Re-exploring the anaesthetic and recovery room component of the Diploma in Operating Department Assistance curriculum at a private higher education institution in South Africa

by

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DECLARATION

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ABSTRACT

The provision of high quality education and training is paramount in healthcare contexts to ensure graduates are trained according to the needs of stakeholders and are competent to enter the 21st century workforce. Healthcare education and training predicates the provision of high quality surgical and medical training which enable healthcare professionals to respond effectively and flexibly to the demands in the healthcare environment – of which the operating department forms a major part. This technological high-impact, fast-moving perioperative environment is staffed by nurses and operating department assistants (ODAs) who deliver patient care with the anaesthetic assistance functions historically provided by nurses. However, due to a shortage of nurses and changes in the higher education landscape in South Africa, anaesthetic and recovery room assistance as an exit-level outcome was added to the training of ODAs. This was mainly done to enable ODAs to fulfil these roles and functions. Thus, the anaesthetic and recovery room assistance course was included in the three-year Diploma in Operating Department Assistance to develop competent ODAs to assist anaesthetists and recovery room registered nurses.

Due to critique from different sources it was deemed necessary to revisit and re-explore the anaesthetic and recovery room curriculum. It became clear that the anaesthetic and recovery room module in use was not effective to equip ODAs with the appropriate cognitive, affective and psychomotor skills. These skills are critical to contribute to an effective and competent team approach to address the skills shortage in the operating department. The aim of this study was therefore to inquire how an existing undergraduate curriculum in anaesthetic and recovery room practices could be reconstructed to fit the needs of a private hospital group in South Africa. This aim was pursued against the background of wider theoretical and healthcare education issues which influence curricula in health training environments.

The development of theoretical perspectives relevant to the study was based on exploring the following concepts and models: competency-based education, curriculum-mapping, Kerns' six-step approach to curriculum development and Fishbein's Integrated Behavior Model (IBM). These key concepts and models guided the investigation in the search for possible curriculum changes.

A programmatic case study design using a mixed method of data collection was used to obtain qualitative data through individual, pair and focus group interviews. Quantitative data were gathered via a self-administered paper-based questionnaire. Data were generated from samples of clinical environment managers, anaesthetists, ODAs, students and educators. An inductive approach through an interpretivist lens of knowledge production was employed to investigate the understanding and needs of the stakeholders. A total of 35 interviews were conducted which involved 71 participants. It included 24 nursing and operating department managers, seven anaesthetists, seven ODAs, 22 students and 11 educators. Sixty-two respondents completed the paper-based questionnaires and the results served to compile a questionnaire on the possible knowledge, technical skills, attitudes and non-technical skills to be included in the anaesthetic and recovery room course. These learning-identified outcomes were verified by means of an online modified Delphi

exercise. To obtain consensus a panel of 17 experts (of whom each held either a Diploma in Operating Room Nursing Science or a Diploma in Operating Department Assistance) participated.

The study findings indicated that a few of the essential cognitive, psychomotor, affective and non-technical skills ODAs require to assist anaesthetists and registered nurses were lacking. It emerged this was mainly due to the lack of ODAs' psychomotor skills. The study further confirmed that a number of factors suggested by Fishbein's Integrated Behavior Model (IBM) impacted on the teaching and learning of anaesthetic and recovery room assistance. Of these factors, mediocre clinical assessments and environmental constraints were found to contribute substantially. Some of the constraints related to the training environment were unclear work profiles and nursing staff shortages. From the factual and conceptual conclusions drawn, a framework for a redesigned undergraduate needs-based anaesthetic and recovery room curriculum within a private higher education institution was proposed. The proposed curriculum aims at contributing towards dealing with the criticisms levelled against the previous curriculum – which was largely the product of a non-participative and non-verified curriculum process – in several ways.

OPSOMMING

Die voorsiening van kwaliteit onderwys en opleiding is uiters belangrik in gesondheidsorgomgewings om te verseker dat gegradueerdes behoeftegerig opgelei word ten einde die werksmag van die 21ste eeu te betree. Gesondheidsorg-onderwys en -opleiding voorsien hoë gehalte chirurgiese en mediese opleiding wat professionele gesondheidswerkers in staat stel om effektief en aanpasbaar te reageer op die eise van die gesondheidsorgomgewing. In hierdie opsig speel die operasiesaalafdeling 'n groot rol. Die gesondheidsorg personeel moet in staat wees om midde 'n tegnologies gevorderde en vinnig bewegende perioperatiewe omgewing pasiëntsorg te lewer; veral verpleegkundiges en operasiesaal departement assistente (ODAe). Histories is die narkotiseur in hierdie omgewings bygestaan deur 'n verpleegkundige. As gevolg van 'n tekort aan verpleegkundiges en veranderinge in die hoër onderwys landskap in Suid-Afrika, is narkose en herstelkamerbystand as 'n uittreevlakuitkoms in die opleiding van ODAe geïnkorpereer. Dit was hoofsaaklik om die ODAe in staat te stel om hierdie ondersteunende rolle en funksies te vervul. Die narkose- en herstelkamerbystandskursus is dus ingesluit in die driejaar 'Diploma in Operating Department Assistance' om bevoegde ODAe op te lei ten einde narkotiseurs en geregistreerde verpleegkundiges te assisteer.

As gevolg van kritiek uit verskillende oorde op die opleiding van ODAe was dit nodig om die narkose- en herstelkamerkurrikulum te hersien. Dit het duidelik geword dat die huidige narkose- en herstelkamermodule nie effektief genoeg was om ODAe met die toepaslike kognitiewe, affektiewe en psigomotoriese vaardighede toe te rus nie. Hierdie vaardighede is krities ten einde by te dra tot 'n effektiewe en bekwame spanbenadering en om vaardigheidstekorte in die operasiesaal departement aan te spreek. Die doel van hierdie studie was dus om ondersoek in te stel na hoe 'n bestaande voorgraadse kurrikulum in narkose- en herstelkamerpraktyk ondersoek en aangepas kon word om aan die behoeftes van 'n privaat hospitaalgroep in Suid-Afrika te voldoen. Hierdie doelwit is nagestreef teen die agtergrond van wyer teoretiese en gesondheidsorg-onderwyskwessies wat leergange in gesondheidsopleidingsomgewings beïnvloed.

Die ontwikkeling van teoretiese perspektiewe relevant tot die studie is gebaseer op die ondersoek van die volgende begrippe en modelle: bevoegdheidsgebaseerde onderwys, kurrikulum kartering, Kerns se ses-stap benadering tot kurrikulum ontwikkeling en Fishbein se geïntegreerde gedragsmodel. Hierdie sleutelkonsepte en -modelle was prominent in die ondersoek na moontlike kurrikulum veranderinge.

'n Programmatiese gevallestudie ontwerp met verskillende metodes van data insameling is gebruik om kwalitatiewe data met behulp van individuele en fokusgroeponderhoude asook kwantitatiewe data deur middel van 'n vraelysondersoek, te verkry. Die deelnemers het bestaan uit geselekteerde groepe vanuit praktiserende kliniese praktykbestuurders, ODAe, ODA studente, narkotiseurs en dosente. 'n Induktiewe benadering deur middel van 'n interpretatiewe lens van kennisverwerwing is gebruik om die leer- en onderrigbehoeftes van die relevante belanghebbendes te ondersoek. Vyf-en-dertig onderhoude is gevoer met 71 deelnemers wat bestaan het uit 24 verpleeg- en teaterbestuurders, sewe narkotiseurs, sewe ODAe, 22 ODA studente en 11 ODA dosente. Twee-en-sestig respondente het die vraelys voltooi. Die resultate van die onderhoude en vraelyste is gebruik om 'n vraelys oor die moontlike vaardighede wat in die narkose en

herstelkamerkursus ingesluit kon word, op te stel. Die geïdentifiseerde leeruitkomste is geverifieer deur middel van 'n aanlyn gemodifiseerde Delphi-oefening. Konsensus is verkry van 'n paneel bestaande uit 17 kundiges met 'n Diploma in Operasiesaalverpleegkunde of ‘n Diploma in Operasie Departement Assistering.

Die studie het getoon dat enkele noodsaaklike kognitiewe, psigomotoriese, affektiewe en nie-tegniese vaardighede wat die ODA benodig om die narkotiseur en geregistreerde verpleegkundige te assisteer, kortkom. Die meeste van hierdie vaardighede is geidentfiseer as psigomotoriese vaardighede. Die studie het ook getoon dat ‘n aantal faktore, soos aangedui deur Fishbein se geïntegreerde gedragsmodel, die leer van narkose en herstelkamer assistensie beïnvloed. Veral ondoeltreffende kliniese assesserings en omgewings-beperkings was bydraende faktore; laasgenoemde het ingesluit ongedefinieerde werksprofiele en 'n tekort aan verpleegpersoneel.

Op grond van die feitelike en konseptuele gevolgtrekkings vanuit die studie is 'n raamwerk vir 'n herontwerpte voorgraadse behoefte-gebaseerde narkose- en herstelkamerkurrikulum in 'n private hoër onderwysinstelling voorgestel. Die voorgestelde kurrikulum kan ‘n bydrae lewer om die kritiek op die huidige kurrikulum – hoofsaaklik die produk van 'n nie-deelnemende en nie-geverifieerde kurrikulumproses – aan te spreek.

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AA	Anaesthetic assistant
ABET	Adult basic education and training
ACLS	Advanced cardiac life support
AET	Adult education and training
ANTS	Anaesthetists non-technical skills
ANZA	Australian and New Zealand College of Anaesthetists
AORN	Association for Operating Room Nurses
AORT	Association of Operating Room Technicians
A/RRA	Anaesthetic and recovery room assistant
AST	Association of Surgical Technologists
AT	Anaesthesia technician
BLS	Basic life support
CHE	Council on Higher Education
CBE/T	Competency-based education and training
CM	Curriculum-mapping
CODP	College of Operating Department Practitioner
CoP	Communities of practice
DHET	Department of Higher Education and Training
EN	Enrolled nurse
HCPC	Health and Care Professions Council
HE	Higher education
HET	Higher education and training
HEQC	Higher Education Quality Committee
HEQCIS	Higher Education Quality Committee Information System
HEQF	Higher Education Qualifications Framework
HEQSF	Higher Education Qualifications Sub-framework

LIST OF ABBREVIATIONS/GLOSSARY

HPCSA	Health Professions Council of South Africa
IBM	Integrated Behavior Model
IOTT	Institute of Operating Department Technicians
IPE	Inter-professional education
IV	Intravenous
NDoH	National Department of Health
NLRD	National learners' records database
NQF	National Qualifications Framework
NTS	Non-technical skills
NVQ	National Vocational Qualifications
ODA	Operating department assistant/assistance / Operasiesaal departement assistent/assistering
ODP	Operating department practitioner
ORT	Operating room technician
OTA	Operating theatre assistant
OTP	Operating theatre practitioner
OTT	Operating theatre technician
PHEI	Private higher education institution
PN	Professional nurse
PoE	Portfolio of evidence
QCA	Qualifications and Curriculum Authority
RN	Registered nurse
RRA	Recovery room assistant
SA	South Africa
SANC	South African Nursing Council
SAQA	South African Qualifications Authority
SOP	Scope of practice

LIST OF ABBREVIATIONS/GLOSSARY

ST	Surgical technologist/technician
TBP	Theory of Planned Behaviors
TRA	Theory of Reasoned Action
TT	Theatre technician
TVET	Technical and vocational education and training
UK	United Kingdom
USA	United States of America

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CHAPTER 1
ORIENTATION TO THE STUDY

1.1. INTRODUCTION

This study focused on the re-exploration of the existing anaesthetic and recovery room component of the Diploma in Operating Department Assistance offered by a private higher education institution (PHEI) in South Africa (SA). The study was deemed essential to address negative criticism levelled at the existing anaesthetic and recovery room component of the particular diploma programme against the background of health education and curriculum development within private healthcare education. The study contributed to knowledge gain in the field of private health education by suggesting a curriculum framework for the relevant component of the qualification in the area of operating department assistance.

1.2. BACKGROUND TO THE PROBLEM

The existing Diploma in Operating Department Assistance programme (referred to as 'the programme'), featuring at Level 6 of the SA National Qualifications Framework, was registered by the Department of Higher Education and Training (DHET) in 2012 and implemented by the relevant private higher education institution in 2013. As the first of its kind in SA, it was implemented to train neophytes with no nursing experience as operating department assistants (ODAs) to function in the operating department. The training of neophytes as ODAs was necessitated by the shortage of nurses in operating departments which was already evident in 2005 when theatre cases in a private hospital organisation in SA were cancelled due to the impact of the nurse shortages (Coustas, 2015:6).

The main purpose of the programme under scrutiny was to prepare ODAs to function in all areas of the operating department. Two of these areas are anaesthetic and recovery room functioning. An ODA functioning in these two areas assists the anaesthetist and registered nurse (RN) during the perioperative phases (before surgery, during surgery and after surgery) of the patient's surgical experience. This assistance takes place in a technologically advanced, fast-paced environment which requires the ODA to effectively display cognitive, affective and psychomotor skills (Dumchin, 2010:87). Several expressions of disapproval were levelled at the assistance given during the anaesthetic and recovery room component from management and RNs in the operating department. Being a training manager herself, the researcher contemplated some important questions. Does the existing anaesthetic and recovery room curriculum optimally prepare ODAs to function optimally in this environment? Which cognitive, affective and psychomotor skills are needed by ODAs to best perform their functions? Was the stakeholder consultation during the planning phase of the existing curriculum sufficient? Does the existing anaesthetic and recovery room curriculum address the needs of stakeholders such as employers, ODAs, co-workers and anaesthetists? Does the existing curriculum address the needs of the nursing and theatre managers to optimally utilise ODAs in addressing the shortage of nurses in the operating department?

In terms of teaching and learning, moving away from a traditional lecturer-centred to a more student-centred approach was embraced with the implementation of the Diploma in Operating Department Assistance programme. The focus was on learning outcomes for adult learners with much time spent on self-study activities. The curriculum was developed according to the programme framework published by the South African Qualifications Authority (SAQA) as a guideline for the ODA curriculum development (SAQA, 2013:1). Despite the fact that the developed curriculum was guided by the SAQA operating department assistance qualification framework and included a student-centred, adult learning and self-study approach, negative criticisms and perceptions relating to the anaesthetic and recovery room component were reported by some staff members in private hospitals and their training facilities.

Having worked in various theatre and theatre training capacities (as a registered theatre nurse, a training and development consultant in the operating department, a theatre educator, a training manager overseeing operating theatre training and a higher education and training manager) for several years, the researcher had been closely involved with operating theatre programmes for over 27 accumulative years. In her opinion, the main problematic issue was the apparent lack of comprehensive consultation at the time the programme was developed concomitant with the fact that the needs of the relevant stakeholders were not met. The only input during the development of the programme came from a few theatre nurse educators (Van Zyl, 2012:i). All held an operating theatre nursing qualification (of which anaesthetic and recovery room care was a component) and had had extensive experience in operating theatre nursing, but none of them had a qualification in anaesthetic and recovery room practice or operating department assistance. Consequently, the implicit question emerging from the main problematic issue noted by the researcher was how representative the input was at the time of the development of the programme. A further concern established was that only a few stakeholders were consulted for the development of modules contained within the programme.

Starting in the late 20th century, the paradigm shift towards outcomes-based learning generated wide interest in education and training research. Curriculum theorists have since suggested various models for curriculum development (Du Toit, 2011:65). A curriculum usually outlines a plan or design upon which educational provision is based. It addresses stakeholder needs, the content, learning outcomes, exit-level outcomes, time frames and the ideology of the curriculum as well as the process of education which includes teaching, learning and assessment (Quinn & Hughes, 2007:107-108). But, according to Archer (2016:30), there appears to be no uniform definition of a higher education and training curriculum. At the same time, higher education institution academics differ on their views of a curriculum and the content thereof. The reason for such differences may be that there are many ways to design a curriculum. Du Toit (2011:62) states some curricula are constructed around subjects, others are based on outcomes; some use a competency-based methodology while others are problem-based or focus on problems identified in society. The same author claims a curriculum should be designed around students – this viewpoint focuses on student-centredness and adult learning (Du Toit, 2011:62). In the opinion of Huang, constructivists also insist teaching and learning must be student-centred (Huang, 2002:32) and adult learning should be authentic. The learning should be

based on competencies because adults want to learn skills which are related to their real-life or work experiences.

Although Neary (2002:58-59 & 68) reminds us that traditional and contemporary approaches to curriculum theory also play an important role in curriculum development, very little published information is available on curriculum development and frameworks for perioperative practices which include anaesthetic and recovery room practice. For instance, on these aspects only one relevant article (Dumchin, 2010:87) was found in literature. No publications related to the SA perioperative context could be found. Similarly, no journal articles on anaesthetic and recovery room curricula for nurses or ODAs in SA were detected in literature. On the contrary, a few articles pertaining to ODAs have been published abroad in, e.g., England, Scotland and United Sates of America. Yet, SAQA allows for a diploma qualification in Operating Department Assistance on its website. The exit-level outcomes, associated assessment criteria and principles of perioperative assistance in the operating department are stated, but it does not give clear guidelines on the content with regard to the anaesthetic and recovery room assistance needs of ODAs (SAQA, 2013:1-6).

In light of the above evidence it seems clear that quality programme designs and their development are closely associated with proper needs assessments and consultation. This implies involving relevant curriculum stakeholders to determine the outcomes, content, learning facilitation strategies and assessment strategies of education and training programmes. In this sense it can therefore be claimed that the knowledge contribution of this study encompasses the generation of new options and possibilities for an anaesthetic and recovery room curriculum for ODA training in private and public health provision. Although the study focused on the instance of private health provision in a South African context, it also relates to other contexts such as the United States of America (USA), the Netherlands, India, Australia and the United Kingdom (UK) where such programmes are offered. Similarly, the research methodology employed in this study might be duplicated by curriculum researchers in other disciplines when investigating curricula.

1.3. DESCRIPTION OF THE PROBLEM

This study involved a curriculum inquiry related to the SA higher education health sciences environment. The existing ODA curriculum makes provision for the training of ODAs for private and public health services within the operating department of the health sciences profession. ODAs represent a new addition to services in the health environment which is in the process of being established in SA.

Although the ODA qualification framework and the CHE and DHET criteria and guidelines were used to develop the existing ODA curriculum, it only provides principles, exit-level outcomes and associated assessment criteria. It clearly does not provide an anaesthetic and recovery room curriculum framework. Criticism directed at the anaesthetic and recovery room curriculum developed for the relevant private hospital group informed the researcher's decision to focus on this topic for her research study. The primary research question (cf. sect. 1.5) relates to the different contexts such as the professional, organisational and national as well as the theoretical contexts. These contexts are discussed in detail in Chapters 2 and 3.

1.4. PROBLEM STATEMENT

The anaesthetic and recovery room component of the existing undergraduate ODA programme was perceived to be insufficient and ineffective to equip ODAs with the required cognitive, psychomotor and affective skills to contribute to an effective, competent team approach and to combat skills shortages in the operating department. If these perceived weaknesses are not properly addressed, it may hamper the effectiveness of the training diploma programme and its outcomes.

1.5. RESEARCH QUESTIONS

Considering the stated problem, the primary research question for this study was formulated as follows:

How, if at all, could an existing undergraduate curriculum in anaesthetic and recovery room practices be re-constructed to fit the needs of a private hospital group in South Africa?

The primary research question was addressed by attending to the following subsidiary questions:

1. *How do stakeholders currently experience operating department assistants (ODAs) in the anaesthetic and recovery room practice?*
2. *Are the existing cognitive, affective and psychomotor skills of ODAs sufficient to perform their anaesthetic and recovery room duties?*
3. *Is there a hierarchy of importance regarding the sequencing of cognitive, affective and psychomotor skills of ODAs?*
4. *What are the possible gaps in the cognitive, affective and psychomotor skills currently taught to ODAs?*
5. *What would a needs-based curriculum for a curriculum in anaesthetic and recovery room practice in an ODA programme entail?*

The data which provided the answers to these questions were analysed and considered to address the primary research question and develop a new curriculum framework to amend or replace the existing anaesthetic and recovery room curriculum. The data and findings also pointed to important changes to similar curricula – not only in SA, but where they appear in educational programmes of health professions globally.

1.6. RESEARCH DESIGN AND METHODOLOGY

An inductive approach through an interpretivist lens of knowledge production was used (Mackenzie & Knipe, 2006:5; Polit & Beck, 2012:496). An interpretivist knowledge lens allowed for a programmatic case study design which incorporated a variety of data generation methods (Creswell, 2009:11) for inquiry into a complex phenomenon within its natural context (Ihuah & Eaton, 2013:935-940). The programmatic multi-staged singular case study design was selected to re-explore the anaesthetic and recovery room component of the ODA programme at a PHEI in SA. A combination of Neale, Thapa and Boyce's (2006:5-6) and Yin's (2014:16) inquiry method (cf. Ch. 4, sect. 4.2.1.2) was employed to better understand whether the existing curriculum prepared ODAs for service in the anaesthetic and recovery room context (Archer, 2016:88). Another reason for choosing this method was because it has been successfully used in medicine and nursing

education owing to its versatility (Keeney, Hasson & McKenna, 2011:3; Mackenzie & Knipe, 2006:938; Salkind, 2010:4 & 7). The selected method allowed the researcher to use both qualitative and quantitative data, collected during various stages (cf. Table 1.1), to investigate the quality of the anaesthetic and recovery room component and its usefulness for practice.

Table 1.1: Summary of stages, research questions, information groups, data collection methods and sampling techniques

Stage 1: Literature review				
Literature review to determine the theoretical underpinnings for revising the ODA curriculum and to determine possible cognitive, affective and psychomotor content that could be considered for the anaesthetic and recovery room component of the ODA programme.				
Stage 2: Data collection				
Research questions	**Participants**	**Number of participants invited**	**Data collection method**	**Sampling**
1 & 2	a. Final year ODA students b. Nursing- and operating room managers, recovery room supervisors and mentors	24 28	Focus group and pair interviews and completion of paper-based questionnaire	Full census
1 & 2	c. ODAs who graduated from programme d. Educators (including the programme coordinator)	7 11	Individual interviews and completion of paper-based questionnaire	Full census
1 & 2	e. Anaesthetists	12	Individual and pair interviews and completion of paper-based questionnaire	Non-probability quota sampling
Stage 3: Obtain consensus and determine hierarchy of importance of skills				
3	Expert panel	53	Online Delphi technique questionnaires	Purposive sampling
Stage 4: Clarification and justification of findings				
1 & 5	Executive managers	5	Individual interviews	Purposive sampling
Stage 5: Determining curriculum priorities/gaps and proposal of a new needs-based curriculum framework				
4 & 5	Determining curriculum priorities and gaps from data analysis and a redesign of the anaesthetic and recovery room component of the Diploma in Operating Department Assistance curriculum as a new curriculum framework.			

1.6.1. Participant selection

The first level of participant selection aimed at generating qualitative data by means of individual and focus group interviews. The participants, referred to as 'stakeholders' in curriculum terms, are central in the needs assessment stage of any curriculum development process as suggested in Kern's six-step approach (Kern, 2009:12-13) and discussed in Chapter 2, section 2.5.3.2. The researcher decided on five groups (cf. Table 1.1) in various geographical regions for the first level of participant selection. All the participants were directly involved with the ODA programme under scrutiny.

1.6.2. Methods of generating data

The data were generated through a systematic review of relevant literature, semi-structured individual, pair and focus group interviews as well as a self-administered questionnaire – which was completed during the same time-slot and after the interviews had been conducted – to obtain a better understanding of the phenomenon under investigation. The individual and focus-group interview questions as well as the self-

administered paper-based questionnaire were scrutinised by senior researchers and piloted as outlined in Chapter 4 (cf. sect. 4.4.2.2). Interviews were selected for the quality of information it would yield while the questionnaire allowed participants to indicate their specific needs as required per year of study (Polit & Beck, 2012:264). A Delphi survey technique was employed afterwards owing to its advantage of fostering consensus among a panel of expert participants (Stefan, 2010:9 & 64) regarding the cognitive, affective and psychomotor skills which needed to be included in the anaesthetic and recovery room component (Fallon & Trevitt, 2006:139; Polit & Beck, 2012:268). Hence, by reaching such consensus it was possible to compare the outcomes of the Delphi survey with the existing programme content. These methods are described in more detail in Chapter 4 (cf. sect. 4.4.2.2; 4.4.3.2 & 4.4.4.2).

1.6.3. Data analysis

The analytical abstraction ladder (adapted from Miles & Huberman, 1994:92) was used to analyse the generated qualitative data. The interview audio recordings were transcribed verbatim followed by a thematic approach to divide the text into smaller units and eventually combining these into themes, categories and sub-categories (Creswell, 2009:208; Maree, 2007:265). The data were cross-checked to provide for credibility and to prevent researcher bias (Creswell, 2009:190). Miles and Huberman's (1994:92) abstraction ladder was useful in repackaging and combining the data from raw codes into the final themes and categories. The assistance of a statistical consultant was obtained to analyse the paper-based questionnaire data (Plowright, 2011:121) with the STATISTICA 11 software program (*StatSoft*, s.a.). Simple descriptive statistics were used to describe, synthesise and analyse the numerical data. These are described in more detail in Chapter 4 (cf. sect. 4.4.2.3 & 4.4.4.3).

Curriculum-mapping was done to determine the taught, hidden, null and perceived curricula as described in Chapter 2 (cf. sect. 2.2.2). This data were compared to the planned anaesthetic and recovery room curriculum component contained within the Diploma in Operating Department Assistance curriculum. The described, synthesised and analysed data were represented using columns and tables (cf. Chapter 6).

The Delphi survey process and results were managed by using the EvaSys evaluation system. Descriptive statistics were used to describe, synthesise and analyse the data using columns and frequency tables (Plowright, 2011:121). This is described in detail in Chapter 4 (cf. sect. 4.4.3.4).

1.6.4. Research sites

The research sites comprised of the five learning centres of the PHEI located in four provinces in South Africa (cf. Fig. 1.1), namely Bellville (Western Cape), Bloemfontein (the Free State), Nelspruit (Mpumalanga), Pretoria (Gauteng) and Bryanston (Gauteng). Learning sites further included the hospitals located in four of the provinces (Gauteng, Mpumalanga, North West and Western Cape) where at least two ODAs per hospital were employed for the clinical component of the programme. All mentioned learning centres were using the same curriculum.

Figure 1.1: Provinces in South Africa (adopted from Wikipedia, 2018)

1.7. POSITION OF THE RESEARCHER

At the time of study, the researcher's role in the company was that of manager of the higher education and training department at the particular PHEI where the study was conducted. Her recognition of operating department assistance as a dynamic profession of which the base is knowledge – and to gain knowledge requires learning – together with her personal deep interest in training ODAs inspired her to conduct this study. She aspired to generate new knowledge thereby contributing towards improvement within the study context. Her particular research responsibilities in the study were to develop the relevant questionnaires, arrange interview dates, train the external data collector (researcher), analyse and collate the data, perform curriculum-mapping, compare stakeholder needs (confirmed by the panel of experts) with the existing course and suggest a redesign of the course using the Integrated Behavioral Model (IBM) framework (cf. Ch. 2, sect. 2.9). Since she was not a direct line manager of any of the study participants, participant coercion was averted. She furthermore appointed an independent external researcher to conduct all interviews and was not present during Stages 2 and 4 of data collection.

To further prevent researcher bias, the interview data generated by the independent external researcher were sent by means of digital audio recordings to an external transcriber for transcription. Two auditors cross-checked the themes, categories and sub-categories the researcher had identified. The researcher was constantly aware of the importance to maintain impartiality in the research process; even more so because of her position as manager of higher education and training at the PHEI. To achieve this, while analysing the interview and paper questionnaire data, e.g., she applied bracketing and continuously kept the following guiding question in mind: 'How would my expectations and perceptions influence the outcomes of the study?' (Creswell, 2009:192 & 200; Tufford & Newman, 2010:80). The researcher's position is further described in Chapter 4 (cf. sect. 4.2).

1.8. SIGNIFICANCE OF THE STUDY

The study results were significant in that it would provide useful feedback for reconstructing the anaesthetic and recovery room component to maximise the utilisation of ODAs. It was envisioned that the study would also contribute to the existing scarcity of literature sources and body of knowledge focusing on HET curriculum development in health sciences education. In particular, it was foreseen that the study would promote insights into the development of the anaesthetic and recovery room component of the ODA curriculum in private health training contexts – not only in South Africa, but also abroad.

1.9. SCOPE OF THE STUDY

The study focused on the undergraduate anaesthetic and recovery room component contained within the Diploma in Operating Department Assistance health education curriculum at a private higher education institution in SA. It did not aim to inquire into the curriculum needs of the public education sector or such training in other private health groups.

1.10. ETHICAL CONSIDERATIONS

The study adhered to the ethical clearance requirements of the private hospital group as well as the Social Sciences Research Ethics Committee at Stellenbosch University. Participation was completely voluntary and the confidentiality of information and protection of participant identity were ensured (Brink, 2006:143). As mentioned, the researcher was not a direct line manager of any of the study participants at the time of study and an independent researcher conducted all interviews to prevent researcher bias (Creswell, 2009:191-192). The participants' willingness to participate was confirmed by them completing a consent form and an online Delphi technique questionnaire. This is further described in Chapter 4 (cf. sect. 4.4.2.5; 4.4.3.5 & 4.4.4.5).

1.11. CLARIFICATION OF KEY TERMS

The following key terms used in this study are clarified by means of a brief working definition of each.

1.11.1. Anaesthetic assistance and care

Anaesthetic assistance is defined as the availability of a dedicated person to assist the anaesthetist with patient care during surgery – from induction through to the immediate recovery of the patient (Phillips, 2007:57-63; Rothrock, 2011:12; Working Group of the Scottish Medical and Scientific Advisory Committee, 2005:1).

1.11.2. Anaesthetic assistant

An anaesthetic assistant is a suitably trained member of the operating theatre team who assists the anaesthetist. This person (a nurse or non-medical staff member) is at the anaesthetist's side for the entire theatre list (Scottish Medical and Scientific Advisory Committee, 2003:1; Working Group of the Scottish

Medical and Scientific Advisory Committee, 2005:1). The focus of this study is on the anaesthetic assistant as a non-medical staff member.

1.11.3. Competency-based curriculum

This is a set of courses offered to students as a learning plan (Pellegrino, 2006:2; Quinn & Hughes, 2007:107-108) with specific emphasis on identification and integration of competencies expected from students and graduates (Toohey, 1999:62).

1.11.4. Operating department and operating room

The operating department – also known as operating room complex, operating theatre complex or surgery departments – is a separate unit in a hospital. This department has various areas such as operating rooms, a holding area, scrub-up areas, sterile set up areas and a recovery room. (Association of Surgical Technologists (AST), 2008:82; Hauxwell, 2002:478; Phillips, 2013:178; Timmons, 2004:629-630).

The terms 'operating room' and 'operating theatre' are used interchangeably. Operating rooms are restricted sterile areas in the operating department where diagnostic and surgical procedures are performed while the patient is anaesthetised. Afterwards patients recover in the recovery room before being transferred to nursing units (AST, 2008:82; Hauxwell, 2002:478; Phillips, 2013:184). In this study this sterile area will be referred to as an operating room.

1.11.5. Operating department assistant (ODA)

The operating department assistant (ODA) is a non-nurse who supplements and complements the activities of the healthcare professionals in the operating department. The ODA has the responsibilities to render healthcare-related services and work closely with all the members of the theatre team (AST, 2008:6; Fuller, 2013:5; Phillips, 2013:32 & 57-63; Rothrock, 2011:12; Timmons, 2004:648). There are, however, numerous designations used interchangeably for them, namely theatre technician, ODA, operating department practitioner, operating room assistant, operating theatre practitioner, surgical technologist and healthcare assistant. In this study the ODA will refer to a health worker who assists the surgeon, anaesthetist, scrub practitioner and RN (the latter in the recovery room).

1.11.6. Recovery room care

Recovery room care, also known as post-anaesthetic care, is the immediate care of the patient in his/her recovery phase after surgery. This care is rendered in an assigned area, referred to as the recovery room, post-anaesthesia room or post-anaesthetic care unit (Rothrock, 2011:270). The care consists, e.g., of assessing/checking the patient, providing pain relief, providing airway management and monitoring the patient's vital signs until the patient is stable enough to be discharged from the recovery room on the anesthetist's approval (Hauxwell, 2002:478).

1.11.7. Registered nurse (RN)

The registered nurse (RN) is a person who holds a diploma or a degree in nursing and is registered with the South African Nursing Council (South African Nursing Council (SANC), 1985:1; 1989:1). In South Africa a RN is also known as a professional nurse (PN). Thus, for the purpose of this study a RN or PN will be acknowledged as similarly qualified and therefore the titles will be used interchangeably.

1.12. OUTLINE OF THE REMAINDER OF THE STUDY

Chapter 1 provided the reader with a brief orientation to the study. Chapter 2 will focus on the development of a theoretical perspective for the reconstruction of the anaesthetic and recovery room component of the programme. Relevant curriculum theories will be explored, discussed and analysed. Chapter 3 will comprise the contextual perspective of this study whereas Chapter 4 will consist of the research design and methodology. The research design, method, sampling, data collection methods, data analysis as well as ethical considerations will be discussed in detail. This will be followed by the data analysis and results of the focus group, pair and individual interviews in Chapter 5. The results of the interview data will be presented, compared and discussed by means of key quotations.

In Chapter 6 the findings of the questionnaire survey and curriculum-mapping will be presented and discussed. The outcomes of the Delphi survey will also be compared to the existing planned anaesthetic and recovery room curriculum to determine how the anaesthetic and recovery room component of the programme can be reconstructed to better meet the needs of stakeholders. Chapter 7 will report on the online Delphi survey involving three rounds while Chapter 8 will deal with the data analysis and results of the second round of individual interviews. The results will be presented, compared and discussed by means of key quotations. In Chapter 9 a synthesis of the findings will be presented and in Chapter 10 conclusions will be drawn based on the findings of the study. The implications of the findings of the study will also be discussed with the focus on the reconstruction of the anaesthetic and recovery component and implications for future research. The limitations of the study will be discussed in Chapter 10.

CHAPTER 2
THEORETICAL PERSPECTIVES

2.1. INTRODUCTION

The study sought to maximise the utilisation of operating department assistants (ODAs) by re-exploring the existing anaesthetic and recovery room component of the Diploma in Operating Department Assistance offered by a private higher education institution (PHEI) in South Africa (SA). This chapter, which presents Stage 1 of the current study (cf. Table 1.1), concentrates on the exploration, discussion and analysis of relevant curriculum theories. The researcher drew from the following concepts: competency-based education, curriculum-mapping, Kern's six-step approach to curriculum development and Fishbein's Integrated Behavior Model (IBM).

The exploration of literature on theoretical perspectives is presented in eight sections. Section 2.2 deals with the curriculum as a concept, section 2.3 provides an overview of the curriculum theories and section 2.4 gives an overview of operating department assistance (ODA) education. Section 2.5 considers literature related to relevant education models. In section 2.6 modern determinants of ODA education are explored while section 2.7 focuses on relevant learning theories. Section 2.8 explores the anaesthetic and recovery room component and section 2.9 explores the Integrate Behavioral Model (IBM) of curriculum design and development. The chapter concludes with a synthesis section.

2.2. CURRICULUM

The concept of a 'curriculum' originates from the Latin term 'currere', meaning 'to run' which refers to running a race or competing on a racecourse (Chaudhary & Kalia, 2015:57; Du Toit, 2011:60; Neary, 2002:33; Posner, 2004:1 & 5). Running a race means one has to 'finis' (the Latin word for 'end' or 'finish') which is the goal or aim of the race (Frankl, 2004:79). Similarly, the overall goal or aim with a curriculum is to equip individuals with the right knowledge and skills to become employed workers who can successfully operate in a specific area (finished the race). In this study context, it is the training of neophytes with no nursing experience (aim/goal) to function successfully as operating department assistants in the anaesthetic and recovery room areas (end of race).

The next section deals with 'curriculum' as a concept and is divided into three sections, namely an overview of the curriculum as a concept (cf. sect. 2.2.1), a discussion of the types of curricula (cf. sect. 2.2.2) and the concept of curriculum-mapping in health sciences education (cf. sect. 2.2.3).

2.2.1. Curriculum as a concept

Some authors view a curriculum as the expected end of education while others see it as the expected means to education. For instance, Kern (2009:1) and Nicholls and Nicholls (1978:i) agree a curriculum is a planned set and range of educational opportunities and experience for students while Stenhouse (1975:4) sees it as the

means to communicate the principles and educational proposal which allow for scrutiny and effective translation into practice. A more comprehensive definition of a curriculum is provided by McKimm and Barrow (2009:714) who state a curriculum is a framework which indicates the knowledge, skills and attitudes students learn during a course or programme. The curriculum provides the specific "teaching, learning and assessment methods" as well as recourses needed to "support effective delivery".

Authors also differ in their viewpoints of what the concept 'curriculum' in higher education entails. Quinn and Hughes (2007:108-109), for instance, suggest a curriculum within higher education constitutes a plan which encompasses the consumers of the curriculum, the educational processes, context and timetables. As mentioned in Chapter 1, Archer (2016:30) states there is no uniform definition of what constitutes a higher education and training (HET) curriculum. Evidently, even educators in the same education institution differ in their views of a curriculum and the content thereof. The reason for these differences might be attributable to the fact that there are many ways to plan and construct a curriculum. Thus, although different viewpoints exist, it is important to keep in mind that much of a HET curriculum, especially those in the health sciences fields, is based on those competencies needed to manage often unpredictable work environments. At the same time, some training is oftentimes based on the predictable knowledge, skills and attitudes/values of a profession (Posner, 2004:70).

In healthcare curriculum developers seem to agree that a curriculum for a qualification constitutes a plan which contains structured educational experiences and a cohort of modules (courses). These educational experiences may include one or more sessions on a subject, one or more modules, short to year-long courses and short to long rotation periods (Choudaha, 2008:17; Kern, 2009:1; Uys & Gwele, 2005:1). When a curriculum is developed or reviewed, the reference is mainly to the processes that are used to develop or renew the whole curriculum or only sections thereof (Fauci, Adams, Mazzaccara, Freeman, Aden, Cozza *et al.*, 2015:7). But, to enhance a healthcare curriculum review, McKimm and Barrow (2009:715) assert more than one type of curriculum should be explored and considered before attempting the review.

2.2.2. Types of curricula

Quinn and Hughes (2007:109) point out there are three types of curricula – the planned curriculum, delivered curriculum and the hidden curriculum – which contribute to teaching and learning. The planned curriculum, also known as the published or official curriculum, is the formal curriculum and ought to match the delivered curriculum, also known as the functional and taught curriculum (Kelly, 2004:6; McKimm & Barrow, 2009:714; Prideaux, 2003:268; Robley, Whittle & Murdoch-Eaton, 2005:327; Quinn & Hughes, 2007:109) to ensure stakeholders needs are met (Prideaux, 2003:270). The pervasive and powerful hidden curriculum is based on the recognition that learning does occur and links to the essential values, attitudes, norms, beliefs, behaviours and expectations students acquire as a result of the culture of a particular education institution and clinical environment (Barnett & Coate, 2005:39; Dent & Harden, 2013:9; Eisner, 1994:88, 95 & 97; Kelly, 2004:7-8; Neary, 2002:46-47; Wear & Skillicorn, 2009:452). Eraut (2000:113-115 & 2007:404) posits that learning of professional knowledge in the workplace has a large implicit learning and tacit knowledge component. The author states that "Most workplace learning is informal and occurs as a by-product of

engaging in work processes and activities" (Eraut, s.a.:1). By utilising the communities of practice (CoP) learning theory students' unconsciously absorb norms, attitudes/values and other culturally embedded knowledge of the profession (Eraut, s.a.:10). The CoP theory is discussed in more detail in section 2.7.1.

The hidden curriculum could thus be seen as a by-product of the anaesthetic and recovery room curriculum which usually includes the unwritten social rules and expectations of behaviour (Bruce & Mtshali, 2017:242) often found particularly in assessment strategies, allocation of resources and institutional policies (Kauffman & Mann, 2014:21). The informal curriculum, on the other hand, is viewed as a process by which the students' knowledge and skills become situated in the context of daily work life.

Eisner (2002:87 & 97) and Posner (2004:12) add another two curriculum types, namely the null curriculum and the extra curriculum. The former is seen as the knowledge and skills not taught and/or omitted (Posner, 2004:13) whereas the latter (Eisner, 2002:87-88) comprises all those experiences outside the planned curriculum (Balmer, Quiah, DiPace, Paik, Ward & Richards, 2015:1547). Eisner (2002:87) further refers to two additional terms, the explicit curriculum (planned anaesthetic and recovery room curriculum) and implicit curriculum (the hidden and informal curriculum). The hidden (or informal) is used to denote learning that occurs in the clinical setting between the perioperative team and students and in the classroom between the educator and students. It is the learning beyond the control of the educator (role-modelling of behaviour and professionalism), role recognition (cultural process through which students learn to distinguish between 'bad' and 'good' clinical behaviour) and identifying which skills are important and which not in the work environment. The real life work environment is also the place where behaviour, attitude or values (affective skills) and practices are reinforced by actual experiences (Balmer, Hall, Fink & Richards, 2013:1136 & 1140; Bruce & Mtshali, 2017:243; Thomas, 2009:49).

The phrase 'hidden curriculum' was used in 1968 to describe the classroom experience of medical students (Case, 2014:6). Karimi, Ashktorab, Mohammadi and Abedi (2014:6) states that "What students listen to, in the classrooms, does not exercise the most permanent influence, but what they observe from their educators and others, influences their attitude and understandings of true expectations from the profession". The behaviour and attitude of the educator, for example facial gestures and norms, communicated without conscious intent could have a negative or positive influence on students' attitude, knowledge and behaviour (Alsubaie, 2015:125; DaRosa, Skeff, Friedland, Coburn, Cox, Pollart *et al.,* 2011:2). For example, teaching and learning could be obstructed when educators give the impression that some topics are less important than others (DaRosa *et al.,* 2011:2). A study, titled "Learning to Work: The Hidden Curriculum of the Classroom", done by LeCompte (1978:34) found that the implicit message conveyed from managerially oriented educators to students was that of 'achievement'. Students absorb the educators' behaviours, attitudes and norms which are reinforced by the social structure of the classroom (Case, 2014:6). The influence of the educator is discussed in more detail in section 2.8.10.6.

The terminology 'implicit' borrowed from Eisner might be too broad, but a study conducted by Balmer *et al.* (2013:1140) mirrors Wear and Skillicorn's (2009:453) study findings in observing the participants did not

really differentiate between hidden and informal curricula. In both studies the students used the two terms interchangeably.

For the purpose of this study the researcher initially planned to focus on the planned curriculum. Engaging with the studies and standpoints of McKimm and Barrow (2009) and Kelly (2004) in particular, she realised one type of curriculum only cannot be considered when reviewing a curriculum. McKimm and Barrow (2009:715) take the stance that students enrolled in healthcare programmes need to acquire a mix of skills to be able to apply their acquired competencies within different practice situations. Kelly (2004:6-7) argues that the received curriculum, seen as the realisation of students' learning experiences, must also be considered when reviewing a curriculum. By closing the planned-received gap, the integration of theory and practice might be enhanced. Hence, for the purpose of the current study, the researcher chose to pay attention to the planned, taught and received curricula. Thus, the curriculum types which constitute a combination of the terms used by the authors as summarised in Table 2.1 were preferred for the current study purpose.

Table 2.1: The kinds of curriculum components considered in the present study

Type of curriculum	Description of curriculum type
Explicit (planned/formal)	Intention of the curriculum planner on competencies students should achieve
Delivered/taught	The curriculum as implemented and seeing what happens in practice
Received	The students' learning experiences of the curriculum
Implicit (hidden and informal)	Leaning which occurs within confines of anaesthetic assistance training over which the educator has little control and which is not intended as part of the planned curriculum It is seen as the interaction between the students and educators, clinical environments, other students and personal interest
Null	Knowledge and skills not taught

(Sources: Balmer *et al.*, 2015:1547; Dent & Harden, 2013:9; Eisner, 2002:87 & 97; Harden, 2001:3-6; Kauffman & Mann, 2014:21; Kelly, 2004:7-8; McKimm & Barrow, 2009:714; Posner, 2004:13; Quinn & Hughes, 2007:109)

The researcher acknowledged that although the terms of the various curriculum types were grounded in relevant research on the topic of curriculum, overlaps could occur. In the next section the issue of curriculum-mapping in health science education is explored because it provides important insights into the anaesthetic and recovery room component and the broad implications of reconstructing such a curriculum.

2.2.3. Curriculum-mapping in health sciences education

Curriculum-mapping (CM) is seen as 'road mapping' stakeholders' (i.e. educators', students', developers', managers', the broad public's and researchers') insight into the curriculum and illustrating the links between the various curriculum elements. Hence, curriculum planning and reviewing becomes more effective and efficient (Harden, 2001:3-4). With the re-exploration of a curriculum, CM is a suitable methodology to determine the effectiveness of the 'what is taught' (content, outcomes and competencies), 'how it is taught' (resources and opportunities), and 'when it is taught' (curriculum sequence) and whether the students actually achieved the expected learning outcomes (Harden, 2001:3). Curriculum-mapping thus focuses on the explicit, the taught and the received curriculum. According to Eisner (2002:87-88) and Quinn and Hughes (2007:109), the null curriculum and implicit curriculum are equally essential to a curriculum review

(cf. Table 2.1). All these components are important to determine whether the planned curriculum meets the needs of all stakeholders and whether curriculum gaps occur.

Curriculum-mapping is widely used in health sciences education and is applied to determine how the different contents of modules relate to one another as well as to the availability of learning opportunities, learning outcomes, the assessment of learning and also to identify potential gaps (Harden, 2001:5). Ashcroft and Gillespie (2017:20) used CM to develop a framework to teach bioscience to nursing students while Burwash, Snover and Krueger (2016:1) used it to map and restructure an occupational therapy curriculum. The methodology used in the current study was based on various types of curricula (cf. Table 2.1) with the specific aim to identify gaps in the existing curriculum and also to reflect possible future changes as highlighted by the current study. Therefore, for the purpose of this study, the null and hidden components were included. The latter formed part of the implicit curriculum whereas the gap between the planned and received curriculum represented the gaps in the teaching and learning of anaesthesia and recovery room assistance. The null curriculum represented those concepts and skills which did not form part of the students' theoretical and clinical repertoire (Flinders, Noddings & Thornton, 1986:33-34), but which they were nevertheless expected to have in the clinical environment where they worked and learned – those were the concepts and skills not taught by some educators. A further focal point was the various windows of curriculum-mapping which allowed the researcher to view the curriculum from 10 windows, namely (i) learning outcomes; (ii) leaning content; (iii) assessment of students; (iv) opportunities for learning; (v) learning location; (vi) resources; (vii) timetable; (viii) human resources; (ix) curriculum management and (x) students (Harden, 2001:6-10).

The next section constitutes a brief overview of relevant 20th and 21st century as well as present time curriculum theories because it influenced the choice of method chosen to re-explore the anaesthetic and recovery room course.

2.3. CURRICULUM THEORIES IN THE 20th AND 21st CENTURIES

Several proponents of curriculum theories were identified by Scott (2008:6-17) who highlights their contributions and applications in his critical essays on major curriculum theorists.

2.3.1. Scientific curriculum-making

Scientific curriculum-making theory became prominent in the 1970s with the rise of the competency-based education (CBE) movement (Horn, 2002:35; Smith, 2000:3) and the re-emergence of vocationalism (Schilling & Koetting, 2010:167). Working together in the fields of curriculum development and audiovisual technology at the University of Chicago, USA, two American behaviourists, John Franklin Bobbitt (1876-1956) and Professor Werret Wallace Charters (1875-1952) pioneered a scientific method to develop a curriculum by determining the learning objectives (Scott, 2008:6). This method and the notion of social efficiency gave rise to the 'curriculum as product' theory which is based on an 'end means' approach (Horn, 2002:36-37; Pinar, Reynolds, Slattery & Taubman, 2008:100). The focus is on the achievable objectives

which are aligned to the subject matter (Alvior, 2014:1; Pinar *et al*., 2008:101; Scott, 2008:6) and aimed at meeting the needs of stakeholders (Smith, 2000:13).

The proponents of the scientific curriculum-making theory believe education prepares the individual adequately for everyday life activities (Bobbitt, 1918:55; Horn, 2002:36-37; Scott, 2008:7). Translated into professional life, this means a curriculum which prepares professionals for their jobs should be scientifically based on the analyses of relevant professional activities and a needs assessment including learning experiences. Bobbitt originated the necessary technology for a behavioural-based curriculum by observing the theory of daily 'life-activity analysis' which informed him to develop specific objectives (Posner, 2004:16 & 59-60; Smith, 2000:22). His theory on how to prepare the young generation to make a living (Du Toit, 2011:65) is used by many educators for curriculum development (Pinar *et al.*, 2008:101; Stefan, 2010:21-22). Although Bobbitt's (1918) scientific approach was originally aimed at the school environment (Bobbitt, 1918:41; Eisner, 1967:30-31), it is indeed applicable to the HET environment and has consequently been used for professional degrees in varying fields such as medicine and accounting. This top-down approach centres on subjects and/or disciplines and includes little or no student input (Du Toit, 2011:66; Pinar *et al.*, 2008:1010). Ralph Tyler's (1949) rationale for curriculum planning and inquiry advocates a 'means end' approach as opposed to Bobbitt's (1918) 'end means' approach to curriculum development (Horn, 2002:36-37; Scott, 2008:7). Currently, Tyler's (1949) scientific method is probably the most popular model used for curriculum design at various educational levels (Du Toit, 2011:65-66; Prideaux, 2000:168) because it involves analysing particular jobs to determine what skills people need. Having this specific knowledge allows for students to be equipped with the competencies to perform a specific job (Harris, Guthrie, Hobart & Lundberg, 1995:18; Horn, 2002:39-40). The job is broken down into components to determine the competencies essential for professionals to practise in their specific fields. The competencies are then broken down into objectives followed by learning experiences and assessments. Hence, curriculum-making is viewed as a linear process with the first step, after competencies, the developing of clear objectives specified in behavioural terms (Scott, 2008:7).

Tyler (1949) with his focus on students and their behaviour (Prideaux, 2000:168), based his theory on four fundamental questions which he believed would enable developers to successfully plan a curriculum: (1) What educational purposes should the education institution attain? (2) What education experiences would the student need to attain these purposes? (3) How can the educator effectively organise these experiences? (4) How can the institution determine whether these purposes are attained? The answer to these questions depends on the information obtained from the stakeholders as subject specialists, students, educators and modern society which reflects a bottom-up approach (Du Toit, 2011:67; Horn, 2002:39) instead of Bobbitt's (1918) top-down approach. Taking curriculum-making even further, Taba (1962:12) suggests a scientific process of seven steps which, in fact, reflects both the approaches of Bobbitt (1918) and Tyler (1949), namely (i) diagnosis of needs; (ii) objectives formulation; (iii) content selection; (iv) content organisation; (v) selecting learning experiences; (vi) organisation of learning experiences and (vii) determining what to evaluate as well as the ways and means of doing it. However, critics like Elliot (1998 in Scott, 2008:7) debate whether the scientific mode is suitable to educate students holistically in HET. He argues the

curriculum should rather consist of processes based on inquiry and problem-based learning within the context of healthcare education (Du Toit, 2011:71; Prideaux, 2000:168; Scott, 2008:31). Although Stenhouse agrees that the objective model could be a better fit for curricula focusing on knowledge and skills (Stenhouse, 1975:9 & 97) Brightwell and Grant (2012:4) view the behavioural objective curriculum as unsuitable for professional development in HET due to its lack of describing professional development and problem solving.

Although Tyler's (1949) model was also initially developed for high schools, it can fruitfully be applied to the education and training of healthcare professionals. In the school environment a top-down process, with little learner and teacher input, is used whereas in HET a bottom-up approach is advised with the input of all relevant stakeholders, including students (Du Toit, 2011:73). Translated into HET, the scientific curriculum-making approach was suitable to re-explore the anaesthetic and recovery room component of the ODA curriculum aimed at preparing competent ODAs to enter the workforce. This was done by determining the needs of relevant stakeholders to guide the re-organising of content to ensure graduates are prepared to successfully become part of the real-life work environment.

2.3.2. Intrinsically worthwhile knowledge

The modern representatives of the intrinsically worthwhile knowledge theory such as Hirst (1969:144) are of the opinion that curriculum planning is not just about what the students learn, but whether or not the learnt knowledge is the most worthwhile and how this worthwhile knowledge can best be achieved. According to the father of this theory, the Greek philosopher, educator, dramatist and poet, Aristotle (1925 in Scott, 2008:8), education is aimed at pursuing activities that develop the mind (Scott, 2008:8). Students learn and obtain knowledge through reasoning processes, initiation into social practices, mental or cognitive processes and according to their type of intelligence. Another factor influencing and underpinning the content of a curriculum is the cultural sub-systems we inhabit, namely sociopolitical, economic, communicative, rational, technological, moral, belief-related, aesthetic and maturational.

Progression within the curriculum can furthermore signify a foundationalist form which entails certain content to be taught before others. Thus, subject matter can be arranged in a hierarchy to underpin the notion of progression which allows for sequencing some domains of knowledge or skills before others (Scott, 2008:9). Translated into healthcare education, this means that a curriculum which prepares ODAs to assist the anaesthetist and RN could be based on the most worthwhile knowledge to be learnt and on teaching strategies and methods to best attain this knowledge which could underpin the notion of progression. Thus, the students could be taught the basic worthwhile knowledge of anaesthesia before teaching them to assist the anaesthetists which is more complex.

Elliott (1998:xii-xiii) asserts social changes are rapid, continuous, complex and dynamic and a traditional curriculum, as a passive process, is not effective in preparing learners to meet the demands of society and everyday life. Thus, Elliott (1998) designated a curriculum as an innovative pedagogical experiment.

2.3.3. Innovative pedagogical experiment

The proponents of this theory – the third episode in curriculum theory history – advocate for a curriculum accommodating the needs of all students, supports the development of creative and critical thinking and uses culture for student development by means of collaboration (Elliott, 1998:135-136; Scott, 2008:10). Thus, the curriculum adapts to the students' needs, enhances their understanding of the problems of society and allows students to develop dynamic qualities connected to initiative and responsibility (Elliott, 1998:135-137). Hence, students use cultural resources to resolve problems and adapt to changes in society and technology. Furthermore, the educators are viewed as innovators who reflect on the curriculum problematics and pedagogic practices and test new approaches (Elliott, 1998:141; Scott, 2008:10-11).

Translated into higher education, this implies the operating department assistance curriculum should be based on adult teaching principles to develop life-long learning and inspire students to take responsibility for their own learning. It also implies rotating students through the operating department to experience real-life situations and grasp the problems and everyday life in the operating department. For educators, it implies continuous evaluation/reconstruction of the curriculum and pedagogic practices based on student-centred teaching and learning strategies (Elliott, 1998:145).

Although the innovative pedagogical experiment theory seemed a suitable approach for this study, it conflicted with the technicist- and market-directed approaches (Scott, 2008:10-11). Further developments led to the sociocultural models of learning.

2.3.4. Sociocultural models of learning

This theory was defined by Vygotsky (1930) and Bruner (1961) whose work revolutionised pedagogy in the mid-1970s (Scott, 2008:11; Vygotsky, 1978:131). The focus is on culture and society as key dimensions of learning (Scott, 2008:11). This focus contradicts didactic and imitative pedagogy practices as students require social interaction to learn (Scott, 2008:11; Weiping, Adey, Jia, Liu, Zhang, Li & Dong, 2011:535). Bruner (1961) whose work echoes Vygotsky's (1930) work was of the opinion children copied the actions of others and integrated the observed characteristics into their own behaviour – this can be seen as informal learning (Bruner, 1961:1-2; Scott, 2008:11). Didacticism, on the other hand, is teacher-centred which entails teachers instilling knowledge, skills and/or affective domain into students. Although many critics are of the opinion that active student participation is limited (Scott, 2008:11), student development can be fostered by competent peers and through problem-solving techniques under guidance (Weiping *et al.*, 2011:535).

Vygotsky's (1930) and Bruner's (1961) work led to the development of various forms of pedagogy models of which the apprenticeship model is widely used in healthcare education and training. Students are supported in the workplace (Scott, 2008:12). Thus, even though the social-cultural theory is based on the development of children, it is transferable to higher education programmes such as the ODA programme. This is owing to the theory's social-cultural learning focus and the application of problem-solving techniques which foster active student participation essential for theory-practice integration. The ODA programme consists of a theory and a practical component of which the latter is mainly facilitated in the clinical

environment. The students learn by means of social interaction with peers and other team members; therefore, they are shaped by the environment and in the process they shape the environment (Scott, 2008:12).

Constructivists and situationists, but specifically Donald Schön (1983:vii-viii), argue that students gain knowledge through interaction with the society and culture they are exposed to. They are not passive inhibitors of information, but active participants in their learning process. Schön (1983:344-345) describes reflection as central to the construction of a professional development course. Various adult teaching and learning strategies for the workplace are proposed, namely mentoring by means of scaffolding and constructive feedback, role modelling, exploration without support, simulation, problem-solving and the transfer of skills to real-life situations (Scott, 2008:12-13).

The traditional apprenticeship model, applicable to healthcare education and training in the HET domain (Scott, 2008:12-13), is mainly associated with skills development within an industrial and craft environment (Guile & Young, 1999:111). It is enhanced by linking it to active, social and collective learning in the workplace to ensure the student and the expert learn as new knowledge emerges (Guile & Young, 1999:112 & 124-125). Translated into health education, this means a curriculum which prepares ODA students for the workplace could be based on an active, collaborative learning experience in the operating department where the bulk of learning occurs by means of support and guidance by experts and peers. Scott (2008:13) acknowledges Schön (1983) has been criticised for his lack of developing a critical approach to knowledge.

2.3.5. Critical pedagogy

According to Barnett and Coate (2005:35), who focused on curriculum design in higher education, the critical pedagogy theory has been influential in HET, and particularly adult education since the 1980s. Freire (1974), the first to describe critical pedagogy, stated it "is a philosophy of education and social movement that combines education with critical theory" (Lindert & Potter, 2015:2). Learning is directed towards social changes as well as student-centredness and empowerment (Belhassen & Caton, 2011:1395; Scott, 2008:14). In other words, the focus of the learning process shifted from the teacher-centred to a student-centred approach with students participating in joint decision-making, the generation of themes, critical dialogue, collective learning and problem-posing activities (Du Toit, 2011:72; Lindert & Potter, 2015:2; Scott, 2008:103-105; Stage, Muller, Kinzie, Simmons, Association for the Study of Higher Education, ERIC Clearinghouse on Higher Education & George Washington University, 1998:61).

Critical pedagogy views curriculum planning as a political and ideological matter (Posner, 1998:92-93). The educator is seen as a transgressive intellectual who shapes the curricular content and pedagogy (Scott, 2008:111-112) by challenging inequality and traditional myths as the means to direct learning towards social change (Stage *et al.*, 1998:67). Students are encouraged to engage in critical analysis of their everyday problems to foster a deeper understanding of the social cultural reality that shapes their life (Stage *et al.*, 1998:52-59). Thus, applying the critical pedagogy approach could enhance students' knowledge, foster critical discussion and analysis, and enhance social justice and productivity. But, critical pedagogy did not

develop further than a system of ideas as it was overshadowed by the technicist framework of understanding which was mainly due to implementation constraints and educators not using active teaching methods (Lindert & Potter, 2015:2).

Discounting much critique, Giroux (1981:70 & 81-83) – who perceived the aims and purpose of formal education as the empowerment and enablement of graduates to enter the workplace – based his work within the field of critical pedagogy (Scott, 2008:14-15 & 103). Decades later, Lindert and Potter (2015:2) used it in the HET domain to develop public health ethics modules as a means to enhance students' knowledge as well as foster critical discussions and analysis by means of problem-posing. The theory of critical pedagogy was further introduced into tourism education to enhance social justice, problem-solving and business productivity (Belhassen & Caton, 2011:1389 & 1391). Translated into ODA education, this means the curriculum which prepares students for their jobs could be based on student empowerment, critical analysis and dialogue, collective learning and a student-centred approach with educators acting as facilitators. Scott (2008:16) questions whether the critical pedagogy theory can be categorised as instrumentalism which is best exemplified by the work of John White (1973).

2.3.6. Instrumentalism

Instrumentalism avoids foundationalism and epistemic conventionalism (Scott, 2008:16). In educational terms, instrumentalism means education is judged by its utility, practicality and relevance to economic, social and professional order (Goodman, 2013:87). Instrumentalists insist that curriculum content should be dictated by the experiences children need "to lead the good life" (Scott, 2008:16). In fact, John White (1973:22 & 79) became a strong proponent for the notion of autonomous well-being by insisting the only way to resolve curricula problems is to define 'good life'. In agreement, Scott (2008:16) states since 'good life' is seen as the end-product of education and the determinant of the content of a curriculum, it needs to be defined to determine the content of the curriculum aimed at giving students the best chance to achieve it. In this regard, 'good life' includes reflection and practices which allow students to make choices (Scott, 2008:16). Writing from a United Kingdom (UK) perspective, Goodman (2013:87) states education based on instrumentalism is valued as it helps students to obtain the competencies needed in the workplace.

Although developed for the school situation, instrumentalism translates into operating department assistance education and training because the curriculum – based on the competencies needed to fulfil the role of an ODA and enhance self-directedness – develops autonomous ODAs equipped for the social, economic and professional demands of the profession they wish to enter.

Conversely, in the opinion of some critics White's (1973) theory imitates a conflict between an autonomous life and leading a fulfilled one. According to these critics, autonomy is more than making choices; autonomy alone cannot lead to learning and a fulfilled life because autonomy should take place within an implicit and normative framework of human society (Scott, 2008:16).

2.3.7. School effectiveness/school improvement

Although the school effectiveness and school improvement curriculum theories are presented as one theory, it has different origins (Scott, 2008:17). School effectiveness curriculum theories are more directed at determining 'what works' in education and 'why it works' whereas school improvement curriculum theories relate to practice and policies and are used to direct education in the desired direction. But, with regard to outcomes, input, processes and context the two theories have much in common (Creemers & Reezigt, 2005:359). Both theories view the scientific curriculum-making model and curriculum content as unimportant because student outcomes can be explained by school as well as classroom factors. Prior achievements are also more significant than gender, socioeconomic, ethnicity and language characteristics (Scott, 2008:18-19). Although the school effectiveness or school improvement theory has a short history, it has shown that effectiveness and improvement can be linked successfully as proven by the National School Improvement Project in the Netherlands (Creemers & Reezigt, 2005:360). Translated into professional education, this means that a curriculum which prepares professionals for their jobs could be based on prior knowledge. Prior knowledge serves as a solid basis to build on, but a curriculum which focuses on preparing healthcare professionals should be scientifically based on additional factors such as (i) analyses of relevant job activities to determine the content of the curriculum; (ii) theory-practice integration of teaching and learning strategies which include active student involvement; (iii) student-centredness and (iv) apprenticeship to enable students to transfer skills to real-life situations.

It is clear from the above discussions that curriculum theorists – all salient contributors to the education and training system we know today – circulated many ideas relating to curriculum development. At one end of the continuum there are the theories of Bobbitt (1876-1956) and Tyler (1902-1994) which lean towards using a top-down approach in the school environment. It is a teacher-centred and product-based design developed through concrete scientific processes with the focus on enhancing cognitive learning. It is not entirely efficient for the undergraduate ODA programme which must prepare students to work in a complex environment as it does not accommodate the learning which occurs in the sociocultural context. At the opposite end of the continuum the theory of Stenhouse (1975) is encountered which is more suited for curriculum design in the HET environment as it fosters a bottom-up approach based on progressivism. It is process-based with the aim of enhancing cognitive and social learning for the 'now' (Du Toit, 2011:73). Critique on Stenhouse's theory is that, as mentioned in section 2.3.1, the behavioural objective approach is beheld not suitable for professional development (Brightwell & Grant, 2012:4). It is also teacher-centred with the educator playing an active and influential role which is in contrast with the student-centred approach and facilitation learning advocated for adult learning in a CBE/T programme (Scott, 2008:7-8). Dewey (1897:77-80) advocates a student-centred curriculum with the emphasis on sociological and psychological learning which enable the student to learn by means of 'doing', 'experiencing' and 'reflecting' (Du Toit, 2011:73; Horn, 2002:38). This implies incorporating work-integrated learning and student-centred approaches in the curriculum and preventing rote-minded methods.

To conclude, most curriculum theorists seem to agree that learning is the purpose of education with a technical production element involved. However, they disagree on what it means to learn something and how to facilitate the learning. Except for the school effectiveness or school improvement curriculum theories – with the main focus on prior knowledge on its own not efficient for an undergraduate ODA programme – the other theories seem to translate well into the HET environment. As indicated in the next section, the ODA curricula are designed according to industry needs and correspond with most of the elements of scientific curriculum-making. Continuous changes to ODA education, as illustrated in the following section, seem to incorporate the thoughts of a spectrum of curriculum theorists.

2.4. OPERATING DEPARTMENT ASSISTANCE EDUCATION AND TRAINING

A study by the Harvard School of Public Health indicates the enormous scope and dire need for ODAs in many countries around the world owing to the urgent demand for adequate and skilled person power. While India and Pakistan each has only 1.3 ODAs per 100 000 of the population, North America and Australasia have 14.3, Western and Central Europe have 14.7 and 15.7 respectively while Central Asia has 11.7, the Caribbean 10.4 and developed regions such as Eastern Europe have 25.1 ODAs per 100 000 population – which is also the highest number (Ministry of Health and Family Welfare Allied Health Section, 2015:26).

In the United States the ODAs (known as a surgical technologists) are defined as "allied healthcare professionals who work closely with surgeons, anaesthesiologists, registered nurses and other surgical personnel delivering patient care and assuming appropriate responsibilities before, during, and after surgery" (AST, 2008:7). Clearly then, ODAs perform various roles and have many functions, e.g., being a circulator (also referred to as a 'runner'), scrub practitioner (whose role is centred on the surgical instrumentation and patient care) and being an anaesthetic assistant (whose role is to prepare the theatre for anaesthesia and assist the anaesthetist) in the operating department. As a scrub practitioner the ODA assists the surgeon next to the operating table whereas the role of a circulator is to assist the scrub practitioner. The circulator is the link between the sterile team members, non-sterile areas and supplies as well as to the rest of the operating department, nursing units and laboratories. Runners fetch additional sterile supplies (such as swabs and sutures) and equipment. They also help the patient to move onto the operating table, position the patient and connect the equipment needed for surgery (Fuller, 2013:5; Phillips, 2007:57-63; Rothrock, 2011:12; Timmons, 2004:648). It is important to mention that it seems to be mainly the ODAs in the UK, India and South Africa who also perform the role and functions of anaesthetic assistants (AA) (Hauxwell, 2002:478; Van Beuzekom & Boer, 2006:634; Van Zyl, 2012:1). Literature also suggests that the ODA in South Africa (Van Zyl, 2012:32) are taught to assist the RN in the recovery room. In Scotland (NHS Education for Scotland (NES), 2011:34) the AA must, e.g., be able to handover a patient in the recovery room, systematically assess the patient using appropriate monitoring and be able to assist with the removal of an endotracheal tube (also referred to as patient extubation).

The next section (cf. sect. 2.4.1) provides a historical overview of the ODA profession to set the scene for exploring the education and training components of the ODA programme. This is followed by an overview

of the existing ODA education and training (cf. sect. 2.4.2) and barriers this profession had to overcome (cf. sect. 2.4.3).

2.4.1. Historical overview of the ODA profession and education

In all the research reviewed it became apparent that many countries are utilising ODAs in today's world. This has not always been the case. Establishing this profession took many years and the overcoming of a multitude barriers. Stemming from an ancillary role during World War I (1914-1918) (Frey, 2008:5; Fuller, 2013: 2), the profession evolved over the next 48 years to become a regulated profession in some countries (Robinson & Straughan, 2014:352; Smith, 2010:6). Incidental to the substantial inconsistency of surgical teams, procedures, patients and technology as well as the realisation that higher standards of perioperative human skills are essential, the work profile of the ODAs changed several times to accommodate those operational needs (Abbott & Booth, 2014:x; The history of surgery and anaesthesia from an ODPs perspective, s.a.:7).

In literature the rich history of ODA education is largely embedded in the UK and the USA contexts (Abbott & Booth, 2014:xi; Fuller, 2013:6), but evidence exists that other countries such as India (Pillai: 2013:i), the Netherlands (Nederlandse Vereniging van Anesthesiemedewerkers (NVAM), 2017a; The Royal College of Anaesthetists, s.a.a:18; Van Beuzekom & Boer, 2006:632 & 635) and South Africa (SAQA, 2015:1-3; Van Zyl, 2014:1) are also presently utilising non-medical staff in the operating department. The focus on the historical development of the ODAs mainly centres on the UK (England) and the USA because literature pertaining to the history of ODA as a profession in other countries is limited. Although scarce, what did emerge from the literature search was the interesting fact that ODAs are differently utilised and named in different countries. In the discussion that follows, the original titles of these non-nurses will be used and adapted as their education and training evolved.

2.4.1.1. United Kingdom

In the UK, historical documentation of the ODA profession informs that in the late 19th century ODAs operated under titles such as 'handlers', 'surgery men', 'box carriers' and 'surgery beadles' (Frey, 2008:6). The word 'beadle' means messenger and derives from the French word 'bedal'. A beadle acted as a surgical assistant (The history of surgery and anaesthesia from an ODPs perspective, s.a.:1). The profession really started to gain momentum when the British Army began training large numbers of soldiers during World War II (WWII) to assist in surgery, a role previously occupied by female nurses in civil life. Training male soldiers as 'medics' (the slang word coined during the war for soldiers in the army's medical unit) was the only option at the time. There was a dire need for assistants with medical knowledge to assist surgeons during surgery on the battlefield because air raids and bombings had, in any case, led to a shortage of nurses in civil life (Fuller, 2013:2; The history of surgery and anaesthesia from an ODPs Perspective, s.a.:1; Van Beuzekom & Boer, 2006:634; Wolfe, 2010:1). These non-nurses developed their skills as apprentices on the battlefield and were formally known as 'operating theatre technicians' (OTTs) (Frey, 2008:5; Fuller, 2013:2).

After WWII, nurse shortages were still experienced in England which led to non-nurses performing duties under the direct supervision of the registered nurse (RN) (Van Beuzekom & Boer, 2006:634). The OTTs, trained by the army and navy, were now employed in hospitals where they were welcomed as an asset to the anaesthetic team.

The informal training of OTTs was initiated at the St Thomas's Hospital in London in 1947. This coincided with the introduction of skeletal muscle relaxation in anaesthesia (Foster & Jepson, 1983:18; Frey, 2008:5-6; Fuller, 2013:2) which led to a strong focus on the anaesthetic assistant (AA) role of the OTT (The history of surgery and anaesthesia from an ODAs perspective, s.a.:4). They mainly learnt their duties by rotating through the anaesthetic and operating room and performing practical work (Foster & Jepson, 1983:1). However, it was the following words of an anaesthetist, Doctor Ivan Magill, in 1951 which ultimately led to the implementation of a diploma to equip OTTs to function in all areas of the operating department, "Its time you lot got together and produces a training programme so that anaesthetists where ever they went can get the same standards of assistants where ever they go." (The history of surgery and anaesthesia from an ODPs perspective, s.a.:4). Subsequently, a theoretical and practical component was incorporated into the programme (Foster & Jepson, 1968:1; The history of surgery and anaesthesia from an ODPs Perspective, s.a.:3-4). This practical component was divided into three core specialities, namely anaesthetics, surgery and post-anaesthetics (Milton, 2005:3).

Although the OTTs could now be employed as multi-skilled practitioners (Milton, 2005:3), their main focus was the care of equipment and assisting the anaesthetist which remained their main role for almost more than two decades (Foster & Jepson, 1968:1; The history of surgery and anaesthesia from an ODPs perspective, s.a.:3-4). In the late 1970s, the shortage of nurses resulted in a change in the work profile of the OTTs as it had to include safe and effective perioperative patient care. The title 'operating theatre technicians' (OTTs) became 'operating department assistants' (ODAs). The main driving force behind the title change was the Lewin Report (1970) which highlighted a multi-skilled approach to staffing operating departments (College of Operating Department Practitioners (CODP), 2011:8). This marked the acceptance of the ODA as an accepted member of the operating room team (Van Beuzekom & Boer, 2006:634).

In 1974 the first formal training centres were opened and in 1976, with the introduction of the City and Guilds of London Institute 752 examination, the ODA students wrote a national examination (Abbott & Booth, 2014:x; Davey & Ince, 2000:5; The history of surgery and anaesthesia from an ODPs perspective, s.a.:7). At this stage, the regional health authorities were responsible for coordinating ODA training according to training standards identified by the National Health Service Training Authority (which later became known as the National Health Service Training Directorate). The standards mainly focused on the theory component with only one surgical- and anaesthetic-related clinical assessment included in the course.

Furthermore, the dually capable ODA was not permitted to take responsibility for schedule 5 – 7 drugs which resulted in patient care becoming the nurses' (who worked in the operating department) main responsibility. This caused an inflexibility which reduced the efficiency in the operating departments (Davey & Ince, 2000:5-6) and resulted in the development of a common training platform for nurses and non-nurses

involved in perioperative care as well as in core competencies. Hence, the concept of an 'operating department practitioner' (ODP) was developed. This cadre of healthcare professionals superseded but did not replace the traditional role of nurses and ODAs. The ODP, however, was equipped with the knowledge, skills and attitudes/values to work in all areas of the operating department (Davey & Ince, 2000:6) including the recovery room (Quality Assurance Agency for Higher Education (QAAHE), 2004:1). Still, the recovery room duties were mainly performed by the RN with the ODP assisting the anaesthetist and taking up the scrub role (Steevenson, 2006:551; Timmons & Tanner, 2004:650). By now, professional and accountable practice as well as promotion of patients' rights was the key aspects of the role and functions of the ODPs (QAAHE, 2004:1). In 2002 between 5 500 and 6 000 trained ODAs/ODPs in the UK were employed in the private and public sectors (Hauxwell, 2002:478; The history of surgery and anaesthesia from an ODPs perspective, s.a.:7).

Meanwhile, the National Vocational Qualification, Health Care: Operating Department Practice Level 3 (later replaced by the CGLI 752 qualification) had been implemented as proposed by the Department of Health. This qualification was based on the requirements of the employer and achievement of competence with the ultimate aim to develop safe practitioners. This programme consisted of modules and work-integrated learning which took place in the operating department under the guidance of work-based assessors and trainers (Davey & Ince, 2000:6). Although the ODPs were now multi-skilled, they were criticised for lack of professional regulation and registration due to the intense focus on patient safety and teamwork (National Assembly for Wales (NAW), 2000:2). In 2004, after a process of nearly 20 years, the ODPs became the 13th statutory regulated profession to join the United Kingdom Health Professions Council. Registration became compulsory (Anderson, 2012:1; Milton, 2005:7). All ODPs were required to complete a formal higher education diploma programme constructed on a CBE/T model (Milton, 2005:4 & 11-12; Timmons, 2004:650) which embraced student-centredness as well as proactive and reflective teaching and learning approaches to produce graduates who were able to create, apply and mediate new knowledge (Milton, 2005:10).

It is evident the role of an OPD evolved over years to become a recognised, registered and respected profession in 1971 (cf. Fig. 2.1) with numerous universities in the UK offering an Operating Department Practice programme (SAQA, 2011:5).

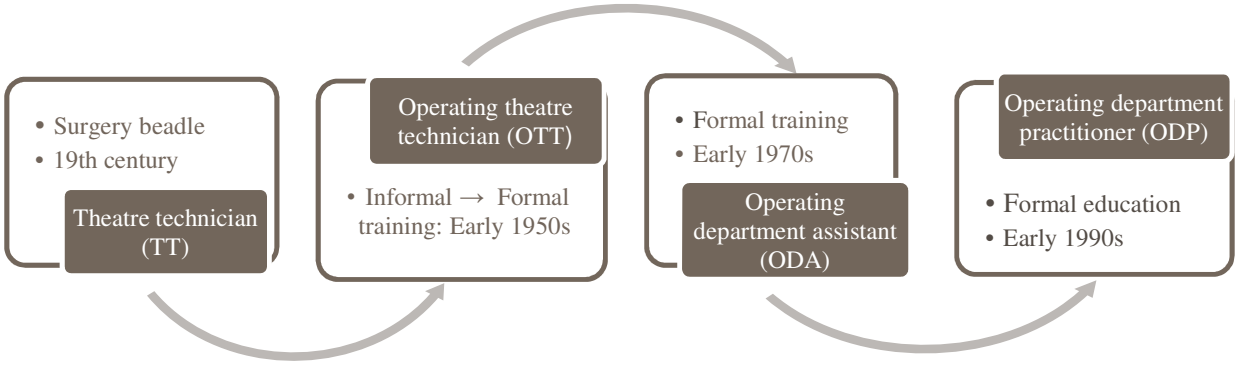

Figure 2.1: Historical path of ODPs in the United Kingdom

These days, ODPs perform the roles of an anaesthetic assistant, a scrub practitioner and a circulator as well as taking care of the patient in the recovery room. These roles, often indistinguishable from that of the theatre nurse (Timmons, 2004:650), encompass commitment to life-long learning and evidence-based practice, effective communication and teamwork, adapted practices embracing the changing demands within the healthcare sector and provision of individualised perioperative patient care (QAAHE, 2004:1). The ODP no longer just focuses on the technological element, but is also responsible for individualised patient care which includes the physical and psychological well-being of the patient as the incorporation of the human element into the ODA curriculum.

The next section focuses on the development of the ODP profession – known as surgical technologists (STs) – in the USA as it parallels the development of ODPs in the UK.

2.4.1.2. United States of America

Although the early development of the 'surgical technologists' (STs) in the USA parallels that of the 'operating department practitioner' (ODP) in the UK (Fuller, 2013:6), their title did not change as many times as that of their counterparts in the UK (cf. Fig. 2.2). The US Army started to train non-nurses to replace the female nurses on the battlefields during WW II (1939–1945), the Korean War (1950–1953) and the Vietnam War (1945–1975). During these wars the 'operating room technicians' (ORTs) were put through an accelerated nursing course of which the focal point was concentrated on operating room technology. Students received their clinical training in operating departments with the focus on instrument sterilisation, care of the patient, suturing, draping and instrumentation. There was no focus on AA training (Wolfe, 2010:1). After the Korean War (1950–1953), the shortage of theatre nurses concomitant with fast-developing technological advances became a problematic issue in operating departments. Former corpsmen were recruited to function in civilian theatres as 'circulators'. These corpsmen fulfilled this function until 1965 when their primary function became that of a scrub person at which point hospitals began training civilians by means of three- to six-months on-the-job-training courses (Fuller, 2013:3).

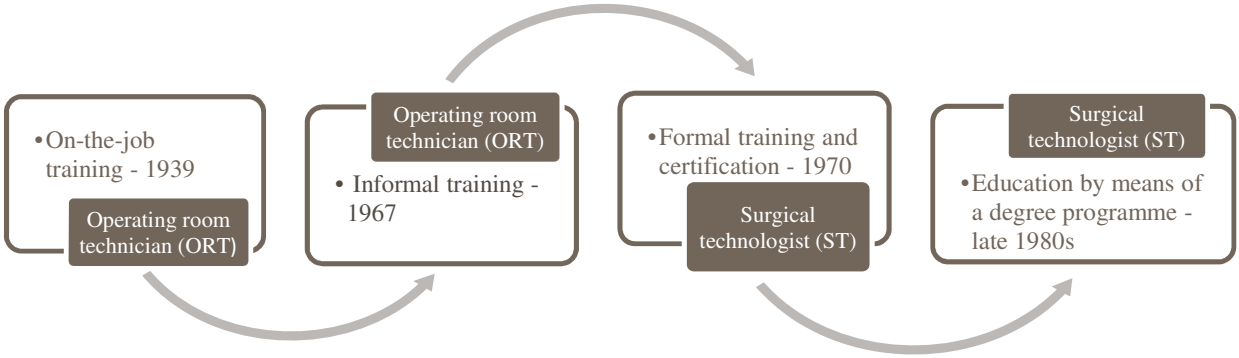

Figure 2.2: Historical path of STs in the United States

There was still very little attention paid to the training needs of this category of staff (ORTs) (Wolfe, 2010:1). The Association for Operating Room Nurses recognised this shortcoming and subsequently published a book, Teaching the Operating Room Technician, in December 1967 (Frey, 2008:6; Fuller, 2013:3). In 1968 the Association of Operating Room Technicians (AORT) was established to address the

lack of training guidelines and standards. Gaining organisational independence brought the informal training of operating room technicians a step closer to formalised ORT education and training (Fuller, 2013:3). Standards and guidelines were published and by the 1970s the role of the ORT was formalised (Van Beuzekom & Boer, 2006:634). In the same year (1970) the first voluntary certifying examination for ORTs was conducted (Frey, 2008:6; Fuller, 2013:2-3; Wolfe, 2010:1).

The American Medical Association House of Delegates adopted the essentials of an approved education programme for STs in 1972 (Frey, 2008:6) and forthwith the title of 'operating room technician' (ORT) was changed to 'surgical technologist' (ST) in 1973 (Fuller, 2013:3). However, to ensure the quality of surgical technology education and training, the Liaison Council on Certification for Surgical Technology oversaw the certification of STs (Wolfe, 2010:1). In 1974 the Accreditation Review Committee for Surgical Technology and Surgical Assisting was created to lead discussions regarding a core curriculum for ST education with the first edition published in 1981 (at the time of study it was in its fifth edition). In 1985 the Code of Ethics for Surgical Technologists was published; in 1986 discussions evolved around a two-year associate's degree for STs; in 1988 Standards of Practice was adopted and the ST profession was well established (AST, 2008:6; Frey, 2008:6).

Undoubtedly, surgical technology education in the USA grew rapidly within a short period of time. In 2000 the AST, previously known as the Association of Operating Room Technicians (AORT), implemented educational requirements. Hence, programmes – ranging from 11 to 24 months and offered by military academies, community colleges, universities and vocational-technical schools – had to comply with the ST core curriculum standards (AST, 2008:8-10; Fuller, 2013:9; Kaye, Fox III & Urman, 2012:140 & 141; SAQA, 2011:5).

Although programmes varied in format, duration and institutions offering it, the main function of the ST was and still is to perform the duties of a scrub practitioner under the supervision of a registered nurse (RN) (SAQA, 2017:5). They do, occasionally, assist the anaesthetist as part of their circulator role and functions. However, the circulator role is mainly performed by RNs who oversee the management of the operating room (AST, 2008:xxiii & 5-10; Fuller, 2013:6; Kaye *et al.,* 2012:140-141). As members of the theatre team, an ST and a RN sometimes do change roles and functions – meaning the ST then assists the anaesthetists.

2.4.1.3. The Netherlands

In the Netherlands the development for perioperative staff differed very much from the paths followed in the UK and the USA. Until the 1960s, perioperative care was mainly provided by hospital-trained theatre nurses, but between the 1960s and 1970s staff shortages resulted in nurses working in theatres without them having additional training. Due to the lack of standardisation in education and hospitals using different curricula, the Association of Dutch Hospitals presented a report which was instrumental in the development of a core curriculum aimed at on-the-job training of both nurses and non-nurses to perform perioperative functions (Eshuis, 2011:25; Van Beuzekom & Boer, 2006:634).

Currently, the duration of the diploma programme for anaesthesia and surgery is three years for non-nurses and two years for nurses. Practical experience and theoretical modules are combined in the diploma programme (Eshuis, 2011:25; The Royal College of Anaesthetists, s.a.a:17). The content covers anatomy, pathology, psychology, physiology, pharmacology, operating department science, anesthesiology, physics and chemistry. The first four to six months of the programme consist of a pre-clinical period where students are taught basic science and skills. The second year focuses on the perioperative phases of their training which allow students to specialise as scrub practitioners or anaesthetic nurses. From the second year, nurses (who enters the programme at second-year level) and non-nurses follow the same programme which centres on the skills graduates require to work in the operating room (Eshuis, 2011:25; The Royal College of Anaesthetists, s.a.a:17; Van Beuzekom & Boer, 2006:635). Thus, there are no differences between nurse and non-nurse training and the functions they perform in the operating room. In 2005, however, 95% of the surgical technicians and 80% of the anaesthesia technicians were non-nurses (NVAM, 2017a; Van Beuzekom & Boer, 2006:635 & 639).

The anaesthetic technician (these days known as the 'anaesthetic nurse' in the Netherlands) is well trained in ventilator support, monitoring, resuscitation, pharmacology and anesthesiology acts and treatments. They are responsible for operating room turnover; troubleshooting; supply management (ensure anaesthetic cart is fully stocked); the ordering and drawing up of drugs (which includes opioids) into labelled syringes; checking and maintenance of equipment; transferring of patients; setting up intubation equipment and supplies; assisting with complex procedures; physiological parameters monitoring (when the anaesthetist is busy in another theatre) such as adjusting the concentration of volatile agents; assisting the anaesthetist with regional blocks; invasive line placement and airway management (The Royal College of Anaesthetists, s.a.a:18; Woodworth, Sayers-Rana & Kirsch, 2012:11-12).

By 2006 non-nurses were performing skills which were traditionally perceived as the scope of nurses with the non-nurses supporting the anaesthetist and also acting as the scrub practitioner (The Royal College of Anaesthetists, s.a.a:18; Van Beuzekom & Boer, 2006: 632 & 635). There is, however, no equivalent of the United Kingdom ODP or the South African ODA in the Netherlands. The anaesthetic nurse (who can be a non-nurse) takes care of the patient's vital signs during anaesthesia and directly post-operative because one anaesthetist rotates between two operating rooms (NVAM, 2017b; Smit, 2017:1). In the recovery room RNs take care of the patients recovering from anaesthesia (The Royal College of Anaesthetists, s.a.a:18; Van Beuzekom & Boer, 2006:632 & 635).

2.4.1.4. India

The literature research did not reveal any history pertaining to the ODA in India. Pillai (2013:i) does, however, mention for the past 35 years skilled theatre technicians assisted the anaesthetists, surgeons and nurses. These technicians work under the supervision of nursing, anaesthetic and surgical personnel in both private and public sectors (Ministry of Health and Family Welfare Allied Health Section, 2015:38). The technician numbers are, however, declining and if available they are usually self-trained with little scientific background to their work.

Some universities and the Government of Tamil Nadu did introduce degree, diploma or certificate programmes to train non-nurses to function in operating rooms (Astron Instituted of Social Sciences (AISS), 2017:1; Delphi Paramedical and Management Institute (DPMI), 2017:1; Jamia Handard University, s.a.:1; Pillai, 2013:i; School of Para Medical Sciences, s.a.:1). These programmes range from one year (certificate), two years (diploma) to three years (degree) (AISS, 2017:1; Jamia Handard University, s.a.:1; Pillai, 2013:i). The key responsibilities of the non-nurses are to transport patients; prepare the operating room and set-up; provide equipment and technical assistance; adjust and connect surgical equipment; clean and restock the operating room and position the patient for surgery (Aggarwal, 2017; Healthcare Sector Skill Council (HSSC), 2013a:1-3).

In 2015 the Ministry of Health and Family Welfare Allied Health Section (2015:29) published curriculum guidelines for OTAs (a two-and-a-half-year diploma) and OTTs training (a four-year degree programme) which means the first cohort of diploma students would only graduate in 2018 and degree students in 2019 presuming the mentioned programmes did commence in January 2016.

2.4.1.5. New Zealand and Australia

In New Zealand and Australia no clear historical perspective could be found of training non-nurses to function in the operating department. Adriaanse (2017), a theatre coordinator at Wakefield hospital in Wellington, New Zealand, states the circulator and scrub roles are performed by nurses. The healthcare staff working in the recovery room only works in that area and do not rotate into the operating theatre to fulfil the functions of a circulator or scrub practitioner.

2.4.1.6. Other countries

Although the history of the ODA profession in other countries is not available, it is increasingly evident that ODAs are utilised in more countries than the ones already mentioned by the Harvard School of Public Health. For example, ODAs are trained and employed in Singapore where they assist and support doctors, nurses and other healthcare workers in operating rooms. Upon completion of studies these graduates are qualified ODAs and rewarded a nationally recognised Workforce Skills Qualification (SAQA, 2017:5). The International Red Cross Committee utilises ODAs (trained in various countries) as members of their medical teams deployed across the world, inter alia, Turkey, Chile, Brazil, Indonesia, Asia, the South Pacific Islands, the Caribbean Islands as well as various regions of Tropical and Equatorial Africa (SAQA, 2017:5).

2.4.1.7. South Africa

It is only recently that there has been a growing interest in the role of an ODA and the underpinning training. In 2008 a two-year in-house programme to train non-nurses as ‘operating theatre practitioners' (OTPs) was introduced with the aim to assist the RN and surgeon in the operating room (Botha, 2015:19). At the same time the two-year in-house OTP curriculum was modified and submitted to the Council on Higher Education (CHE) for accreditation. In 2010 it was registered by the Department of Higher Education and Training (DHET) as a two-year Diploma in Operating Room Practice programme on an NQF level 6 (Jordaan,

2011:13; Metcalfe, 2009). The aim of this programme was to equip students with the necessary competence to assist the scrub practitioner and the surgeon. Hence, the title 'operating theatre practitioners' (OTPs) was changed to 'operating room practitioners' (ORPs). The duties of ORPs included the functions of a circulator and scrub person. In addition, the ORPs were also taught to prepare the theatre for anaesthesia; but, they were not taught to assist the anaesthetist in the operating room or the RN in the recovery room (Cummings, 2008:3-4).

It is important to mention in South Africa the title 'practitioner' in terms of healthcare is defined as a person legally delivering health services to a patient in accordance with specific laws: the Allied Health Professions Act, 1982 (Act No. 63 of 1982); Health Professions Act, 1974 (Act No. 56 of 1974); Nursing Act, 1978 (Act No. 50 of 1978); Pharmacy Act, 1974 (Act No. 53 of 1974) and Dental Technicians Act, 1979 (Act No. 19 of 1979) (Republic of South Africa (RSA), 2004:5). The healthcare personnel consist of healthcare practitioners and healthcare workers (RSA, 2003:5). The latter is defined as any person "who is involved in the provision of health services to a user, but does not include a healthcare provider" (RSA, 2003:6). Thus, with reference to the ORPs, their function in the operating department seems to place them in the category of healthcare workers who renders the title 'practitioner' inappropriate.

In response to the new higher education policy requirements, the two-year diploma curriculum was upgraded to a three-year diploma programme (the Diploma in Operating Department Assistance) which is also on an NQF level 6 (Van Zyl, 2012:2). Hence, the name of the ORP changed to 'operating department assistants' (ODAs) which seemed to be more in line with the definition of a health worker (cf. Fig. 2.3).

The curriculum was redone according to a qualification template developed by a task team consisting of academics of HET institutions founded by three private hospital groups. The new curriculum was based on the standards for a three-year, 360 credits programme as stipulated in the Higher Education Qualifications Council's (HEQC) curriculum guidelines. Thus, it was necessary to add the required components (anaesthetic and post-anaesthetic care modules), but to stay within the credit boundaries set by the HEQC. Currently, the programme is offered by two private higher education institutions (SAQA, 2017:6). However, the public sector in the Western Cape also utilises these healthcare workers trained by the private higher education institution (PHEI) in the Western Cape. (A more detailed discussion of the legislative aspects is provided in Chapter 3).

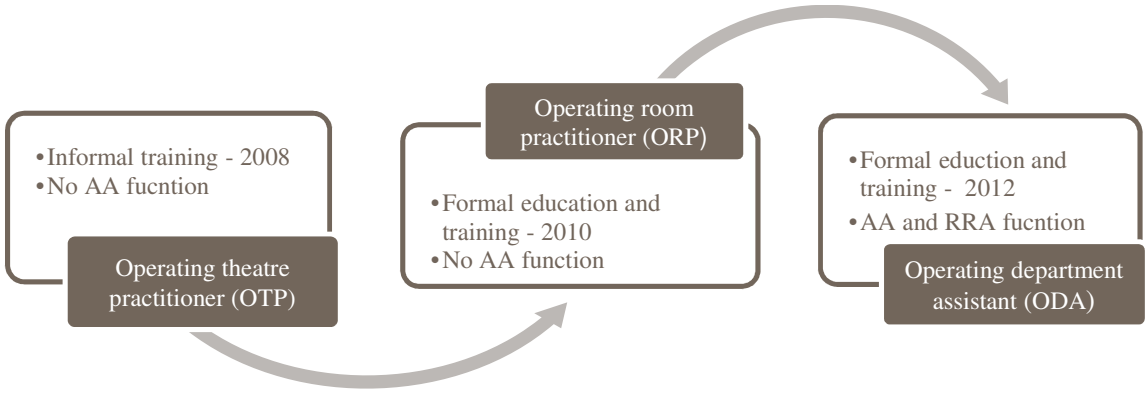

Figure 2.3: Historical path of the ODA in South Africa

From the literature reviewed it became noticeable there are discrepancies in the role and functions of ODAs (cf. Table 2.2.). Although many countries utilise anaesthetic assistants, it emerged from literature that a different cadre of healthcare professionals assist the anaesthetists.

Table 2.2: Roles and functions of ODAs/technicians in various countries

Function	Country						
	United States	**United Kingdom**	**New Zealand**	**Australia**	**India**	**The Netherlands**	**South Africa**
Title	Surgical technician	Operating department practitioner	Anaesthesia technician	Anaesthesia technician	Operating theatre / anaesthesia technician*	Scrub practitioner / anaesthetic nurse*	Operating department assistant
Circulator	√	√			√	√	√
Scrub practitioner	√	√			√	√	√
Anaesthetic assistant	When performing circulator functions	√	√	√	√*	√*	√
Recovery room assistant/practitioner		Recover patients	Recover patients				Assist the RN

The SA model resembles the UK model in that the ODAs in SA and the ODAs/ORPs in the UK perform scrubbing, circulating and have an anaesthetic assistance role and functions to fulfil. The only difference seems to be that the ODP, who had completed level 3 of the Health Care: Operating Department Practice (UK), also performs the following skills: venipuncture and intravenous annulation; administration of drugs; patient intubation and extubation and advanced cardiac life support as well as caring for the patient in the recovery room (Davey & Ince, 2000:70) which the ODA in SA is not allowed to do ([redacted] 2013:1-3; SAQA, 2013:1-6). Consequently, the ODA is multi-tasking and switching between the circulator, scrub practitioner and AA roles and functions all the time.

The next section provides a more detailed overview of the ODA education and training in the UK as the SA model resembles the UK model the most.

2.4.2. Overview of current operating department assistant education and training

It is evident the ODA profession has been typified over 30 years by the training and education development; from an on-the-job in-house training to vocational training in the 1990 and, since 2002, a competency-based HET diploma which was changed to a competency-based bachelor's degree with an honourary degree added in 2011 (Abbot & Booth, 2014:xi11-x1v; Council of Deans of Health, 2013:2; Health and Care Professions Council (HCPC), 2014:1; Timmons, 2004:650).

As indicated (cf. sect. 2.4), ODA as a modern profession is relatively young and as an academic discipline it has an even shorter history. Through the literate search it became evident many authors claim ODA training falls between medical and nursing education, but with the tendency more towards medical training (Fuller, 2013:2). Like nurses and doctors, ODAs followed a pedagogical path of apprenticeship. However, the training of ODAs was initially based on nursing training which proved to be not quite successful. For this

reason, and also because of the emphasis placed on the 'assisting' function (The history of surgery and anaesthesia from a ODPs perspective, s.a.:1) the ODA curriculum moved from the City and Guilds (for ODAs) to the National Vocational Qualification (for ODPs) and into the HET domain. This move was driven by operational needs, advances in medical technology, changes in educational and professional priorities and development in anaesthetic techniques which strongly linked anatomy, physiology, microbiology, pharmacology and so forth. Higher education institutions responded by developing HET diploma programmes in operating department practice (CODP, 2011:8) to meet the demands of society and address issues such as perioperative patient care and patient safety; a multi-skilled workforce and operationally capable and efficient practitioners who are able to integrate theory and practice (Barnett, 1994:11 & 13; Harris, *et al.*, 1995:9; Sun, 2004:6). Hence, higher education became pivotal in producing graduates to address the needs of modern society (Barnett, 1994:12).

Operating department assistant training evolved from informal hospital-based training to formal academic degree programmes classified as professional education. Professional education is defined as programmes directed at a designated area of employment which prepares candidates for occupations in specific fields such as helping (social work, medicine, nursing, pharmacy), enterprising (law, engineering, business) or informing (education, library service, journalism) professions (Stark, Lowther & Hagerty, 1986:1-6). Although the work of Stark *et al.* (1986) does not include the ODA profession, Fuller (2013:2) notes the ODA programme is seen as a helping and service profession.

The literature search further revealed the anaesthetic and recovery room module is included in the BSc and BSc (Hons) in Operating Department Practice diploma. The Diploma in Higher Education, introduced in 2002 and revised in 2006, was offered over a two-year period (HCPC, 2016:1-3). During the two-year programme the students' main focus was on 'assisting' the perioperative team (Smith & Wicker, 2007:4). However, as stated, the diploma programme changed to a bachelor's degree and an honourary degree (minimum three years and maximum five years) as there was a need for a more flexible, responsive workforce (Council of Deans of Health, 2013:3). Indeed, the focus shifted from 'assisting' to 'practicing'. The reason for this transfer was to uplift the educational threshold to prepare the graduates to deal with the increasing complexity of perioperative care delivery, create a cadre of healthcare professionals with a distinct skillset and embed human factors which the constraints of the two-year programme did not allow for (Council of Deans of Health, 2013:1-3). Other reasons included the shortage of nurses with fewer nurses developing the required skills mix to provide adequate assistance to the anaesthetist; developments in patient safety and the need for more advanced training in human factors and pharmacology; increased advances in technology which required specific knowledge, understanding and skills; the need for critical thinkers and reflective and evidence-based practice and finally, an increased need for management and leadership knowledge and skills (Council of Deans of Health, 2013:1).

The Council of Deans Health, representing academics from 85 universities' health faculties in the UK, is of the opinion that the roles of nurses and ODPs are inextricably linked and by raising the educational threshold greater opportunity was created to strengthen the connection between the two professions (Council of Deans

Health, 2013:4). In 2014 there were 34 approved undergraduate Operating Department Practice programmes offered by 26 UK institutions (Council of Deans of Health, 2013:2; HCPC, 2016:1-3). However, the majority (71%) of universities still registered students for the diploma programme. Only nine (26%) offered the BSc (Hons) and one (3%) the BSc degree (HCPC, 2016:5).

Although there was no indication in literature of the precise duration of the anaesthetic and recovery room component, it seems the two-year diploma programme incorporated anaesthesia in the first year and post-anaesthetic care in the second year. In the three-year degree programmes it varied (cf. Table 2.3) according to each higher education institution's curriculum. The majority (86%) of institutions included the foundations or principles of anaesthesia in the first year with 52% offering anaesthetic care, 77% principles of post-anaesthetic care and 76% recovery room care in the second year. The minority of universities included principles of post-anaesthetic care (5%) and recovery room care (24%) in the third year of the programme.

Table 2.3: Summary of anaesthetic and post-anaesthetic modules offered per year in the UK

Content	Year 1	Year 2	Year 3
Foundations/principles of anaesthesia	86%	14%	-
Anaesthetic care	48%	52%	-
Principles of recovery room (post-anaesthetic care)	19%	77%	5%
Recovery room care (post-anaesthetic care)	-	76%	24%

The majority of universities seemed to base their programme on the CBE/T model, needs assessment and spiral curriculum design for the anaesthetic and recovery room course. (Anglia Ruskin University, s.a.:3-6; Birmingham City University, s.a.: 1; Bournemouth University, s.a.:1-2; Bucks New University, s.a.: 10-17; Canterbury Christy University, s.a.: 1-3; Cardiff University, s.a.: 1-3; Coventry University, s.a.: 2; Edge Hill University, s.a.: 1-4; Glasgow Caledonian University, s.a.: 1-2; London South University, s.a.:1-6; Northumbria University, 2015:2-8; Oxford Brookes University, s.a.: 2-5; Sheffield Hallam University, s.a.: 1-4; Staffordshire University, s.a.: 2-4; Teesside University, s.a.: 2-3; The University of Surrey, s.a.: 1-4; University of Bedfordshire, s.a.: 2 & 14; University of Campus Staffolk, s.a.: 2-3; University of Central Lancashire, s.a.: 1-4; University of East Anglia, s.a.: 2-4; University of Huddersfield, s.a.: 1-4; University of Hull, s.a.a:1-2; University of Hull, s.a.b:2-4; University of Leicester, s.a.: 2-3; University of Portsmouth, s.a.a:1-4; University of Portsmouth, s.a.b:1; University of West London, s.a.:3).

It appears as if the training of non-nurses in India was not formalised and offered according to specific HET standards. In 2015 the Ministry of Health and Family Welfare Allied Health Section (2015:8, 26-38 & 60) published a curriculum model based on skills and competencies. The model currently serves as guideline for higher education institutions to develop a two-and-half year diploma and/or a four-year bachelor's degree in operating theatre technology. The aim is to develop OTAs (diploma programme) and OTTs (degree programme) (Department Ministry of Health and Family Welfare Allied Health Section, 2015:55-89).

In SA only two higher education institutions – both founded in the private sector – are registered to offer the three-year ODA diploma (SAQA, 2018a:6). The ODA diploma, within the institutional context, is discussed

in more detail in Chapter 3. At the private higher education institution (PHEI) which was included in this study, anaesthetic and recovery room knowledge, skills and attitutes are taught throughout all three years. In the first year the principles of anaesthesia, competencies related to anaesthetic preparation and checking the patient are taught. The second year students are taught how to assist the anaesthetists during minor surgery and the third year includes advanced anaesthetic assistance competencies and post-anaesthetic care (Van Zyl, 2012:21-23, 29-32 & 36-39).

A positive feature of all the programmes offered by universities abroad is that the theoretical and clinical teaching in classrooms and clinical facilities cover competencies in both the anaesthetic and recovery room disciplines. A significant feature is the use of active teaching methods to integrate theory and practice such as seminars; simulation; self-directed learning; group discussions and supervised practise during clinical placement; case studies; computer-aided learning and workshops. Problem-based and problem-solving methods; enquiry-based sessions; scenarios; web-based learning and role-play are also used but to a lesser extent. It is further noted that all the universities use lectures, but most of the universities indicate there is a limit on lecture usage.

Although the ODA profession and education and training are well defined and structured in some countries, especially in the UK, this developing profession had to overcome numerous barriers.

2.4.3. Barriers the ODA profession had to overcome

The ODA profession, a new profession established in the nursing field, faced and conquered many challenges of which the tension between them and nurses took centre stage. It comes across as if this dispute and state of tension was mainly related to aspects or themes concerning technology, regulation, professional status, holistic patient care and territorialism.

The first barrier to overcome was achieving recognition of ODA as a profession to shed the negative perception of the ODA's role (Hauxwell, 2002:483; Timmons & Tanner, 2004:663). Bearing the title 'theatre technician' emphasised the non-nurse role by highlighting the equipment managing function of the ODA. Other professions perceived the profession as technically inclined and uncaring (Robinson & Straughan, 2014:352-354; Steevenson, 2006:550; Timmons & Tanner, 2004:663). This perception was intensified by the lack of insight into this new professions' existence and role (Steevenson, 2006:552). Nurses claimed the ODAs did not have the range of professional skills and knowledge they as nurses had (Timmons & Tanner, 2004:659). The general assumption was that ODAs were unable to provide holistic perioperative care because this was viewed as a nurse-oriented skill. Efforts to expand the ODA role was met with resistance as the nurses perceived the non-registration status of the ODA as detrimental to patient safety and accountability which resulted in strained relationships in many operating theatres (Hauxwell, 2002:483; Timmons & Tanner, 2004:655).

Eventually a humanistic approach was incorporated into the ODA curricula (Steevenson, 2006:550-552) (cf. sect. 2.6.1) and the general term 'theatre practitioner' was used for ODPs and nurses. The role and functions of the two professions overlapped and they were able to perform each other's functions. Timmons and

Tanner (2004:651) aptly state, "neither profession could be seen as a 'cheap' substitute for the other, as nurses and ODPs earn roughly comparable salaries". The education and training of the ODPs and nurses were revised; both professions' programmes are now of a similar length and standard and, in some instances, taught by the same faculty (Timmons & Tanner, 2004:661). Programmes cover similar topics, namely teamwork; holistic patient-centred care; legal and ethical issues; organisational structures and processes and communication (Steevenson, 2006:551).

Then, occupational boundaries created by antagonistic theatre nurses who protected their scrub role and functions (territorialism) (Robinson & Straughan, 2014:352-355; Timmons & Tanner, 2004:645) tainted the development of the ODA as a profession. Traditionally, surgeons – and to a lesser extend anaesthetists – were primarily assisted by nurses. With the introduction of the ODA/ODP role and function the nurses' role were threatened and, although occupational boundary disputes are common between professions, the dispute between ODA/ODPs and nurses became blatant with the overt tension apparent even in the recovery room (Timmons & Tanner, 2004:651). Eventually, the scrub role remained primarily with the nurses and the ODA/ODP was forced to predominantly assist the anaesthetist (Steevenson, 2006:550; Timmons & Tanner, 2004:650) which, in fact, contradicted the existing notion that non-nurses were unable to provide holistic patient-centred care. In their AA role the ODA/ODP had more patient contact than in the scrub role and its expected function.

The lack of humanism, perceived inability to provide holistic patient-centred care and an emphasis on technology, could be reasons for the conflict and territorialism between ODAs and nurses in the operating department. Nurses perceived the developing ODA role as a threat to the nursing profession. Robinson and Straughan (2014:355) state, for instance:

> "Perhaps it can be posited that evolution in health-care practice will continue to shake the foundations of professional identity - an issue that will continually cause role misconception from professions under threat. It is not out-landish to suggest that the role of the ODP will someday face a similar perceived threat to that of our nursing colleagues, as current developing roles take a valuable place within the operating theatre."

Other problematic issues encountered included obtaining regulation and certification as a profession as well as parity among other health professions (Robinson & Straughan, 2014:355). In a culture of accountability the lack of regulation caused critique and resentment from nurses. However, with the introduction of appropriate regulations some of the previous professional barriers diminished and led to clarity and consistency in non-nurse training and responsibility (Steevenson, 2006:550).

2.5. CURRICULUM DESIGN AND OPERATING DEPARTMENT ASSISTANCE EDUCATION

The ODA programme seems to be a busy, full programme where pedagogical practices, educational theories and input of various role players collide within an environment of increased accountability and regulations (Swanwick, 2014:3). Furthermore, it encompasses various modules to equip ODAs with the knowledge, skills and attitude to fulfil their function in the operating department. Professional practice, microbiology,

infection prevention and control, anatomy, physiology and pathology, sociology, psychology, operating department science and anaesthetic and recovery room science are modules built into the curriculum (AST, 2008:xxiii).

2.5.1. Contemporary operating department assistance curricula designs

Changes in the worldwide economy, globalisation and internalisation all had an influence on health science provision as well as the healthcare education domain. Across the world, healthcare systems struggled to keep up with modern day threats and the continuously changing and advancements in technology. Consequently, the health sector was left with a global shortage of RNs in the operating department. This led to an urgent need to expand the AA role of ODAs (Clark, Stewart & Clark, 2006:46-47).

The skills shortage, contemporary fast-changing technology, well-informed patients, demands for high-quality care and increased concern for patient safety (Cao & Taylor, 2004:309; Milton, 2005:12) resulted in an increase in the speed and complicity of healthcare delivery (Milton, 2005:12) in the operating department. This is the same environment where ODA graduates end up working in. Hence, there was a call for practitioners to be equipped with the necessary competencies to deliver safe patient care (Du Boulay & Nixon, 2000:715; Milton, 2005:15; NAW, 2000:9; Taha, 2015:110). The urgency to rectify the unfavourable situation in the operating department had major implications for the ODA curriculum design. According to Barnett and Coate (2005:2), the critical changes, adjustments and challenges experienced in the operating departments placed formidable demands on higher education and training (HET) curricula in the 21st century. Previous professional training in general had neither kept up with these changes nor did it meet the standards of activity and knowledge needed to work in this domain. This was mainly due to outdated, fragmented and static curricula which produced ill-equipped graduates. Graduate competencies were not in line with stakeholders' needs and the narrow technical focus without broader contextual understanding hampered quality and safe health service delivery. In other words, the redesigning of healthcare education based on the needs of all stakeholders was necessary and timely (Taha, 2015:110).

Barnett and Coate (2005:3) state three dimensions are needed to design a HET curriculum for the 21st century graduate, namely 'knowing', 'acting' and 'being'. A curriculum cannot be complete without all three buildings blocks being present and offered simultaneously (Barnet & Coate, 2005:65). 'Knowing' is seen as the kind of knowledge which will be fruitful in a changing world as it is active and constructive. It flows from constructivism and also social-constructivism and is considered as knowledge develops through collaborative endeavours in real-life situations such as the workplace (Barnett & Coate, 2005:61-62). 'Acting' is associated with work-related situations where students get opportunities to apply their growing knowledge and understanding. It is a definitive building block of an undergraduate programme (Barnett & Coate, 2005:61) as it allows students to gain critical thought and understanding by 'doing' the skill which is usually overt in healthcare professional education, but it may also be hidden. Thus, students are acquiring skills intimately associated with the health profession by means of active engagement. 'Being' relates to terms such as capability, self-reliance, self-confidence, self-realisation and self-understanding which link to

the student's development of the inner self. The development of the 'self' is an important skill since it equips graduates to flourish and adapt in a world that is constantly changing (Barnett & Coate, 2005:63).

The curriculum is perceived as a holistic multidisciplinary framework constituting a design that encompasses all educational experiences, planned and unplanned, within the broader social context. Accordingly, in the design and development of a curriculum many influences and challenges are encountered. The factors which impact on the development of a healthcare curriculum are discussed in the next section in the following order: regulatory issues and professional framework (cf. sect. 2.5.1.1) and current curriculum models in operating department assistance education and training (cf. sect. 2.5.1.2).

2.5.1.1. Regulatory issues and professional framework

Healthcare education and training is regulated by numerous regulation and professional bodies as it falls within the boundaries of higher education and a health profession. Healthcare practice is considered a moral and social contract between the healthcare practitioner and patient in which professionalism and professional integrity are embedded. In the healthcare context, a profession is viewed as an occupation characterised by a high level of autonomy, commitment to the well-being of patients as well as colleagues, upholding moral standards and the mastery of appropriate knowledge, skills and attitudes (McQuoid-Mason & Dhai, 2011:59 & 62).

Because the perioperative education and training falls within the healthcare sector, and the responsibility for the well-being of the patient and the bulk of training occurs in the clinical environment, there is government involvement which entails numerous regulation and accountability issues (Swanwick, 2005:859). To protect the patient and profession many laws and regulations have been implemented which have a significant impact on health science education and practice (McQuoid-Mason & Dhai, 2011:59). These laws and regulations do not only pertain to the healthcare sector, but also to the HET sector that sets standards for accreditation and registration. It is implemented to regulate healthcare professionals with the aim of ensuring patient safety and making sure practitioners are qualified to carry out their responsibilities within a specific framework known as the scope of practice (SOP) which is usually regulated by a health professions council.

In medicine, nursing and allied health professions functions are all performed in the interest of the patient. Allied health professionals such as the ODAs are seen as individuals who have been trained in healthcare-related science and deliver healthcare-related services, but who did not graduate from a registered nursing, medicine, dentistry, podiatry or osteopathy higher education institution (Phillips, 2013:23-24).

In some countries the government employs curricula guidelines, but not all set exact accreditation guidelines for the development of a curriculum. For example, in the UK the ODA/ODP curricula are regulated by the relevant health professional body which accredits programmes. In New Zealand and Australia, the Australian and New Zealand College of Anaesthetists (ANZCA) sets the teaching standards for the anaesthetic technician. In SA all health-related curricula are regulated and accredited by a statutory health professional council (RSA, 2003:16) as well as relevant government departments. The ODA programme and ODAs, in South Africa, are currently not registered by any health professional council. However, the submission to

register them as professionals is currently with the HPCSA (Slabbert, 2017). This programme, within its regulatory context, is discussed in more detail in Chapter 3.

Internationally there is much debate and controversy going on with regard to the regulation of ODAs through a relevant professional body. For example, in the USA some states require registration whereas others use a voluntary regulation system (Fuller, 2013:4). In the UK registration was voluntary until the early 2000s when it became compulsory. This led to ODP becoming a profession after regulation was implemented. By then ODP education had been formalised and was therefore moved into the higher education arena (Anderson, 2012:1; Milton, 2005:7). In New Zealand registration of ATs are compulsory (Medical Sciences Council of New Zealand, 2014a:4), but not in Australia (Australian Anaesthesia Allied Health Practitioners (AAAHP), 2017a:1). A more detailed discussion of the legislative aspects is provided in sections 2.8.3.

More professional bodies started to compile core competencies for non-nurses functioning in the operating department of which the professional bodies in the UK were the forerunners. The ODA frameworks which seemed to have the biggest influence worldwide were those from the UK and the USA; more specifically though, the ODA framework published by the National Health System Education of Scotland (NES, 2011). The impact of the Standards of Proficiency Document for ODPs published by the Health and Care Professions Council (HCPC, 2014:3-15) and the Curriculum Document published by the College of ODPs (CODP, 2011:21-44) was also significant. It was, however, the Core Competencies for AAs framework published by the NHS Education for Scotland (NES, 2011:3-47) which gave clear guidelines on the standards expected from an AA and subsequently influenced many anaesthetic and recovery room curricula. It is indeed important to keep in mind that a competency framework only serves as a framework. As Walsh (2013:3) points out, every health professions education institution needs to develop its own appropriate curriculum around these guidelines and consider its own stakeholders' needs and input.

However, when developing the curriculum the aspects of 'knowing', 'action' and 'being' must have equal emphasis to develop a graduate who is able to work successfully in a fast-changing environment (Barnett & Coate, 2005: 65). For this reason, the focus shifted more to performance which increasingly became the core of ODA education and training globally as the well-being and safety of the patient in the operating department intensified.

In South Africa the AA and RRA functions form part of the multi-skilled role of the ODA. Therefore, the anaesthetic and recovery room component is not a loose-standing curriculum but is incorporated into the three-year ODA programme. Currently policy makers in India are also considering incorporating AA training into the OTT competency framework to develop a multi-skilled worker (Aggarwal, 2017:1). These tendencies in India mirror the worldwide demand on healthcare professionals to perform multiple tasks in a competent and safe way in order for healthcare organisations to respond to pressures of cost containment and quality optimisation (Taha, 2015:110).

2.5.1.2. Current curriculum models in operating department assistance education and training

Undoubtedly, the ODA profession evolved over an extended period of time from the grey area of on-the-job training to a high-level CBE/T honours bachelor's degree which lies within the professional education domain. The ultimate aim of ODA education and training is to supply the operating department with competent healthcare providers to function in the perioperative team (Ministry of Health and Family Welfare Allied Health Section, 2015:15; SAQA, 2017:1 & 4). This involves teamwork centred on patient care and safety.

As stated by Fuller (2013:2-3), ODA education lies within the confines of medical and nursing education. Hence, a lot of predominant educational practices such as experiential learning and popular curriculum designs were borrowed from medical and nursing curricula to develop ODA curricula. This resulted in a distinct skillset and highly specialised knowledge allowing the ODAs to provide patient care in all three stages of the patient's perioperative journey (Council of Deans of Health, 2013:2).

According to Stark *et al.* (1986:6 & 17), professional higher education is complex and encompasses several components. It embraces the totality of specialised professional study – learning theoretical/academic concepts, integrating theory and practice, developing psychometric skills and socialising the student into the profession. Contemporary ODA curriculum models include vocational education (CODP, 2011:8; Hauxwell, 2002:477), outcomes-based education (Ministry of Health and Family Welfare Allied Health Section, 2015:15), a spiral curriculum, a needs-based curriculum (Barnett, 1994:11-13) and CBE/T (CODP, 2011:9 & 13; Milton, 2005:11-12; Ministry of Health and Family Welfare Allied Health Section, 2015:15; Timmons, 2005:650). Common features of these models include practice-based teaching linked to competencies developed according to the needs and input of the various stakeholders.

Competency-based education and training was seen as the answer to provide healthcare professionals with the skills they need (Ministry of Health and Family Welfare Allied Health Section, 2015:15; UK Qualifications and Curriculum Authority (QCA), 2001:2-9). In particular, the reports of Lewin in the 1970s and Bevan in the 1980s were instrumental in the development of the modern day operating department assistance CBE/T curricula intended to foster multi-skilled practitioners. The aim was to provide appropriate, sequenced theoretical and practical knowledge across a range of courses and settings to ensure a close working relationship between the AA and the anaesthetist (Ministry of Health and Family Welfare Allied Health Section, 2015:15; Royal College of Anaesthetist, 2017:5; Smith & Wicker, 2007:4) and also the development of independent graduates who have the necessary competencies to function in the operating department. Thus, the curriculum development process was informed by the attainment of a certain level of competence important to stakeholders (Thuy, Hansen & Price 2001:147) to address the population's healthcare needs (Carraccio, Wolfsthal, Englander, Ferentz & Martin, 2002:362).

Competency-based education and training

Competency-based education and training was implemented to ensure graduates, especially in healthcare areas, are ready to enter the global workforce (Harden, 2002:118; Schwarz, 2001:533). It is seen as a conceptual framework for curricula or as a framework for individual courses, modules or study units. In healthcare education it is defined as designing, implementing, assessing and evaluating healthcare education programmes – based on an organising framework of competencies – through an outcomes-based approach (Frank, Snell, Ten Cate, Holmboe, Carraccio, Swing *et al.,* 2010:641). This definition mirrors the opinion of many authors that there is no difference between competency-based and outcomes-based education (Morcke, Dornan & Eika, 2013:851-863; Ott, Baca, Cisneros & Bates, 2014:2; Palomba & Banta, 2001:14). In CBE/T the emphasis is placed on the achievement of competencies consisting of cognitive (encompassing intellectual capabilities, known as 'knowledge'), affective (comprising attitudes, feelings, emotions and values) and psychomotor skills (Ebert & Fox, 2014:26). These skills constitute the curriculum content and link to the competencies students should achieve by the end of the programme whereas the content should ht to reflect the job graduates will do when they enter the workforce (Fauci *et al.*, 2015:7; McKimm & Barrow, 2009:716).

Competency-based education and training, also known as performance-based training (Del Bueno, 1978:10; Naquin & Holton, 2003:25), originated in America in the 1950s (Gonczi, Hager & Oliver, 1990:8; Hodge, 2007:179-184; Hyland, 1992:23) mainly due to graduates' struggle to secure and maintain employment in the USA (Hodge, 2007:182; Ten Cate & Billet, 2014:328). It was viewed as a solution to staff shortages experienced in a number of professions, i.e. engineering, healthcare, the military, navy and teacher education (Chyung, Stepich & Cox, 2006:307; Ellison, 2001:74; Gonczi *et al.*, 1990:8; Leung, 2002:693; Naquin & Holton, 2003:23). Today competency-based education and training is used in many countries, e.g., New Zealand, Australia, the USA, the Netherlands, Canada and the UK (Gonczi, 1994:31; Leung, 2002:693; Ten Cate & Scheele, 2007:542; Voorhuis, 2001:7). South Africa as well reflects in the definition that a programme offered in SA constitutes of a planned combination of learning outcomes to produce graduates with applicable competence (RSA, 2015:3; Sutherland, 2009:23).

One of the main reasons for introducing CBE/T to healthcare education was to provide training programmes aimed at equipping graduates with competencies deemed necessary by economy, industrial and social representatives, professional bodies and the government to enter a particular profession. Consequently, both private and public institutions designed CBE/T programmes according to the needs of the aforementioned organisations and bodies (Naquin & Holton, 2003:25). Competency-based education and training is therefore used in healthcare fields such as medicine, nursing, ODA and pharmacology (Chyung *et al.*, 2006:307; Ellison, 2001:74; Leung, 2002:693; Naquin & Holton, 2003:23). Education and training no longer consisted of narrow tasks-based concepts and the memorising of facts but instead became based on an active, student-centred, dynamic, holistic and humanistic approach. The educational lens subsequently refocused on CBE/T (Boland & Laidig, 2001:77) which differed from the behaviourists' view – a view which had dominated healthcare curricula for the past six decades.

No matter how broad or narrow the interpretation, CBE/T is applicable to adult education with the achievement of outcomes (Del Bueno, 1978:10-11) and attainment of required competencies observed as the visible demonstration of knowledge, skills and attitudes (Ebert & Fox, 2014:24; Schilling & Koetting, 2010:166).

There are various ways of determining the competencies graduates must acquire to enter the workforce (Harris *et al.,* 1995:5). For example, for medical programmes data are usually obtained through focus groups with general practitioners, interviews with patients and behaviour coding of general practitioners during patient consultation (Leung, 2002:694; Patterson, Ferguson, Lane, Farrell, Martlew & Wells, 2000:188-189). Conversely, for a narrower interpretation, the developer can use a Dephi exercise to identify the competencies which then entail the input and consensus of subject matter experts (those who possess a wealth of knowledge about workplace processes), students and employers (Chyung *et al.*, 2006:307; Cooper, 2000:26; Del Bueno, 1978:12). This approach links to the scientific curriculum-making theory as well as Kerns' six-step approach. The latter represents a bottom-up approach which is more suited for HET curriculum designs as it is based on the needs of stakeholders – competencies are thus directly related to the job or occupation. By using the Delphi technique to reach consensus on the selection of competencies, programme validity is verified (Del Bueno, 1978:12).

Although Boland and Laidig's (2001:82) stakeholder representative list concurs with Del Bueno's (1978:12) list of students, programme supervisors and nursing service administrators, the former added the following stakeholders to their list: consumers of service rendered; leaders who have an interest in education and the profession; faculty members; recent alumni and representatives of other programmes who are interested in the direction of the programme. The intended outcome of dialogue with the listed representatives of both lists is to identify the competencies graduates need when graduating (Saucier, Schipper, Oandasan, Donoff, Iglar & Wong, 2011:11) as it is a key element of CBE/T to provide a programme which meets the needs of all relevant stakeholders (Tritton, 2008:15-16). To achieve this expectation and ensure success, the US Department of Education (US Department of Education, 2001:viii) formulated a six-step approach in 2001. Nine years later, Frank *et al.*, (2010:642) refined this original six-step approach by building their curriculum design around one question: What abilities are needed of graduates? The abilities these authors' question centres on are seen as the competencies of knowledge, skills and attitudes built into a curriculum according to stakeholder needs, but by using a backward approach (Prideaux, 2000:168). This approach of Frank *et al.* (2010) mirrors Kern's six-step approach discussed in detail in section 2.5.3.2.

Developing CBE/T curricula

Developing the CBE/T curriculum involves starting with the end goal (job performance) and then working backwards by determining learning outcomes to support the competencies identified (Naquin & Holton, 2003:38). Thus, CBE/T programmes include both the means and the end (Chyung *et al.*, 2006:311) and can be applied to various settings such as higher education institutions, military programmes (Ellison, 2001:74) and professional apprenticeship training programmes, e.g., clinical clerkship in neurology (Gordon & Issenberg, 2003:485). The main focus of CBE/T is to assist the student to translate the competency (mean)

into occupation- or job-related outcomes (end). There are, however, important implications, namely the authentic contexts of learning and the active participation of students in learning and assessment (Saucier, Shaw, Kerr, Konkin, Oandasan, Organek *et al*., 2012:707).

Regardless of all the advantages of CBE/T, Brightwell and Grant (2012:3) question whether complex, higher order skills needed by professionals can be developed through CBE/T. According them, CBE/T is

> "… inadequate to describe the higher cognitive skills and the integrated and individual application and structure for complex knowledge, skills and problem-solving necessary for professional performance, and lacks the necessary emphasis on the experiences of working in service alongside other professionals which is needed to achieve this."

Other critique voiced against CHE/T is possible lower knowledge acquisition due to time allocated for the development of competencies and the utilisation of non-applicable and non-precise outcomes. In spite of developing competencies students are not necessarily better prepared for clinical practice (Hussey & Smith, 2002:221-222; Kerdijk, Snoek, Van Hell & Cohen-Schotanus, 2013:6). There is also an emphasis on minimum standards (Frank *et al*., 2010:643; Hussey & Smith, 2002:228) which could compromise achieving excellence (Del Bueno, 1978:13). According to Frank *et al*. (2010:643) breaking competencies down into too small units of observable behaviour may cause frustration amongst students and educators. Furthermore, students progressing at their own pace could cause logistic chaos, and educators may struggle to embrace student-centred teaching and learning methods.

These concerns and pitfalls may be justified. The educators could, however, be empowered to compile useful, applicable, precise and ascertainable outcomes which specify the knowledge, skills, understanding and abilities to be achieved (Hussey & Smith, 2002:224-225) as well as utilise active student-centred teaching and learning strategies.

In spite of all the criticism voiced Ebert and Fox (2014:28) assert a wealth of literature supports the effectiveness of CBE/T while Hyland (1992:23), regarded as a major critic in the domain of vocational education and training, confirms his earlier opinion that there is an imprecision and ambiguity about the meaning of competence and no conclusion on the cognitive status of competence (Hyland, 1994:3).

Competence and competency

The terms 'competency' and 'competence' can be confusing. 'Competency' (plural noun is competencies), is a component of competence and refers to a combination of attributes underlying a specific profession. These attributes translate to acquiring the required cognitive, affective and psychomotor skills required to successfully perform a specific job (Ebert & Fox, 2014:26; Frank *et al.*, 2010:641; Meyer & Van Niekerk, 2008:42; Toohey, 1999:62). It can vary from simple to complex (Gonczi , Hager & Oliver, 1990:62) whichever is in accordance with the standards of the employer (Chyung *et al.*, 2006:308; Palomba & Banta, 2001:3 & 23; US Department of Education, 2001:7; Voorhuis, 2001:7; Wooley, Bryan & Davis, 1998:361).

In the context of this study, 'cognitive skills' referred mainly to the knowledge and understanding required from an ODA to perform the anaesthetic and recovery room functions, 'affective skills' pointed to the

required attitudes, values, behaviours and beliefs which constituted the caring function (collectively it refers to 'attitude') and 'psychomotor skills' referred to those procedural hands-on skills performed manually by an ODA in the workplace (Quinn & Hughes, 2007:140; Meyer & Van Niekerk, 2008:150). Thus, when referring to a 'competency' in this study it constituted knowledge, skills and attitude.

The term 'competence', on the other hand, is a noun which means having the knowledge, skills and attitude to perform professional tasks in accordance with the appropriate standards (Ebert & Fox, 2014:26; Gonczi *et al.,* 1990:62; Toohey, 1999:62). This indicates the ability to do the right thing at the right time in the right way in a complex professional setting (Saucier *et al.*, 2011:9-10; Saucier *et al.*, 2012:707) by using the right internal (e.g., abilities, knowledge, attitudes, judgment and values) and external (e.g., patients and other professionals) resources. The challenge is to develop 'competency bundles' which will equip the graduate with knowledge, skills and attitude to perform a professional task. For example, leadership in the operating department is different to leadership in a retail store. Both these types of leadership require similar skills such as the coordination of co-workers' roles. It is important to combine a suitable set of competencies required for a specific profession as required by the stakeholders (Gonczi *et al.,* 1990:9-10; Voorhuis, 2001:9-10). In higher education and training, the teaching staff, employers and governmental leaders are often of the opinion that graduates need communication, problem-solving, interpersonal and critical thinking skills (Diamond, 1998:3), but according to Chyung *et al. (*2006:308) competence goes beyond skills.

Level of competence

Competence does not necessarily mean the person is an expert (Benner, 2004:189-194; Chyung *et al.*, 2006:308). Students' progress through five stages (novice, advanced beginner, competent, proficient and expert) to develop professional skills. Benner (1982), whose school-based performance model was adopted for health science education (Benner, 2004:189; Carraccio, Benson, Nixon & Derstine, 2008:761 & 763) added another stage (unskilled or not relevant) to Dreyfus and Dreyfus' 1980 model of performance (Gillies & Howard, 2003:781). This stage enables the educator to assess a student's progress from an unskilled to a competent level which is the purpose of CBE/T (Ebert & Fox, 2014:27).

Later, Miller's Pyramid of Assessment of Medical Trainees was combined with Benner's performance model (cf. Fig. 2.4). It displays student progression over a period of time and suggests that progression overlaps education and training years and progress into practice after graduation (Benner, 2004:191-197; Ebert & Fox, 2014:27). Figure 2.4 also illustrates that the skills practitioners require can be broken down into subdivisions called 'milestones' (framed from novice to expert) which is viewed as subsets of the competencies which must be achieved (Ebert & Fox, 2014:24 & 27).

Contemporary CBE/T also embraces the notion that students' progress at developing proficiency is not at a similar pace (Ebert & Fox, 2014:24). Frank *et al.* (2010:642) therefore propose the term 'competent' should be used with modifiers related to the context, abilities and stage of healthcare education and training. Thus, a second-year ODA student could be able to perform the functions of the circulator (on-job specific competency) and enter a supervised clinical rotation as scrub practitioner assisting the surgeon. A third-year

ODA student could be competent to act autonomously as a scrub practitioner as well as a theatre team leader during day shifts while learning to assist the anaesthetist autonomously.

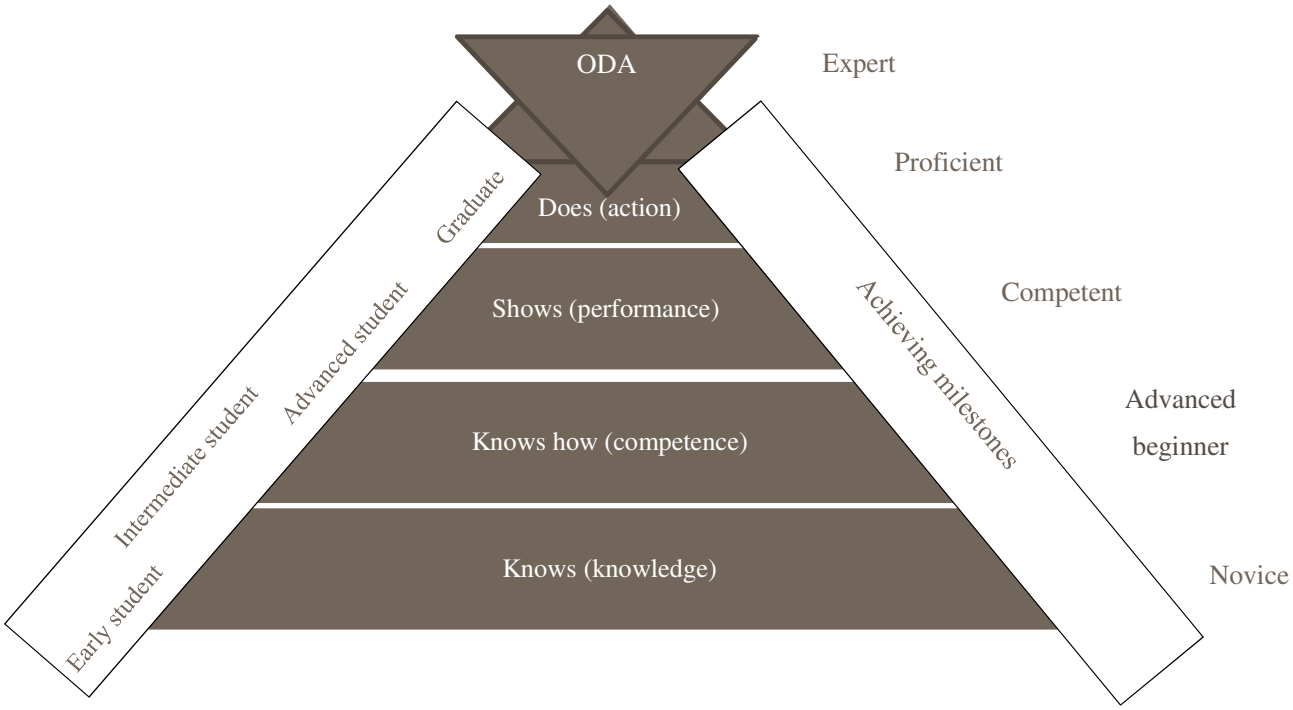

Figure 2.4: Presentation of professional development (adapted from Ebert & Fox, 2014:27)

A problem, however, is that a graduate of the ODA programme could be competent to perform only some – and not all – procedures which are job specific if the curriculum is not aligned to the needs of the healthcare service and functions of the specific healthcare professionals. Job specific competencies refer to a combination of behaviours and qualities a graduate needs to perform a specific job (Chyung *et al.*, 2006:309).

Job specific competencies

Over time there have been many attempts to compile a generic dictionary of competencies to be used in numerous occupations (Chyung *et al.*, 2006:309). In the real world competencies are *de facto* not job or context specific (Spencer & Spencer, 1993:23). Therefore, the CBE/T curriculum architecture needs to be specific and needs-based to ensure students are trained for the specific job the programme is aimed at. To enable graduates to enter the healthcare environment, it is pivotal for the healthcare curricula to reflect the healthcare, professional and educational context (Fauci *et al.*, 2015:8; McKimm & Barrow, 2009:714) which implies a synergy between curricula and healthcare services, also known as 'curriculum symbiosis' (Prideaux, 2003:268).

2.5.2. Curriculum symbiosis and needs analysis

Curriculum symbiosis is based on Bligh, Prideaux and Parsell's (2001:521) argument that a healthcare curriculum should form a symbiosis with the community and healthcare services in which the graduates will enter the workforce. This implies curricula should change as the needs of the healthcare service, healthcare

professionals, patients and society change (Fauci *et al.*, 2015:8; Prideaux, 2003:268). Similarly, the World Health Organization (WHO) stresses the importance that healthcare programmes should be developed according to the health needs of the population and the functions of healthcare practitioners. There is a strong relationship between the healthcare practitioners' functions or roles, competencies, learning outcomes and professional activities (Fauci *et al.*, 2015:9). Educational competencies and professional activities or tasks should almost be identical to ensure graduates are fully prepared to enter the workforce (Fauci *et al.*, 2015:8 & 11). This leads to a greater awareness of flexible and dynamic healthcare curricula (Bligh *et al.*, 2001:820-821; Fauci *et al.*, 2015:8).

Although it is important to ensure symbiosis between curricula and stakeholder needs, it is also important to take cognisance of methods to identify these needs (Bligh *et al.*, 2001:821). Such a method is Kern's six-step approach (cf. Ch. 2, sect. 2.5.3.2) which is firstly introduced and then discussed on the next page.

2.5.3. The Johns Hopkins healthcare curriculum design approach

According to the literature reviewed, the role HET plays in addressing the needs of stakeholders and society is of great importance. Indeed, the relationship between industry and HET shows industry supports HET through experiential learning opportunities, feedback and funding as pointed out by Choudaha (2008:29) thereby providing evidence supporting Tyler's (1949:126-127) much earlier stance that when curricula are re-explored, there should be widespread stakeholder participation.

The most popular design in healthcare education which encompasses the needs of stakeholders, is the Johns Hopkins curriculum design approach developed by a group of specialists at the Johns Hopkins University in Baltimore, Maryland in the USA. These specialists based their model on the Flexner report (1970) which motivated for multi-skilled healthcare practitioners. The Johns Hopkins design envisioned and rationalised a multiple step approach based on six steps which addressed four elements, namely content, teaching and learning strategies, assessment and evaluation processes. However, no other steps are more important than the first step, the needs assessment step, which informs all the other steps (Stefan, 2010:27; Thomas & Kern, 2004:599).

2.5.3.1. Theoretical underpinnings

The Johns Hopkins design is mainly based on the work of Tyler (1949) and Taba (1962). Tyler (1949) based his curriculum design approach on four sequential steps which starts with identifying objectives and ends with evaluation (Print, 1993:64; Rodwell, 1978:13-14; Tyler, 2013:viii). Adding another step, Taba included interaction between five equally interactive elements, namely needs, objectives, content, teaching and learning strategies, and evaluation strategies (Print, 1993:65-66). This rational model provides a step-by-step logical, sequential and meaningful approach which highlights both educator and student participation (Adagale, 2015:603; Lunenburg, 2011:1; Print, 1993:67; Yunus, s.a.:21-24). The only critique offered on Taba's design is that it is too static and rigid to account for complex learning outcomes and does not take into account changes in the educational, socioeconomic, political and occupational environment (Nicholls & Nicholls, 1978:14-15).

The understanding of Wheeler (1967:12), who improved on both Tyler's and Taba's models (Chaudhary & Kalia, 2015:59), was that a curriculum is shaped by the culture of the society in which it operates (Nicholls & Nicholls, 1978:14-15). Wheeler therefore suggested a more flexible approach to determine the training needs essential to prepare students to cope with stakeholder demands on the one hand, while on the other hand, keeping abreast with rapidly changing societal and healthcare needs (Wheeler, 1967:15). Wheeler's (1967) cyclical model thus consists of similar steps as those of Tyler's and Taba's models, but represents a continuous cycle (Adagale, 2015:603; Nicholls & Nicholls, 1978:14 & 22; Print, 1993:70-73; Yunus, s.a.:24-26). Nicholls and Nicholls (1978:i) perfected the cyclical model to represent a continuous logical sequential structure of activities with each step interrelated as the cycle repeats itself. However, it is critiqued as time consuming and not practical for the hectic conditions of modern educational practices (Print, 1993:73).

According to Decker Walker (1971), the linear and cyclical models represent a descriptive or naturalistic model comprising three phases, namely beginning (platform), end (design), and process (deliberation) (Lunenburg, 2011:2; Print, 1993:75-76; Stefan, 2010:38). This non-linear approach mirrors Malcolm Skilbeck's (1984) view that curriculum development is a realistic process which can begin at any stage (Prideaux, 2003:269; Print, 1993:77). Skilbeck (1982:1), who embedded his model within a cultural and social framework as confirmed by Prideaux (2003:269), posited the needs situational analysis is an important component of curriculum development. In Skilbeck's (1982) opinion educators could attend to two or more components of the curriculum simultaneously. In addition, educators could also start with any of the five steps (needs analysis, goal formulation, programme design, implementation, evaluation and reconstruction) in any order as long as they perform all the steps (Lunenburg, 2011:2; Print, 1993:74-78; Stefan, 2010:38).

Although all the scholars mentioned above focused on school curriculum development, their models are equally suitable to be used for the development of HET curricula. The most used model for healthcare curriculum development and review is Kern's (2009) six-step model based on the work of the Johns Hopkins design; it is a synthesis of all the modules mentioned above (Bligh *et al.*, 2001:520; Fauci *et al.*, 2015:8; Kern, 2009:5; Lynn, 2011:3; McKimm & Barrow, 2009:715; Yunus, s.a.:13-16).

2.5.3.2. Kern's six-step approach

The Kern's model is aimed at providing "a practical, theoretically sound approach to developing, implementing, evaluating, and continually improving educational experiences" in healthcare (Kern, 2009:1). It characterises a systematic scientific approach constituting of a cyclical curriculum process which signifies interdependency between the six steps and an alignment between competences, outcomes, teaching and assessment strategies (Biggs, 1996:350; Fauci *et al.*, 2015:8; Tritton, 2008:15-16). The six-step approach, though, does not always follow a specific sequence (Thomas & Kern, 2004:599) but rather a dynamic interactive process where the one step influences the next step or sometimes one or more steps progress simultaneously (cf. Fig. 2.5). However, central to this model is the needs assessment step which entails curriculum development and revision as a result of the needs identified (Adagale, 2015:603).

Although all six steps are discussed individually, it is important to mention steps 1 and 2 are usually used when an existing curriculum is refined and improved such as the anaesthetic and recovery room course in this study (Kern, 2009:6-8).

First step

The general needs assessment step, which determines *the needs of stakeholders,* is seen as the most important step in the Kerns model as it informs all the other steps (Adagale, 2015:603; Amin & Eng, 2003:60; Fauci *et al.*, 2015:8; Hughes, 2009:29; Thomas & Kern, 2004:599). It is the first step for developing and revising curricula which corresponds with Nicholls and Nicholls' (1978:18-19) opinion that expert and industry needs assessment are important. Educator input could lead to an improved curriculum and consistency in the educational plan and employers express their expectation of their future employees. Hence, the first step starts by determining the healthcare requirements which need to be addressed by the curriculum, i.e. the need to ensure healthcare practitioners' competency in teamwork.

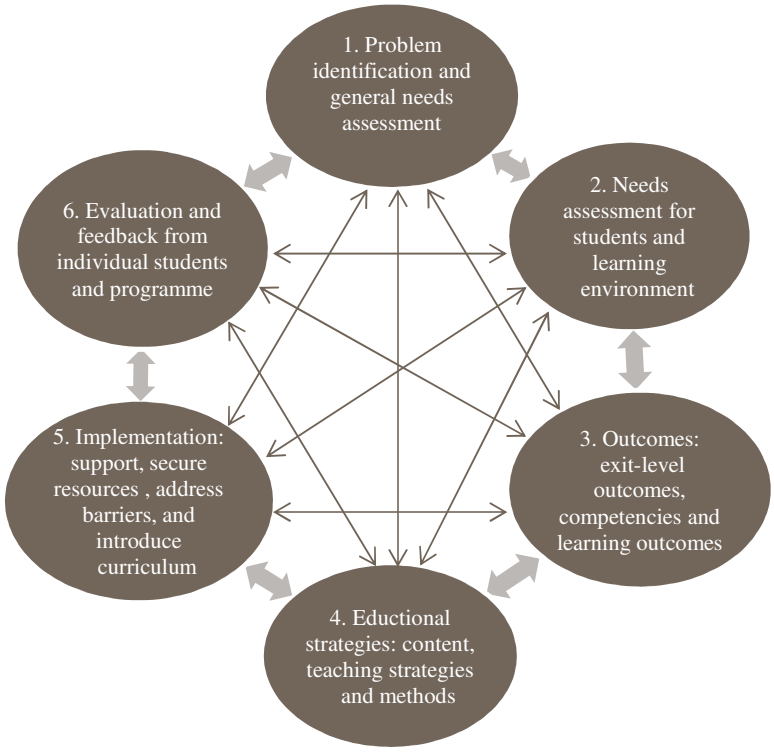

Figure 2.5: Kern's six-step approach to curriculum development (Kern, 2009:6)

Various sources (Urevbu, 1985:33) and methodologies (cf. Table 2.4) can be utilised (Bass, 2009:17; Kern, 2009:6; Lynn, 2011:5; Print, 1993:112) to determine the needs of the stakeholders (Amin & Eng, 2003:59; Bass, 2009:12).

Table 2.4: Methods for general and targeted needs assessments

General needs assessment methods			Targeted needs assessment methods
Available information review	**Experts**	**New information collection**	
• Evidence-based reviews of educational and clinical topics • Published studies • Clinical practice guidelines • Published recommendations on expected competencies • Record of professional organisations • Curriculum documents from other institutions • Patient education documents • Health statistics	• Formal and informal consultants • Meetings	• Patients, practitioners or expert surveys • Focus group techniques • Delphi method • Daily diaries of patients and/or practitioners • Observation of tasks performed by staff • Time and motion studies • Critical incident reviews • Role model practitioners	• Informal discussions • Formal interviews • Focus group discussions • Questionnaires • Direct observation • Tests/examinations • Audit of present performance • Strategic planning sessions

(Sources: Bass, 2009:17; Hughes, 2009:33-34; Lynn, 2011:10)

Second step

The second step in needs assessment is to determine the *needs of the targeted students* and their learning environment (Amin & Eng, 2003:60; Bass, 2009:22; Hughes, 2009:29). Students are afforded the opportunity to voice their expectations related to the following: entry level competence; assumptions and expectations from the programme (Amin & Eng, 2003:60); learning needs; training and experiences related to the current curriculum; perceived competencies needed; perceived deficiencies and needs; scope of work responsibilities and competencies they need to fulfil those responsibilities (Diamond, 2008:76; Hughes, 2009:28-29). Associated with students' needs is the necessity to understand the learning environment. Therefore, it is important to include the needs of all key stakeholders (Diamond, 2008:76; Hughes, 2009:38). Formal interviews, focus group discussions and questionnaires (cf. Table 2.4) are methods most commonly used in this step (Hughes, 2009:32).

Third step

Once the needs analyses are completed, the *outcomes* which include the curriculum goal, exit-level outcomes, competencies and learning outcomes with each level following on the preceding level, are developed (Adagale, 2015:603-604; Kern, 2009:7; Nicholls & Nicholls, 1978:35). These outcomes are classified into three domains, namely cognitive, psychomotor and affective skills (Quinn & Hughes, 2007:114-115) and should be clear as it serves as a communication tool to keep stakeholders informed and also to ensure students' education experiences are in line with the institution mission statement (Amin & Eng, 2003:61; Kern, 2009:7). Lastly, curricular outcomes should embrace the latest healthcare education and training trends such as factual information reduction; early exposure to the clinical environment; active learning; general competence development (e.g., critical thinking, problem-solving, communication, management); subjects integration (vertical and horizontal); assessment and interprofessional collaboration (Towle in Rees, 2000:96).

Fourth step

Step four is selecting the *educational strategies* (Amin & Eng, 2003:61) which consist of a fine blend of knowledge, skills and experiential learning (Adagale, 2015:604). The latter is divided into work-integrated and work-based learning which consists of learning opportunities in and exposure to the clinical environment. The content and teaching and learning strategies should be aligned to the specific outcomes (Amin & Eng, 2003:61; Kern, 2009:7). In this context, pedagogy has three components: what must be taught, ways in which teaching is done and techniques (cf. Table 2.5) to socialise students for successful functioning in the workplace (Adagele, 2015:604; Lynn, 2011:21-22).

Table 2.5: Methods to achieve knowledge, skills and attitudes

Knowledge	Skills	Attitudes/values/behaviours/beliefs
• Learning projects • Readings • Audio-visual material • Discussions • Problem-solving techniques • Case studies • Lectures • Self-directed learning techniques	• Supervised clinical experience • Simulation: manikins, role-play and patients • Reviews of skills	• Exposure to readings, discussions, experiences • Facilitation of introspection and reflection • Role modelling

(Source: Lynn, 2011:21-23)

Employers play important roles in accommodating and assisting students in the workplace. Their commitment to student teaching and learning ensures the success of students achieving competence in their role and functions according to their scope of practice (Kern, 2009:8).

Fifth step

Implementing the curriculum consists of several steps, namely obtaining political and institutional support; identifying and securing resources; identifying and addressing barriers; piloting of curriculum; administration of the curriculum and refining and improving the curriculum after numerous cycles (Kern, 2009:8; Lynn, 2011:25).

Sixth step

The last step consists of *student assessment, programme evaluation and feedback* (Adagale, 2015:604; Kern, 2009:8) used to refine and improve curricula and student achievement (Kern, 2009:8). The stakes in student assessment are high as it is directly related to programme accreditation, quality assurance and how students learn as they usually learn by keeping assessments in mind. Student assessment is of paramount importance in curriculum development (Amin & Eng, 2003:62; Tyler, 2013:110). Curriculum evaluation, on the other hand, is concerned with the impact of the curriculum. It might, e.g., examine the effectiveness of curriculum content (whole curriculum or specific modules); existing pedagogies; teaching and learning strategies and study material. Consequently, the overall aim of curriculum evaluation is to ensure quality student learning (Adagale, 2015:604). This reinforces Amin and Eng's (2003:63) view that a curriculum is a dynamic process which must be continuously evaluated, corrected and monitored by means of collective stakeholder

feedback. Lynn (2011:33) suggests the following methods: student, faculty, staff or patient questionnaires; objective measures of skills and knowledge; student, faculty and staff focus groups; site visits and informal observations and/or discussions. These methods reflect the methods summarised in Table 2.4.

In summary, the primary focus of Kern's model is the needs assessment phases which form the focus point of curriculum development and reviewing. Needs assessment was promoted years ago as the diagnosis phase of curriculum revision. Therefore, the main focus of the current study was based on the first two steps of Kern's model. The curriculum theories as discussed as well as the trends in healthcare education and training informed the interpretive approach used in this study as elaborated on in Chapter 4.

2.6. MODERN DETERMINANTS OF CHANGE IN OPERATING DEPARTMENT ASSISTANCE EDUCATION AND TRAINING

Operating department assistance curriculum development and redesigning have over the last two decades embraced contemporary issues which resemble the barriers ODAs originally had to overcome on their journey to a profession (cf. Ch. 2, sect. 2.4.3). The recent humanistic approach to patient care, development of multi-skilled practitioners and interprofessional and simulated training have had the most significant impact on breaking down current barriers (Steevenson, 2006:553).

2.6.1. Humanism

The purpose of healthcare practice is to care for the sick and promote health and well-being. It goes beyond technical or clinical experience. Patients' needs include expertise as well as humanity from all those who take care of their health. McQuoid-Mason and Dhai (2011:59) aptly state humanism is essential as healthcare encompasses understanding and acknowledging that patients are not merely bodies that receive care, but are human beings who have feelings like fear and anxiety, experience pain and suffering and who need tenderness and compassionate care. Such humane caring attributes were not initially envisaged as part of the ODA profession. The role of the ODA was purely seen as an equipment managing function perceived as technically inclined and uncaring (Robinson & Straughan, 2014:352-354; Steevenson, 2006:550; Timmons & Tanner, 2004:663). At the outset the general assumption was that ODAs are unable to provide holistic perioperative care (Davey & Ince, 2000:29; Hauxwell, 2002:483) which caused strain between ODAs and nurses (cf. Ch. 2, sect. 2.4.3). Technology was the central feature of the divide (Timmons & Tanner, 2004:655-659) with ODA education and training described as lacking the humanistic component – the component which fosters compassionate and empathetic relationships and is described as healthcare embracing elements of caring, excellence, compassion, integrity, respect, service, empathy and altruism (Schiffman, 2017:246). Humanism also demonstrates actions and attitude sensitive to patients' autonomy, values and cultural and ethnic backgrounds. A shift occurred in the ODA profession from fulfilling a distant technical role towards a more holistic, patient-centred approach to produce healthcare professionals capable of multi-functioning in the operating department. Topics such as holistic patient-centred care; legal and ethical issues; communication; knowledge, attitude and ethics associated with professionalism as well as the caring element were included in ODA programmes (Montgomery, Loue & Stange, 2017:378-379;

Steevenson, 2006:551). Furthermore, Schiffman (2017:247) states accountability, commitment to excellence and learning as well as dealing with complexity and uncertainty enhance core humanistic values. On the other hand, Davey and Ince (2000:29) perceive the caring process as the continuous cycle of assessing, planning, implementing and evaluating the patient's perioperative care. Consequently, the specific selection criteria for undergraduate students became based on caring and teamwork instead of pure technical skills (Hind, Galvin, Jackson & Platt-Mellor, 2001:82).

2.6.2. Multi-skilled practitioner training

The Lewin (1970s) and the Brevan (1980s) reports were instrumental in the development of a flexible, responsible workforce and the ODA curriculum of the modern era. The vision was for ODAs to have appropriate knowledge, skills and attitudes to move between different theatre disciplines and work in teams alongside the anaesthetist, surgeon and RN. The aim was to foster multi-skilled practitioners able to function in all areas of the operating department, including the anaesthesia and recovery room departments (Hauxwell, 2002:481; Ministry of Health and Family Welfare Allied Health Section, 2015:15; Smith, 2010:2-4; Smith & Wicker, 2007:4) to combat the staff shortages in the operating department (Hauxwell, 2002:487). This was consistent with the findings of Hind *et al.* (2001:78) that some senior operating department staff preferred multi-skilled ODAs to ODAs specialising in technical pre-operational activities. This versatility gave ODAs the incentive of being promoted (Hauxwell, 2002:493) if they embraced their professional development by updating their knowledge and skills to that of ODPs. It resulted in the positive outcome of nurses and non-nurses sharing roles and responsibilities which finally broke the mould of ODAs/ODPs being trained solely as technicians (Hauxwell, 2002:486).

2.6.3. Interprofessional education

Because all theatre cases are addressed and managed by a team consisting of more than one healthcare professional, Keijsers, Dreher, Tanner, Forde-Johnston and Thompson (2016:306) assert adopting a patient-centred interprofessional approach is essential and best for safe perioperative patient care. The WHO indicates interprofessional education (IPE) as an innovative solution to produce practice-ready healthcare professionals (WHO, 2010:12). Although many definitions exist for IPE, the following definition formulated by the Centre for the Advancement of Interprofessional Education (CAIPE) (2016:24) is best known and most widely used: "Interprofessional education occurs when students from various professions learn from and about each other to improve collaboration and the quality of care." (CAIPE, 2016:24).

Interprofessional education differs from multi-professional education as students learn side by side without any interactions (Brown & Bostic, 2016:237). The former is perceived as a method to enhance teamwork, increase job satisfaction, reduce patient safety errors, use resources economically (Hind *et al.*, 2001:75 & 81) and assist students to make the transition to competent healthcare professionals (Boyce, Moran, Nissen, Chenery & Brooks, 2009:433). This viewpoint relates to the Brevan Report's (1980) recommendation that nurses and non-nurses should work and train together to enhance role coverage between the two groups. The IPE superseded the traditional roles of nurses assisting the surgeons and taking care of patients in recovery

room and ODAs/ODPs assisting the anaesthetists which mainly emerged as a result of the Lewin Report published in the 1970s (Hind *et al.*, 2001:75 & 81).

The participants (nurses, ODAs and medical staff) in the study conducted by Hind *et al.* (2001:81) agreed with the concept of interprofessional education to improve teamwork and the quality of patient care. Hammick, Freeth, Koppel, Reeves and Barr's (2007:735 & 748) review of IPE showed similar results. They found IPE has a positive impact on students' ability to work together and improve patient satisfaction which is confirmed by the findings in the study Keijsers *et al. (*2016:306) did with regard to interprofessional education. Keijsers *et al.* (2016:307) and Thistlethwaite (2012:65) state the most important theories underpinning IPE are adult learning, student-centredness, self-determination and social constructivism. Community of practice (CoP) based on the social learning theory and linked to the situated learning is also relevant (Thistlethwaite, 2012:65). According to the situated learning theory, which also underpins IPE, an authentic context and social interaction in practice situations improves learning (Keijsers *et al.,* 2016:308).

In South Africa, Treadwell and Havenga (2013:1-7) conducted a simulation study involving four groups of healthcare students (medicine, nursing, physiotherapy and occupational therapy) at the Sefako Makgatho Health Sciences University. They concluded that IPE provided students with an opportunity to develop collaborative skills and an awareness of each other's profession. These findings support Thistlethwaite's (2012:67) statement that educators and healthcare professionals need to collaborate to provide authentic learning experiences such as simulated training.

Regardless of all the advantages of IPE, Zanotti, Sartor and Canova (2015:2) reported that knowledge of the effectiveness of IPE is lacking. Thistlethwaite (2012:59 & 62) states that the IPE community still needs to prove empirically whether IPE is more effective before or after obtaining a qualification; whether it should be facilitated in the classroom or clinical setting and how it should be structured. A study by Hammick *et al*. (2007:736), which consisted of a review of 107 IPE studies, showed both positive and negative responses to IPE. This was due to the ineffective facilitation of IPE; undergraduate students' prior negative attitude towards IPE; students not reflecting on current or future practices; educators' not utilising adult-learning principles and the absence of or mediocre assessments during IPE (Thistlethwaite, 2012:65).

The lack of a clear understanding of what is meant by collaborative practice in the clinical environment, as well as the lack of creating an authentic learning experience for students who are learning to work together, were mentioned as barriers to effective IPE (Thistlethwaite, 2012:67). Hammick *et al*. (2007:748) are of the opinion that the unique nature of IPE demands adult-learning principles paired with authentic learning experiences in the clinical environment (workplace) and/or in simulation. To conclude, Freeth (2014:85) is of the opinion that poor-quality IPE could be detrimental if it results in reinforcing negative stereotypes and creates reluctance amongst students to engage in IPE sessions.

2.6.4. Simulated training

Dr Aaron Motsoaledi, SA's Minister of Health stated: "The importance of providing quality health services is non-negotiable." (National Department of Health (NDoH), 2011:5). However, the profound national and

international changes in healthcare challenge the delivery of safe, quality healthcare services. For example, reports based on studies done in the UK, USA and Australia highlight adverse events and human errors where one in 10 patients suffered due to some blunder or oversight during their hospital stay (Sevdalis, Hull & Birnbach, 2012:i3). To counteract such adverse outcomes, the education and training of a uniquely capable, knowledgeable and accountable new nurse workforce was pivotal. Numerous changes to education and training curricula have been made to improve patient safety. One such change was simulated training. The aim of simulated training is to improve teamwork (cf. Ch. 2, sect. 2.8.7), competence (Sevdalis *et al.*, 1012:i13) and communication (Hughes, 2013:167; Weller, Cumin, Torrie, Boyd, Civil, Madell *et al.,* 2015:40). Simulated training is also seen by Hughes (2013:167) as a method to reduce staff anxiety in real anaesthetic emergency situations because staff gets the opportunity to practise vital skills not commonly available in the workplace.

Simulated training is not a new concept. Del Bueno (1978:11) reported it long ago as a useful method for students to acquire the required knowledge, skills and attitudes imbedded in a CBE/T programme. In fact, the original simulation training model as found in the aviation industry was adopted for healthcare training to assess competence of healthcare practitioners (Cumin, Weller, Henderson & Merry, 2010:45; Weller, Merry, Robinson, Warman & Janssen, 2009:126). Anaesthetic training was one of the first health specialties to adopt the aviation model for healthcare training between the late 1980s and mid-1990s (Sevdalis *et al.*, 1012:i6). It is now widely used in anaesthetic training in the UK, Australia and New Zealand with some countries making it a compulsory training requirement (Cumin *et al.*, 2010:45). Unfortunately, this strategy is not well embedded in ODA and whole team training mainly due to costs, the recruitment of participants, scarcity of adequate simulators and the lack of creating an approach which can combine all elements of a team (surgeons, anaesthetists, ODAs and nurses) (Weller *et al.*, 2015:41).

Having discussed curriculum theories, barriers to effective ODA education and training as well as modern determinants in ODA education, the next section provides an overview of the impact of learning theories on ODA learning.

2.7. LEARNING THEORIES IN ODA EDUCATION AND TRAINING

According to Harper (2014:57-58), there are many leading theories in ODA education and training. But, because ODA education and training is complex and socially constructed (with learning taking place in the classroom and the operating department) no single theory can describe exactly how students learn in this field. Anaesthetic and recovery room assistance competencies consist of knowledge, skills and attitudes; it was therefore relevant to explore learning theories applicable to individual as well as social learning in the class and clinical environment (the operating department in this study context).

2.7.1. Apprenticeship and social learning theory

From the literature search it became clear that work-based learning occupies a central role in ODA education and training. This observation was in line with Swanwick's (2005:859-860) opinion that work-based learning

plays an important role in healthcare education. Healthcare education and ODA education are predominantly sited within the workplace where the bulk of learning takes place by means of an apprenticeship model which is viewed as a suitable method for personal and on-the-job specific development.

Apprenticeship is seen as an internationally understood structure within which students can learn, develop their identity, and demonstrate their potential and abilities (Fuller & Unwin, 2003:41-42). The model focuses on 'doing' with the guidance of a 'master' as role model. In the operating department the master-apprentice relationship is typified by the qualified healthcare professional and student. Key factors to ensure success is the recognition of students as students and not as employees (Swanwick, 2005:863) and giving them access to and participation in a wide range of learning opportunities. Providing various and different learning opportunities is crucial to ensure students develop the attitutes, skills and knowledge to progress in and beyond their current workplace and develop lifelong learning skills (Fuller & Unwin, 2003:42).

Another key factor is modelling which links to the sociocultural theory of learning (cf. Ch. 2, sect. 2.3.4) and Bandura's (1988) social cognitive theory in which self-efficacy and observational learning plays an important role (Swanwick, 2005:860). According to Bandura (1988), there are four processes involved in observational learning, namely attentional, retention, motor reproductive and motivational processes. Attentional processes are concerned with the usefulness of the observed behaviour (procedure), interpersonal report between the model and student, and the complexity and frequency of the modelled stimuli (Quinn & Hughes, 2007:99-100). The retention process is linked to the rehearsal and practising of the behaviour while the motor reproductive process involves the students performing the procedure and evaluating it for accuracy. The student is most likely to learn the modelled procedure if he or she understands the value of it and why it is done.

Apprenticeship is a potential powerful tool for ODA teaching and learning as it mainly occurs in the operating department where the students socialise with other healthcare professionals and patients (Meyer & Van Niekerk, 2008:116). For example, one of the early aspects of learning an ODA must acquire is the professional role. By being present in the operating department when other ODAs and nurses are performing their daily roles and functions, the student must be receptive to constantly observe the skills and teamwork being demonstrated; she or he must take note of and digest the staffs' interaction with the patients. This is the way in which ODAs learn professional attitude as well as techniques (Quinn & Hughes, 2007:100).

The healthcare professionals in the operating department represent a group of people who share the common goal of safe perioperative patient care. Placing ODA students in the workplace to acquire knowledge and skills through collaboration, regular interaction and engagement in real-life activities is relevant to work-based learning in ODA education. Work-based learning further relates to the communities of practice (CoP) theory (Wenger, s.a.a:1 & 6; Wenger, s.a.b:7). Communities of practice, a term used by Jean Lave and Etienne Wenger (Lave & Wenger, 1991:25) for the first time in 1988, is defined by Wenger (s.a.a.:1) as "… groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly". The shared interest of the group members and their shared learning keeps the CoP together (Wenger, 1998a:4).

The CoP theory is perceived to be a social learning theory which could influence both theory and practice in health education (Wenger, s.a.a:6; Wenger, s.a.b:7). The theory centres on four assumptions, namely: (1) students are social beings and this forms the central aspect of learning; (2) competence demonstrates knowledge; (3) participation and active engagement with the world generates knowing and (4) engagement in social culture and the ability to experience it generates meaning (Graven & Lerman, 2003:187; Wenger, 1998b:4).

Yet, Wenger (1998b:4-5) theorised that learning is an everyday experience, and that learning and knowing by means of social participation are only achievable if the following four learning components are integrated namely community (learning as belonging), identity (learning as becoming), meaning (learning as experience) and practice (learning as doing). The community thus acts as a 'living curriculum' for the apprentice (Kauffman & Mann, 2014:22; Wenger, 1998b:5; Wenger, s.a.a:4). It is a locus for creation and acquisition of knowledge which involves an interaction between experience and competence (Wenger, 1998b:214). This interaction could provide ODA students, as upcoming healthcare professionals, with the opportunity to access socially defined competence by means of actions and interactions.

The acquisition of professional knowledge is linked to CoPs (Eraut, s.a.:9). According to Eraut professional knowledge has a large tacit knowledge component, which is enhanced through daily interaction with others. Students learn by performing ('doing') tasks/procedures through collaboration, social interaction and bonds with healthcare practititioners and other students (Kauffman & Mann, 2014:19-20). Much of the professional work and learning, in which area this study was situated, occurs in complex situations. Complex knowledge is required to master situational understanding, intuitive decision-making and routine actions which are seen as the three main components of professional learning (Eraut, s.a.:3-11). Applying it to ODA education means that when the student encounters complex situations they draw on social-cultural learning resources such as colleagues and peers for assistance. This implies learning happens everyday by joint collaboration (Morris & Blaney, 2014:103).

By applying communities of practice to ODA education, learning becomes situated and collective with students engaging in the activities of the team. The focus shifts from individual learning to collaborative learning and from the student and teacher to the team or community (Lave & Wenger, 1991:29; Morris & Blaney, 2014:103). The perioperative healthcare practitioners and ODA students, as newcomers, are brought together by mutual activities which allow the latter to participate in daily real-life activities - defined as situated learning - and to become participants in social cultural practices (Lave & Wenger, 1991:29; Morris & Blaney, 2014:103; Smith, 2003:1-2; Wenger, 1998b:4). Situated learning is based on the social cultural learning theory, and the authors posit that learning occurs through a process of engagement within the CoP (Kauffman & Mann, 2014:19-20; Smith, 2003:1). It provides students with the opportunity to develop roles, responsibilities and understanding, and to embed their knowledge in a clinical context (Kauffman & Mann, 2014:22).

In summary, learning occurs by means of belonging to the perioperative community, by developing a professional identity, by grasping the meaning of procedures/tasks performed and by performing ('doing') the procedures/tasks (Kauffman & Mann, 2014:20).

Regardless of all the advantages, Allix (2000:197-198) critiqued the CoP theory by pointing out that Wenger's CoP theory is not based on explicit epistemological and methodological theories. It is also a multidimensional and complex concept which is dependent on legitimised initial memberships, commitment and enthusiasm of members to the desired goals of the CoP and members' perception of the CoPs relevance (Kauffman & Mann, 2014:23). The situated learning and CoP theory were further critisied for not focussing on the "emotional dimensions of work-based learning" (Morris & Blaney, 2014:104).

2.7.2. Behaviourism

The scientific study of actions is known as 'behaviourism' which, according to Skinner (1987), began with the works of Pavlov (conditioning theory), Watson (importance of environment) and Thorndike (connectionism theory) (Harper, 2014:62; Quinn & Hughes, 2007:91-93; Watkins, 2000:94). Behaviourism describes learning by means of a stimulus in the environment and the student's response to the stimulus which ultimately changes behaviour (Braungart & Braungart, 2003:45; Watkins, 2000:95).

Two types of learning, namely classical and operant conditioning are central to behaviourism (Quinn & Hughes, 2007:91 & 101). Classical conditioning, however, has little significance in the higher education environment as the response it elicits has no effect on the environment. Nevertheless, classical conditioning can still influence adult learning by means of conditioned negative (e.g., fear) or positive responses (Quinn & Hughes, 2007:97). Operant conditioning, on the other hand, offers a greater range of educational applications (Quinn & Hughes, 2007:93). Reinforcement, a fundamental principle of operant learning, is obtained by providing feedback to students (Quinn & Hughes, 2007:97) and is central to reinforcing professional, cognitive and technical development and to shape behaviour. All these aspects are significant to ODA education and training and have been part of healthcare education for many years.

An example of operant learning is teaching a student to assist the anaesthetist with intubation. At a basic level, the student is taught what to prepare for intubation and how to assist the anaesthetist. When the endotracheal tube is secure, the procedure ends. Likewise, any error observed (e.g., the tape to secure the endotracheal tube is too short) would result in the procedure continuing until the tube is secure or an enrolled and/or registered nurse takes over. The reaction of the anaesthetist and feedback afterwards will be either positive or negative depending on how the task was performed.

On a theoretical basis, behaviourism in ODA education may have some merit, but collectively it presents many disadvantages. Students may be seen as passive bystanders; mere onlookers who are expected to simply absorb knowledge and then respond as if they have acquired hands-on knowledge and learnt a new skill (Watkins, 2000:95). Reinforcements from other healthcare professionals are very much needed to ensure learning and habits forming have taken place. Another critique of behaviourism is its lack of contributing to the ODA's cognitive capabilities. Furthermore, only observable behaviour can be assessed

and observed which means that only the student's procedural skills and ability to memorise knowledge would indicate whether learning has occurred or not (Meyer & Van Niekerk, 2008:98).

2.7.3. Cognitivism

Piaget (1971), the father of cognitivism (Scott, 2008:9), believed knowledge is created by four factors, namely experience with the physical environment, the social environment, biological maturation and equilibration. Cognitive development, which coordinates the other three factors to ensure consistency between internal mental structures and the external environmental reality, are driven by equilibration (Schunk, 2012:235). Thus, knowledge is 'created' and not 'received' which means students are active participants in their knowledge development and not passive receivers of knowledge.

One of the most familiar cognitive learning and teaching processes is problem-solving. The interest in this teaching method mushroomed with the growth of the cognitive theories in learning (Schunk, 2012:298). However, the cognitivist approach to the development of course outcomes is based on thought processes and not on the performance which results from the learning (Archer, 2016:40). But, although the cognitivist learning processes relate to basic learning forms, it is important for complex learning. Thus, to develop competence in a clinical-oriented higher education healthcare domain the student requires the applicable knowledge coupled with the healthcare and appropriate teaching and learning strategies as well as metacognition (Schunk, 2012:342). The latter implies the student monitors her/his activities to ensure successful completion of the tasks(s).

2.7.4. Social cognitive theory

This theory was developed by Bandura (1988) in the 1980s (Kauffmann & Mann, 2014:9; Schunk & Usher, 2012:15) and unites the behaviourist and cognitive approaches. The theory implies learning occurs in a social environment where students learn from and in interaction with team members and the environment (Kauffman & Mann, 2014:9; Schunk, 2014:184). Behavioural, personal and environmental factors influence each other bi-directionally to enhance motivation and bring about behavioural changes (Bandura, 1988:275; Ratten & Ratten, 2007:92). Related to ODA education, the student (personal factors), learning environment (environmental factors) and learning activities (behavioural factors) have direct influences on each other. However, central to the social cognitive theory is self-efficacy (students' belief that they can either perform the skill or not through their own actions) (Kauffman & Mann, 2014:10-11; Ng & Lucianetti, 2016:14) and the perceived importance of the skills to be mastered (Schunk, 2014:211). On the other hand, the social cognitive theory posits that students experiencing anxiety are unlikely to enhance their self-efficacy due to the negative emotions signalling they are prone to failure (Ng & Lucianetti, 2016:14).

Three aspects of Bandura's theory was relevant to the current study, namely enhancing motivation through clear outcomes, the strengthening of students' self-efficacy and developing competencies through mastery modelling. The latter is widely used to develop intellectual, behavioural and social competencies (Kauffman & Mann, 2014:11; Schunk, 2014:184). Bandura (1988:276) fittingly states, "appropriate skills are modelled to convey basic competence … people receive guided practice under simulated conditions so that they can

perfect the skills … they are helped to apply the newly learned skills in work situations in ways that will bring them success". Modelling serves as a guide to students to monitor personal progress and enhances their self-efficacy by observing someone else performing the skill successfully (Kauffman & Mann, 2014:11; Schunk, 2014:184). But, competence also requires guided practice, informative and/or corrective feedback and practise opportunities to perfect the skill (Bandura, 1988:276-277; Kauffman & Mann, 2014:11).

Translated to anaesthetic and recovery room education and training, an important source of motivation is the link created between the course outcomes and self-efficacy. The latter develops as the ODA student achieves each outcome (Redmond, 2016:14). For example, if a first-year student is placed in the operating room to assist the anaesthetist, he/she will most likely experience self-doubt, stress and the fear of failure which will very probably result in an unsuccessful performance. However, if the same first-year student is assigned a simple task, e.g., preparing the anaesthetic machine and then experience success, with more difficult skills introduced in sequence (i.e. preparing for anaesthesia, then assisting the anaesthetists, then assisting the RN in the recovery room), he/she gets the opportunity to build high self-efficacy (Bandura, 1988: 277; Redmond, 2016:14). If students do not get enough practise to convince them they are able to perform the new skill, they apply it weakly and inconsistently. It usually results in students abandoning the skills if they experience difficulties (Bandura, 1988:277). For example, if a student is hastily placed into a busy theatre to assist the anaesthetist, he/she may do it simply to get the job done – but their behaviour and the feedback on it will have a major influence on their self-efficacy. On the other hand, if students are eased into the environment, they may choose to perform the new skill (Kauffman & Mann, 2014:10). Translated to the operating room, learning simple anaesthetic assistance skills would typically occur by means of observation. Learning complex skills would typically occur through a combination of observation and practise. Students will observe the educator, peers and team members modelling anaesthetic preparation and assistance, then practise it with guidance and feedback (known as experiential learning) before performing the procedure on their own (Schunk, 2012:121 & 151-152). Regular feedback will then show an improvement in performance and enhancement of self-efficacy as an outcome achievement.

2.7.5. Constructivism

This theory emphasises that learning takes place by means of data interpretation and not merely by memorising facts (Meyer & Van Niekerk, 2008:98; Rutt, 2017:93). Knowledge obtained from inside the mind is used by students to construct new knowledge based on previous knowledge (Rutt, 2017:93; Watkins, 2000:96). This perspective assumes that students are active learners who develop their own knowledge independently from the teaching methods applied (Schunk, 2012:230-231) by the educator in the role of a facilitator (Rutt, 2017:93). Pivotal to the constructivist theory is the scaffolding of knowledge (Schunk, 2012:245).

Constructivism also has important implications for curriculum design. It underlies the emphasis on students learning about a topic from multiple perspectives through student-centred principles. Thus, constructivists believe educators should use teaching methods which actively involve the students in the classroom and in the clinical environment (workplace) to ensure hands-on experience (Schunk, 2012:231-240). The social

environment is viewed as critical for learning as knowledge is constructed between two or more people (Schunk, 2012:242-244). This author is of the opinion students should be given the opportunity to solve problems with the guidance of or in collaboration with other healthcare professionals. This links to social constructivism. Transferred to the operating room, it may imply students being mentored and coached by their educator and other healthcare professionals whereas in a classroom situation the social interaction is enhanced through group work (Schunk, 2012:64).

2.7.6. Social constructivism

Social constructivism, the opposite of the conditioning theories (behaviours), is viewed as *learning by doing*. The latter means learning occurs in a social environment by means of active learning methods and doing. Students are encouraged to find answers, do things themselves, think critically, and construct what they learn by means of social interactions. Social constructivists emphasise the importance of socialisation to acquire knowledge, skills and attitudes (Schunk, 2014:497 & 504). In the operating room, the construction of knowledge and learning anaesthetic assistance skills would typically occur through a combination of social interactions with peers, healthcare professionals and patients while students perform the role and functions of an assistant.

2.7.7. Experiential learning theory

The ODA students typically perform their role and functions in the workplace which aligns with the view of Dhital, Subedi, Prasai, Shrestha, Malla and Upadhyay (2015:2) that in healthcare education a major portion of learning occurs in the clinical environment by means of experiential learning. Kolb's (1984) experiential learning theory, which draws on the work of well-known scholars such as Dewey (the chief proponent), posits the transformation of experience creates knowledge (Jacobs, Vakalisa & Gawe, 2004:40-41; Kolb & Kolb, 2011:44). Experiential learning, which implies learning by doing, almost always includes clinical practise (Meyer & Van Niekerk, 2008:34) which combines experience and reflection. This combination is crucial for real-life learning and achieving competence (Boud, Keogh & Walker, 1985:18-19; Dhital *et al.*, 2015:2). Experience, viewed as the total response of a student to a situation or event, enhances theory-practice integration, professional development, interpersonal and managerial skills development, communication, self-actualisation and personal growth (Jacobs *et al.*, 2004:40-41; Meyer & Van Niekerk, 2008:127-128). However, experience alone does not lead to learning. Reflection – when students express their feelings, values, attitude as well as the cognitive and psychomotor aspects of the experience – is crucial for learning to take place (Boud *et al*., 1985:14-15).

Importantly, the focus of workplace learning is not just about *doing*, but also encompasses *being* due to the focus shift to the sociocultural environment which shapes the intentional and unintentional learning activities (Swanwick, 2005:862-863). Examples of ODA experiential learning may include: rotating through the operating department to observe; collaborating in an operating department audit; assisting the anaesthetist; preparing the operating room for the next day's operations and managing a theatre slate as a scrub

practitioner. Hence, learning through practice implies application of theoretical knowledge in the clinical setting (Meyer & Van Niekerk, 2008:128).

2.7.8. Summary of theories applicable to operating department assistance education and training

Kolb (1984:20) views the experiential learning theory as a combination of experience, cognition, perception and behaviour and not as a third theory to the behavioural learning and cognitive theories. According to Kolb (1984), behaviourism does not acknowledge the role of subjective experience and cognition in the learning process whereas the cognitive theories emphasise the acquisition, manipulation and recalling of knowledge. However, behaviourism seems suitable for teaching ODA students new skills; cognitivism for teaching critical and clinical thinking skills; social cognitive theory to enhance self-efficacy and teamwork; social constructivism for enhancing the students' communication, problem-solving and clinical decision-making skills (Haghani & Massomi, 2011:1188) and experiential learning to obtain holistic learning by means of acquiring the required knowledge, skills and attitudes.

Swanwick (2005:863) proposes that operating room personnel who are positive towards apprenticeship are more likely to create a positive learning environment. By means of a positive learning environment a broad base of experience is provided to students within and outside the operating room. Teamwork is cherished, cross-disciplinary communication encouraged, and the development of knowledge and skills valued (Fuller & Unwin, 2003:51-52).

It seems important that students are not dependent only on formal sources (textbooks, lectures) to obtain knowledge, but also rely and depend on social interaction with more knowledgeable peers, colleagues and other healthcare professionals. Often, relevant knowledge arises from communication and interaction with other healthcare professionals within the culture of the operating department (Swanwick, 2005:863-864) and therefore clinical placement of ODA students is extremely important. As first-year students develop skills and experience self-growth, their value to the operating room increases. For example, a student might progress from observing a colleague assisting the anaesthetist with general anaesthesia to assisting the anaesthetist with regional anaesthesia for complex hip surgery. The student's sense of identity evolves by means of graded contributions (from low to high accountability) of practice work opportunities such as assisting the anaesthetist on a continuous daily basis, accompanied by regular feedback, to support and build the student's confidence.

The next section explores the anaesthetic and recovery room component of the operating department assistance programme.

2.8. THE ANAESTHETIC AND RECOVERY ROOM COMPONENT

Trained AAs are considered essential for safety in anaesthesia (Kluger, Bukofzer & Bullock, 1999:269). In fact, the assertion of Kluger *et al.* (1999) is reaffirmed by Weller, *et al.* (2009:126-127) who similarly conclude that trained AAs is vital to improve the quality of patient care and reduce errors in anaesthesia.

In this section anaesthetic and recovery room assistance are defined (cf. sect. 2.8.1) and the development (cf. sect. 2.8.2), regulation and supervision (cf. sect. 2.8.3) and significance (cf. sect. 2.8.4) of the anaesthetic assistance explored. This is followed by an overview of the AA functions (cf. sect. 2.8.5), relationships (cf. sect. 2.8.6), teamwork (cf. sect. 2.8.7), competencies (cf. sect. 2.8.8), non-technical skills (cf. sect. 2.8.9) as well as curriculum activities supporting the development of AAs (cf. sect. 2.8.10).

2.8.1. Definition of anaesthetic and recovery room assistance

The literature search revealed titles such as 'assistant' and 'technician' for the individual assisting the anaesthetist. Depending on the country, the term 'anaesthetist' (SA, Europe, Canada, the Netherlands and Australia) also refers to an 'anaesthesiologist' (Europe) or an 'anesthesiologist' (USA) (Australian Society of Anaesthetists (ASA), s.a.:1; The Royal College of Anaesthetists, s.a.a:12).

This assistant is seen as an essential member of the team responsible for safe patient care. Overall, the assistant is responsible for all anaesthetic areas, equipment, supplies, drugs and to assist the anaesthetist during all the perioperative phases. They are involved with all aspects of delivering anaesthetic care to the patient during induction, maintenance and reversal of anaesthesia (Association of Operating Theatre Practitioners (AOTP), 2013:1). 'Anaesthetic assistant' is an overarching term used to describe the assistance role provided to the anaesthetist by a nurse or non-medical healthcare worker (Perioperative Nurses College (PNC), 2014:1). For example, in England and Wales the anaesthetist is mainly assisted by an ODA/ODP and in Scotland predominantly by a nurse. In the USA a similar function is performed by an anaesthetic technician/technologist, RN, vocational nurse or surgical technologist (American Society of Anesthesia Technologists and Technicians (ASATT), 2014:1; AST, 2008:8; Commission on Accreditation of Allied Health Education Programs (CAAHEP), 2015:1; Rutherford, Flin & Mitchell, 2012a:27), whereas in Australia (Australian and New Zealand College of Anaesthetists (ANZCA), 2016:1) the function is performed by an AT. In New Zealand the anaesthetist is mainly supported by an AT who graduated from a three-year vocational programme offered at an tertiary institution, but occasionally it is a RN who may or may not have completed a one-year perioperative programme. Of the 700 ATs in New Zealand, 90% do not have a nursing background (New Zealand Nurse Organisation, 2014:4; Weller, Webster, Shulruf, Torrie, Davies, Henderson *et al.,* 2014:143). These technicians can apply to the Medical Sciences Council of New Zealand for expanded practice which will allow them to take care of patients in the recovery room (Medical Sciences Council of New Zealand, 2013:4-18). In India, the AT is considered to be a skilled paramedical staff member who assists the anaesthetist in the operating room (Aggarwal, 2017:1; Pillai, 2013:3). In Germany anaesthetists are also assisted by trained non-nurses (Meeusen, Van Zundert, Knape & Gatt, 2012a:17) whereas in the Netherlands a different skills mix is used. Here the AAs – drawn from nursing and non-nursing backgrounds – administer anaesthesia and take care of the anaesthetised patient (Eshuis, 2011:25; The Royal College of Anaesthetists, s.a.a:15).

It is important to reiterate here that the focus of this study was on the AA (overarching term) who assists the anaesthetist and the former's recovery room assistance functions. No conclusive definition was found in literature as regards the non-medical individuals assisting the recovery room staff. The only reference made

to healthcare individuals who fulfil this role was the ODAs who work in a private hospital group in SA (Van Zyl, 2012:32). Moreover, this role was only developed recently with the first cohort of students graduating at the end of 2015.

The next section focuses on the development of the anaesthetic and recovery room assistant category in various countries.

2.8.2. Development of the anaesthetic and recovery room assistant category

Internationally, the AAs are well established in many countries. This cadre of healthcare workers mainly originated during the two world wars (WWI and WWII) when OTTs assisted the anaesthetists (cf. sect. 2.4.1). They transported patients to the operating room and assisted the anaesthetist during induction (Meeusen, Van Zundert, Knape & Gatt, 2012b: 52-53). On the contrary, it is almost impossible to provide a precise description of the development of AAs in each country because their education and training and the progress of anaesthesia differs in every country (Meeusen *et al.,* 2012b:48). Nevertheless, it does seem as if the UK played the most import role in establishing and developing the AA role as the first recorded use of anaesthesia support staff was in England in the late 1930s (Woodworth *et al.,* 2012:5).

2.8.2.1. United Kingdom

As anaesthesia developed the need for non-medical assistance also increased. At this stage the anaesthetist was assisted by a 'Box Boy' or friendly porter who mainly received on-the-job training (Woodworth *et al.*, 2012:5). After the Second World War (1945) the OTTs, trained on the battlefields, were employed in hospitals in London to assist the anaesthetists (Meeusen *et al.*, 2012b; 52; Smith & Wicker, 2007:4). The anaesthetic assistance role was only formally introduced when all the elements of modern anesthesia were in place (Smith & Wicker, 2007:3: The Royal College of Anaesthetists, s.a.b:3). The role extended and these non-nurses became responsible for anaesthetic equipment and assisting anaesthetists during general as well as more complex tasks (Meeusen *et al.*, 2012b:52-53). Subsequently, anaesthetic assistance became an accepted and essential function in the operating department to ensure the safe delivery of anaesthesia by two individuals who have complementary skills and knowledge (NES, 2011:3).

As the complexity of modern anaesthesia advanced, the need for qualified support staff intensified (Woodworth *et al.*, 2012:5). In 1965 the UK Minister of Health recognised AAs as a special group who needed special formalised training to ensure safe anaesthesia. The focus of training consequently shifted from on-the-job to formal training (The Royal College of Anaesthetists, s.a.b:3) with the introduction of a six-month training course (Meeusen *et al.*, 2012b:53). Since then the AA existed under the names of OTT**,** ORP**,** ODA and ODP. A full history of the ODA/ODP development, of which the anaesthetic and recovery room education and training is a component, is provided in section 2.4.1.1.

For many years the main role of the AA was to provide technical support to the anaesthetist. They were responsible for: (i) preparing the anaesthetic room and equipment according to patient needs; (ii) checking and cleaning the anaesthetic machine, monitors and equipment; (iii) preparing the anaesthetic drugs,

intravenous fluids, supplies and intubation equipment; (iv) patient identification; (v) positioning of the anaesthetised patient; (vi) protecting the unconscious patient from harm; (vii) assisting with patient transfer; and (viii) assisting the anaesthetist (Foster & Jepson, 1983:1- 20). In the late 1980s their function changed to ensuring safe perioperative patient care. Their scope of practice (SOP) as well as perioperative knowledge and skills broadened (Abbott & Booth, 2014:x; The history of surgery and anaesthesia from an ODPs perspective, s.a.:7). This led to formal regulated educational programmes with a focus on specified outcomes and competencies (Milton, 2005:3-4).

2.8.2.2. United States of America

In the USA the anaesthetist is assisted by an AT whose development history is not clear. What is known and evidenced in literature is that in 2011 the Commission on Accreditation of Allied Health Education Programs adopted standards and guidelines for accreditation of a degree programme in anaesthesia technology (ASATT, 2014:1-2). This programme enables the AT to function in a variety of clinical settings, e.g., the operating theatre, radiology department, labour units, intensive care units, emergency units and ambulatory surgical centres (CAAHEP, 2015:1). Conversely, if the AT is not available the anaesthetic providers are assisted by the circulator who is predominantly a RN. The circulating function was traditionally performed by a nurse but over the past decades the ST training has been expanded to include circulating skills (AST, 2008:5-10; Fuller, 2013:6; Kaye *et al*., 2012:140 & 141). Thus, a ST often assists the anaesthetist when he/she is allocated to perform the circulator role and functions on a shift.

2.8.2.3. India

Pillai (2013:i) mentions in India ATs assisted anaesthetists as early as in 1971. The Governing Council of Indian Society of Anaesthesiologist recommended minimum requirements for safe anaesthetic assistance in 1990, yet Pillai's (2013) interpretation is that the training of ATs is still neglected in the country.

To provide clarity, it is of significance to explain that although the AT, operating theatre assistant (OTA) and operating theatre technician (OTT) assist the anaesthetist, it is the AT who provides support to the anaesthetist in the operating room. The OTs and OTTs are trained to assist the anaesthetists with emergencies outside of the operating room (Aggarwal, 2017:1; HSSC, 2013a:1; HSSC, 2013b:1-2). However, Aggarwal (2017), a senior manager at the Indian Healthcare Sector Skill Council (HSSC), shared via email that feedback from the Indian healthcare industry declared the two "job roles should be merged into one where theatre technicians would also be given the responsibility of an anaesthesia technician".

2.8.2.4. Sweden

The evidence of AAs is also visible in Sweden where they are mainly drawn from nursing backgrounds (The Royal College of Anaesthetists, s.a.a:15:3). However, the AA assists the anaesthetic nurse and not the anaesthetist. The anaesthetic nurse is the one administering anaesthesia and taking care of the anaesthetised patient. The AA is not involved in patient monitoring, administration of drugs or resuscitation and has no

direct patient-related role during anaesthesia. On occasions they are allowed to monitor a stable patient's vital signs and administer drugs under oral directions (The Royal College of Anaesthetists, s.a.a:20-24).

2.8.2.5. Australia and New Zealand

Although there is evidence that anaesthetists in Australia are currently assisted by nurses and/or ATs – who may or may not have undergone formal training and examination (ASA, s.a.:2) – there have been different types of assistants supporting the anaesthetist over the years. Initially it was theatre porters and later enrolled nurses, RNs and ATs (Meeusen *et al.*, 2012a:17). The exact history of the AT development is not clear, but in 1972 the Association of Operating Theatre Practitioners (AOTP) was established to provide education, ensure employment security and develop a code of ethics for the AT (AOTP, 2013:1). The recommended training standards were provided by the Australian and New Zealand College of Anaesthetists (AOTP, 2013:1). The ATs perform the following duties, namely anaesthetic preparation, assistance to the anaesthetist and caring for patients in the recovery room (AAAHP, 2017b:1).

In New Zealand the AA role and functions, which are not part of the nursing functions, are performed by specific trained ATs whose training is guided and monitored by the Australian and New Zealand College of Anaesthetists which recognises the importance of their role and functions. The Australian and New Zealand College of Anaesthetists promotes and guides the training of ATs (ANZCA, 2016:1) who may also care for patients in the recovery room once they have completed an additional programme and been certified as competent by the Medical Sciences Council of New Zealand (2013:16).

2.8.2.6. South Africa

Although literature reveals no historical evidence of the role of AAs in SA, there is evidence that anesthetists were assisted by RNs in the 1960s. Lambrecht's (2017) said: "During my operating room nursing training in 1960, at the Groote Schuur hospital, in Cape Town, registered nurses assisted the anaesthetists. There was also a registered nurse in charge of the anaesthetic assistance service." Today the anaesthetists are assisted by nurses (auxiliary, enrolled and RNs) – who do not necessarily have formal anaesthetic assistance training – and ODAs. The multi-skilled ODA role – which includes the AA role and functions – and underpinned training have been developed recently with the first cohort of students graduating in December 2015.

On examining the development of the AA in the various countries, various interpretations of the role and functions which seem to differ among countries emerged. The function is performed by various and different members of the operating department team. In some institutions the functions are performed by a nurse and in others by nurses and/or ODA/ODPs and/or the ATs. It also appears that the training of AAs is different. There are various streams of which examples are listed below.

1. Graduates from a registered diploma or degree programme leading to a qualification in Operating Department Assistance/Practice, i.e. in the UK and SA.
2. Anaesthetic technicians who completed an accredited vocational AT programme, i.e. New Zealand and the USA.

3. Scrub practitioners or AAs (known as anaesthetic nurse in the Netherlands) who commenced with a three-year perioperative programme but graduated as one of the two professionals, i.e. the Netherlands.

4. Nurses who completed a recognised nursing certificate, diploma or degree programme, i.e. Sweden, SA and the UK (specifically Scotland).

In the 1980s in the UK (Meeusen *et al.*, 2012b:54) there were only a few nurses assisting the anaesthetist, but they could take on more responsibilities than the non-medical healthcare professionals. Nurses were allowed to possess scheduled drugs, administer drugs and begin intravenous infusions which ODA/ODPs were not allowed to do (Davey & Ince, 2000:5-6; Meeusen *et al.*, 2012b:54). Their non-medical role, however, evolved over the years to a recognised, registered and respected profession in the UK and by the early 1990s the nursing and non-medical anaesthetic assistance role and functions were equivalent (Meeusen *et al.*, 2012b:54). Although the two groups work in harmony, their exact role and functions are often undistinguishable and thus not always clear to all healthcare professionals working in the operating department (Meeusen *et al.*, 2012b:54; Oakley, 2006:11; Timmons, 2004:650).

Early in the literature search it became obvious that variations exist in the regulation, certification and supervision of AAs in the various countries.

2.8.3. Regulation and supervision of anaesthetic assistants

According to the literature reviewed, there is some discrepancy among countries regarding the registration of AAs. For example, the registration of AAs is not compulsory in all countries, i.e. in New Zealand the AA is regulated but not in Australia (Hamlin, Davies, Richardson-Tench & Sutherland-Fraser, 2016:21). The countries in which regulating the AAs was initiated did it in recognition of the potential risk to the patient (Medical Sciences Laboratory Board, 2011:94; Medical Sciences Council of New Zealand, 2016a:2). Another irregularity is the fact that student supervision is provided by different healthcare professionals in the different countries and at different levels and ratios as illustrated in Table 2.6.

The Medical Sciences Council of New Zealand (2016b:1-3) states first-year students must work under the direct supervision of a registered AT to ensure the safety of the patient. Students can progress to supervision levels 2 and 3 as their competence level develops. The second level of supervision entails indirect supervision by a registered AT who is available to give immediate clinical assistance or advice. Here the ratio of student to AT is 2:1. Level 3 supervision refers to supervision provided by a supervising AT available in the hospital but not exclusively available to a specific student. Once students are deemed competent to work in the recovery room, they work under the direction of an anaesthetist, but are directed by the RN in charge of the unit (Medical Science Council of New Zealand, 2013:18).

Table 2.6: Summary of AA regulation in the various countries

Country	Regulation/certification	Regulating body	Supervised by:
United States of America	Mandatory in some states	American Society of Anesthesia Technologists & Technicians	Anaesthesia provider Registered nurse
United Kingdom	Yes – since 2004 Before 2004 voluntary	Health Professions Council	Registered professionals
Australia	Voluntary registration	Australian Anaesthesia Allied Health Practitioners	Registered anaesthetic technician
New Zealand	Yes	Medical Sciences Council of New Zealand	Anaesthetist and anaesthetic technician team leader
India	Voluntary	Healthcare Sector Skill Council	Nursing and anaesthetic staff
The Netherlands	Yes	Dutch Society of Nurse Anaesthetists	Consultant anaesthetist
South Africa	No	None	Registered nurse

(Sources: Adriaanse, 2017:1; ASATT, 2014:1; AST, 2008:9; CAAHEP, 2015:1; DPMI, 2017:1; Fuller, 2013:4; Hamlin *et al*., 2016:21; HSSC, 2013b:1-51; HSSC, 2015:2; Jordaan, 2011:10; Medical Sciences Council of New Zealand, 2014b:4; Medical Sciences Council of New Zealand, 2016b:1; Medical Sciences Laboratory Board, 2011:94; The Royal College of Anaesthetists, s.a.a:5-9; SAQA, 2017:5; Van Beuzekom & Boer, 2006:635)

Another noteworthy aspect is that the ODPs in the UK also render post-operative care in the recovery room which seems to include the recovery of patients (Smith & Rawling, 2008:190). In South Africa the ODAs are trained to assist the RN in the recovery room (SAQA, 2015:1-2). On the whole, although some differences are noted in the role, functions and responsibilities of AAs (overarching term) around the world, Meeusen *et al.* (2012a:22) argue the AA has unequivocally made and is still making a significant contribution to the perioperative care of a patient. In many countries they are recognised as an indispensable member of the anaesthetic team.

Before discussing the significance of anaesthetic and recovery room assistance, it is important to clarify that for the purpose of this study the individuals, regardless of their training and clinical/professional background, who assist anaesthetists are collectively referred to as 'anaesthetic assistants' (Rutherford *et al.*, 2012a:27; Smith & Rawling, 2008:190). While the nature of the anaesthetic assistance training is a phenomenon that requires attention, this study deliberately concerned itself only with the anaesthetic and recovery course (a component of the ODA programme).

2.8.4. Significance of anaesthetic and recovery room assistance

The literate search did not reveal any positions related to the recovery room assistant. Thus, this section only focuses on the significance of anaesthetic assistance. Despite the considerable amount of literature indicating the benefits of anaesthetic assistance, it is evident there is no international standardisation on the background, SOP, training and competencies of this healthcare professional category. According to Kluger *et al.* (1999:269) and Meeusen *et al.* (2012a:22), skilled AAs are seen as essential for the safe conduct of anaesthesia during the perioperative period. This period includes pre-operative preparation, induction and maintenance as well as reversal and recovery from anaesthesia which include patient monitoring and positioning (Rutherford *et al.*, 2012a:27). The AA significantly increases safety and is therefore an

invaluable asset in the operating department (Du Boulay & Nixon, 2000:715). Concurring with the previous statement, Pillai (2013:i) states: "The presence of an efficient assistant makes a big difference in the overall safety of the conduct of anaesthesia."

The significance of anaesthetic assistance is reiterated by The Association of Anaesthetists of Great Britain and Ireland (2007:3 & 6; 2010:4) which states safe induction of anaesthesia cannot be achieved by one person; a team approach is essential. A competent assistant must assist every anaesthetist when anaesthesia is administered and therefore an AA should be competent and dedicated exclusively to the anaesthetist (Du Boulay & Nixon, 2000:715). The Governing Council of Indian Society of Anaesthesiologists was of similar opinion considering its recommendation in 1990 that an assistant must always be available to assist the anesthetist during induction, maintenance and until the end of the theatre list. This recommendation was later changed to assistance from the time premedication is administered to the end of the theatre list (Pillai, 2013:ix).

Study findings of Kluger *et al.* (1999:269-271), who analysed anaesthetic-related incidents in Australia, indicated skilled anaesthetic assistance were associated with fewer errors as AAs played an important role in the prevention of incidents and reducing the impact of incidents that did occur. Data from 5 837 anaesthetic-related incident reports were analysed. In 187 incidents 'inadequate assistance' was identified as the cause of the problem whereas 'skilled assistance' minimised the incident in 808 reported cases. In this study skilled assistance referred to AAs adequately trained (from a theoretical and clinical point of view) on: equipment familiarisation; trouble shooting; problem-solving; formalised equipment checking regimen; cricoid pressure; difficult intubation; airway management and anaesthetic drugs (Kluger *et al.,* 1999:271). Although the study of Kluger *et al.* (1999:269-273) confirmed the vital role AAs play in preventing incidents, it also revealed in 147 of the cases the AA failed to prevent an incident due to inadequate training. Inadequate assistance was ranked as the 14th contributing factor to incidents occurring. A similar study conducted by Weller *et al.* (2009:126-129) in New Zealand revealed similar results. Importantly, the error rate was much lower when anesthetists were assisted by AAs who had anaesthetic-specific training.

Kluger *et al.* (1999:273) take the stance that many factors contribute to the inadequate or poor training of AAs and their subsequent inability to cope. According to the aforementioned authors, these factors include the lack of access to anaesthetic simulators; lack of CBE/T; poor communication structures; staff shortages; rapid turnover of operating room staff and infrequent exposure to anaesthetic techniques and difficult scenarios. Kluger *et al.* (1999:269-273) therefore called for the revision of anaesthetic assistance training with a focus on the theoretical training (especially knowledge of anaesthetic drugs), clinical training (equipment familiarisation; formalised equipment checking regimens; troubleshooting; airway management; difficult intubation; cricoid pressure and improved communication), 'multi-skilling' and simulation-based training. Regular assessments of the theoretical and practical components were also recommended and the continuous professional development of ODAs emphasised.

Pillai (2013:4) asserts a well-trained, intelligent AA in and around the operating room makes a significant difference in the management of any crisis, minor or major. The use of skilled and well-trained AAs thus seems congruent with the commitment to patient safety (Weller *et al.*, 2009:126).

2.8.5. Role and functions of the anaesthetic and recovery room assistant

As indicated in the previous section, the AA role is crucial for the safe administration of anaesthesia. Therefore, the emphasis is on efficient and skilled assistance to the anaesthetists. As mentioned, the responsibilities and/or functions of the AA are different in the various countries. But, although their functions differ from country to country, their core responsibilities, with some variations, are the same (cf. Table 2.7).

Table 2.7: Main perioperative responsibilities of the anesthetic assistant

Pre-operative	Intra-operative	Post-operative
• Check/prepare/set-up equipment: anaesthetic machine (incl. breathing system), monitors, intubation, suction and oxygen equipment, IV infusion equipment (incl. those for blood products), gas cylinders and emergency equipment (incl. those for difficult intubation) • Ensure drugs (incl. scheduled and emergency drugs), fluids and supplies are available (anaesthetic cart stocked) • Collect the patient's data • Transfer the patient from the holding area to the theatre • Order, maintain and keep record of all anaesthesia equipment and drugs • Ensure a clean environment and equipment • Maintenance of anaesthetic equipment (incl. broken ones) • Site an IV cannula*	• Assist the anaesthetist with: – IV cannulation, induction of anaesthesia, intubation, anaesthetic/airway maintenance, reversal and patient extubation – Fluid therapy and administration of blood/products* – All procedures/patients of all ages, incl. trauma and emergency cases – Rapid sequence induction – Patient with unstable cervical spine – Sedation – spinal/regional anaesthesia – Positioning nasogastric tube* – Positioning of the patient for surgery • Keep the anaesthetic machine's worktop clean/tidy • Monitor the patient's: – vital signs*/**/*** – with sedation – regional/peripheral nerve blockages*/** – condition for adverse effects of anaesthesia, maintenance of fluids/drugs • Clear upper airway obstruction* • Administer drugs: – under direct supervision*/***** – pre-prepared drugs with oral directions*** • Adjust volatile agent level during surgery** • Insert a urinary catheter • Transfer the patient to the recovery room	• Check/prepare recovery room: equipment, monitors, apparatus, drugs and fluids • Ensure: adequate stock, clean environment and clean and sterile equipment • Handover a patient in recovery room* • Monitor the patient's condition for adverse effects of anaesthesia, maintenance of fluids, drugs, post-op pain, nausea* • Take care of the anaesthetised patient* • Measure blood glucose* • Extubate the patient* • Site an oropharyngeal airway and laryngeal mask airway* • Remove a laryngeal mask airway* • Assist with removal of an endotracheal tube* • Administer drugs* • Possess and handle scheduled drugs* • Perform post-operative procedures**/*****
Responsibilities during all three phases *Communication and administrative functions* • Reassure the patient, provide explanations, relay information and ensure colleagues are adequately informed by providing a communication link • Check and interpret patient identification, records, consent form, case notes and test results • Ensure the correct patient for the correct procedure and maintain accurate legal records *Expertise*: • Implement and maintain standard precautions, safety measures and asepsis • Maintain the patient's privacy, comfort and dignity* • Implement protocol for life-threatening haemorrhage* and assist during basic life support (BLS), advanced cardiac life support (ACLS) **** and anaesthetic crisis management • Assist the anaesthetist outside the operating department, i.e. MRI suits, cardiac catheterisation, etc.***		

- Set-up for an underwater drain insertion*

Other:

- Provide safe, holistic care as well as physical and emotional support to the patient
- Provide patient education**
- Demonstrate accountability*
- *Additional tasks performed by AA in: * UK; ** India; *** Sweden; **** USA; ***** New Zealand*

(Sources: CAAHEP, 2015:10-12; DPMI, 2017:1; Fuller, 2013:6; HSSC, 2013b:1-93; Medical Sciences Council of New Zealand, 2012:24; Ministry of Health and Family Welfare Allied Health Section, 2015:26; NES, 2011:5-38, 45; Pillai, 2013:3-5; Royal College of Anaesthetist, 2015:18; School of Para Medical Sciences, s.a.:1; Working Group of the Scottish Medical and Scientific Advisory Committee, 2005:2).

Especially the NHS Education of Scotland provides a comprehensive document on the competencies required by an AA (NES, 2011). An overview of the ODA's/AA's functions in SA is provided in Chapter. 3.

In summary, one might associate with the view of Kluger *et al.* (1999:273-274) who state inadequately trained AAs can cause adverse outcomes. For AAs to maintain professional standards they need specific competencies (cf. sect. 2.8.8) and an effective relationship with the anaesthetist (NES, 2011:2; Pillai, 2013:4-5). The viewpoint of the The Royal College of Anaesthetists (s.a.a:5) that the anaesthetist-assistant relationship requires a close working relationship mirrors the opinion of Kluger *et al.* (1999:269-274). The NES (2011:3) further confirms suitably trained AAs constitutes an essential safety standard.

2.8.6. Relationships

Anaesthetists often perceive AAs as their 'second pair of hands and eyes' and thus rely on them to speak up when potential problems are observed and identified. Studies have shown that effective communication, teamwork, a shared understanding of roles and responsibilities as well as the willingness to speak up when problems are identified are crucial for effective anaesthetist–assistant and assistant–RN relationships and safe patient care (Rutherford *et al.*, 2012a:29; Rutherford *et al.*, 2012b:21-25).

To enhance professional relationships, the Medical Sciences Council of New Zealand (2014b, 1-2) proposed guidelines to clarify the role of the AA which they named 'the scope of practice'. Two key areas were highlighted, namely assisting with preparation of anaesthetic drugs and guidelines for the staff complement during anaesthesia. For example, the AA is allowed to prepare the anaesthetic (drug) trolley and administer drugs (under direct supervision of the anaesthetists), but the preparation of drugs (filling the syringe) remains the responsibility of the anaesthetist. The AA may only fill syringes at the request of the anaesthetist and under his/her direct supervision. The anaesthetist must check all ampoules and vials before it is drawn up by the AA. Thus, the anaesthetist resumes legal responsibility for drugs administered to the patient.

Although it is important to ensure AAs are skilled to maintain effective professional relationships, they are also required to function autonomously and as a skilled member of the multidisciplinary team (QAAHE, 2004:1).

2.8.7. Teamwork

A variety of individuals make up the unique multidisciplinary teams in the operating department (Corbett, 2009:278). The specific roles of these team members who support and complement one another (Corbett, 2009:278; Scottish Medical and Scientific Advisory Committee, 2003:i) are reflected in the perception Weller *et al.* (2009:130) have on teamwork: "anaesthetists do not work in isolation, but depend on other people within the operating room". It links to the definition of an AA as an anaesthetic team member who works collaboratively with other healthcare professionals (Medical Sciences Council of New Zealand, 2011:2).

Teamwork in the operating department can be defined as healthcare workers acknowledging each other's contribution (Corbett, 2009:279) to the performance of specific tasks while contributing to the common goal of safe perioperative patient care (Baker, Day & Salas, 2006:1580). This is affirmed by Steevenson (2006:551-552) who states, in the operating department, teamwork is the assembly of a group called together to perform a task that should not or cannot be performed individually.

A patient undergoing a procedure relies on a multiple team approach that individually and collectively has the patient's safety and welfare at heart while undergoing the procedure. Without assistance the surgeon and anaesthetist will not be able to perform their tasks. Therefore, the AST view a collaborative teamwork environment essential to provide a safe, seamless and efficient experience with a positive outcome for the patient (AST, 2008:14). Effective teamwork and communication are crucial in the modern surgical environment which is clinically and technologically complicated (Corbett, 2009:279; Fuller, 2013:16; Smith & Jones, 2009:248; Steevenson, 2006:553). Teamwork and communication are by far the two most important components of patient care in the operating department (AST, 2008:14). Smith and Mishra (2010:60-63) share the viewpoint of the AST (2008) that communication within the team is an essential interpersonal skill to build and maintain relationships, exchange information, coordinate team processes and ultimately deliver high-quality healthcare. These viewpoints illuminate James' (2003:859) worrying results which, after analysing 1000 reported incidents, showed poor communication accounted for 10% of all adverse incidents that occurred in the operating department.

Moreover, the many important duties shared by the theatre team members are not the same as in a traditional nursing unit. In the operating room, a team comprises sterile surgical team members (surgeon, assistant and scrub practitioner) and non-sterile team members (circulator, anaesthetist and AA) (Fuller, 2013:6-8) who work together to prevent human errors and ensure patient safety (Corbett, 2009:278). Teamwork in the operating room is paramount. Typically, all team members know their role and functions since it is guided by knowledge and experience. It is the responsibility of every single team member to ensure they base their practice on the policies, standards, guidelines and procedures of the operating department and their profession (NZATS, 2012:3). In addition, all team members must have knowledge of each other's tasks and responsibilities. Limited understanding of team members' roles and capabilities and poor task distribution could cause sub-optimal team performance (Baker *et al.*, 2006:1578-1579; NES, 2011:9; Weller *et al.,* 2009:129).

Trust and a positive attitude towards teamwork are two additional elements to teamwork emphasised by Corbett (2009:279) and Sevdalis *et al*. (2012:i5). According to Corbett (2009:279), mutual trust permits team members to triumph over educational boundaries, achieve flexibility and accomplish excellent perioperative care. On the other hand, being human and working in an extremely stressful environment, realistically there is always the probability of an 'X-factor' present in teamwork which might just be the factor that could hinder successful teamwork. In a qualitative study on teamwork in a neonatal intensive care unit conducted by Thomas, Sherwood, Mulhollem, Sexton and Helmreich (2004:553-557), the findings revealed three main factors which might prevent effective teamwork:

- Healthcare professional characteristics: personal attributes (i.e. confidence, flexibility, values, beliefs); attitude towards their work and colleagues; reputation (i.e. perception of others, trust and respect) and expertise (which includes knowledge, skills, education and certification).
- Operational factors: staffing levels (i.e. workload and number of staff); work organisations (type and complexity of work as wells as roles, functions, responsibilities and accountability of staff) and workplace environment (i.e. trust, sense of community versus conflict).
- Group influences: communication; behaviour (i.e. team leadership, adaptability, mutual support and performance monitoring, team orientation and mutual trust) and interrelationships between team members.

Team effectiveness in itself is a key end point. In the operating department team members with different educational backgrounds have to interact with each other to ensure a positive outcome for the patient. The AA, as an integral member of the perioperative team, does not only work in close relationship with the anaesthetist (Weller *et al.*, 2009:130), but also with the other members of the team (NZATS, 2012:3). Consequently, Brown and Bostic (2016:237) recommend simulation-enhanced interprofessional education and training (cf. Ch. 2, sect. 2.2.3 & 2.2.4) to promote effective teamwork and communication. Rutherford *et al.* (2012a:25) concluded that to be an effective team member, an AA must be able to support team members, exchange information and resolve conflict as well as coordinate perioperative activities. These five skills are highlighted as essential non-technical skills (cf. Ch. 2, sect. 2.8.9) for AAs (Rutherford *et al.*, 2012b:26).

In summary, in the operating room nobody can work in isolation. There is no alternative but for the operating room services to be conducted by teams pulling together and working as one solid unit. It is essential for all team members to be competent and have insight into the roles and functions of each other to ensure the patient has an uncomplicated surgical experience.

2.8.8. Anaesthetic and recovery room assistance competencies

The complexity of patient care in modern operating departments requires a combination of skills. Conventional training has been placed under pressure to produce graduates who have the necessary competence to function in the operating department. This requires abilities such as cognitive, affective and psychomotor skills which form an integral part of anaesthetic and recovery room education and training (Fletcher, McGeorge, Flin, Glavin & Maran, 2002:418).

Competencies are essential for AAs to ensure they are suitably skilled to assist the anaesthetist and deal with the complex demands of the environment (Fletcher *et al.*, 2002:418). As shown in literature these required competencies (cf. Annexure P) are categorised and listed as: (1) anaesthetic assistance competencies (cf. Table 1) and (2) competencies to assist the anaesthetist during anaesthetic emergency situations (cf. Table 2). Although values, behaviour, attitude and beliefs form a component of a competency, the researcher thought it important to list it separately (cf. Table 4). It is also essential to mention that problem-solving skills seem to be a key characteristic AA and RRAs should exhibit and constantly improve on. This skill is especially important to prevent medical legal risks which can range from simple to complex technologically-oriented or patient care-related situations (AST, 2008:7).

The competencies listed in Table 3 (cf. Annexure P) are mainly based on the competencies ODPs require to care for patients in the recovery rooms of hospitals in the UK. Of note here is that the researcher could not find any international equivalent of the ODA's recovery room assistance function in SA. With the exception of the competency to insert and remove endotracheal airway, the competencies ATs in New Zealand require to work in the recovery room are similar to those of the ODPs in the UK (Medical Sciences Council of New Zealand, 2013:17-18). The minimum competencies for AAs in Scotland to contribute to post-operative patients are: (i) handover the patient to recovery room staff; (ii) assessing the patient using appropriate monitoring and ABC headings; (iii) assessing the patient for post-operative pain, nausea and vomiting and arranging for appropriate action; (iv) inserting an oropharyngeal airway; (v) removing a laryngeal mask airway and (vi) assisting with removal of an endotracheal airway (tube) (NES, 2011:34). What is of significance, however, is that the ATs in New Zealand who take care of patients in the recovery room have to complete an additional post-graduate programme and be registered and certified by the Medical Sciences Council of New Zealand (2013:17).

The National Health System Education for Scotland (NES, 2011:8-17) summarised the competencies AAs need to assist the anaesthetist and care for a patient in the recovery room as an overarching broad competence: (i) preparation of patients for theatre; (ii) safe, holistic perioperative patient care; (iii) preparation for anaesthesia and assisting the anaesthetists; (iv) involvement with airway management; (v) care of the anaesthetic machine, monitoring and related equipment; (vi) maintaining standard precautions, aseptic and sterile techniques related to anaesthesia; (vii) involvement with routine drugs and fluid therapy; (viii) involvement with post-operative care and (ix) involvement with emergency management and obstetric, cardiac, ear, nose and throat (ENT), thoracic, paediatric and neurosurgery.

In brief, the ODA education and training programmes in the UK and SA are similar with regard to the anaesthetic and recovery room theoretical outcomes, but the clinical/practical outcomes of recovery room care are different. In the UK, although not common practice, the ODP can additionally provide post-anaesthetic care which includes checking the patient, doing airway management and monitoring vital signs. The ODP may also administer drugs and provide treatment until the patient is stable enough to be transferred to the nursing unit (NES, 2011:34-37) whereas in SA the ODAs are not allowed to take care of patients in the

recovery room. But, they are required to provide assistance to RNs who take care of the patients (SAQA, 2017:2-3). The competencies of the ODAs in the SA environment are discussed in more detail in Chapter 3.

2.8.9. Non-technical skills

Due to the humanistic dimension of healthcare education and the important aspect of patient safety, non-technical skills (NTS) linked to safety-critical occupations, are seen as another essential aspect of competence. It protects patients against human fallibilities and the consequent adverse effects in high-risk areas (Rutherford *et al.*, 2012a:27). According to Flin, O'Connor and Crichton (2008:1), human factors can be linked to as much as 80% of accidents in high-risk industrial sectors such as the operating departments.

Seven basic non-technical skills were identified for high-risk work areas such as in healthcare, the military, emergency services and industry. These seven skills – situation awareness (attention to the work environment), teamwork, leadership, decision-making, communication, stress management and coping with fatigue – were selected due to the influence it has on efficient and safe task execution (Flin *et al.*, 2008:1). These skills equip people with the necessary skills to cope with their work demands and risks. According to Rutherford *et al.* (2012b:22), each given occupation has precise NTS customised according to their professional or organisational culture, clinical task and workplace conditions. For example, NTS have been developed for surgeons (NOTSS), anaesthetists (ANTS), operating room teams (ORCL) and scrub practitioners (SPLINTS) (Flin *et al.*, 2008:290-291; Rutherford *et al.*, 2012b:22). Although up to date no specific NTS have been developed for AAs, Rutherford *et al.* (2012a:27-29) are of the opinion the NTS for AAs could be based on the one for anaesthetists and the operating theatre team. A limitation observed in the study of Rutherford *et al.* (2012a:28) is that they did not identify a comprehensive list of NTS specific for AAs. They did, however, suggest the five groups of NTS summarised in Table 2.8.

Table 2.8: Non-technical skills for anaesthetic assistant

Skill	Behaviour
Communication	Task-related verbal and non-verbal communication
Teamwork	Supporting others in their tasks, cooperation, resolving conflicts and exchanging information
Leadership	Asserting own opinion, directing others, allocating tasks and organise a team structure
Decision-making	Option generation, appraisal, balancing risks and selection
Situation awareness	Gathering information, monitor patient or environment, recognise, understand and anticipate

(Sources: Rutherford *et al.*, 2012a:28; University of Aberdeen, 2010:3)

Although much emphasis is placed on the importance of acquiring NTS in high-risk environments, the question remains: "What exactly are these non-technical skills that have to be acquired?" Flin *et al.* (2008:1) define NTS as "the cognitive, social and personal resource skills that complement technical skills, and contribute to safe and efficient task performance". Therefore, NTS can be described as skills used in healthcare which is not directly related to expertise, drugs or equipment but which encompasses interpersonal skills (e.g., communication, leadership and teamwork) and skills such as decision-making and situation awareness (Flin, Patey, Glavin & Maran, 2010:38; Flin, 2013:2).

Non-technical skills have not been recently 'discovered' or 'developed' or 'added' to the education and training of healthcare professionals – it has always been an intrinsic part of such education and training programmes because it simply refers to what is known as the 'human factor'. The interesting part is that, as the 'human factor', it did not always explicitly feature in ODA training simply because the operating department has probably always been perceived as a highly technical domain where the core of ODA education and training centred on advanced technological skills and competencies and not on holistic assistance (cf. Ch. 2. sect. 2.6.1).

Defined within the context of anaesthesia, NTS can be divided into two groups, namely, cognitive or mental skills (e.g., decision-making and situation awareness) and social or interpersonal skills (e.g., teamwork, communication, leadership) (Fletcher *et al.*, 2002:418; Flin, 2013:2). Although divided into two groups and five generic categories, these skills should not be considered in isolation to the other skills related to the anaesthetic and recovery room (University of Aberdeen, 2012:2). All five generic categories are essential during the perioperative anaesthetic period (Rutherford *et al.*, 2012b:22) as highlighted by the Anaesthetic Incident Monitoring Study (AIMS) done in New Zealand. The study indicated in 148 of the incidents, the AA failed to assist with the incident or contributed to it due to insufficient non-technical skills. Communication and teamwork failure were the main contributory factors to adverse events. Another factor was the inability of junior and lower rank staff to speak up when they identified problems (Rutherford *et al.*, 2012a:27-29). According to Flin *et al.* (2008:5), the causes of three healthcare-related incidents (in 1994 chemotherapy overdose; in 2000 the removal of the wrong kidney and in 2001 a chemotherapy site error) were due to the following NTS failures:

- 1994: situation awareness and decision-making
- 2000: situation awareness, teamwork and leadership
- 2001: decision-making, situation awareness and communication

The literature search showed a lot of emphasis is placed on teaching and assessing NTS in the workplace, especially in the anaesthetic domain due to the high mortality and morbidity rates (Flin, 2013:2; University of Aberdeen, 2012:1-2). Particularly teamwork and communication receive a lot of attention as it is seen as skills crucial to safe patient care (Flin, Martin, Goeters, Hörmann, Amalberti, Valot *et al.,* 2003:98-99). While NTS cannot prevent incidents and harm to patients, it can reduce the probability of it happening by teaching these skills to healthcare providers via lectures, demonstrations, work-integrated learning (case studies, scenarios, role-play) and interprofessional training (Flin *et al.,* 2008:245-247). The University of Aberdeen (2010:5-6) adds constructive feedback, supervised clinical experience and simulation training to the list of teaching methods which can be used.

The next section focuses on curriculum activities supporting the development of the anaesthetic and recovery room assistant.

2.8.10. Curriculum activities supporting development of anaesthetic and recovery room assistants

The many activities supporting the development of the anaesthetic and recovery room assistant are presented and discussed in five sections: (2.8.10.1) longitudinal versus block placement; (2.8.10.2) sequencing of training and learning activities; (2.8.10.3) student-centred approach; (2.8.10.4) role of assessment and (2.8.10.5) clinical placement, accompaniment and mentoring.

2.8.10.1. Longitudinal versus block placement

In literature examples of many clinical health science courses taught in blocks were discovered, e.g., in medicine, psychiatric, pharmacy, and community health. Teaching in 'blocks' means the course is a consolidated course (consisting of theoretical and clinical block rotation) over a period of one to six months (Kamil & Kheder, 2015:117; Kurth, Irigoyen & Schmidt, 2001:325; Saravanan & Pels, 2011:S270; Watts & Green, 2015:196). In fact, much debate about the benefits of block versus longitudinal systems with each having different learning advantages was found in literature. During longitudinal allocations the students are typically scheduled throughout an academic year or programme. In a block system the students are allocated for a solid period of time (Kurth *et al.*, 2001:327).

In the 1990s many medical schools in the USA embarked upon curriculum initiatives to close the theory-practice gap. This led to the implementation of block and longitudinal models to determine which was most suitable and fit to enhance students' learning (Kurth *et al.*, 2001:327). Mixed results were obtained. A study done at the University of Michigan to compare the two systems, found both systems had advantages and disadvantages. The block system improved student-patient interaction, enhanced students' interest for a career in internal medicine and improved their clinical skills. The longitudinal system reported higher overall faculty satisfaction and interaction and also more student-patient contact time (Wisdom, Gruppen, Anderson, Grum & Woolliscroft, 1993:S34-S36). Hence, for improvement in clinical skills, Wisdom *et al.* (1993) interpreted the block experience as being more helpful. However, to ensure continuity of clinical exposure, the block period should be long enough in duration (a minimum duration of preferably four to eight weeks) (Kurth *et al.*, 2001:328).

Similar studies done by other educators like Marinović, Hren, Sambunjak, Rasić, Skegro, Marusić *et al.* (2009:498 & 501-504), Watts and Green (2015:197-199) and Kamil and Kheder (2015:117-121) on the transition from a longitudinal to a block system also rendered mixed results. On average, the educators had a more positive attitude towards the longitudinal system because of the increased teaching burden with the block system. Many students, however, chose the block system because it gave them the opportunity to focus on a single subject and complete the study year quicker. They mastered the clinical skills better, achieved better overall knowledge and clinical performance and the quality of their clinical care was better. Fifty-three per cent of the students in Kamil and Kheder's (2015:117-121) study preferred the block system due to the well-organised class day followed by the consolidated placement in practice. In addition, it seems more students in Watts and Green's (2015:197-199) study considered a career in psychiatry after the block

allocation. Disadvantages included satiation and boredom due to the intensity of the block course which seemed to adversely affect the students' motivation for self-study. Insufficient study time resulted in lower grades and more students failing the examinations (Marinović *et al.,* 2009:500). The level of acquired knowledge was lower in the block model and students were overwhelmed by the amount of work they had to learn and study in the short period of time. Some turned to rote learning to pass the examination (Marinović *et al.,* 2009:504).

Although many researchers point out the results for block rotations were positive – provided it was longer than one month (Watts & Green, 2015:197) – Rosenberg, Lockspeiser, Lane, Nomura, Schmitter, Urban *et al.* (2013:639) suggest a block system of at least six months. Smith and Rawling (2008:191) agree, but recommend a minimum of 360 clinical (practice) hours for a block system for an anaesthetic and recovery room course to ensure students develop satisfactory levels of competence. However, according to Marinović *et al.* (2009:500) study results show it is evident the sequencing of teaching and learning activities also affect learning and students' examination results.

2.8.10.2. Sequencing of training and learning activities

Healthcare education requires students to obtain a complex mix of competencies to allow them to combine and apply their skills to new situations. Thus, they need to retain the knowledge learnt, e.g., in their first year to apply it in their third year. In a traditional healthcare curriculum it was expected from students to first master basic knowledge before they master the knowledge applicable to their future profession. Students often fail to see the relevance of this basic knowledge to their future profession which result in them ignoring or forgetting it (Dent & Harden, 2013:9). Hence, a spiral curriculum is advocated due to its advantage of organising and sequencing programme and/or course content in a useful way – meaning it allows students to revisit topics at various levels of difficulty throughout the programme and/or course and relate new content to previous learning as the difficulty level increases. Thus, new learning is linked to preceding learning and with each topic the student's competence increases (Dent & Harden, 2013:10) which allows students to move from 'novices' to' experts' (cf. Fig. 2.4). Another advantage of the spiral curriculum is that it allows for students to link their learning to their future role, e.g., as a doctor, nurse or ODA (McKimm & Barrow, 2009:715). Furthermore, the spiral curriculum constructs learning as a developmental process which is coupled to the acquisition of new competencies. It allows for the sequencing of teaching and learning activities which includes the sequencing of contact sessions and clinical placements (McKimm & Barrow, 2009:715). The students, however, first need to acquire simple 'building blocks' before complex principles are taught. Therefore, it is vital to consider their needs as the learning outcomes for junior and senior students differ.

2.8.10.3. Student-centred approach

In this approach students are more involved and responsible for their own learning. They are supported and guided by the educator who is seen as the facilitator of learning (Dent & Harden, 2013:10). Emphasis is

placed on active student involvement in finding knowledge and interpreting it by using critical analytical reasoning and reflecting (Meyer & Van Niekerk, 2008:53).

Based on the assumption that students are adults, specific outcomes are needs-based and clinical knowledge and skills can be taught in simulation. Webb, Weigelt, Redlich, Anderson, Brasel and Simpson (2009:160-161) conducted a study to enhance students' general surgery training. Their results indicated the participants' knowledge and skills improved with the use of active teaching and learning methods such as class assignments, interactive lectures, case- and problem-based discussions, case-based presentations, completion of portfolio of evidence and skills practise in simulation. The study also indicated the student-centred teaching methods enhanced learning and improved students' communication and clinical skills whereas the portfolio of evidence improved their depth of knowledge. Their clinical skills were assessed by means of an objective structured competence checklist and their communication skills by means of an observation checklist to ensure validity and reliability (Webb *et al.*, 2009:160 & 163). The assessment of clinical competence is becoming more and more important as stakeholders are interested in the competence of graduates (Boursicot, Roberts & Burdick, 2014:293; Meyer & Van Niekerk, 2008:53).

2.8.10.4. Role of assessment

Assessment is seen as a valuable educational strategy which compels students to obtain and reproduce knowledge and skills (Meyer & Van Niekerk, 2008:166). The saying "students don't do what you expect, students do what you inspect" (Schuwirth & Van der Vleuten, 2014:246) is a good indication of the impact assessments have on student learning. Thus, it is important for the educator to capitalise on this behaviour as assessments influences student learning in various ways. Therefore, assessments should form an integral part of the curriculum, especially in CBE/T where teaching includes formative and summative assessments to evaluate the outcomes of the teaching and learning (Del Bueno, 1978:11). The correlation between education and assessments highlights the effect of assessment on the student's methods to address the learning content (Meyer & Van Niekerk, 2008:104).

Although the ODAs are trained to assist healthcare professionals, they do have direct contact with the patient during all phases of anaesthesia. This interaction takes place in a social-cultural context which requires supervision and regular assessments of the students' ability to articulate their competencies in the various disciplines according to their development levels using Bloom's taxonomy (Meyer & Van Niekerk, 2008:53 & 189-190). Clinical competence is not just based on expert knowledge, but also encompasses psychomotor and affective skills. Assessing the cognitive domain provides an indication of the level of knowledge acquisition whereas assessment of the affective skills relates to the students' behaviour in practice. Skills assessments relate to the students' speed in performance, accuracy and coordination of procedures and tasks (Boursicot *et al.*, 2014:293; Meyer & Van Niekerk, 2008:53 & 189-190). Boursicot *et al.* (2014:295 & 302) reiterate that assessments of competence could also include assessing communication, problem-solving ability, leadership skills, relationships with colleagues and professional behaviour which mirror the essential non-clinical skills advocated by Flin *et al.* (2008:1) (cf. Ch. 2, sect. 2.8.9).

Setting the standard are also crucial, because it is a well-recognised phenomenon that students rather focus on the assessments than the learning outcomes. Well-defined outcomes linked with workplace-based assessments can be a valuable tool to motivate students to master the desired competency. Setting the standard will determine how students learn the competency. Outcomes stating 'demonstrate' will motivate students to practise the skills whereas an assessment based on multiple choice questions will lead to knowledge acquisition. Using checklists to assess competencies also pose a danger. Too long checklists usually encourage students to memorise the steps and thus they do not focus on learning and practising the skills. Hence, assessment drives education. Therefore, student assessment has been reshaped by linking assessments with programme and/or course outcomes, improving formative and self-assessment, performing comprehensive assessments and introducing workplace-based assessment to assess the student's actual application of skills to the workplace (Amin & Eng, 2003:8). With workplace-based assessments came the development of workplace learning methods and clinical accompaniment and mentoring of students.

2.8.10.5. Clinical placement, accompaniment and mentoring

Much of healthcare teaching and learning occurs in the hospital setting by means of clinical placement (Wood, 2014:326). This is known as work-integrated learning based on credit-bearing hours. These hours are usually supplemented by work-based learning which is not credit-bearing. Work-integrated learning involves experienced staff mentoring students as the latter needs guidance and support to identify and meet learning needs (Botma & Bruce, 2017:323). It also includes clinical accompaniment by the educator which is defined as the purposeful guidance and support of students in the clinical environment to assist them to achieve the required learning outcomes. The educator is physically present in the operating department to facilitate students' learning (Botma & Bruce, 2017:316). But, to become competent students need support and guidance by a variety of staff across healthcare disciplines (Botma & Bruce, 2017:321). Through this active engagement, students gain experience and confidence, they socialise into the ODA profession, develop clinical judgment and skills and experience job satisfaction by bridging the theory-practice gap (Botma & Bruce, 2017:323).

Work-integrated and work-based learning, collectively known as experiential learning, are essential in CBE/T programmes owing to the competencies students must master. But, to achieve this, the theory must be aligned with the clinical placements (Botma & Bruce, 2017:321). The latter provides valuable learning experience as constant use of decision-making skills and application of theory is required (Meyer & Van Niekerk, 2008:171). Simulated environments can also be used, but it does not replace authentic learning in the real world (Ker & Bradley, 2014:179).

As regards the placement of students in the operating department, ANZCA (2016:2) and the Scottish Medical and Scientific Advisory Committee (2003:1) stipulate specific standards to ensure students utilise the learning opportunities to the fullest: (i) students must be allocated to appropriately trained and experience professional senior staff; (ii) students may not be left unsupervised after hours; (iii) students must be allowed to work independently but supervised during normal hours; (iv) the students' duties must be specified in an appropriate job description and known to all staff to enable staff to assist, guide and support the students and

create learning opportunities for them; (v) managers must ensure students are exclusively responsible to the anaesthetists when assisting them (ANZCA, 2016:2) and (vi) students must be supernumerary during the first month of placement before they start to work under supervision and later unsupervised (Scottish Medical and Scientific Advisory Committee, 2003:1). Line managers play an important role in assisting students to master the required skills and competencies (Eraut, s.a.:21).

Eraut (s.a.:14, 17 & 21) further posits that students require emotional support, mentoring/coaching, time to practise, tasks/role taking (on-the-job learning) and contact time with patients for knowledge transfer to occur in the workplace. This links to the placement of students in an environment with no, or minimum, constraints which could enhance students' intention to perform behaviours such as assisting the anaesthetist and RN. According to Eraut (s.a.:21) there are many factors which affect learning in the workplace, and which could be linked to the environmental constraint component of the Integrated Behaviour Model discussed in more detail in section 2.9.2. It could also be linked to Bandura's concept of self-efficacy, because the many factors affecting learning could also influence the student's motivation and commitment to assist the anaesthetist.

Obviously, it is essential for experienced clinical staff and educators to be actively involved in the clinical accompaniment and guidance of the students to correlate theory-practice and create learning opportunities (Meyer & Van Niekerk, 2008: 84, 88 & 187). Without proper guidance, students will not utilise the learning opportunities to the fullest and probably not attain the relevant outcomes which can have a negative effect on their learning experience.

2.8.10.6. Aspects that influence the education and training of anaesthetic and recovery room assistants

It seems there are many factors affecting perioperative teaching and learning. Some of these factors are more enabling than others, but the barriers affecting the training of ODAs are oftentimes difficult to change. Conversely, if these barriers are recognised it can be taken into consideration during curriculum design, theoretical contact sessions, clinical placement and the facilitation of student teaching and learning.

Cultural barriers

Cultural barriers are viewed as a major obstacle to effective teaching and learning (DaRosa *et al.,* 2011:2). Students' attitude, their resistance to accept changes in the methods of facilitation and the fact that they believe they work hard, yet their expectations are not met, are major barriers to implementing active teaching methods (Shell, 2001:291)**.** This resistance to active learning can be ascribed to a few factors. Firstly, they seem to lack knowledge or do not understand the importance and benefits of the programme outcomes. Secondly, their preference to be lectured to as opposed to participating in active learning is a problematic issue. For the students, learning and acquiring knowledge apparently means memorising facts and information which they perceive as important to pass examinations. Many students seemingly do not grasp the idea that perioperative patient care is a hands-on, practical work where they encounter real-life situations which are not reflected in a textbook. To deal with an unexpected problem in the field, they need a different

kind of learning and different kind of knowledge. This implicitly means students have to understand that what they think they know (theory) can only be understood if it is practically applied (active learning) and then they will know that they do, in fact, know it. Therefore, Shell (2001:291) recommends orientation of students from the onset of the programme.

Educators' attitude is perceived as another barrier. Educators who are negative about student-centred approaches are also prone to be negative about programme outcomes and course content (DaRosa *et al.,* 2011:2; Shell, 2001:287-288). Their assumptions might affect education and teaching negatively, especially if the educators are scared of negative outcomes due to student resistance and the amount of factual knowledge to be covered. Succumbing to student and their own preferences, many educators want to cover all the work by means of lectures and this is not at all conducive to active student involvement (Green, Gross, Kernan, Wong & Holmboe, 2003:468). Another barrier is educators' attitude towards assessments which impacts negatively on student assessment and compliance as some educators do not fail students even if the latter is not competent (DaRosa *et al.,* 2011:2).

The third barrier identified is the lack of institutional support to educators. Educators are not always aware of the institution's academic standards and expectations – which constitute to effective teaching – and their responsibilities (DaRosa *et al.,* 2011:2). Furthermore, educators do not receive guidance on how to balance theoretical and clinical facilitation and supervision with learner autonomy (Green *et al.,* 2003:468). The latter is usually due to the educators' fear of legation against student malpractice which can lead to lawsuits against them. This in turn results in fewer opportunities for students to perform procedures and participate in patient care while supervision increases resulting in limited student exposure (DaRosa *et al.,* 2011:2).

Environmental and financial barriers

Linked to the lack of clinical exposure is environmental constraints which have a direct impact on healthcare teaching and learning. These constraints refer to time limitations, limited human and technical resources as well as space scarcity (DaRosa *et al.,* 2011:3). A busy hospital environment is not the ideal environment for students to achieve all the required competencies they as future healthcare professionals need (Coady, Walker & Kay, 2004:49). In a study done with the aim to teach medical students musculoskeletal examination skills, Coady *et al.* (2004:47-50) identified several barriers which impeded on the effective teaching and learning of these skills. The barriers were a lack of mentors to assist and supervise students in practice; time constraints due to clinical staff too busy to teach students; inconsistency in what students were taught; the lack of teacher skills and confidence; insecurity of healthcare professionals performing the clinical skills; not enough patients admitted to hospital; inconsistency in assessments; no reinforcement of clinical skills; the "perception of musculoskeletal medicine as being a marginal speciality" (Coady *et al.,* 2004:49; DaRosa *et al.,* 2011:3) and poor communication. These barriers led to workforce supervisors and mentors not being aware of what students have been taught which resulted in work not covered or repeated.

Although many of the barriers mentioned above are specific to musculoskeletal clinical skills training, many are also applicable to other healthcare disciplines (Coady *et al.,* 2004:50) such as the ODA programme as it has clinical training and learning embedded in the programme. Similar barriers have also been reported on

the teaching of general clinical skills to medical students which make teaching in the clinical environment very difficult. These barriers mirrored the outcomes of a study done by Seabrook (2003:213) which identified insufficient student monitoring and support in the clinical environment due to financial constraints and revenues. The latter pressurises educators and clinical teaching staff to use facilities and time in ways to maximise facility-based revenues (Bridges & Diamond, 1999:28 & 31). It poses serious challenges to even the most committed educator and student (DaRosa *et al.*, 2011:1).

In a study conducted by Bridges and Diamond (1999:31-32) on the financial impact of teaching surgical residents in the operating room, the researchers concluded that despite the financial impact, healthcare students require the time and space to practise their skills. Surgery has always been a technical exercise which mainly occurs in the operating room and thus requires time for adequate exposure and practise. Students also do not learn at the same rate with some students requiring a few attempts to master a skill while others need more practise and educator feedback to form the habit and correctly perform the skill (DaRosa *et al.,* 2011:3). Although this study did not refer to the training of ODAs, anaesthetic and recovery room assistance are also viewed and recognised as a technical exercise which requires time for adequate exposure and practise in the operating department.

Lastly, DaRosa *et al.* (2011:3) mention two more barriers, namely educators not focusing on the needs of all stakeholders and educators not emphasising skills transfer from one setting, patient or procedure to another which is an important aspect of healthcare teaching and learning. The reason is that every workplace a student or graduate enters has different requirements and needs which would require transferability and adaptability. Hence, curriculum development and content are very important to assure the various needs and requirements of stakeholders are covered to ensure students are prepared to enter the 21st century workforce.

Curriculum barriers

The two major curriculum barriers are unclear learning needs and inadequate content sequencing. Unclear learning needs refer to the competencies ODAs need to meet society's expectation of an ODA functioning in an increasingly complex healthcare environment where teamwork and safe patient care are crucial (DaRosa *et al.,* 2011:1). For example, the humanism principles lacking from the ODA curricula were only recently incorporated into the ODA curriculum (cf. Ch. 2, sect. 2.6.1). In addition, educators do not always know or agree what students need to be taught. Teaching is further obstructed when educators and clinical staff, as powerful role models, make certain topics and/or skills off as unimportant or less important (DaRosa *et al.*, 2011:1). A lack of clear clinical outcomes and clinical rotation time, unachievable outcomes and variability of students' prior knowledge and skills were also identified as factors hindering effective clinical teaching (Skeff, Stratos, Mygdal, DeWitt, Manfred, Quirk *et al.,* 1997:S56). Furthermore, clinical teaching is simultaneously impounded by the need and expectation from healthcare services to deliver safe patient care as well as educators and clinical staffs' perception of the intended outcomes (Coady *et al.,* 2004:50; Seabrook, 2003:213).

Sequencing of curriculum activities is equally important to ensure continuity of knowledge and clinical exposure. Random sequencing of clinical exposure causes chaotic, inconsistent learning which poses

significant challenges as it obstructs the repetition of clinical experience which serves to enhance skills and problem integration. This usually happens when clinical rotation is not in uniform sequence, not in sequence with the relevant theory or according to the student clinical rotation planner (DaRosa *et al.*, 2011:1-2).

It is evident there are numerous barriers impeding on healthcare teaching and learning, namely attitude and misconceptions of students and teaching staff; the lack of support from academic institutions and the clinical environment staff; lack of adequate time and resources to practise clinical skills; curricula not addressing stakeholder needs as well as inadequate clinical supervision and mentoring of students (Skeff *et al.,* 1997:S56-S57). Transferred to the anaesthetic and recovery room course, it is clear healthcare education and training is not a simple process. There are many factors related to the theoretical as well as the clinical component of the course which impede on the teaching and learning of anaesthetic and recovery room assistance skills.

The literature underpinning the teaching and learning of anaesthetic and recovery room assistance skills was thoroughly explored. As the final section in this chapter, an integrated behavioural model was used to understand the factors impeding the learning process of obtaining competence (behaviour) in a process to adapt the anaesthetic and recovery room course.

2.9. USING THE INTEGRATED BEHAVIOR MODEL TO GUIDE THE ADAPTION OF THE ANAESTHETIC AND RECOVERY ROOM COURSE

In order to understand the underlying curriculum and learning theories involved in the training of anaesthetic and recovery room assistants, it was important to clarify how the concept of the anaesthetic and recovery curriculum re-exploration was viewed for the purpose of this study.

2.9.1. Clarification of how the concept of the anaesthetic and recovery room component re-exploration was viewed

The existing operating department assistance curriculum, which includes the anaesthetic and recovery room component, is seen as a CBE/T programme owing to the competencies it encompasses. It is aimed at preparing graduates for the complexity of the operating department as these graduates need overall competence in the role of the anaesthetic and recovery room assistant. To achieve competence, students need to achieve generic and core competencies which the employer, as a stakeholder, seeks. All these competencies are linked to specific job- or occupation-specific skills such as the anaesthetic and recovery room assistant functions. These competencies, viewed as a multi-dimensional concept, are obtained as a result of integrated learning experiences.

However, the student, the learning environment and the learning activities play a major role in obtaining the required competence as suggested by Bandura's social cognitive theory (cf. Ch. 2, sect. 2.7.4). Hence, student socialisation in the workplace plays a vital role in obtaining competence. Competence, on the other hand, encompasses demonstrable performance output as well as behaviour inputs which are incorporated in a 'competency framework'. The latter is defined as the knowledge, skills and behaviours/

attitudes/values/beliefs an individual requires to work in an environment such as the operating department. But, because the main focus is on safe perioperative patient care, healthcare professionals need humanistic (cf. Ch. 2, sect. 2.6.1) as well as technical and non-technical (cf. Ch. 2, sect. 2.8.9) expertise. These skills are mainly achieved by means of experiential learning through master modelling and demonstrations (observation), guided practice, constructive feedback and task-relevant knowledge as clarified by the social cognitive theory.

To re-explore the anaesthetic and recovery room component it was important to do a needs analysis guided by Kern's six-step approach (cf. Ch. 2, sect. 2.5.3.2). The students' needs assessment involved attitude towards the discipline; assumption of the programme; learning needs; SOP and competencies to fulfil the required responsibilities of which all influence self-efficacy. On the contrary, the final decision to perform a task, by incorporating all components of a competency, depends on the desire and motivation of the student (Performance appraisal of MSU staff, 2008:1). The Integrated Behavior Model (IBM) was deemed an appropriate model to explore and adapt the clinical-oriented anaesthetic and recovery room course aimed at the needs of stakeholders of which theory-practice integration is crucial (Fishbein & Yzer, 2003:181). A lot of learning takes place in the operating department by means of socialisation and habit forming. However, to achieve theory-practice integration, clinical rotation and mentoring from healthcare professionals are crucial. Other important factors to ensure competence are the students' attitude towards the course, their assumption of the course, learning needs and SOP. In fact, commitment, intention, habit and environment without constraints also play an important role. All these factors are addressed by the IBM.

2.9.2. Exploring the Integrated Behavioral Model (IBM)

The IBM is seen as a valuable tool during programme re-exploring and adaptation as it is used to understand the students' attitude towards assisting healthcare professionals and how they learn. A study done by Wee, Zimmerman, Pullen, Allen, Lambert and Paskett (2016:158-165) where the IBM framework was used to guide the development of a Web-based educational course on cancer examination, showed a positive outcome with a post-test indicating an increase in knowledge and skills. These researchers viewed the behaviour as the competency (to examine a patient) they wanted to teach the students.

For the purpose of this study the behaviour expected to be achieved referred to the competencies the AA and RRA must achieve, namely 'Preparing for anaesthesia and assisting the anaesthetist' and 'Preparing the recovery room and assisting the RN in the recovery room'. The IBM (cf. Fig.2.6) is a combination of the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB). The latter uses the construct of the TRA, but adds an element of control. The former posits the view that evaluation of behaviour outcomes together with behaviour beliefs determines an attitude towards behaviour. Motivation to comply, together with the normative belief, controls the intention to perform the behaviour (Montaño & Kasprzyk, 2015:65). Intention (influenced by attitude), perceived norms and personal agency towards the behaviour are seen as the top predictors of behaviour (Montaño & Kasprzyk, 2015:95; Steyn & Jandu, 2011:11). However, in the context of the IBM (cf. Fig. 2.6), if the ODA has a strong intention to perform the behaviour (assist the anaesthetist in the theatre and the RN in the recovery room) then four other factors are needed to result in the

behavioural performance (competence), namely (i) knowledge and skills; (ii) few or no environmental constraints; (iii) experience (habit) of performing the behaviour and (iv) it must be important to the ODA (Fishbein & Yzer, 2003:166; Wee *et al.,* 2016:160).

Of importance is to remember that the three psychosocial variables (attitude, perceived norms and personal agency) influencing the students' intention to perform the behaviour, are dependent on the tasks to be performed and the population being considered. Attitude, which is composed of experiential (feeling about assisting the healthcare professional) and instrumental attitude (belief about the outcomes of assisting the healthcare professional), is the most important determinant to perform the behaviour. Personal agency consists of self-efficacy and perceived control. The latter is the perceived control over behavioural performance (Wee *et al.,* 2016:160-161) whereas the former is the "the self-belief a person holds, or his personal judgment about his competency, within an educational context" (Van Dinther, Dochy & Segers, 2011:96 & 104). Thus, it is the degree of confidence ODAs have in their ability to assist the anaesthetists and RNs – even if there are environmental constraints (Wee *et al.,* 2016:160-161). Perceived (injunctive and descriptive) norms reflect the social pressure the ODAs have to assist the healthcare professional. Injunctive norm is the belief what others think one should do (e.g., policies) and motivation to comply to carry out the assistance role and functions. Descriptive norms are what others, in the operating department, are doing with regards to this behaviour (assisting the healthcare professional), i.e. is management supportive of ODAs assisting the healthcare professionals or not (Wee *et al.,* 2016:161).

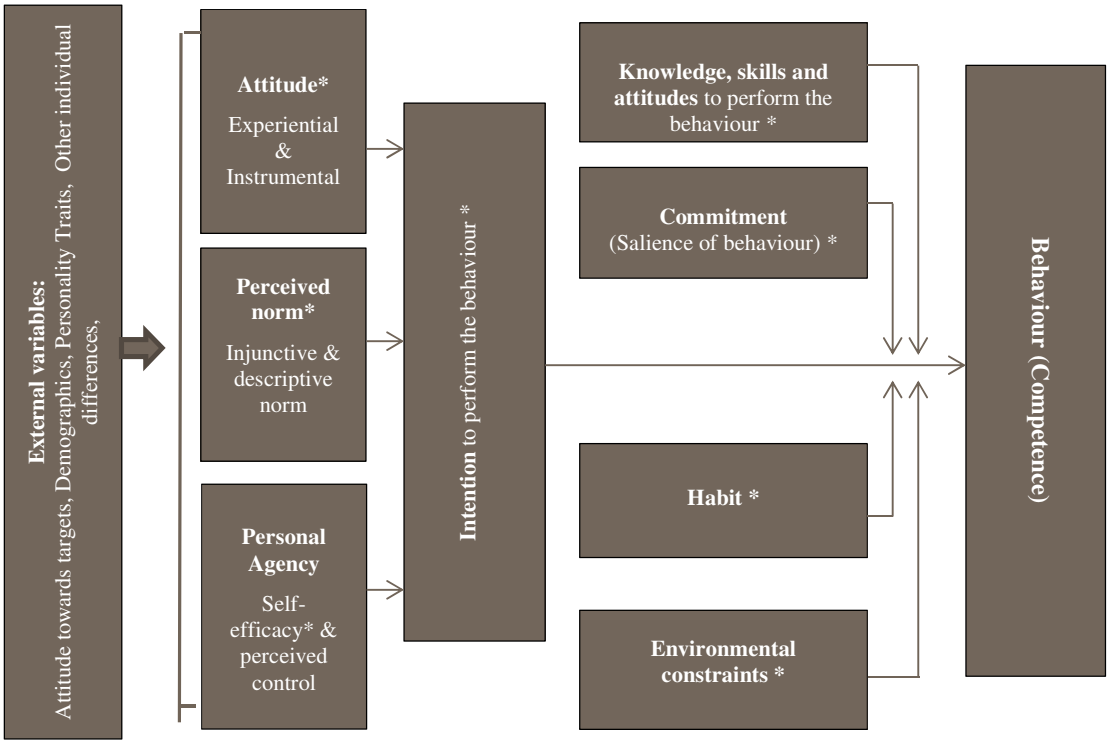

Figure 2.6: Integrated Behavioral Model (IBM) - * will be used in the anaesthetic and recovery room course intervention (adapted from Wee *et al*., 2016:160)

Behaviour, to a large extend, may be driven by self-efficacy and attitudinal considerations, e.g., the more one believes that one can (i.e. has the necessary knowledge and skills) perform the behaviour, the stronger one's self-efficacy will be (Fishbein, 2000:275-276; Fishbein & Yzer, 2003:165-166). However, the IBM points out that a lack of knowledge and skills, environmental constraints and lack of commitment and clinical experience could prevent the ODA to assist the healthcare professional (Fishbein, 2000:275; Wee *et al.,* 2016:160).

The researcher agrees with Archer (2016:57) that the social cognitive theory is clearly visible in the IBM. The social cognitive theory is based on the perception that learning takes place by means of interaction with the social environment and others. These three factors are similar to the elements described in the IBM (Kauffman & Mann, 2014:8). According to Bandura (1988), two factors are very important for a person to adopt behaviour, namely a belief that the outcome of the behaviour will be positive and a high sense of self-efficacy which is central in the social cognitive theory (Kauffman & Mann, 2014:9-11).

Self-efficacy

Today, much more attention is paid to self-efficacy in HET than in the early nineties to determine the factors influencing students' self-efficacy (Van Dinther *et al.*, 2011:96 & 104). The social cognitive theory postulates that student achievement hinges on the interaction between personal factors, behaviours and environmental conditions. However, many institutions focus on assisting students to achieve competence but they do not take cognisance of the fact that self-efficacy affects a student's motivation, learning and overall achievements. Neither do they recognise that it plays an important role in aspects such as choice of tasks, effort, perseverance, performance and achievement (Schunk, 2003:159; Van Dinther *et al.*, 2011:95-96 & 105).

Studies have shown that it is possible to influence the students' self-efficacy by means of interventions, personal accomplishments, observation of experience and social persuasion. However, enactive mastery experience and personal accomplishment by means of practical experiences, i.e. students perform tasks while applying knowledge and skills within demanding well-tuned authentic situations with supervision, are considered effective ways to create a strong sense of self-efficacy (Schunk, 2003:159; Van Dinther *et al.*, 2011:96 & 104-105). This provides students with authentic evidence that they can succeed at a task. Observational experience, by means of live models, videotaped models and/or participant modelling, is achieved when students compare their performance with their peers who modelled the desired behaviour (Palmer, 2006:337-338). Positive feedback from healthcare professionals (verbal and social persuasion) via knowledgeable and realistic information provided is viewed as the third efficacy source (Bong & Skaalvik, 2003:6; Van Dinther *et al.*, 2011:96 & 105). Thus, 'performing' tasks should occur with task-relevant knowledge, guided practice and feedback whereas 'observing' is accomplished by means of socialisation, demonstrations and modelling. Modelling is essential for learning new skills. Educators, mentors and healthcare professionals – who have extensive influence on student learning – model knowledge, attitudes, behaviours, problem-solving skills, teamwork and interaction with other healthcare professionals and patients. Guided practice and corrective structured feedback, on the other hand, also allow students to

develop a positive perception about tasks to be mastered (Kauffman & Mann, 2014:11-12). The students learn to assist the anaesthetist and RN directly and indirectly by means of observation, action and guided practice as practising skills are crucial to achieve high self-efficacy and competence.

Self-efficacy, which plays an important role in the development of competence and overall higher education academic performance, can also be cultivated and enhanced through other interactions such as providing students with information (background and how to assist the healthcare professional); feedback on progress; goal setting; self-evaluation; reflection and a 'safe' learning environment (Schunk, 2003:171; Van Dinther *et al.*, 2011:105).

Additional factors which can affect students' sense of self-efficacy are their moods, emotional and physical state. Tension, anxiety and stress can be interpreted as a sign of failure which can lower the student's sense of self-efficacy (Van Dinther *et al.*, 2011:98).

Higher education institutions put a lot of effort into developing the students' required competencies. Although acquiring competent behaviour (assisting the healthcare professionals) depends on acquiring the necessary competencies, it seems the students' self-efficacy plays an important role in relation to their achievements, motivation and learning (Van Dinther *et al.*, 2011:105). Therefore, it is crucial for higher education institutions to also focus on the students' development of self-efficacy.

The IBM was deemed a reliable tool to understand how students learn to re-explore the existing anaesthetic and recovery room course and to re-design the course based on the IBM to encourage ODAs to assist the healthcare professional in the operating department. Therefore, it seemed like a logical framework to re-explore and adapt the current course as shown by the study of Wee *et al.* (2016) and as advocated by Fishbein and Yzer (2003:181).

2.10. SYNTHESIS

To synthesise the main theoretical concepts (cf. Ch. 2, sect. 2.2-2.9) of this study it was important to clarify what is meant by the term 'curriculum'. The term is viewed by healthcare curriculum developers as a plan, consisting of a cohort of modules, which encompasses planned educational experiences. Although various views exist on the term 'curriculum', it is important to comprehend that CBE/T in HET is based on the competencies graduates need to function in an often unpredictable perioperative environment. There are the implicit and explicit curricula which cannot be ignored as they impact on student teaching and learning. The implicit curriculum is used to represent the anaesthetic and recovery room education and training (beyond the control of the educator) which primarily take place in the operating department between healthcare professionals and students. Consequently, curriculum-mapping seemed to be a suitable tool to re-explore the anaesthetic and recovery room course content as it determines what is taught, how it is taught, when it is taught and whether the education was effective and according to the expected learning outcomes.

However, to re-explore the anaesthetic and recovery room course it was important to also explore the impact of various curriculum theories on curriculum development. Stenhouse's theory (1975) is more suited for curriculum development in the HET environment as it fosters a bottom-up approach based on progressivism.

However, curriculum theories which represent Tyler's (1949) thoughts of developing it according to stakeholder needs is the foundation on which Kern's (2009) model is based. This model was chosen for its scientific approach and stakeholder representation.

Assessing stakeholder needs is an important step in developing a CBE/T curriculum aimed at equipping graduates with competencies in line with stakeholder needs to ensure they meet the demands for multi-skilled professionals to work in the operating department. However, modern determinants dictate that the multi-skilled ODA could be trained by means of simulated, experiential, multi-skilled and interprofessional education and training methods. Thus, it is important to understand the learning theories applicable to ODA education and training. The seven learning theories discussed (cf. Ch. 2, sect. 2.7) all contribute, in different ways, to ODA education and training since the ODA graduate needs the required competencies to provide safe perioperative patient care.

Behaviourism focuses on learning new skills, linked to CBE/T, by means of repetition and reinforcement. Cognitivism expresses the cognitive processes to develop knowledge, critical and clinical thinking skills whereas constructivism focuses on student-centred adult learning and learning by means of data interpretation. Social cognitivism links social and cognitive learning with a big emphasis on workplace learning while social constructivism highlights learning clinical decision-making, communication and problem-solving skills by means of active student teaching and learning strategies. However, a positive learning environment is more likely to be achieved if operating department staff has a positive attitude towards apprenticeship. The latter posits CoP, situated learning, teamwork, communication, formative assessments and the development of competencies ODAs require to perform their role and functions. Hence, experiential learning based on the work of well-known scholars such as Dewey, Lewin, Kolb, and Piaget combines observation, experience, feedback and reflection, cognition, perception and behaviour which play an important role in achieving competence and real-life learning (Kauffman & Mann, 2014:18-19; Ker & Bradley, 2014:181; Simpson & Jackson, 2003:23; Steinert, 2014:465; Wood, 2014:326).

It is also important to clarify what is meant by anaesthetic and recovery room assistance (cf. sect. 2.8.1). An AA is seen as the professional who prepares for anaesthesia and assists the anaesthetist during all phases of anaesthesia. These functions extend to the post-operative care of the patient in the recovery room, but in South Africa the ODA is only permitted to assist the RN – hence the title 'recovery room assistant'. Anaesthetic and recovery room assistance are considered a competence which requires various knowledge, skills and attitudes. To achieve competence it is important to expose students to theoretical and clinical experiences by means of a block or longitudinal system (cf. sect. 2.8.10.1). Both systems have advantages and disadvantages with students preferring the block system to enhance their learning experience and provide them with the opportunity to master the competencies whereas educators prefer the longitudinal system. However, non-technical skills (cf. sect. 2.8.9) are also seen as an essential component of the ODA student's learning experience as it is directly related to patient safety.

Self-efficacy (cf. sect. 2.9.2.1) as well as the intent to perform a task is crucial in mastering a competency. This requires guided practice and structured feedback by trained, experienced staff and educators. But to

achieve theory-practice integration, theoretical input as well as clinical experiential rotation and assistance from experience clinical staff is important – preferably in an environment without constraints – as it will enhance the student's learning experience and development of competence. However, other factors influencing students' achievement are their attitude towards the course, learning needs, the SOP which must be known to all stakeholders, commitment, intention and habit. All these factors are addressed by the IBM. Hence the IBM was chosen as the most appropriate tool to re-explore and adapt the anaesthetic and recovery room component of Diploma in Operating Department Assistance programme.

2.11. CONCLUSION

In the context of this study 'the curriculum' was seen as the expected learning which occurs during the anaesthetic and recovery room course. The curriculum specifies the learning outcomes as well as sequencing thereof to support student achievement of job-specific requirements. The course design and process of defining and sequencing learning outcomes in a logical pattern, according to the needs of stakeholders, form the pillars of a suitable curriculum framework. The next chapter highlights the context within which the study was conducted.

CHAPTER 3
CONTEXTUAL PERSPECTIVES

3.1. INTRODUCTION

This study aimed at exploring the question whether an existing undergraduate curriculum in anaesthetic and recovery room practices can be re-constructed to fit the needs of a private hospital group in South Africa. (cf. Ch. 1, sect. 1.5). To contextualise the study, it was necessary to explore the theoretical, disciplinary, international, national, organisational and programmatic contexts of the research in detail (Plowright, 2011:8). This chapter represents Stage 1 of the current study (cf. Table 1.1). It deals with the disciplinary (cf. sect. 3.2), international (cf. sect. 3.3) and the South African health, higher and private higher education (cf. sect. 3.4) contexts. The professional (cf. sect. 3.5), organisational (cf. sect. 3.6) and programmatic (cf. sect. 3.7) contexts are also outlined.

3.2. DISCIPLINARY CONTEXT OF THE STUDY

The current study was conducted in the higher education and training department of a PHEI in the Western Cape, SA and centred on the anaesthetic and recovery room component incorporated in the undergraduate operating department assistance (ODA) programme. The study was undertaken within the field of higher education and training with a focus on the field of curriculum inquiry. Kridel (2010:213 & 220) explains that although curriculum inquiry and curriculum studies in higher education (HE) can take many forms, they are all synonymous. Curriculum inquiry is done to address distinct and important issues as well as challenges related to HE curricula. The field is defined as the research conducted of different aspects of curricula in HE by means of methodologies and methods used in other areas of social inquiry, especially with regard to relationships between the education programme and the contours of the society and culture in which the HE institution is located (Bitzer & Botha, 2011:18, 19 & 27). The inquiry is done to determine the selection of knowledge to be included in a programme and courses and how to construct, distribute and facilitate the knowledge so that students can learn it (obtain knowledge). It implies differentiated methodologies and paradigmatic lenses to conduct the inquiry by means of a multitude of questions. This indicates curriculum inquiry is a broad terrain within education research. But, because there is no single definition of the term ‘curriculum’ (cf. Ch. 2, sect. 2.2.1), there is not a single line of curriculum inquiry (Bitzer, 2011:33-34).

Curriculum inquiry dates back to Tyler’s ‘Basic Principles of curriculum’ published in 1949. Tyler highlighted four major areas – based on four questions – of curriculum inquiry (cf. Ch. 2, sect. 2.3.1) which provided the groundwork for further developments in the domain of curriculum inquiry. Questions related to cognitive and social constructivism, student diversity and participation as well as a holistic view on the influences affecting student leaning paths emerged as important factors in curriculum inquiry. A range of data collection methods are required of which case studies is one (Bitzer, 2011:38-39).

Curriculum inquiry received much attention in the UK, USA and Australia (Bitzer, 2011:35 & 42). The literature search done by the researcher revealed no curriculum inquiry were found in ODA perioperative care and anaesthesia/recovery room curricula up until the early nineties. What did emerge was that HE curriculum inquiry in SA proliferated after democracy in 1994, particularly after several HE institutions were merged. This era witnessed the introduction of the National Qualifications Framework (NQF) extended to the Higher Education Qualifications Framework (HEQF) (explored in more detail in section 3.4.2) which had a major influence on curriculum inquiry in SA. The goal of curriculum inquiry was to ensure HE curricula produce graduates fit to enter the 21st century workplace, support the growing SA economy and adhere to public accountability (Bitzer, 2011:46-52).

Although curriculum inquiry initially focused on individual courses, it gradually expanded to include student participation and workplace-integrated learning (Bitzer, 2011:50). Therefore, a single programmatic case study design which incorporates various data collection methods was chosen (cf. Ch. 4, sect. 4.2.1.2) to conduct an inquiry into the anaesthetic and recovery room component part of an ODA curriculum in SA.

3.3. INTERNATIONAL CONTEXT

Because the programme under scrutiny is situated within the health sciences in professional and private higher education as well as in ODA education and training, a number of international trends relevant to the study are highlighted next.

3.3.1. Patient safety and care linked to the anaesthetic assistant

Patient safety and care is a vital component of the patient's journey through the operating department as high mortality and morbidity rates are often linked to anaesthesia (Weller *et al.,* 2009:126). The field of safe delivery of patient care has always been a component of the job profile of healthcare professionals while initially the focus of the ODA was mainly on technical skills performed in the operating department (Smith & Rawling, 2008:190-192). However, this stance changed in the 1990s (Smith & Rawling, 2008:190-191) as the training of ODAs increasingly evolved to assist the rest of the operating team in providing holistic safe perioperative patient care (Patty, 1999:776; Smith & Rawling, 2008:191-192). Nurses and ODAs functioning as AAs have to achieve the same competencies – thus, including safe patient care – and the ability to provide competent assistance to anaesthetists. Clinical competencies and criteria, underpinning patient safety and care knowledge for ODAs acting as AAs, were therefore included in the ODA curricula (Smith & Rawling, 2008:190). Anaesthetic assistants are indeed seen as members of the perioperative team and their assistance is essential for the safe delivery of anaesthesia (cf.Ch. 2, sect. 2.8.7) by managing unforeseen clinical adverse events (NES, 2011:3; NES, 2012:1).

Contemporary views on patient safety and care include prioritising the role of the AA in cooperation with the anaesthetist to ensure the safety of a patient during the perioperative period (Rutherford *et al*., 2012a:27; Scottish Medical and Scientific Advisory Committee, 2003:1).

3.3.2. Non-technical skills training as international trend

Promoting non-technical skills is an international trend known as "Safety at the sharp end" (Flin *et al.,* 2008:2). When things go wrong in high-risk environments such as operating departments, it can have major consequences for the health organisations, patients and staff. Wrong actions can ultimately result in human mortality and morbidity as well as damage to the environment and equipment. Although significant levels of protection have been built into systems and procedures to safeguard patients, human error does occur. For instance, it has been reported that the biggest cause (80%) of anaesthetic and recovery room related incidents are caused by human error (Flin *et al.,* 2008:1). Due to the high error rate in healthcare, medical professionals began to develop non-technical skills for healthcare professionals based on the behavioural markers for aviation. In healthcare, anaesthesia became the forefront of these developments. Human error can, of course, not be eliminated totally and for this reason managers have to ensure staff members have appropriate non-technical skills (Flin *et al*., 2008:1). A more comprehensive discussion is provided in Chapter 2, section 2.8.9.

Non-technical skills are taught to AAs in UK countries (England, Ireland and Scotland), the USA, Australia, New Zealand, Denmark, Germany and Canada. The Australian and New Zealand College of Anaesthetists (ANZCA) (ANZCA, 2016:6) supports cultural competence as an essential non-technical skill. Non-technical skills are taught by means of information-based techniques, demonstrations and rotation in practice. Practice-based training (i.e. role play, scenarios, case studies, simulations, work-integrated learning in the workplace) is seen as the most effective teaching method to teach these skills. It is, however, important for training in practice to be supported by prompting, feedback and mentoring of students with assessment based on observing behaviour markers, relevant to a specific job, on a behaviour rating scale (Flin *et al*., 2008:244-245, 273 & 289). The non-technical skills, which are related to cognitive and affective skills, are seen as an element of the competencies which form the basis of competency-based education and training. However, in SA the teaching of non-technical skills is not viewed as isolated but is considered as a component of a competency. There is no South African literature available pertaining to the teaching and learning of non-technical skills in the operating department.

The next section explores graduate attributes and core competencies considered as essential for ODAs and, more specifically, anaesthetic and recovery room assistants.

3.3.3. Graduate attributes and core competencies

In the 21st century, technology, globalisation and an increase to information were driving forces challenging higher education to progress and change as healthcare professionals and graduates needed to be equipped with certain crucial skills to join the modern day workforce in the healthcare sector (Alexander, Ramsay & Thomson, 2004:9; Frenk, Chen, Bhutta, Cohen, Crisp, Evans *et al*., 2010:1923). It is not only the global imbalance of human resources in healthcare and the shortage of healthcare workers which place a burden on healthcare and education (Pruitt & Epping-Jordan, 2005: 637), but also the extraordinary pace of technological changes and advancements in the global environment. These changes increase pressures on the

competencies of healthcare professionals (Frenk *et al*., 2010:1954). Although the importance of communication and teamwork are highlighted as attributes graduates must have in addition to the clinical skills associated with a specific profession (Alexander *et al.,* 2004:9), there is also an urgent call for core competencies based on transnational, multi-skilled professionals to serve the needs of patients and stakeholders (Frenk *et al*., 2010:1954).

Another important factor in the development of student attributes and core competencies is the gap between theory and practice. There are grave concerns about graduates entering the workforce and being unable to integrate the knowledge learned in higher education into professional practices (Smeby & Vågan, 2008:159). Higher education is often accused of lacking relevance to professional practice and for placing too much focus on the academic side of training when it is supposed to train professionals with an appropriate theoretical and clinical knowledge base and then socialise them into a professional community (Smeby & Vågan, 2008:160 & 170). The same authors highlight the following attributes healthcare graduates must acquire to function effectively in healthcare settings, namely the ability to recontextualise knowledge; problem-solving skills; having an active and reflexive attitude towards subject matter; cooperation; effective communication skills; the ability to make ethical decisions and skills to properly handle information.

Although healthcare graduates will share some attributes and core competencies, the global workforce requires more specialised and educated employees for the various healthcare categories (Williams, 2007:512). The international core competencies for AAs are summarised in Table 3.1.

Table 3.1: Core competencies for anaesthetic and recovery room assistants

Anaesthetic assistant competencies	

• Apply standards: anaesthesia protocols, applicable regulations, teamwork and legal responsibilities
• Apply aspects of patient care: preparation, safety checklist, positioning, transfer, monitoring, induction, securing airway, maintenance and emergence
• Participate in perioperative care of patients of all ages, including those with special needs
• Participate:
  o in common anaesthetic procedures: i.e. safe storage preparation of anaesthetic drugs / fluids
  o in airway management
  o with intravenous insertion, management and fluid therapy
• Check and take care of the anaesthetic machine, monitors, equipment and accessories
• Assist the anaesthetists during sedation, general, regional and local anaesthesia
	• Assist the anaesthetists with invasive procedures, i.e. arterial lines, pulmonary artery catheters, peripheral central venous lines
	• Clean and sterilise equipment related to anaesthesia
	• Apply infection prevention and control principles applicable to staff, patients and equipment
	• Apply safety principles with regard to electricity, radiation, lasers, gas cylinders and pipelines and biological fluid exposure
	• Assist with anaesthetic emergencies: CPR, difficult airway, cardiac defibrillation, massive blood transfusion, anaphylaxis and malignant hyperthermia
	• Assist the anaesthetist during the perioperative period in speciality-specific disciplines such as obstetrics, ENY, cardiac, thoracic, neurosurgery, paediatrics, maxillofacial, burns and patient transfers

(Sources: ANZCA, 2016:3-5; NES, 2011:1; Pillai, 2013:3-5)

The training of graduates to meet the requirements of the workforce is the responsibility of public as well as private higher education institutions.

3.3.4. Private higher education

With the emergence of private higher education as an increasing worldwide phenomenon in the 21st century, the spotlight on growth in higher education subsequently intensified (Gupta, 2008:566; Setswe, 2013:98; Su,

2012:157). This growth was fuelled by various factors such as the upheaval of information technology; growing internationalisation of higher education and The World Bank boosting of private higher education in the mid-1990s (Mabizela, Subotzky & Thaver, 2000:13). Yet, although the growth of PHEIs has shown remarkable development over the past decade (Adeyemo & Sehoole, 2015:25), literature indicates private higher education in itself has had different types of impact in countries worldwide (Kraak, 2012:3).

3.3.4.1. Private higher education: concept and demand

In a presentation at the World Conference on Higher Education in France, in 2009, Bjarnason (2009:2) indicated the demand for higher education worldwide would increase from 97 million students in 2000 to over 262 million by 2015. Even before Bjarnason (2009) shared those statistics, public institutions were quite unable to keep up with the demand for higher education – private higher education thus flourished worldwide (Hofmeyr & Lee, 2002:79; Kruss, 2002:15; Stone, 1990:154). The literature search revealed a diversity of private higher education providers. Obviously, there is no "one size fit all" for the numerous types of private higher education institution models (Bjarnason, 2009:3; Fielden, 2013:4).

Private higher education institutions, also known in some countries as 'private universities', 'private independent institutions', 'university colleges' or 'colleges', are defined as institutions privately owned by individuals or organisations (Tham, 2013:650). The Higher Education Act 101 of 1997 (RSA, 1997:2) refers to higher education institutions (HEIs) as organisations which: (i) register students for its own accredited programmes on NQF levels 5 – 10; (ii) develop, teach and evaluate their own programmes; (iii) issue students with certificate in its own name; (iv) are financial sustainable and (v) have DHET registration, HEQC accreditation and their programmes are registered by the South African Qualifications Authority (SAQA). A distinguishing characteristic among the HEIs is that PHEIs are usually self-funded and normally do not receive funds from the state or government (Garwe, 2016:233; Hughes, Porter, Jones & Sheen, 2013:7; Otieno, 2007:188; Varghese, 2006:23; Woodfield, 2014:11). For the purpose of this study the overarching term of 'PHEI' will refer to all institutions registered as a private higher education institution.

Although it seems that PHEIs are more adaptable to meet stakeholder and market demands and offer a wider choice of job-related programmes than public or government institutions (Bjarnason, 2009:2; Shah & Nair, 2012:1; Varghese, 2006:43), criticisms were raised against PHEIs because of their poor research output and focus on only niche programmes. Regardless of such criticisms, PHEIs were accepted and welcomed worldwide for providing greater access to higher education (Obasi, 2008:4) and for redressing the lack of quality education. A study done by Oketch (2009:31-32) in three African countries confirmed that private higher education had improved access to higher education. The next section provides an overview of private higher education as an international phenomenon.

3.3.4.2. Private higher education as an international phenomenon

Altbach's (1999:1) statement that "private higher education is one of the most dynamic and fastest-growing segments of post-secondary education at the turn of the 21st century" implies over the world private higher education is vested in the "contemporary higher education marketplace" (Altbach, 2005:7). Some countries

such as Japan, Taiwan, South Korea, the Philippines, Mexico and Brazil have a long history of private higher education (Altbach, 2005:1; Asmal, 2002:125). In these countries PHEIs succeeded to establish themselves in the absence of regulatory norms during a period in which the demand for HET exceeded the supply of public higher education (Gupta, 2008:567; Otieno, 2010:175). As a consequence, PHEIs had to complement public institutions with quality higher education to prepare students for their working life (Arokiasamy & Fook, 2008:82; Gupta, 2008:566; Levy, 2002:31; Rahman, 2010:1-4).

However, the contributions made to private higher education differs from country to country (Garwe, 2016:233). In developed countries like Japan, the Philippines, South Korea and Taiwan PHEIs dominated higher education and training for centuries – enrolling more than 70% of all students (Altbach, 2005:1). The reason being that higher education became a requirement to obtain employment concomitant with public institutions' inability to keep up with the demand for HET (Altbach, 2005:2; Arokiasamy & Fook, 2008:82; Levy, 2002:31; Rahman, 2010:1-4). By 2009 approximately 30% of the global higher education enrolments were perceived in the private sector in developed and developing countries with Latin America and Asia showing the greatest growth for the decade (Bjarnason, 2009:3 & 7; Kraak, 2012:2). Seventy-three per cent (73%) out of a total of 2.8 million students were enrolled at the 773 (70%) private universities in Japan (Hasan, 2008:168). This percentage increased to 80% in 2013 (Asmal, 2002:125).

A similar tendency was evident in some developing countries. In Brazil, Mexico, Venezuela, Columbia and Peru, e.g., private higher education was as the fastest growing sector (Altbach, 2005:3). Brazil showed an increase of 84% undergraduate students enrolled in PHEIs in the six-year period from 1998 to 2004 with the private sector dominating 70% of the HET sector (Bjarnason, 2009:8-9; Kraak, 2012:3; McCowan, 2004:454). India also experienced a steady growth in PHEIs with 63% of the higher education institutions registered as PHEIs in 2006 and 52% of the total student population enrolled (Lei, 2012:275; Zha, 2011:753 & 759). In comparison, Russia had more than 500 private institutions accounting for roughly 10% of the higher education student enrolment (Gupta, 2008:570). Malaysia's 54% enrolment (500 000 students) in 2010 placed this country also in the top highest private headcount bracket in the world (Tham, 2013:650 & 651).

Although the USA is regarded as a major role player in private higher education in the developed world, only 20% of American students studied at PHEIs in 2005. Similarly, China had a 20% enrolment of students in the private higher education system in the same year (Altbach, 2005:1-4). However, in 2009 a mix of developed (Germany and New Zealand) and developing (South East Asia, Cuba and SA) countries showed the lowest student enrolments in the private higher education sector – less than 10% (Bjarnason, 2009:8). Moreover, in the period 2011-2012 private healthcare education institutions in the UK catered for even smaller student numbers – only 160 000 students were enrolled in the 674 private healthcare education institutions compared to the 2.3 million students who were enrolled in public sector healthcare education institutions in the country. By comparison though, most of the 160 000 private healthcare education institutions students were absorbed in high-skilled jobs after graduation (Hughes *et al.*, 2013:7; Woodfield, 2014:11).

Late developments in private higher education

It emerged from literature the development of private higher education in the Middle East started much later than in other countries. The first PHEIs commenced operations in 2003. Five years later the list of PHEIs had grown to eight institutions enrolling over 13 000 students. By 2009, another seven was in the pipeline and the prediction was that by 2025 the student population enrolled with PHEIs would reach the mark of 45 000 (Al-Atiqi & Alharbi, 2009:6).

Slow development of private higher education in Africa

Private higher education was slow to develop in Africa with a breakthrough only made in the mid-1980s continuing into the 1990s (Bjarnason, 2009:12; Setswe, 2013:100; Thaver, 2008:137; Varghese, 2006:32). Within a 5- to 10-year period more PHEIs than public higher education institutions were established (Varghese, 2006:25). By 1990, an average of 5 000 sub-Saharan African students were enrolled in PHEIs with approximately 100 new PHEIs established by 2004 (Setswe, 2013:98; Varghese, 2006:33). However, the percentage of students enrolled in PHEIs was still significantly lower than in Asian countries.

A study conducted by Setswe (2013:100) showed that PHEIs in Africa had grown exponentially. By 2011 more than 100 private higher education institutions were operational in sub-Saharan Africa with 87 registered PHEIs – of these 27 were provisionally registered in SA (Setswe, 2013:98). These PHEIs were making a significant contribution to ease the social demand for higher education. According to Matimbo (2016:51), private higher education is available in Ghana, Kenya, Tanzania, Senegal and Uganda with Kenya leading the way. In Kenya private higher education existed before 1962 (Matimbo, 2016:74; Otieno, 2010:33; Varghese, 2006:31) but only gained momentum in the 1990s. By 2010 Kenya had a well-developed private higher education system consisting of 18 PHEIs with 20% of the total higher education student population enrolled (Otieno, 2010:30 & 33). In Zimbabwe the enrolment also went up and by the mid-2010s the country had six PHEIs which greatly broadened the pool for degree studies (Garwe, 2016:233; Matimbo, 2016:74). Tanzania's development of private higher education was more or less similar to Kenya's (Matimbo, 2016:74) with 19 registered PHEIs offering programmes pitched at certificates to degree levels. However, very little is still understood about higher education development in Botswana and Nigeria (Altbach, 1999:vii). According to Obasi (2008:6), Botswana and Nigeria were late entrants to the private higher education industry, but the latter still showed a rapid growth in the number of PHEIs in the nine-year period between 1999 and 2008. In 2007 there were 34 private universities in Nigeria in comparison to the five private tertiary educational institutions in Botswana (Obasi, 2008:7).

Thus, although private higher education had a slow start in Africa, it had mushroomed since 2000 to make a significant contribution to ease the social demand for higher education (Altbach, 2005:3; Materu, 2007:9; Varghese, 2006:25).

Programmes offered by private higher education institutions

Although private higher education as global enterprises flourished, it is evident that the anatomy of private higher education at present differs internationally. Some PHEIs focus on certificate and diploma programmes

while others offer first degrees and professional degrees. There are some PHEIs which provide all the aforementioned (Altbach, 2005:3 & 7). Most PHEIs specialise in specific academic disciplines – generally those which appeal to a large number of students – with very few offering medicine and other health-related programmes (Altbach, 2005:7). The majority of PHEIs in European and Asian countries offer vocational- and market-oriented training (Bjarnason, 2009:13) in the professional and technical disciplines (Fielden, 2013:4). The fields covered are aviation, business studies, computer science, finance, hospitality, legal studies, management and global management, marketing, social care, tourism and so forth (Altbach, 2005:7; Fielden, 2013:7; Gupta, 2008:573). Further, most of the programmes offered have low set-up costs and a guaranteed market demand (Fielden, 2013:7; Gupta, 2008:570).

In sub-Saharan Africa programmes are mainly offered according to demand and labour market needs (Ndiaye, 2006:119; Varghese, 2006:22), e.g., accounting, agriculture, business administration, commerce and information, communication, computer science, economics, engineering, language, marketing, social and health sciences, theology and technology (Garwe, 2016:234-235; Matimbo, 2016:74; Thaver, 2008:131). Other less popular programmes offered include agriculture, arts, biblical studies, biochemistry, Christian ministries, education, engineering technology programmes, environmental science, law, natural sciences, physics, psychology, public relations and special education at undergraduate and postgraduate levels (Abagi, 2006:82-83; Ajayi, 2006:101; Garwe, 2016:234-235; Thaver, 2008:131).

In SA the focus is also on business, commerce, management, education, training and development (Mabizela *et al*., 2000:2-7), information technology, beauty therapy and hospitality (Gupta, 2008:572) with the majority of enrolments for the undergraduate diploma and certificate level programmes (Asmal, 2002:125; Mabizela *et al*., 2000:4). A more detailed description of the private higher education system in SA is provided in section 3.4. Despite the literature evidence confirming a major worldwide upsurge of PHEIs offering a wide range of programmes, only a few PHEIs offer health-related programmes (Altbach, 2005:3) as discussed in the next section.

3.3.4.3. Private higher education in health sciences

The researcher, with the assistance of a University of Stellenbosch librarian, thoroughly searched the available literature on PHEIs offering health sciences or health-associated professions education and training. Yet, although private higher education evolved worldwide, the literature search provided little information pertaining to PHEIs offering health sciences or health-associated professions education and training worldwide. The majority of PHEIs seem to offer non-health sciences programmes as alluded to in the previous section. Research done by Hughes *et al*. (2013:7) and Woodfield (2014:11) indicate that only nine of the 674 United Kingdom PHEIs offer health and social care programmes. In India, only three health science programmes were offered, namely medicine, dentistry and physiotherapy (FICCI Higher Education Committee, 2011:18 & 19).

According to Otieno (2007:190 & 192), only a few health sciences programmes are offered in Kenya with most of the PHEIs retaining specific niches. Although these PHEIs have a mandate to offer health sciences

programmes (i.e. medicine and pharmacy), they tend to avoid it due to its time demanding and capital intensive nature; by implication thus heavy investment and qualified staff (Abagi, Nzomo & Otieno, 2005:35; Otieno, 2007:190; Varghese, 2006:43). Only two PHEIs in Kenya offer health sciences programmes (Abagi, 2006:83) which includes nursing. In Nigeria (Ajayi, 2006:101), Tanzania (Matimbo, 2016:74) and Malaysia (Tham, 2013:651) there is indeed a focus on health sciences; however, Ajayi (2006) does not elaborate on the nature of the programmes offered in Nigeria. It was established that in Tanzania four PHEIs offer a degree in medicine and nursing (Kuhanga, 2006:183) and in Malaysia one private university has a medicine faculty (Tham, 2013:651).

Mabizela *et al.* (2000:6&7) state in 2002 only 4% of all student enrolments in SA were in the health sciences and social services fields offered by PHEIs, but the researchers do not elaborate on the nature of the health sciences programmes offered. In 2016, only five of the 94 registered and 31 provisionally registered PHEIs in SA offered health professions programmes such as nursing (general, critical care, operating theatre, trauma and emergency nursing), emergency medical care and operating department assistance (Department of Higher Education and Training (DHET), 2016a:10-106). Although the majority of these programmes are indeed related to nursing, only two PHEIs were registered to offer the ODA programme at the time of study (Mafetsa, 2015:1; Qonde, 2015a; Qonde, 2015b; SAQA, 2018a:6).

All PHEIs and programmes offered in African countries are regulated by the state or government to maintain the quality and standard of admission, teaching and infrastructure (Ajayi, 2006:106; DHET, 2016a:10-106; Kuhange, 2006:190; Mabizela, 2006:136-138; Tham, 2013:652). For PHEIs to endorse quality and standard measures on all levels and in all instances is essential. Recognition is given to this serious aspect by Altbach (2005:8) as follows: “Quality assurance is one of the central issues in higher education debates today.”

3.3.4.4. Regulation of private higher education

Together with the emergence of private higher education, quality assurance surfaced as a response to the call for regulation and accountability of PHEIs (Suspitsin & Suspitsyna, 2007:62). This was necessitated by the few controls which existed (Altbach, 2005:8) and the perception that the quality of private higher education is questionable. On the contrary, there seems to be a general consensus in Kenya that a number of PHEIs seem to be better equipped to offer quality education than public institutions (Abagi *et al*., 2005:35). Yet, in SA the Council on Higher Education (CHE) reported, in 2006, the overall quality of education provided by the PHEIs is sub-standard (Mabizela, 2006:160-161).

To ensure quality education many countries moved towards instituting acts, regulations and policies to regulate PHEIs. These days, it is the responsibility of a complex array of government laws, policies, and control mechanisms (Suspitsin & Suspitsyna, 2007:62) that ensure proper and credible accreditation systems set minimum standards for programmes. In the view of Adeyemo and Sehoole (2015:26), this points to the nature and form of some curriculum standards. Globally, these regulations – which should make sure PHEIs provide quality and relevant education to adequately prepare graduates for the existing job market (Kuhanga, 2006:190) – varies from weak to extremely rigid (Thaver, 2008:133).

In China, e.g., a reasonable quality assurance system is lacking (Lei, 2012:281) and in India the private sector has grown due to the absence of a restraining national government (Otieno, 2007:179). In the UK no public policy on the private higher education sector exists resulting in the lack of a comprehensive regulation and registration process (Fielden, 2013:5-8). In the Philippines the accreditation of programmes and institutions are voluntary (Adeyemo & Sehoole, 2015:37). Meanwhile, in many African countries (including SA) strict legislation governs PHEIs by means of a professional body (e.g., the CHE) which exerts close supervision of PHEIs (Abagi *et al*., 2005:36). The South African private higher education regulatory context is explored in more detail in sections 3.4.2 and 3.4.3.

Suspitsin and Suspitsyna's (2007:62) interpretation of the complexity of the laws, policies and control mechanisms directed at both the private and public higher education sectors, is that more stringent accreditation requirements seems to be applicable for the PHEIs in many countries. Whether this is, in fact, the case can only be deduced by exploring the situation in a number of countries. One example is the standard and identical criteria for academic governance structures across private and public sectors enforced in both Nigeria and Kenya (Thavor, 2008:133). In the Philippines, PHEIs require a government permit to offer curricular programmes whereas it is not a requirement for public higher education institutions (Adeyemo & Sehoole, 2015:35). In Malaysia the number of PHEIs dropped from 704 in 1996 to 468 in 2011 due to the more stringent enforcement of regulations with the implementation of the Private Higher Education Institutions Act in 1996 (Tham, 2013:654). The high government regulations for private higher education in Japan, South Korea and Taiwan are observed by Altbach (2005:1) while Yonezawa (2005:21-22) comments in Japan private universities protested against the strict accreditation policies.

Kenya is an example of a country in Africa which has strict regulations for establishing a HEI (Abagi, 2006:78; Varghese, 2006:42-43). Kenya was also the first country to establish a Commission of Higher Education in 1985 (Otieno, 2007:179) resulting in this country having 17 private universities by 2008 of which only seven were fully accredited (Thaver, 2008:130). Tanzania and Uganda followed suite with the establishment of their accrediting bodies which concentrated more on the private than public higher education institutions (Otieno, 2007:179). For example, in Uganda the National Council for Higher Education revoked the license of one PHEI in 2005 due to it its incapacity to effectively deliver higher education.

As regards the situation in SA, Mabizela (2006:140) states, "private higher education institutions are expected to perform at unreasonably high levels. For example, none of the private higher education institutions in South Africa are universities and yet they are expected to compare to universities". According to Otieno (2007:179), much of the direction, type and level of private provision are influenced by the rigid regulation of the private higher education sector as discussed above.

From the literature it is clear that private higher education, in the majority of countries, is governed to address public and government concerns. Although different types of Acts and accreditation bodies regulate private higher education, they all seems to focus on quality assurance, equity and access, and institutional accountability to the society they serve (Kuhanga, 2006:190). Translated into private higher education in

health sciences, this means that quality assurance ensures PHEIs are properly quality assured to offer quality programmes assuring a highly qualified and skilled calibre of graduates are produced to enter the workforce, including that of the healthcare sector. The next section focuses on the South African national health system as well as the higher education and private higher education contexts.

3.4. THE SOUTH AFRICAN NATIONAL HEALTH SYSTEM, HIGHER EDUCATION AND THE PRIVATE HIGHER EDUCATION CONTEXT

Since 1994 radical changes have occurred in the national health and higher education systems in SA. What follows includes the national health system (cf. sect. 3.4.1), higher education system (cf. sect. 3.4.2) and private higher education in SA (cf. sect. 3.4.3).

3.4.1. National Health System

Due to the increasing shortage of nurses, and especially operating room nurses, the ODP/ODA category was introduced to the private healthcare profession in 2008. In 2010 SA had a shortage of approximately 44 700 nurses which was 12 700 more than the shortage reported in 2003 (Clark *et al*., 2006:40; Cullinan, 2015:1). The migration of healthcare professionals, an aging workforce, a decrease in post-secondary nursing institution enrolment, changes in the healthcare system and numerous career opportunities outside of healthcare which opened up for women were some of the causes leading to the dire shortage of nurses in the health sector. According to Armstrong (2017), the number of RNs (especially baccalaureate graduates) is still decreasing, the nurse population is aging and healthcare delivery models are changing – all at the same time.

In 2016 a total of 109 381 (as opposed to the total of 106 182 in 2015) nurses with additional qualifications were registered with the South African Nursing Council (SANC, 2016:5). At the time, only 5149 (in 2015 the number was 5158) were registered operating room nurses. A study by Armstrong (2017) indicates the shortage of nurses in SA is most likely to worsen due to the perceived gap in nurse training as a result of universities, colleges and PHEIs being unable to commence with the new nursing programmes in 2018. Currently, the nurse ratio in SA is 4.94:1000 population for which the World Health Organization's benchmark is 8.6:1000 population. Once the higher education institutions obtain approval to offer the new programmes, it will take approximately seven years to train a RN to function in the operating department as a specialist in perioperative care. Armstrong's study also indicates that, because of higher education institutions inability to commence with nurse training in 2018, this perceived gap in training would result in numbers well below the norm set by the World Health Organization for the nurse-patient ratio in a country. The prediction is a nurse ratio of 4:1000 population by 2023, 3:1000 population by 2031 and 2:1000 population by 2041 (Armstrong, 2017). This shortage of nurses is most likely to spill over to the operating department.

Due to the shortage of RNs in the operating department, a private hospital group in SA started with the in-house training of non-nurses in 2008 in an attempt to supplement professionals in the operating department.

Similar to the position in the UK and USA, the ODA qualification assists in addressing the needs of healthcare practitioners in SA by helping to alleviate the nursing shortage and the subsequent delegation of non-nursing functions to non-nurses. The programme also aims to assist with the emerging needs in current healthcare environments with many countries throughout the world already employing this category of healthcare workers. By incorporating the ODAs into the skills mix, an array of duties conventionally performed by nurses could be taken on by ODAs, who are seen as healthcare workers. This supply aims to meet an ever-increasing demand for healthcare and improved patient care (Fuller, 2013:3; Jordaan, 2011:10).

Most operating room facilities, theatre associations or organisations accept these healthcare workers. The South African Theatre Nurses Association now permits ODAs to become associate members and a recognised qualification provides employment which reduces the shortage of trained personnel in the operating department. It also maintains the status quo by supplying sufficient numbers of trained healthcare workers to compensate for resignations and the retirement of experienced nurses (Fuller, 2013:3, Jordaan, 2011:10; Stroh, 2010:1-2). However, the question often asked, is "what is operating department assistance education?" This question is addressed from a programmatic perspective in more detail in section 3.7.

Another example of a strategy implemented to address the shortage of healthcare professionals in SA has been the training of mid-level health workers (called 'clinical associates') since 2008. This was an attempt to increase the numbers of health workers in public hospitals, especially in rural areas. The first graduates who registered for the three-year bachelor's degree at three medical schools entered the job market in 2011. These graduates, generalists who do history-taking and physical examinations, deal with emergencies and conduct routine diagnostic and therapeutic procedures (Doherty, 2013:1). Their competencies are directly related to the disease profile at district hospital level. A study done in Mpumalanga showed that training these clinical associates are cost-effective, worthwhile and that they receive support and direct supervision from the doctors with whom they work (Doherty, 2013:2; Hamm, Van Bodegraven, Bac & Louw, 2016:1). As with the ODAs, clinical associates are not intended to replace the doctor but work with the doctor, sharing the workload and freeing the doctor to concentrate on more complex cases. They are also, as the doctors, regulated by the Health Professions Council of South Africa (HPCSA) (Doherty, 2013:2-3). Since 1994 many influential policies, legislative documents and publication initiatives related to health sciences education and higher education, including private higher education, have been published.

3.4.2. Higher Education System

Higher education (HE) in SA is defined as the system which delivers programmes registered in accordance with the National Qualifications Act 67 of 2008 either as a qualification or part-qualification of the Higher Education Qualifications Sub-Framework (HEQSF) on NQF levels 5-10 (CHE, 2014:7).

Changes in the HE system were evident after the 1994 democratic elections owing to the implementation of numerous published policies and legislative documents. The aim was to eliminate the legacy of the fragmented and unequal education system and to contribute to economic development, social reconstruction and equity (Department of Education (DoE), 1997:4-5). In 1996 the SA government unveiled the most

transformative constitutional structure in SA history (CHE, 2004a:94; Daniel & Greytak, 2012:347). Higher education was viewed as a central role player in the cultural, economic and social development of the country (CHE, 2004a:19; DoE, 1997:3). As a result, a higher education policy linked to the government's vision on economic growth and human resources development plan as well as the global attention to improve the quality of patient care, outcomes and safety, was drafted (Amuwo, 2004:65; Fataar, 2003:31). The goal was to mobilise human talent; to develop professional and knowledgeable workers with globally equivalent skills to contribute to the economic, cultural and intellectual capacity of SA (DoE, 1997:6). There was also a focus on funding, private higher education and quality assurance (CHE, 2004a:14; DoE, 1997:2-3 & 7).

The policy resulted in the publication of the White Paper on Higher Education in 1997 which aided the transformation of the higher education system. The Paper's aim was to create a balance between global competitiveness and national development (CHE, 2004a:14; DoE:1997:5; Fataar, 2003:35), address the skills shortage in the country and transform the higher edition system to one which would (i) provide equal access and change of success to all students; (ii) produce highly skilled graduates to meet the country's employment needs; (iii) promote critical and creative thinkers; (iv) produce research of international standard and (v) improve the quality of teaching and learning (Boughey, 2004:6-7; DoE, 1997:6 & 9-10). Subsequently, the Higher Education Act 101 of 1997 was published and SAQA and the NQF established (Boughey, 2004:7; CHE, 2004a:29 & 35). The Higher Education Act sets out the stipulations and arrangement for registration of PHEIs. However, since its promulgation in 1997 numerous amendments have occurred to strengthen the regulatory framework for private higher education (CHE, 2004a:30) which is explored in more detail in the next section.

Moreover, in an effort to address the need of skilled practitioners in healthcare, HET was linked to skills development which led to curricula being redesigned with the focus on teaching and research for new needs and contexts (Fataar, 2003:33). As a result, all HET curricula had to be redesigned and registered on the NQF (Badenhorst, 2012:1; Daniel & Greytak, 2012:345 & 348; Fataar, 2003:31; Sherwood, 2011:226-227).

The period between 1994 and 2002 was identified as the time when educational growth in the private sector was happening to the greatest extent. The National Commission on Higher Education, a temporary body set up by the first democratic government to advise on higher education, acknowledged the presence of PHEIs and the value they could add to address the skills shortage in SA (CHE, 2004a:24; Mabizela, 2006:135-136). However, the manifold global challenges and the social and economic shifts within the country itself resulted in a major increase in student numbers in the HET sector (both public and private) which placed a burden on the existing educational resources (Boughey, 2004:1-4; DHET, 2015a:5).

The CHE and DoE supported the view that PHEIs could complement public higher education institutions to expand access to higher education. The White Paper on Higher Education and Training aimed at preventing the laissez-faire proliferation of programmes offered by PHEIs to ensure quality education and training (DoE, 1997:21; Mabizela, 2006:136-139). Therefore, the stringent focus on the inadequately regulated private higher education sector to build in quality, protect students and improve articulation with the public higher education sector (Boughey, 2004:1-4; CHE, 2002:41; DHET, 2015b:4-5). Subsequently, a set of

regulations and policies, under the Higher Education Act, for the registration of PHEIs (these regulations are discussed in the next section) was published in 2002 (Fataar, 2003:33-34; Mabizela, 2006:136 & 138). This was to ensure that only PHEIs with adequate infrastructure to offer and sustain quality higher education programmes would be registered (DoE, 1997:21).

In summary, the higher education system was characterised by decades of fragmentation which resulted in the restructuring of the higher education system, including in the private sector. A discussion of the legislative documents and bodies mentioned is presented next.

3.4.2.1. The South African National Qualifications Framework

To be competitive in the global arena, SA had to have a national education and training system which could provide quality education and training as well as promote lifelong learning (CHE, 2004a:14-16; SAQA, 2016a:3). The South African Ministry adopted an education and training system based on competencies and outcomes to ensure qualifications are internationally comparable (CHE, 2014:6; SAQA, 2000:2-4; Sutherland, 2009:2). Therefore, as outlined in the SAQA Act 58 of 1995, an internationally comparable single integrated NQF framework for learning achievements (SAQA, 2016a:2; SAQA, 2018b:1) was developed. The intended vision was to meet the many local and global challenges by focusing on enhancing the quality and efficiency of the South African education and training system as well as career paths (Boughey, 2004:8; SAQA, 2016b:1; SAQA, 2018b:1).

Following the global trend, the NQF "organised as a series of levels learning achievements" (SAQA, 2018b:1) is a database of all accredited and DHET registered qualifications based on learning outcomes students are expected to achieve. The underlying commitment was that education and training would be organised around the notion of learning outcomes and the associated criteria for each learning outcome. This ensured articulation and portability within the education and training system. The NQF consists of levels which are described by a unique level descriptor. SAQA developed guidelines on level descriptors "in consultation with each National Standard Body (NSB) and Standard-generating body (SGB) to ensure coherence across fields and to facilitate assessment and the international comparability of standards and qualifications" (Olivier, 1998:1).

Untill 2008 the NQF was an eight-level framework representing three qualification bands, namely: General Education and Training (ABET), FET (levels 1-4) and HET (levels 5-8). The doctoral degree and other research degrees were clustered at a level eight (Boughey, 2004:7). After 2008, with the promulgation of the National Qualifications Framework Act 67 of 2008 (SAQA, 2018b:1), the eight-level framework was replaced by a new 10-level NQF with level 1 representing a higher certificate and level 10 a doctoral degree (cf. Table 3.2) to ensure a more streamlined education and training system. With the adoption of the new NQF, all education institutions had to redesign their curricula. Hence, the two-year Diploma in Operating Room Practice programme offered by the PHEI had to be adapted to a three-year level 6 Diploma in the ODA programme as stipulated by the new framework (CHE, 2014:6-8; SAQA, 2016a:3; SAQA, 2018b:1).

Table 3.2: The NQF sub-frameworks

National Qualifications Framework					
Sub-frameworks and qualification types					
	Sub-framework	NQF level	Qualification types		
Postgraduate qualifications (with *exception* of the bachelor's degree)	**Higher Education Qualifications (HEQSF)**	10	Professional Doctorate Doctoral Degree		**Occupational Qualifications Sub-framework (OQSF)**
		9	Professional Master's Degree Master's Degree		
		8	Postgraduate Diploma Bachelor Honours Degree Professional Bachelor's Degree (480 credits)	Occupational Certificate	
Undergraduate qualifications		7	Bachelor's Degree (360 credits) Advanced Diploma	Occupational Certificate	
		6	Diploma (240 or 360 credits) Advanced Certificate	Occupational Certificate	
		5	Higher Certificate	Occupational Certificate	
	General and Further Education and Training (GENFETQSF)	4	National Certificate	Occupational Certificate	
		3	Intermediate Certificate	Occupational Certificate	
		2	Elementary Certificate	Occupational Certificate	
		1	General Certificate	Occupational Certificate	

(Adapted from CHE, 2014:7; DoE, 2007:19-29; Shapiro, 2016:2)

In summary, by implementing the new framework, programmes had to be adapted to ensure flexibility between occupations and a more cooperative work environment (SAQA, 2000:3-4). In terms of this study, the Diploma in Operating Department Assistance (NQF level 6) is a qualification focused on enhancing and developing students' knowledge, skills and attitude to ensure they are multi-skilled on completion of training and able to deliver safe, competent assistance to all healthcare professionals in the operating department.

3.4.2.2. South African Qualifications Authority

The South African Qualifications Authority (SAQA) is an administrative body. It was established to promote a high quality education and training system, develop standards for education and training through participatory and representative processes and structures, and to regulate the NQF as stipulated by the National Qualifications Framework Act 67 of 2008. To achieve this, SAQA stipulates that all qualifications should include critical cross-field outcomes as well as disciplinary, domain-specific competencies (Boughey, 2004:11; DoE, 2007:6; SAQA, 2000:4).

Briefly then, the role of the SAQA is to register standards and qualifications on the NQF (DoE, SAQA & CHE, 2016:4). With regard to the Diploma in Operating Department Assistance, it was registered by SAQA as a NQF level 6 qualification after it had been accredited by the Higher Education Quality Committee (HEQC) of the CHE, a section of the Department of Higher Education and Training (DHET).

3.4.2.3. Council on Higher Education and the Higher Education Quality Committee

The HEQC, an independent statutory body, is a sub-division of the CHE established by the Higher Education Act 101 of 1997 (RSA, 1997). Its main function is to generate and set standards for all HET qualifications and to ensure that such qualifications meet the SAQA criteria for registration (DoE *et al*., 2016:4). The CHE, as the quality council for higher education, is ultimately responsible for the quality of higher education and training (CHE, 2013:2).

The HEQC oversees the accreditation of programmes by appointing evaluators who are experts in their fields to evaluate the quality of new programmes according to the following seven accreditation criteria: (i) programme design; (ii) student recruitment, admission and selection; (iii) personnel; (iv) teaching and learning; (v) student assessment policies and procedures; (vi) infrastructure and library resources and (vii) programme administration services (CHE, 2004b:6-7). Only if a programme meets the specified criteria and complies with the HEQC standards, is it accredited.

Quality education and training delivered by higher education institutions is a global trend (Maila, 2005:1457) mirrored by the opinion of authors in many countries such as Australia (Shah & Nair, 2012:5-6), China (Lei, 2012:279), the Gulf States (Al-Atiqi & Alharbi, 2009:6-7), Kenya (Abagi, 2006:88-89), Uganda (Tumwesigye, 2006:225), the Philippines (Adeyemo & Sehoole, 2015:33), Russia (Suspitsin & Suspitsyna, 2007:67), South Africa (Mabizela, 2006:157) and sub-Saharan Africa (Varghese, 2006:42-43).

One way to ensure the quality of a programme is to make sure the curriculum is developed according to the needs of all stakeholders, which include employees and students, and quality assurances are in place (Boughey, 2004:14). Quality assurance as well as transformation in the HET arena is characterised by constant change (Sutherland, 2009:27). Hence, the changes in the NQF, with a specific focus on the Higher Education and Qualification Framework (HEQF) and as related to this study, follows next.

3.4.2.4. The Higher Education Qualifications Sub-framework

The HEQF, an integral part of the NQF, was published on 5 October 2007 with the aim to establish a single coordinated qualification framework for higher education (DoE, 2007:1) as envisaged in the Education White Paper 3 (DoE, 1997:11). The HEQF occupies six levels of the NQF (cf. Table 3.2). Levels 5-7 represent undergraduate qualifications with the exception of the professional bachelor's degree at level 8 and levels 8 to 10 representing postgraduate qualifications (CHE, 2014:7; DoE, 2007:19-29; Shapiro, 2016:2). In 2014 the revised Higher Education Qualifications Sub-framework (HEQSF), in line with the previous framework, was published (DHET, 2014a:3). It had minor changes as explained below.

The new sub-framework was applicable to this study because it: (i) recognises three broad qualification profession routes, namely vocational, professional and general; (ii) provides greater flexibility and options related to professionally-oriented qualifications; (iii) simplifies credit specifications within a qualification and (iv) adds two occupational qualifications to the nine existing qualification types (CHE, 2014:12 & 18). It also clarifies the characteristic differences of the 240- and 360-credit diploma variants. By offering the latter, higher education institutions may allow up to 120 credits of work-based learning whereas the two-year

diploma may not. The two-year diploma may only be offered if it leads to a professional designation or occupation role as determined by the relevant professional body (CHE, 2014:29). The qualification types are mapped onto the six levels.

The Diploma in Operating Department Assistance is primarily a professional qualification, based on the needs of the industry, and includes experiential learning. The aim with this qualification is to develop graduates who are able to demonstrate competence in the perioperative field. Hence, students are exposed to the workplace context which allows them to gain in-depth and specialised knowledge encompassing clinical skills and workplace experience (DoE, 2007:21).

All qualifications submitted for accreditation and registration after 1 January 2009 had to comply with the HEQSF. A transitional period was allowed for qualifications that did not conform to the new requirements (DoE *et al*., 2016:3). One such a requirement was the National Senior Certificate as minimum requirement for admission into a higher education institution. From an institutional approach, the relevant PHEI requires the National Senior Certificate with entrance to diploma studies as minimum admission requirement for the Diploma in Operating Department Assistance (DoE, 2007:11).

As already alluded to, HET is central to social, economic and cultural development in SA with higher education institutions accountable to the Education Ministry for the standard of their education and training (CHE, 2014:18; Sutherland, 2009:29). In addition, all nursing, medical and allied healthcare qualifications must be accredited by a professional body. The professional bodies continue to determine whether a particular qualification meets the industry requirements for registration and regulate professional conduct in cooperation with the HEQC (DoE *et al*., 2016:3).

3.4.2.5. Professional bodies

The registration of ODAs worldwide is inconsistent as discussed in Chapter 2 (cf. sect. 2.5.1.1). For example, in the USA only some states require registration with a professional body. In the UK all ODAs (or ODPs as they are called in the UK) must register with a professional body on completion of their training (Fuller, 2013:3). In SA all medical, health sciences and nursing qualifications are accredited and endorsed by a health professional body. On completion of training, healthcare professionals are required to register with the relevant professional body to practise. All nursing programmes are accredited with the SANC while medical and health science programmes with the HPCSA. The Diploma in Operating Department Assistance is, however, currently not accredited by any health professional body (Jordaan, 2011:13; Naidoo, 2016). For the past 15 years numerous stumbling blocks have been experienced in terms of the endorsement of the ODA profession and registration of the curriculum with a regulatory body.

When the SANC was approached to register the ODAs, the organisation refused, citing the fact that these assistants were not qualified nurses, and not included in the Nursing Acts (Act 50 of 1978 and Act 33 of 2005) (SANC, 1997:1-29; SANC, 2006:1-45). The SANC did, however, state the particular PHEI could train ODAs as long as they did not perform nursing tasks (Sibiya, 2008:1). In past years, the HPCSA was also not prepared to accredit and register this cadre of healthcare workers (Masondo, 2012:1). Subsequently, a

position paper for ODA registration, prepared by the academic and operational managements of the three major private healthcare groups in SA, was compiled for submission to the Health Association of South Africa (HASA) for submission to the HPCSA in 2016 (Van Zyl, 2016a:1) with a third renewed effort in 2017 (Slabbert, 2017). The submission was confirmed by the HPCSA and is currently being considered (Khumalo, 2017).

The SA private higher education and training landscape, within which the PHEI operates, is discussed in some detail in the next section.

3.4.3. Private higher education in South Africa

The PHEIs already in existence in the late 19th century, in South Africa, was ignored by the government and research community during most of the 20th century and eventually absorbed by public institutions due to the lack of policies and regulations. The Constitution of the Republic of South Africa, Act 108 of 1996, was the first to acknowledge and recognise PHEIs (Mabizela, 2006:133-135) after which several Acts and regulations were promulgated to regulate PHEIs. The registration and regulation of PHEIs are explored in more detail in section 3.4.3.5.

Since 1996 (MacGregor, 2008:2; Sehoole, 2006:10) private higher education has blossomed (Kruss, 2002:15). In accordance with the Constitution of the Republic of South Africa (Act 108 of 1996), the National Commission on Higher Education acknowledged the potential PHEIs had to contribute to the success of higher education in SA (Mabizela, 2006:135). Hundreds of new local private providers were established (MacGregor, 2008:2). These PHEIs were locally privately owned institutions, franchises or a partner of a public or international university (CHE, 2007:174; Kruss, 2002:15; Levy, 2002:29; Mabizela, 2002:48-49; Mabizela, 2006:131-135; MacGregor, 2008:1 & 3).

Although these institutions mostly focused on businesses, information technology and education, the higher education sector did have the flexibility to meet the spectrum of educational needs by offering full degree programmes to more career-oriented non-degree programmes. Despite the fact that there was an increase of students seeking enrolment in the various types of PHEIs, the number of PHEIs decreased rapidly due to the government imposing freezes such as the PHEI registration regulation (Kruss, 2002:15; Levy, 2003:4; Mabizela *et al*., 2000:2-6; MacGregor, 2008:1).

The next three sections outline the types (cf. sect. 3.4.3.1) and number (cf. sect. 3.4.3.2) of PHEIs as well as the registration and regulation (cf. sect. 3.4.3.3) of PHEIs in South Africa. Section 3.4.3.2 also provides an overview of the programmes offered by the PHEIs.

3.4.3.1. Types of private higher education institutions

By 2002 a few types of PHEIs existed in SA, namely transnational, agency/franchise institutions, Technical and Vocational Education and Training (TVET) institutions and the corporate classroom (Levy, 2003:6). The transnational colleges affiliated with international institutions, i.e. Monash University (Australia) which was at the time limited in SA. Agency institutions, accounting for more than a third of PHEIs, are local

companies providing higher education, i.e. Damelin College. TVET institutes mainly offer level 5 programmes and account for most of the PHEIs. The corporate classroom lies within a large organisation which trains their employees, i.e. Old Mutual. All four types of institutions feature the for-profit form with the focus on a commercial and practical thrust (Levy, 2003:6-7).

According to Levy (2003:10-11), the SA private higher education sector also features characteristics of religious, non-for-profit, and demand-absorbing PHEIs. The religious institutions form part of the TVET group. The two types, 'dubious' and 'serious', of demand-absorbing PHEIs enrol students who were rejected at public or other private institutions. The 'serious demand-absorbing' institutions are usually committed to quality education and training and thus referred to as 'semi-elite' institutions. These providers, situated between the 'elite' and 'non-elite' group, have average selectivity and status and are involved in applied research. They often develop niche programmes which focus on practical education and teaching and recruit the most talented students of the secondary schooling system (Altbach, Reisberg & Rumbley, 2009:84-85; Kraak, 2012:3). The 'dubious' can be subsumed into the 'non-elite' group of private providers and are viewed as exploitive family-owned institutions capitalising on the unmet demand and deliver poor quality education (Altbach *et al.,* 2009:85; Kraak, 2012:3).With the exception of the 'demand-absorbing' and 'elite' institutions, Kraak (2012:2-3) also identify the 'identity institutions' within the SA market. These institutions are usually of religious, gender or ethnic nature (Altbach *et al*., 2009:83; Kraak, 2012:3). There are also a few non-for-private PHEIs which are small compared to their counterparts (Levy, 2003:9-10). But, according to Altbach *et al.* (2009:86), the PHEIs in SA are mainly classified as religious, for-profit and demand-absorbing institutions. Levy (2003:8) is of the opinion that the inclination of PHEIs is more towards the demand-absorbing private higher education due to the overwhelming growth of the higher education sector.

The discussion above reiterates the overwhelming perception that the private higher education sector is far from harmonious. Not only do the PHEIs differ according to the type of institutions, but also according to the type of programmes and the level at which they offer it. The next two sections focus on the number of PHEIs in SA and the type of programmes offered.

3.4.3.2. Number of private higher education institutions and programmes offered by PHEIs

As mentioned, after the mid-1990s there was a noticeable growth in the private higher education sector (Kruss, 2002:15). By 2000 there were 323 PHEIs with a student enrolment of 10 8701 (Mabizela *et al.,* 2000:4 & 10). The biggest concentration of PHEIs was in Gauteng (56%) followed by KwaZulu Natal (14%) and the Western Cape (11%). However, after 2002 the number of PHEIs declined due to the rigorous and stringent accreditation and registration processes (MacGregor, 2008:1) with only 113 PHEIs (a decline of 210 since the 2002 report) registered by the DHET in 2015. In 2016, the existing PHEIs were offering 1 046 registered HE qualifications with a total of 345 328 students enrolled and 92 740 qualifications awarded in 2016 (CHE, 2016:1; DHET, 2015b:3 & 5; Hofmeyr & Lee, 2002:80-84; Levy, 2002:30 & 31; SAQA, 2016c:1; Shapiro, 2016:5).

The majority of PHEIs offer higher certificates, advanced certificates and diplomas of a vocational nature (DHET, 2016a:10-106; MacGregor, 2008:2). A study done by Mabizela *et al.* (2000:6 & 7) which included 145 PHEIs indicated 48% PHEIs experienced a concentration of enrolments in business, commerce and management studies. Twenty-four per cent (24%) offered education, training and development programmes and only 9% life sciences, mathematical and computer studies. The remaining 19% were thinly spread across other fields (Mabizela *et al.,* 2000:2-7). Only 4% (4 254 students) of all student enrolments were in the health sciences and social services fields. Although the researcher did not elaborate on the nature of the health sciences programmes offered, the finding did indicate most of the student enrolments (78%) were for diplomas and certificate programmes (Mabizela *et al*., 2000:8). By 2008, the list of programmes grew with PHEIs now also focusing on information technology, beauty therapy and hospitality (Gupta, 2008:572).

In 2016 the majority of the 125 PHEIs (91 registered and 34 provisionally registered) offered programmes registered as NQF level 5 and higher certificates to level 7 degrees. Only a few PHEIs offered level 9 master's degrees (less than 10) and level 10 doctoral degrees (less than five). The programmes offered mirror the fields covered by PHEIs in the rest of sub-Saharan African counties (cf. Ch. 3, sect. 3.3.4.2), namely arts, accounting/finance, business and commerce, computer science/technology, digital animation, education, graphic design, hospitality, information technology, interior design, journalism, management (human resources, project), marketing, sound and network engineering, theology/ministry, travel and tourism, photography and sports and recreation. Despite the long list of programmes offered, only five PHEIs focus on health sciences programmes and only two are registered to offer the Diploma in Operating Department Assistance (DHET, 2016a:10-106).

On the contrary, to make certain quality education and training ensure graduates are equipped to enter the 21st century workforce, quality assurance, regulations and policies which include mechanisms for accreditation, oversight and evaluation of private institutions are very important (MacGregor, 2008:2; The World Bank, 1994:5). Hence, proper quality assurance practices and regulation are crucial to establish a sound private higher education sector. The next section presents the registration and regulation of PHEIs in South Africa.

3.4.3.3. Registration and regulation of private higher education institutions

Both public and private institutions are steered by the DHET in cooperation with the CHE. The DHET implements its registration and regulation functions according to the Higher Education Act 101 of 1997 and Regulations for the Registration of Private Higher Education Institutions of 2002 (DHET, 2014b:4). Therefore, PHEIs are required to register with the DHET to ensure: (1) quality sustainable education is provided by private institutions with the necessary infrastructure and resources and (2) students obtain HEQF aligned and NQF registered qualifications (DoE, 1997:21).

The PHEIs further have to comply with the Regulations for the Registration of Private Higher Education Institutions (2002) published by the DoE (DoE, 2002:6; DHET, 2016b:5-6). These regulations provide clear guidelines for application and registration (DoE, 2002:4). The Higher Education Amendment Bill number

39384 of 9 November 2015 amended the 1997 Higher Education Act and was published in November 2015. To this Bill, one additional criterion was added, namely to provide for different categories of registration for PHEIs: Clause 33 of the Bill provides for registered PHEIs to be named a university, university college or higher education college (RSA, 2015:1 & 35). To ensure and maintain the quality of HET in the private sector, PHEIs are only registered for a limited period of time. Twenty to 24 months before a registration date expires, the PHEI must apply for reaccreditation by submitting applications for all their registered qualifications to the HEQC. Reregistration depends on whether the HEQC reaccredits the programmes (CHE, 2014:11).

The next three sections provide an overview of the researcher's professional context (cf. sect. 3.5) to this study as well as an overview of the organisational (cf. sect. 3.6) and programme context (cf. sect. 3.7) to provide transferability. In these sections sufficient relevant detail is given for the reader and other researchers to understand the context of the study and compare it to their own contexts.

3.5. THE RESEARCHER'S PROFESSIONAL CONTEXT

The current ODA curriculum was developed by the researcher in her capacity as manager of the Higher Education and Training Department at the particular PHEI. Prior to this, she had performed numerous functions in the same institution. For nine years she was a scrub practitioner; she spent two years as a training and development facilitator in the operating department and six years as an operating room nursing science educator. For the last ten years she had been a manager overseeing operating theatre nursing, nursing, emergency medical care and ODA education and training which all lies within the higher education and training domain.

Aspects of the researcher's current role informed her decision to conduct this study. All complaints regarding formal education and training in the PHEI are referred to her. Importantly, one of her main responsibilities is to ensure that the HET programmes offered by the PHEI meet the demands of the clinical environment and its stakeholders. She also has to make sure sufficient human resources are available to make patient care (which includes perioperative patient care) safe and secure. Undoubtedly, the researcher's position as HET manager made the possibility of researcher bias very likely and she therefore had to make a discerning distinction between her role as a researcher and her role as a manager to prevent partiality. This was accomplished by using an external researcher to generate and record the data, an external transcriber (cf. Ch. 4, sect. 4.4.3.2 & 4.4.4.3) and two auditors to read the transcriptions and cross-check the themes, categories and sub-categories (cf. Ch. 4, sect. 4.4.2.4 & 4.4.4.4.) identified by the researcher. The service of an external administrator was used to administrate the Delphi survey and process the data of each round (cf. Ch. 4, sect. 4.4.3.2 & 4.4.3.3). The researcher used the processed data to determine the consensus of each knowledge, skill and attitude identified and proposed. Furthermore, the researcher applied bracketing and intuiting throughout the research process to reduce bias and improve rigour in the study (cf. Ch. 4, sect. 4.3).

3.6. ORGANISATIONAL CONTEXT

The origin of the PHEI, where this study was conducted, can be traced back to 1984 when a decision was made to train nurses for a private hospital group. In 1997 the training was expanded by opening a learning centre in Bellville, SA. Only a one-year course – the course leading to enrolment as a nursing auxiliary which was accredited by the SANC – was offered initially. In 1999 the SANC also accredited the two-year course leading to enrolment as a nurse (GN R. 2175 of 1993) and in 2006 the bridging course for enrolled nurses leading to registration as a general nurse (GN R. 683 of 1989) was accredited by the SANC. These programmes were initially offered at three of the PHEIs delivery sites situated in Bryanston, Bloemfontein and Bellville. The student numbers increased rapidly in line with the human resources needs of the company and shortage of nursing staff (Monama, 1999; SANC, 1997:ii-iii; Stroh, 2016a; Stroh, 2016b). This resulted in commissioning four additional delivery sites situated in Pretoria, Kimberley, Nelspruit and Polokwane.

Subsequently, with the Higher Education Act 101 of 1997 necessitating all PHEIs to register with the DoE, the PHEI obtained provisional registration to offer the two-year Diploma in General Nursing Science (accredited by the SANC as the bridging course for enrolled nurses leading to registration as a general nurse) in 2008. Provisional registration changed to full registration in 2011. In the same year the PHEI obtained DHET registration to offer the two-year Diploma in Operating Room Practice which was later adapted to a three-year programme entitled Diploma in Operating Department Assistance. After CHE accreditation, SAQA and DHET registration, the first group of students started in January 2013 (Brown, 2011; Metcalfe, 2009; Monama, 1999; Naidoo, 2013; Qonde, 2011; Stroh, 2016b).

During the 20-year period since 1997, the PHEI altogether opened seven learning centres in six provinces, namely Western Cape (Bellville), Gauteng (Pretoria and Bryanston), Mpumalanga (Nelspruit), Limpopo (Polokwane), the Free State (Bloemfontein) and Northern Cape (Kimberley). The PHEI is currently registered to offer seven healthcare HE programmes, ranging from an NQF level 5 to NQF level 8, of which the Diploma in ODA is one (Qonde, 2017). The details of the other programmes were not relevant to this study and are therefore not included in any discussions.

Currently, the ODA programme is offered at seven delivery sites of the PHEI with a programme coordinator overseeing the general conduct and assessment processes. The training philosophy of the PHEI is based on the principles provided by Stroh (2016b) and listed below. These principles are related to the exit-level of the programme being studied.

- Providing quality, comprehensive learning programmes to all students.
- Ensuring a professional, independent practitioner upon completion of training.
- Motivating students to actively participate and take ownership of their own development.
- Integrating theory into practice.

Stroh (2016b) contributes the following statement enhancing the larger context in which the PHEI principles are embedded. “By living out our philosophy we create a culture of learning that means that learners can

work and obtain experiential learning in a safe environment with the support of their peers and colleagues." All curricula developed by the staff of the PHEI are grounded in this institutional teaching and learning philosophy.

3.7. PROGRAMMATIC CONTEXT

Although the ODA education and training was formalised in 2010, the current three-year ODA programme (which includes anaesthetic and recovery room training) commenced in 2013 with the first cohort of students graduating at the end of the 2015 academic year and finding employment in 2016. At the end of 2017 the third cohort of students graduated. In order to understand the study context it is important to discuss the structure of the ODA programme, and especially the anaesthetic and recovery room component, in some detail.

3.7.1. Operating department assistance programme

The ODA programme is an extremely 'busy' and dense programme in which pedagogical practices, educational theories and input of various role players in the theoretical and clinical arena feature. It is also a programme where accountability is increasingly emphasised due to a highly regulated healthcare environment. In the next section a short summary of the programme's development is provided followed by a more-in-depth look at the programme itself.

3.7.1.1. Short summary of the ODA programme development

The overall purpose of the ODA programme is to alleviate the skills shortage in operating departments with the aim to prepare the ODA with the necessary competencies to function in ever-changing environments and being able to assist the registered healthcare professional within the perioperative environment (SAQA, 2017:1-6). In response to the South African higher education policy requirements, the two-year Diploma in Operating Room Practice curriculum (which did not include the exit-level outcome of ODAs assisting the healthcare professional in anaesthesia and recovery room) (Cummings, 2008:3-4) was upgraded to a three-year diploma programme as mentioned previously. Hence, the title 'operating room practitioner' changed to 'operating department assistant' as alluded to in Chapter 2, sect. 2.4.1.7 (cf. Fig. 2.3). The curriculum was redesigned according to a qualification template developed by a task team consisting of academics at three PHEIs and the HEQC curriculum guidelines. Thus, it was necessary to add the required components (anaesthetic and recovery room modules), but to remain within the credit boundaries of 360 set by the HEQC (CHE, 2014:29). Overloading the curriculum could impact negatively on the quality and nature of the students' learning experience and have financial implications which could impede learning (Badenhorst, 2012:4). The latter was not applicable to students registered for the ODA programme at the PHEI because no tuition fees apply and the study package includes uniforms, study materials and text books (Van Zyl, 2017a:1).

3.7.1.2. Programme detail

Selection criteria

The main selection criterion is a Grade 12 school certificate with an average pass mark of 50%. The following Grade 12 subjects are compulsory:

- Life or physical science – NQF level 4 with a minimum of 40%
- Mathematics – NQF level 4 with a minimum of 40%

or

- Mathematics literacy – NQF level 4 with a minimum of 50%
- English communication skills – NQF level 4 with a minimum of 40%
- Computer literacy – NQF level 3 with a minimum of 40%

The selection process also takes into account the results of psychometric testing, interviews and health assessments with student numbers largely determined by the budget amount determined by the PHEI (Van Zyl, 2017a:1).

Purpose of the programme

On completion of training, the ODA should be able to function in both the public and private sector in sterile and non-sterile areas and have the necessary cognitive, affective and psychomotor skills to create a safe therapeutic diagnostic or/and surgical environment for the patient. The ultimate aim is to supply the operating department in hospitals with competent ODAs able to assist all members of the theatre team. The ODA should be able to deliver this function in a cultural diverse operating room environment within required legislation, health and safety regulations, patient rights, confidentiality, ethics and codes of practice with sustained professional behaviour (SAQA, 2017:1).

The qualified ODA should be able to perform various roles such as a circulator (also referred to as a 'runner'), scrub practitioner (whose role is around the surgical instrumentation and patient care), anaesthetic assistant (whose role is to prepare for anaesthesia and assist the anaesthetist) and assisting the RN in the recovery room. The scrub practitioner assists the surgeon next to the operating table whereas the circulating nurse assists the scrub practitioner. The latter is the link between the sterile team members and non-sterile areas and supplies as well as to the rest of the operating complex, nursing units and laboratories (Fuller, 2013:5; Phillips, 2007:57-63; Rothrock, 2011:12; Timmons, 2004:648). The ODAs are multi-skilled and ought to be able to multitask by switching between the circulator, scrub practitioner and AA roles all the time.

Programme level, credits and nature of the programme

The ODA programme is registered on an NQF level 6 and covers 3 600 notional learning hours over a three-year period (SAQA, 2017:1). It is competency-based and encompasses various modules (cf. Table 3.3) to equip students with the required competencies to fulfil their role and function in the operating department.

Table 3.3: Diploma in Operating Department Assistance programme structure

Study year	Module	Credits allocated	NQF level
Year 1	Professional Practice 1	16	5
	Integrated Science (patient care, infection prevention principles, medical terminology) 1	16	5
	Anatomy 1	12	5
	Physiology 1	12	5
	Operating Department Science 1: Circulating functions & preparation for anaesthesia	64	5
	Total credits	**120**	
Year 2	Professional Practice 2	12	6
	Integrated Science (Applied Sociology and Psychology) 2	16	6
	Anatomy 2	16	6
	Physiology 2	16	6
	Operating Department Science: Scrub functions • Advanced Operating Room Principles, Anaesthetic & Surgical Pharmacology • General Surgery • Gynaecological & Obstetric Surgery • Urological Surgery • Orthopaedic Surgery & Radiology Procedures • Ear, Nose & Throat Surgery	60	6
	Total credits	**120**	
Year 3	Professional Practice (Leadership principles) 3.1	16	7
	Professional Practice (Management principles) 3.2	16	7
	Operating Department Science 3: Advanced scrub functions • Diagnostic and Surgical Procedures • Paediatric Surgery • Vascular Surgery • Advanced Orthopaedic Surgery	60	6
	Operating Department Science 3 • Advanced Anaesthetic & Recovery Room Care	16	7
	Operating Department Science 3: Electives • Ophthalmic Surgery *or* • Neurosurgery *or* • Plastic, Reconstructive Surgery & Maxilla Facial Surgery	12	7
	Total credits	**120**	

(Source: Van Zyl, 2012:15-16)

Professional practice, microbiology, infection prevention and control, anatomy, physiology and pathology, sociology, psychology, operating department science and anaesthetic and recovery room science are modules that feature in the curriculum. Anatomy, physiology, microbiology and a basic understanding of pathology and patient care form the foundation of all practices in the operating room (Van Zyl, 2012:15-16).

The modules build onto one another by means of a spiral, staggered approach. Students spend their time divided into blocks of theoretical contact sessions (facilitated by the educators) and clinical rotations in the hospitals. The latter is mainly in the operating department with the students rotating through the various

disciplines as indicated on their programme planner. The number of hours devoted to theory (time spent in class) decrease with each year as the clinical placement hours increase.

An innovative aspect of the programme is that the third-year students can choose between three electives (cf. Table 3.3). Another innovative aspect is that follow-up of students in practice occur (in the workplace) by the educators who also facilitate their theoretical sessions. Mentors are also available to provide guidance during clinical rotation and assist the students to complete the relevant and required portfolio of evidence (PoE) which is linked to the modules (Van Zyl, 2016b:1-4). Thus, during the time in the clinical setting students have the opportunity to get to know surgeons, anaesthetists, RNs, clinical facilitators and unit managers. Table 3.4 illustrates the breakdown of the allocated teaching and learning hours during the three-year programme period and the hours spent on various teaching methods.

Table 3.4: Teaching and learning hours and hours spent on various teaching methods

Teaching and learning hours	Hours spent on various teaching methods
• Classroom and theoretical assessments: 1 076 hours • Self-study: 1 124 hours • Work-integrated learning: 1 400 hours • Work-based learning: 1 600 hours (not credit bearing)	• Lectures (including active teaching methods): 1 000 hours (28%) • Tutorials: 46 hours (1.2%) • Syndicate groups: 20 hours (0.8%) • Work-integrated learning: 1 400 hours (39%) • Independent self-study: 1 124 hours (31%)

(Source: Van Zyl, 2012:37, 39-40 & 48)

It is obvious from the above listed hours that the students spend a lot of time in class. This places a burden on the educators who must also accompany the students in the hospitals during their clinical placements and conduct the students' formative and summative assessments. Hence, the educator/student ratio is determined on a monthly basis to ensure it does not exceed the ratio of 1:15 in practice. Currently, the groups vary between 30 and 36 per group per year with 12 educators overseeing the training of approximately 110 ODAs at any given time (Coetzee, 2017).

Clinical rotation

The majority of students spend all their time in one hospital. But, if there are not enough clinical learning opportunities students are placed out to another private hospital. The time allocated to the various units and disciplines is summarised in Table 3.5.

Table 3.5: Clinical allocation weeks of ODA students per year of study

Year 1		Year 2		Year 3	
Discipline	**Weeks**	**Discipline**	**Weeks**	**Discipline**	**Weeks**
Hospital orientation	1	Operating room: Scrub duties - rotation through various disciplines	27	Leadership and management	6
Nursing unit	1			Operating room: Scrub duties	24
Operating department reception	1	Operating room: AA functions	3	Operating room: AA functions	3
Central sterile supply department (CSSD)	3			Recovery room: RRA functions	2
Operating room: Circulating duties	19				
Operating room: AA functions	3				
Total weeks	**28**		**30**		**35**

(Source: [redacted], 2016a:6-7)

The anaesthetic and recovery room content are spread over the three years. This is testimony to the complaints received from the students and clinical staff stating these modules are too 'spread out' and the time and hours allocated to the anaesthetic and recovery room rotation do not sufficiently allow for consolidation of knowledge. In relation to the students' circulating and scrub allocation, the anaesthetic and recovery room placement weeks seem too limited. There seems to be too much emphasis placed on the ODAs' circulating and scrub functions. The situation is also aggravated by students not allocated according to their programme planners.

Assessment

An integrated assessment approach comprising formative and summative assessments is followed in the ODA programme. These assessments include cognitive, psychomotor and affective aspects. The formative assessments – which include anaesthetic and recovery room assessments – can be done by means of case presentations, clinical simulations, perioperative care plans, a PoE, tests, oral presentations and also clinical assessments by means of direct observation in the workplace. The following assessment techniques are used for summative assessments: PoEs, written and oral examinations as well as clinical examinations by means of direct observation. Although the bulk of the formative assessments are done by the educators, trained clinical facilitators and mentors are allowed to assess non-crucial clinical procedures. The summative assessments are, however, done by the respective educators with the assistance of a second educator who acts as an internal moderator (Van Zyl, 2012:12-13).

3.7.2. Anaesthetic and recovery room training

The anaesthetic and recovery room component is incorporated into the ODA programme and fragmented over the three years (cf. Table 3.6). The content is arranged in a hierarchy to underpin the notion of

progression (Scott, 2008:9). It allows students to revisit topics and relate new content to previous learning as the difficulty level and the student's competence increases (Dent & Harden, 2013:10).

Table 3.6: Overview of the anaesthetic and recovery room units over the three-year period

Content	Competencies	Year 1	Year 2	Year 3
Foundations/principles of anaesthesia and anaesthetic preparation	Students are able to prepare for anaesthesia for minor surgery	√		
General anaesthesia for minor procedures	Students are able to prepare for anaesthesia and assist the anaesthetist during minor surgery		√	
Regional and general anaesthesia for major procedures (including invasive monitoring)	Students are able to prepare for anaesthesia for major surgery, assist the anaesthetist with general and regional anaesthesia for major surgery			√
Recovery room (post-anaesthetic care)	Students are able to assist the RN in the recovery room			√

(Source: Van Zyl, 2012:21-23, 28-31, 36-37)

Table 3.7 provides a summary of the knowledge and skills students are supposed to master during their anaesthetic and recovery room training.

Table 3.7: Summary of anaesthetic and recovery room knowledge and skills

Knowledge	Skills
• Introduction to general anaesthesia techniques. • Anaesthetic-related anatomy, physiology and pathophysiology • Anaesthetic preparation for a list which includes machine, circuits, monitors, equipment, supplies and anaesthetic-related pharmacology • Role and functions of the anaesthetic assistant • Classification of medication used in the surgical setting • Introduction to local and regional anaesthesia • Introduction to anaesthetic drugs and emergency drugs • Transfer and positioning of the patient • Monitoring the patient's vital signs • Adverse anaesthetic conditions and emergencies • Care, cleaning and sterilisation of anaesthetic equipment • Preparation and checking of the recovery room • Care of a patient in the recovery room • Complications related to interventions • Scientific approach to patient care • Principles of accurate scientific record-keeping • Problem-solving and critical analytical skills	• Anaesthetic preparation: checking the anaesthetic machine which includes gas flow, monitors, equipment, sterile supplies and drugs • Checking of emergency equipment and performing cardiopulmonary resuscitation (BLS) • Identification of patient and checking of patient documentation • Safe transfer and positioning of the patient for surgery • Assisting the anaesthetist during the induction, maintenance and reversal phases of anaesthesia • Assisting the anaesthetist with the management of adverse anaesthetic conditions or emergencies • Assisting the anaesthetist with: insertion of arterial lines, central venous line and regional blocks • Cleaning of anaesthetic machine, ventilator, monitors and equipment • Preparation and checking of the recovery room • Assisting the registered nurse in the recovery room during post-anaesthetic care of the patient • Accurate record-keeping • Utilise a scientific approach to patient care

(Source: Van Zyl, 2012:21-23, 28-31, 36-37)

The affective (values/attitudes/behaviours/beliefs) and non-technical skills are integrated throughout the three years and not necessarily reflected in the anaesthetic and recovery room units. Although the word searches of the ODA curriculum and study material reflected the affective skills (accountability, responsibility, professional, respect and responsibility), it was not formulated as affective outcomes per se. The skills approachable, courteous, professional conduct and boundary setting as well as reassuring are indeed outcomes on the assessment forms.

The non-technical skills (communication, teamwork, leadership and decision-making) were reflected by the word search. Unfortunately, it seemed that many of the affective skills, which the ODA needs, are lacking. These include proactive thinking and reaction, self-confidence, personal integrity (honesty, truthfulness), diligence, alert (observant) and quick response, anticipation and commitment. Except for the situation-awareness skill, all the non-technical skills (cf. Ch. 2, sect. 2.8.9) are covered in the curriculum.

The anaesthetic and recovery room course, as presented in the ODA programme, has the potential to create enough learning opportunities for students to master the needed and relevant knowledge and skills (cf. Table 3.7). On the contrary, the clinical education and training of the students poses a risk. Although the students are allocated to the clinical environment according to an individual rotation programme planner, the following stumbling blocks could prevent learning and therefore result in a student being found 'not competent'. These stumbling blocks are: (i) operating department staff and students not adhering to the rotation programme planner; (ii) students taught by various mentors who have different viewpoints and expectations; (iii) educators who lack insight into the purpose and content of the anaesthetic and recovery room course; (iv) different expectations and management styles of the operating department managers; (v) the lack of a learning culture in the operating department and (vi) students seen as a workforce and treated as such when placed in the operating department which could result in them not getting the relevant clinical exposure (Wood, 2014:326-327).

3.8. SUMMARY

This chapter provided a contextual perspective of the programme under scrutiny by referring to international trends related to the anaesthetic and recovery room course, the national health system as well as the higher education and private higher education sectors in SA. The contextual exploration also included the professional, organisational and programmatic contexts of the study. This information served to build an understanding of the anaesthetic and recovery room component within the ODA which is multifaceted and complex.

The theoretical context of the study was discussed in Chapter 2 and included an overview of the Integrated Behavioral Model (IBM) (cf. Ch. 2, sect. 2.9). This model served as the theoretical grounding to determine stakeholder needs and perceptions as a basis to review the anaesthetic and recovery room programme component. Stakeholder needs were suggested to be further explored by applying Kern's six-step approach (cf. Ch. 2, sect. 2.5.3.2.). Given the theoretical and contextual background as explained, the teaching and learning of anaesthetic and recovery room assistance as a competence in relation to the IBM and as understood by the researcher, is graphically displayed in Figure 3.1.

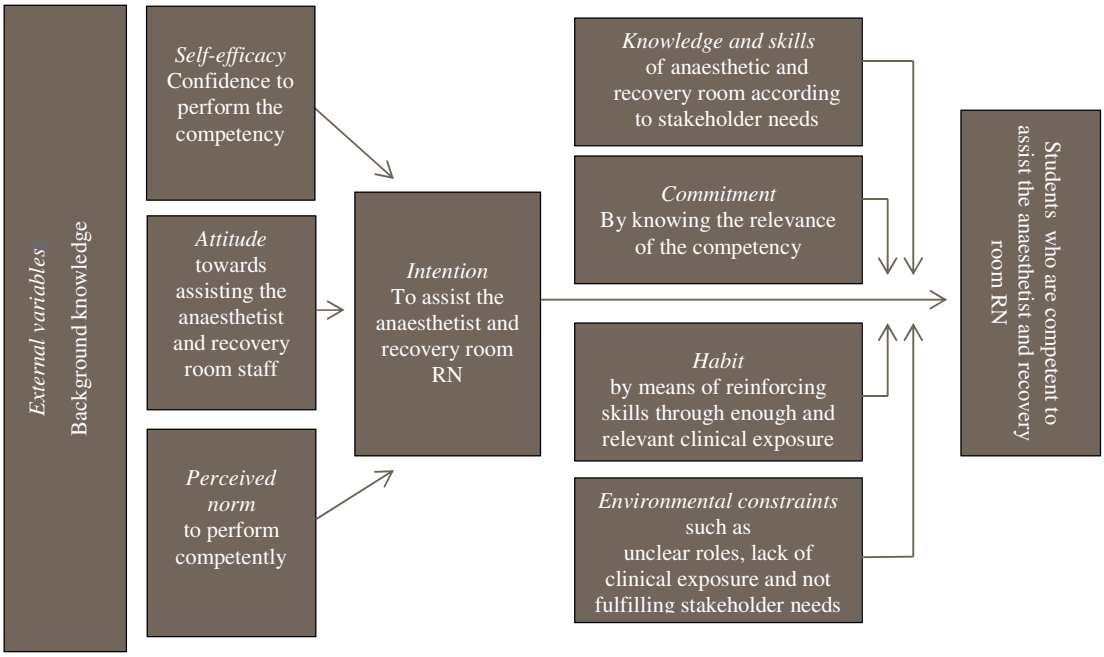

Figure 3.1: Construct of the IBM used as a guide to understand student learning needs and re-design the anaesthetic and recovery room course (adapted from Archer, 2016:56; Wee *et al*., 2016:160)

According to this outline, students enter the programme as neophytes and are exposed to many external variables in the classroom and, more significantly, in the operating department. The students have various attitudes, expectations and sense of self-efficacy which may influence their intentions (cf. Ch. 2, sect. 2.9.2) to assist the anaesthetist and recovery room staff. In fact, there are four other vital elements which impact on the student's intention and ability to competently assist the anaesthetist and recovery room nurse. These are, first of all, the knowledge and skills determined by the relevant stakeholders (cf. Ch. 2, sect. 2.8.8 & 2.8.9). Secondly, commitment (cf. Ch. 2, sect. 2.9.2) to fulfil the necessary roles, functions and habits (cf. Ch. 2, sect. 2.7.2) and in the third place environmental constraints or enablers (cf. Ch. 2, sect. 2.8.10.5). The mentioned elements play an important role in the student's ability to perform the behaviour. All of these take place within the ODA programme which consists of a theoretical and practical component. Thus, to enhance appropriate competence it is important to utilise teaching and learning strategies, including assessments which address the four factors identified in the IBM, namely knowledge and skills, commitment, habit and environmental constraints.

Chapter 4 addresses the research design and methodology employed in this study.

CHAPTER 4
RESEARCH DESIGN AND METHODOLOGY

4.1. INTRODUCTION

A multi-staged programmatic case study design was selected to address the research issue whether the content of the existing Diploma in ODA adequately prepares graduates to function in the anaesthetic and recovery room domain of the operating department in a private hospital context. This chapter represents Stage 2 of the current study.

4.2. RESEARCH DESIGN

The selected case design required multiple data sources to critically explore the current curriculum which did not seem to fit the needs and requirements of the health education context. Various approaches to investigate the quality of the course, its usefulness for practice and to obtain relevant information were employed. A Delphi technique was used to obtain consensus on the competencies and content areas needed for the anaesthetic and recovery room component of the relevant programme.

4.2.1. Research approach, design and research paradigm

The study approach (cf. sect. 4.2.1.1), study design (cf. sect. 4.2.1.2) and study paradigm (cf. sect. 4.2.1.3) are discussed in the following sections.

4.2.1.1. Research approach

An inductive approach through an interpretivist lens of knowledge production was used. An interpretivist knowledge view stems from the hermeneutic philosophy which refers to the art and philosophy of interpreting the meaning of a unit of information (Mackenzie & Knipe, 2006:5; Polit & Beck, 2012:496). Researchers who take an interpretive view seek to understand the whole of a unit in terms of its parts and the parts in terms of the whole. Hence, such inquiries primarily rely on qualitative data generated from research participants who have directly experienced the construct or phenomenon under investigation and mainly capture 'insider' knowledge (Henning, 2004:20; Polit & Beck, 2012:496). The focus in this case was therefore on the experiences, views, perceptions and expressed needs of participants based on their professional involvement and roles in an everyday working environment (Creswell, 2009:8; Henning, 2004:20).

4.2.1.2. Research design

A programmatic case study design was chosen to connect the research question, steps and data within this research project (Archer, 2016:88; Polit & Beck, 2012:741). Depending on the philosophical assumptions of the researcher, case studies might originate from a critical, interpretivist or positivist stance (Maree, 2007:5). From an interpretivist perspective (cf. sect. 4.2.1.3) case study research strives towards a holistic

understanding of the case being studied from an insider's point of view (Brink, Van der Walt & Van Rensburg, 2012:25); in this research the case being the anaesthetic and recovery room course as received and experienced by the relevant stakeholders (the insider's point of view).

Different researchers define and describe case study designs differently, depending on their views and points of departure (Hancock & Algozzine, 2006:9-11; Polit & Beck 2012:271; Salkind, 2010:2; Stake, 1995:xi). According to Yin (2014:16), a case study is "an empirical inquiry that investigates a contemporary (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident". Yin's (2014) definition illustrates the contextual nature of case studies (Meyer, 2001:330) and advocates it as a legitimate research design within a real-world context (Yazan, 2015:138). Hence, the case study design, which relies on multiple data sources (Yin, 2012:5; Yin, 2014:17 & 24), has been effectively used in many studies in several disciplines, e.g., economics, sociology, medicine, law, nursing, social work and education due to its versatile approach where various data collection methods are needed (Keeney *et al.,* 2011:3; Salkind, 2010:4 & 7).

The named design was elected to understand whether the current curriculum adequately prepared students for their role as A/RRAs as there were calls for competent graduates to assist anaesthetists and RNs in the operating department. It was seen as an inquiry strategy which the researcher could use to explore the study component within contemporary healthcare curricula (Archer, 2016:88; Creswell, 2009:13). This corresponds with Meyer's (2001:330) view that a case study is useful to respond to questions relating to contemporary healthcare curricula and does not limit the researcher to one data technique (Gerring, 2007:10). Consequently, quantitative and qualitative techniques were employed in this case to generate and analyse evidence from a real-life context (Meyer, 2001:330).

Other research designs such as experiments, surveys, action research, grounded theory and archival research were not suitable for this study. These designs are not capable of exploring particular programmatic cases which a researcher might be interested in (Yazan, 2015:138). Experiments and surveys fall within a positivist domain and thus would have undermined the purpose and objective of the current study (Baker, 2001 cited in Ihuah & Eaton, 2013:939; Polit & Beck, 2012:12-15). An action research design was also not an option as such research expects the researcher to change the attitude and behaviour of the study participants which were not in line with the purpose of this study (Ihuah & Eaton, 2013:939). The researcher of this current study is situated within the PHEI and is the manager of higher education and training. The participants could have felt intimidated and said what they believed the researcher wanted them to say, which would not have delivered the desired results. The empirical study would not have been ethically justifiable. A grounded theory or an archival research design was also not appropriate. The former allows for data to be collected without an initial theoretical framework and testing the data before a conclusion is made (Creswell, 2009:27; Ihuah & Eaton, 2013:939) whereas the latter only focuses on the past and is limited by data held in the archive. By focusing only on archival data or current curriculum documents it would have distracted the current researcher from the purpose, question and objectives of this study (Ihuah & Eaton, 2013:939).

Hence, the programmatic case study design offered exploratory opportunities to address the research question (cf. Ch. 1, sect. 1.5) and was thus preferred (Yin, 2012:5; Yin, 2014:238). However, one weakness of a case study design is that there are no recipes that guide case study research. But, Yin (2014:24-29) and Meyer (2001:329) provide useful insights and recommendations on its use. The design and data collection methods were tailored to suit the research questions in a principled way. Also, as suggested by Yin (2014:29), the researcher started with the main research and subsidiary questions (cf. Ch. 1, sect 1.5) as it provided a firm guide to follow in the rest of the research process. The four steps, as suggested by Yin (2014:29), were used to plan and execute this study in combination with the six-step approach of Neale *et al.* (2006:5-6) (cf. Fig. 4.1) of which the main research question constituted the first step. Next, the subsidiary questions, which constituted the objectives of the study, were developed to: (1) establish how the stakeholders currently experience operating department assistants (ODAs) in the anaesthetic and recovery room practice; (2) establish whether the current cognitive, affective and psychomotor skills of ODAs are sufficient to perform their anaesthetic and recovery room duties; (3) establish whether there is a hierarchy of importance regarding the sequencing of cognitive, affective and psychomotor skills of ODAs; (4) establish the possible gaps in the cognitive, affective and psychomotor skills currently taught to ODAs and (5) establish what a needs-based curriculum for anaesthetic and recovery room practice in an ODA programme would entail. The third step was to identify the 'study unit' ('the case') – which was the anaesthetic and recovery room component – within a broader ODA education and training programme offered at a particular private higher education provider in SA. Then the data generation methods and ways to logically link the data to the aims of the study were determined. The final step was to determine the criteria for interpreting the data (Yin, 2014:29). These last two steps are very similar to the six-step inquiry of Neale *et al.* (2006:5-6).

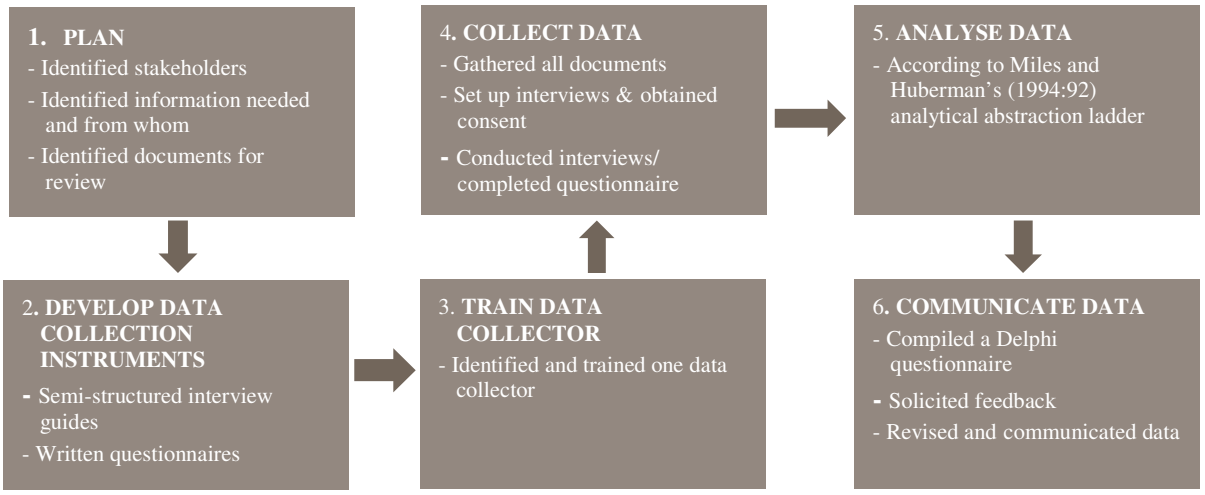

Figure 4.1: Programmatic case study steps (adapted from Neale *et al.*, 2006:5-6)

Together with Yin's (2014:29) logical steps, the step-by-step approach of Neale *et al.* (2006:5-6) were employed to plan and execute the data collection process (cf. Fig 4.1). Although the researcher chose a single programmatic case study design for its in-depth and rich knowledge (Keeney *et al.*, 2011:1; Mackenzie & Knipe, 2006:938; Polit & Beck, 2012:504; Yin, 2012:5), it introduced a range of strategic, ethical and personal issues into the research (Creswell, 2009:177) which the researcher had to be aware of. Thus,

precautionary methods such as bracketing were introduced to prevent ethical drift and bias. As the researcher was involved in the development of the current ODA curriculum, she was constantly aware of and alerted to possible bias as a training manager (cf. sect. 4.3).

One concern related to case studies is its generalisability (Polit & Beck, 2012:504). Yin (2014:21) points out that case studies might not be generalisable to populations but to theoretical propositions. A more detailed discussion is presented in the next section.

Generalisation in case study research

Generalisation, also known as transferability (Archer, 2016:89), is defined by Stake (2010:219) as "applying a statement to all or many cases". Smaling (2003:2-3) supports Firestone's (1993:16) stance of statistical and analytical generalisation as well as case-to-case transfer as forms of generalisation which can be used in research studies which use mainly qualitative data. However, even these forms of generalisation are not always applicable to all situations and, if it is, it is hard, if not impossible, to generalise findings from qualitative data to other settings (Firestone, 1993:16). Plowright (2011:31) has the same view and proposes it is problematic to generalise the findings from case studies because of the uniqueness of each case study. Firestone (1993:16-17) states a case study researcher might consider analytical generalisation, but any extrapolation of sample-to-population is unlikely. Case-to-case transfer can be helpful, but only occurs when a programme from one setting is adopted or adapted by the researcher from another setting. However, Smaling (2003:2) points out case studies do not need to be generalisable, but the researcher has an obligation to provide rich, detailed and thick descriptions of data concerning the chosen case to enable readers and other researchers to judge and utilise the findings in their own research as well as helping them to bridge the gap between possible application settings (Firestone, 1993:18). According to Firestone (1993:19), the burden to see possibilities for transferability lies with the reader and not the researcher. The researcher's responsibility stops when he or she has provided and analysed the relevant data.

4.2.1.3. Research paradigm

This study mainly embraced an interpretivist knowledge lens by acknowledging that multiple realities have manifold meanings within a social context and findings are researcher-dependent (Denzin & Lincoln, 2018:344; Yazan, 2015:139; Yin, 2014:17). An interpretative paradigm is often set in motion by inquiry strategies which connect the researcher with data collection and methods of analysis. Interviews and document analysis are two such methods which a case study relies on (Denzin & Lincoln, 2018:21). The interpretivist combines a realist / relativist ontology (nature of the reality), a subjectivist epistemology (relationship between the known and the researcher), a naturalistic set of methodological procedures (how the knowledge is gained within a natural world) and a balanced axiology (ethical issues to be considered when planning the research) (Bitzer, 2018:14; Denzin & Lincoln, 2018:19-20 & 98). According to Yin (2014:17) much of case study research is usually oriented towards a realist perspective but could advance towards a relativist perspective. The latter acknowledge "multiple realities having multiple meanings…" (Yin, 2014:17). A brief discussion on why an interpretivist paradigm suited this study follows.

The current case study focused on a competency-based ODA curriculum framework, which had to meet the needs of different stakeholders. The researcher assumed that the social interactions in the classroom and workplace (operating department) could be explored though a variety of, predominantly interviews (researcher-participant interactions) and group interviews (participant-participant interactions), methods to endeavour to understand the topic being researched from the participants' (managers, anaesthetists, ODAs, students and educators) viewpoint (Bitzer, 2018:14). Conducting open-ended individual and group interviews dealing with the reality of the ODA programme within the PHEI and the hospitals (relativist ontology), and interpreting the data based on the participants' views of the studied situation thus played a key role in the study (Creswell, 2009:8; Ihuah & Eaton, 2013:935-940). The researcher wanted to gain an improved understanding, from the different participants' perspectives, of the knowledge, skills and attitudes ODAs require to function in the anaesthetic and recovery room environment. The study thus draws heavily on inductive reasoning from qualitative data. Analysing the qualitative data was a recursive process to systematically review the data as a means to understand the topic being investigated (Hancock & Algozzine, 2006:56-57; Salkind, 2010:8). The main focus was on interpreting and analysing the data generated by the participants (Denzin & Lincoln, 2018:20; Gill, Stewart, Treasure & Chadwick, 2008:291; Mackenzie & Knipe, 2006:3; Polit & Beck, 2012:264) to develop trends and meaning (subjectivist epistemology) (Creswell, 2009:8-9; Denzin & Lincoln, 2018:98) through cognitive processes and the researcher's own thinking. The study findings reflect the values and balanced view of the researcher (Bitzer, 2018:14).

Although the study was mainly based on qualitative data, questionnaire data were employed to inform, enhance and expand the qualitative findings. Using closed-ended questions, presented by the researcher, consumed a realist orientation (Yin, 2014:220).

The rationale behind the choice of an interpretive knowledge lens was the nature of the posed research questions (Plowright, 2011:8 & 15; Yin, 2014:29). The study mainly involved qualitative data (Creswell, 2009:11; Ihuah & Eaton, 2013:938; Mackenzie & Knipe, 2006:6) to understand how relevant stakeholders (participants) experience anaesthetic and recovery room education and training. This interpretivist stance allowed for inquiry into a complex phenomenon within its natural context (Ihuah & Eaton, 2013:935-940).

A disadvantage of an interpretivist lens is that the research could be seen as subjective by nature and could be influenced by researcher bias (Bitzer, 2018:5). In the current study, the researcher acknowledged her background, beliefs and experiences in the research by describing her relationship to the research in section 4.3. She adopted a 'bracketed' stance (Creswell, 2009:8-9; Denzin & Lincoln, 2018:19; Mackenzie & Knipe, 2006:3).

Although the study was mostly of an interpretative nature, its methodology included elements of pragmatism. Pragmatism highlights the behaviour of the participants in conjunction with the beliefs underlying their behaviour and actions (Bitzer, 2018:14).

4.3. POSITION OF RESEARCHER

Creswell (2009:177) states case study researchers are usually involved in some or other way with the research context and the research participants. In the present study the researcher was the instrument for data generation and analysis. Thus, throughout the research it was important for the researcher to recognise she is human and the primary instrument in data generation and analysis (Leung, 2015:324; Palaganas, Sanchez, Molintas & Caricativo, 2017:427; Sanjari, Bahramnezhad, Fomani, Shoghi & Cheraghi, 2014:2). Consequently, the researcher acknowledged and considered her limitations, views, experiences, attitude and possible bias in the generation, analysis, interpretation and reporting of the data (Palaganas *et al*., 2017:427; Tufford & Newman, 2010:83). The researcher needed to disclose her role (cf. Ch. 1, sect. 1.7 & Ch. 3, sect. 3.5) in the research (Archer, 2016:90) and applied various methods to prevent bias.

As a registered nurse by profession, the researcher graduated in nursing (midwifery, community, general and psychiatric nursing) and is the HET manager of the PHEI where the present study was conducted. At the time of study she oversaw all programmes registered by the South African Department of Higher Education and Training (DHET) on behalf of the PHEI. While working in the operating department, she completed a postgraduate Diploma in Operating Room Nursing and subsequently became interested in teaching operating room nurses. A Diploma in Nursing Education and Administration were successfully completed after which the researcher lectured operating room nurses for many years and coordinated the postgraduate Diploma in Operating Room Nursing for the University of Johannesburg and Stellenbosch University. Owing to her current position in the private training company, the researcher was involved in developing the curriculum and study material to teach non-nurses to function in the operating department as scrub practitioners, circulators and anaesthetists and recovery room assistants. Participating in the development of the ODA curriculum for non-nurses triggered her interest to determine whether the graduates are prepared for their anaesthetic and recovery room assistant functions when entering the workforce. As the manager of higher education and training, the researcher also has the responsibility to ensure that stakeholder needs and expectations are met.

As described, it was envisaged that the position she held at the time of study could skew the data in the direction she wanted it to go if it was carried into the research. However, she strived consciously towards shedding any ideas, preconceptions, misconceptions and bias which could have tainted the research process by using techniques such as bracketing and constant critical reflection (cf. Ch. 1, sect. 1.7) (Tufford & Newman, 2010:80). In-depth critical reflection refers to a continuous process where the researcher reflects on her or his values and examines, understands and recognises how her or his assumptions, location, position and academic background might affect her or his research practices (Palaganas *et al.,* 2017:427). Bracketing occurs when the researcher lays aside (but does not abandon) prior knowledge and assumptions, preconceptions, prejudices and beliefs about the phenomenon with the goal of attending to the generated data with an open mind to avoid misconceptions (Burns & Grove, 2011:96; Parahoo, 1997:45; Tufford & Newman, 2010:83).

The researcher's knowledge of the phenomenon might have hindered her ability to investigate the topic thoroughly throughout as unconsciously assumptions about the topic might have entered the research process (Chan, Fung & Chien, 2013:5; Parahoo, 1997:45). Therefore, the researcher acknowledged her beliefs and values early in the current research process (Tufford & Newman, 2010:83 & 85), namely that non-nurses could be trained to assist anaesthetists and RNs according to the needs of all stakeholders, but excluding the administration of drugs to patients. She further recognised that the current anaesthetic and recovery room curriculum, within the ODA programme, did not appear to prepare ODAs to effectively assist anaesthetists and RNs in the recovery room. From the researcher's view, this assistance entails assisting the healthcare professional efficiently during all phases of the patient's perioperative journey including the handling of scheduled drugs, preparing intravenous fluids and assisting during anaesthetic emergency situations. Assisting the RN in the recovery room under direct supervision entails connecting the patient to monitors, assisting with documentation (including vital signs), preparing the recovery room (including the checking of the emergency trolley and equipment), fetching supplies and/or equipment and cleaning and preparing the patient station. It does not include extubating a patient or taking care of a patient in the recovery room.

The researcher recognised these views and held beliefs and endeavoured to approach the research with minimal interference thereof. For this reason she contracted a trusted researcher as an external data generator to assist with formulating the research questions. This was done to prevent unclear or biased questions due to the researcher introducing her possible preconceptions and which could consequently pose a barrier to the exploration. The external data generator (researcher) thus prevented possible preconceptions of the researcher interfering with the process. In addition, auditors' familiar with the field in question was contracted to cross-check themes, categories and sub-categories which emerged from the qualitative data as well as the choices around the ordering of themes and the selection of illustrative participant quotations (Tufford & Newman, 2010:85-86 & 92). The researcher also kept the question, "how would my expectations and perceptions influence the outcomes of the study?" in mind and constantly reflected on this issue to keep an open mind to the data as it was revealed when read. To illustrate, some of the researcher's insights included that a number of stakeholder needs were too conservative while she perceived others as expecting too much of the ODAs as non-nurses. Another insight involved that the study content presented by some educators was not well planned or facilitated while other educators expected too much of the students such as caring for the patient in the recovery room. Emerging data thus raised additional questions and insights as the data process emerged (Tufford & Newman, 2010:90).

4.4. RESEARCH STAGES

The study was executed in five stages (cf. Table 1.1). These stages are discussed in the next five sections.

4.4.1. Stage 1: Literature review

A comprehensive review of relevant literature was done to determine the theoretical context of how to rethink a new anaesthetic and recovery room component in the current ODA programme. The theoretical perspectives which emerged from the review are contained in Chapter 2.

4.4.2. Stage 2: Interviews and questionnaire survey

The general practice for curriculum development at the PHEI is for training managers of specific disciplines to compile a curriculum with input from a few educators. This method, however, does not provide opportunities for other constituents, i.e. students who graduate from the specific programme, anaesthetists who are on the receiving side of the ODA service and operational managers who oversee the work of ODAs. Hence, the collective voice (Stefan, 2010:58) of these stakeholders on the usefulness of the anaesthetic and recovery room component provides for a more comprehensive way of viewing and appreciating this part of the ODA programme which was selected for scrutiny.

Stage 2 of the research thus comprised of interviews and a questionnaire survey to determine inputs from relevant stakeholders as to the knowledge, skills and attitudes needed by ODAs to optimally function in the anaesthetic and recovery room environment.

4.4.2.1. Research population and sample criteria

The study population consisted of five categories of participants distributed over four geographical regions (cf. Ch. 1, sect. 1.6.4), namely operational managers (including supervisors and mentors), anaesthetists, ODAs, ODA students and educators. The final year students were selected as they had a good and recent overview of the ODA programme while graduates could provide retrospective perspectives of their programmatic experience. Both groups constituted an appropriate data source of whether the anaesthetic and recovery room teaching and learning effectively equipped them for the workforce. The managers who were included as participants worked at the hospitals where the ODAs or students were employed and the anaesthetists were able to report on how they were assisted by the ODAs. The participant educators had a deeper insight into the programme as they facilitated the theoretical contact sessions and did clinical accompaniment with the students in the hospitals. Important to mention is that an identical curriculum including the same study guides, workbooks (PoE) and textbooks were used at all the delivery sites (learning centres) included in this case study.

The sample of participants (also referred to as stakeholders in curriculum terms) are central in the needs assessment stage of a curriculum development process (Kern, 2009:12-13) according to Kern's six-step approach to curriculum review (cf. Ch. 2, sect. 2.5.3.2). Five participant groups were selected to generate data from multiple sources for a balanced perspective (Stefan, 2010:59) as all these participants were involved in the training of ODAs or were assisted by them. Hence, the following group of professionals and students were invited to participate: (a) 28 nursing and operating department managers, including recovery room supervisors and mentors; (b) 12 anaesthetists; (c) seven ODAs (graduates); (d) 24 students and (e) 11 educators which included the programme coordinator. These participants were practising in four different regions in SA. They were selected via a combination of sampling methods as explained below (Plowright, 2011:15 & 25).

The small size of four population groups (a, c, d and e) necessitated a census of the full population to be invited to attend individual and focus group interviews to generate rich narrative data. What complicated the

study, however, was that although all participants were invited to take part, participation was at the end their own choice. The participants who did not attend the focus groups or interviews thus excluded themselves from the census group.

A non-probability sample was selected from the last population group (b). Individual interviews were chosen as a data generating method due to the busy schedules of the anaesthetists and the geographical location of the hospital sites. However, because of the large size (approximate 100) of this population, generating narrative data by means of individual interviews would have been impractical. Thus, a quota sampling technique to select at least one anaesthetist from each hospital where at least two ODAs were employed was used (Plowright, 2011:43). The study was indeed further complicated by some anaesthetists who chose not to participate. Those who agreed to participate represented three regions and four of the selected eight hospitals. The hospital sites were selected on the basis that at least two ODAs or students were employed.

The inclusion criteria for each participant category (Brink, 2006:124; Polit & Beck, 2012:286) are stated below.

- The nursing and operating department managers, recovery room supervisors and mentors had to be employed at one of the eight hospitals selected for this study.
- The anaesthetists had to be assisted by ODAs at one of the eight hospitals selected for the study.
- The ODAs, graduates of the programme offered at the PHEI, had to work at one of the eight hospitals selected for this study.
- The students had to be in their third (final) year of the Diploma in Operating Department Assistance offered at the PHEI.
- The educators had to facilitate theoretical and clinical learning for the Diploma in Operating Department Assistance students.

To prevent sampling bias (Brink, 2006:126) and to increase the representativeness of the study sample for the particular programme, all participants involved with the selected programme and who met the selection criteria were invited to participate. The timeframe made provision for all participants to participate in the study and all were interviewed at their respective workplaces or classrooms (students) at a time convenient to them.

The study sample size was more than Guest, Bunce and Johnson (2006:78) recommend. In the opinion of these authors, six to 12 individual interviews might suffice. In the current study a total of 23 individual interviews, two paired and 10 focus group interviews were conducted. Twenty-four out of a total of 28 managers (86%), seven of the 12 anaesthetists (58%), seven ODAs (100%), 22 out of a total of 24 students (92%) and 11 educators (100%) participated in the study.

Table 4.1: Demographic profile of sites where data were generated

Focus group interviews (Management and students)	Individual interviews (ODAs, educators and anaesthetists)	Paired interviews (Management and anaesthetists)
Gauteng hospital (x1)	Gauteng hospital (x3)	Gauteng hospital (x1)
Mpumalanga hospital (x1)	North West hospital (x2)	Mpumalanga hospital (x1)
North West hospital (x1)	Western Cape hospitals (x7)	
Western Cape hospitals (x3)	Learning centre in the Free State (x2)	
Learning centre in Mpumalanga (x1)	Two learning centres in Gauteng (x5)	
Two learning centres in Gauteng (x2)	Learning centre in Western Cape (x3)	
Learning centre in Western Cape (x1)	Learning centre in Mpumalanga (x1)	

4.4.2.2. Instrumentation

The data generation methods involved individual, paired and group interviews as well as a paper-based questionnaire. Interviews were chosen due to the small population, the quality of information yielded (Polit & Beck 2012:265), its high response rate, opportunities to clarify responses and probe to ensure in-depth, relevant and accurate data were obtained, and to generate additional data (Polit & Beck, 2012:307). The researcher also chose the paper-based questionnaire as an additional information source as explained after the individual and focus groups interviews section.

Individual and focus group interviews

The semi-structured interviews were conducted by an external researcher to generate narrative data (cf. Annexure A for interview guide) for each of the categories of participants as listed in Table 1.1. Between 5 July and 6 September 2016 a total of 35 interviews (23 individual interviews, two paired interviews and 10 focus group interviews) were conducted. Although paired interviews are not ideal (Polit & Beck, 2012:358) and was not planned, it was used to accommodate participants if only two invitees of a focus group agreed to participate. Some anaesthetists were also accommodated with paired interviews due to their busy schedules. Because of the neutral and insensitive nature of the interview questions, the paired interviews worked very well.

The interviews were guided by open-ended questions related to the knowledge, skills and attitude of ODAs. At the end of the interviews, participants were asked to complete a paper-based questionnaire (cf. Annexure B). All interviews were conducted at the respective learning centres or hospitals in quiet venues to ensure privacy and prevent interruptions. Three to 10 participants were included in each focus group interview. Interviewees all shared similar backgrounds which ensured comfortable group dynamics for the discussions. The same interviewer guided all the semi-structured discussions by using an interview guide. The reason for choosing group interviews was to take advantage of group dynamics to access rich data and to obtain the views of as many participants possible in a short period of time (Polit & Beck, 2012:537-538).

The interview questions were carefully formulated to be understandable and meaningful to participants (Polit & Beck, 2012:541). This was made possible by keeping in mind how the self-administered questionnaire type of questions used by Stefan (2010:159-161) in a similar study to determine the content of an undergraduate haematology course was structured. The guidelines of Brink (2006:149) and Maree (2007:160) were followed and topics covered were related to the research questions (cf. Ch. 1, sect. 1.5).

However, the wording of each interview guide was adapted according to the profile of the participants to make it relevant to the specific interview group. Furthermore, two experienced researchers scrutinised the interview guides before it was piloted (Creswell, 2009:149) with one educator and one ODA student. These pilot participants did not participate in the actual study (Creswell 2009:149). Minor changes were made according to the feedback received from the pilot interviews.

During the interviews participants were encouraged to talk freely about the range of topics covered by the interview guide. This was done to ensure as much information as possible was obtained and to allow participants the freedom to offer as many explanations and views as they wanted. Probes were utilised where appropriate to elicit more detailed information (Polit & Beck, 2012:537). A high level of mediation assisted participants to answer questions on their knowledge, understanding, feelings and experiences about the anaesthetic and recovery room component of the ODA programme. The degree of structure was thus low due to the open-ended nature of the questions (Plowright, 2011:32 & 55).

Paper-based questionnaire

A two-page questionnaire consisting of mainly closed-ended questions and a few open-ended questions was used to obtain more specific data relevant to the current ODA curriculum (see Addendum B). Participants were asked to respond on a 4-point Likert scale on the following issues: (a) how competent the current ODAs are; (b) the sequencing of the content of the anaesthetic and recovery room course and (c) the cognitive, affective and psychomotor skills an ODA requires to fulfil the functions of an anaesthetic and recovery room assistant.

The following guidelines by Brink (2006:149) and Maree (2007:160) were kept in mind with the compilation of the questionnaire: short, simple and clear questions which were sequenced in such a way that it prevented confusion; the inclusion of closed-ended questions to allow the respondents to select a response and a comment section to offer participants the opportunity to provide annotations (Van Zyl, 2014:73-74). After it had been scrutinised by two senior researchers, the questionnaire was piloted with participants. The paper-based questionnaire formed part of the interview session. Once again, the pilot participants did not participate in the actual study and the data generated was not used in the actual main study. The pilot study aimed to determine whether the questions were clear, logical and appropriate to ensure the respondents would understand the questions in the way intended by the researcher and to make certain the feedback provided was understood by the researcher as intended by the respondents. A further advantage of doing a pilot study is to ascertain whether the questions would measure what it intends to measure as well as to determine the completion time (Brink, 2006:166; Polit & Beck, 2012:195 & 331; Saunders, Lewis & Thornhill, 2009:371-372). No major changes to the questionnaire were necessary – especially after the content validity was checked by two senior researchers in the field. The wording of the questionnaire was adapted for each participant group to fit the profile of the group, i.e. managers, anaesthetists, ODAs, students and educators (cf. Annexure B). It is important to mention that although the researcher would have preferred a larger sample for the pilot runs (both for the interviews and questionnaire) the specific populations were too small to allow for a bigger pilot sample.

4.4.2.3. Data capturing and analysis

Two important factors, namely confidentiality and anonymity were taken into consideration after the data had been generated, stored and analysed. (Plowright, 2011:169). In this section an overview of the methods and procedures used to capture and analyse the data are presented.

Data capturing

All interviews (cf. sect. 4.4.2.2) took place in a classroom at the respective learning centres and in a quiet venue at the respective hospitals. All participants were briefed before their session and written consent was obtained. A digital audio recorder was used to record the interviews to ensure verbatim, accurate coding and transcription. It also prevented bias owing to the interviewer's memory and personal views (Maree, 2007:89; Polit & Beck, 2012:534). The recordings were kept secure by the interviewer and were transferred to the computer of the transcriber who signed a confidentiality agreement (cf. Annexure O). The electronic versions of the transcribed data were provided to the researcher and were kept secure on the researcher's computer which is password protected. Thus, only the researcher had access to the electronic data (Plowright, 2011:173). The hard copy printouts were kept secure with only the researcher and an external auditor, who cross-checked the data categories, having access. The auditor committed in writing to ensure the confidentiality and security of the data. The same procedures applied to the questionnaire data. Further ethical considerations are discussed in section 4.4.2.5.

Data analysis

During the analysis of the qualitative data it was classified and sorted as part of the interpretation phase which linked to the interpretive paradigm of this study (Stake, 2010:133 & 150). Although there are no fixed rules to change raw data into themes (Archer, 2016:99; Patton, 2015:541; Stake, 2010:151-156), the analysis in this case was done by means of descriptive and thematic text analysis (Creswell, 2009:208). By asking the question, "how can we draw valid meaning from qualitative data?". Miles and Huberman (1994:11) define data analysis as the congruent flow of data reduction, data display and conclusion drawing as a result of structured reading (Miles & Huberman, 1994:10). In accordance with the analytical steps suggested by Creswell (2009:183-184), the data were prepared and read through, coded to generate themes, described and, lastly, interpreted. The analysis was done according to Carney's Ladder of Analytical Abstraction (1990, in Miles & Huberman, 1994:92) as it makes provision to combine and integrate data from various datasets (cf. Fig. 4.2).

Although the ladder gives the impression that data analysis is a one-way process from bottom to top, Miles and Huberman (1994:91) see it as an iterative and incremental process which can move forwards and backwards at any stage. For example, in her study to determine how undergraduate medical students learn patient-centredness, Archer (2016:100-101) used the analytical abstraction ladder to integrate the data generated from various sources and through various methods whereas Bygstad and Munkvold (2007:1) used it in their longitudinal interpretive case study to conceptualise the approach.

Descriptive and numerical analyses were used to analyse the quantitative data as suggested by Creswell (2009:208). An overview of the analysis process is provided in the next section and the data findings are reported in Chapter 6.

Level 1: Summarise and package data

The first level consisted of two phases (cf. Fig. 4.2), namely transcribing the recorded data and coding the interview data (Miles & Huberman, 1994:92; Saldana, 2013:26) to provide for an overview. Analytical notes were made while reading through all the transcripts three times. This was done to get a general sense of the data to be able to reflect on its overall meaning (Creswell, 2009:185). During this phase the data obtained from the various interviews and questionnaires were analysed. Each process is discussed separately.

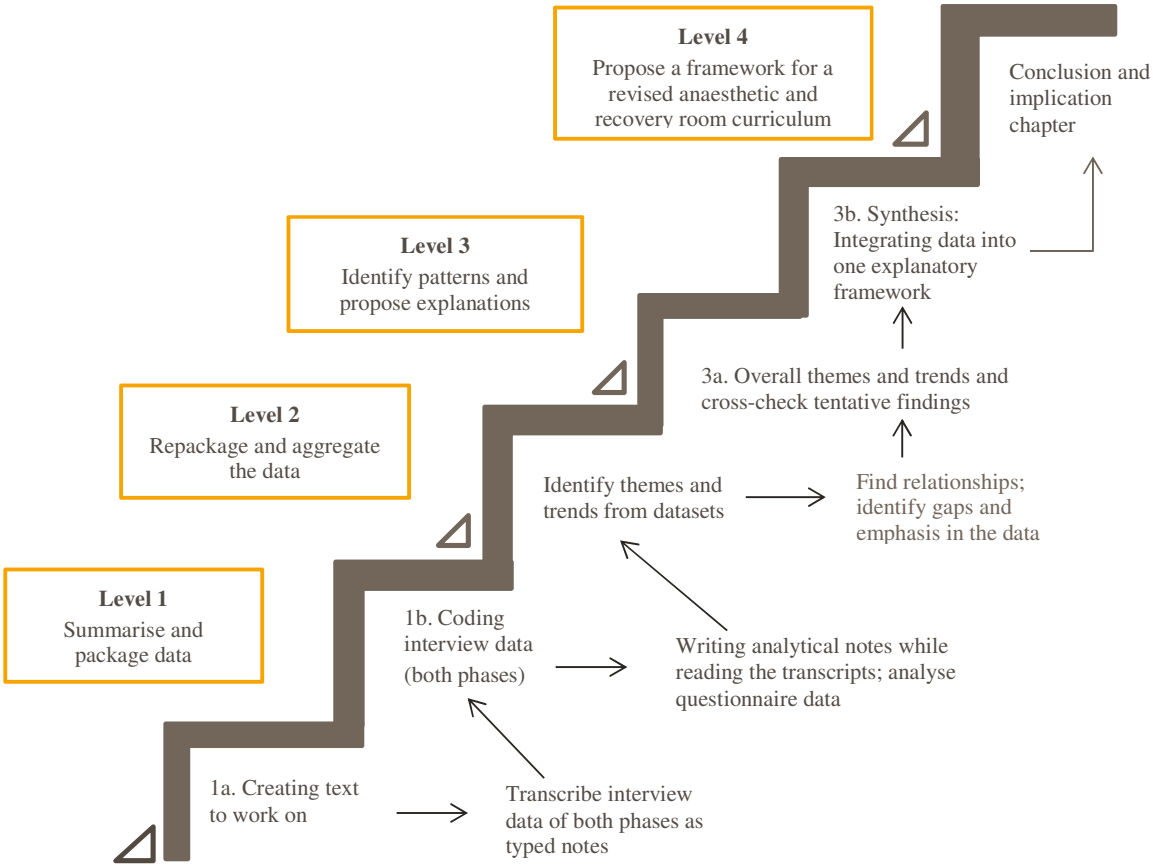

Figure 4.2: The analytical abstraction ladder for this study (adapted from Miles and Huberman, 1994:92)

For the purpose of this study Saldana's (2013:13) view that themes are an outcome of coding, categorisation or reflecting was adopted. Thus, overarching themes were identified from the categories which emerged and are reported on in Chapter 5.

- **Analysis of interview data**

As interviews yield large amounts of data, data reduction – seen as the process of simplifying, selecting, focusing and transcribing (Miles & Huberman, 1994:11) – was used during the analysis phase of the data. As suggested by the Ladder of Analytical Abstraction (cf. Fig. 4.2) the researcher created text to work on. The

audio-recorded interviews were transcribed. Thereafter, every transcribed line and page of each participant's transcription was coded electronically by means of the Microsoft Word software program. Copies were printed and read while phrases were restated and analytical notes (Miles & Huberman, 1994:92) made with different colour pens to reduce the data, make sense of it and identify categories and meanings (Patton, 2015:541). The data were grouped to compress and organised to permit drawing conclusions and for verification purposes (Miles & Huberman, 1994:11).

The management interview data were the first to be coded and categorised by means of an analytical approach. By clustering the phrases, categories were formed (Miles & Huberman, 1994:87-89). These categories and relating interview data were captured on several Microsoft Excel spreadsheets and in different cells after which the categories were sub-categorised as it inductively emerged from the data in each category (Archer, 2016:100-101). The software provided the researcher with an excellent organisation of the individual cells with the entries and accompanying codes (Saldana, 2013:11-14 & 26-27).

The interview data of the other four groups (anaesthetists, ODAs, students and educators) were analysed the same way as the managers' interview data. The categories and sub-categories from the analysis of the managers' interview data were used as an analytical framework as suggested by Archer (2016:101). The datasets of the five groups were captured onto the same Microsoft Excel spreadsheets. New categories and sub-categories which emerged were added to the Microsoft Excel spreadsheets.

- **Analysis of questionnaire data**

The questionnaires were used to complement the interview data and were thus a supplemental data source. The data were captured onto a Microsoft Excel spreadsheet, developed by a consultant statistician of Stellenbosch University, where after it was checked for completeness (Brink, 2006:55). The STATISTICA 13.2 software program was used to make sense of the data. Simple descriptive statistical data were generated once the questionnaire data had been coded, computerised, computed and analysed. Participant responses to the open-ended questions were categorised to determine similarities and thereafter it was computed into a single table format (Van Zyl, 2014:84). The aim was to use these responses together with the qualitative interview data to compile a Delphi technique questionnaire or then datasheats. A description and synthesis of the quantitative data results are presented in Chapter 6.

Level 2: Repackage and aggregate data

The data from level one were repackaged and aggregated. The themes, which emerged from the categories, formed the basis of the findings and created a platform to interpret and discuss the findings before moving to the explanation phase (Danner-Odenwelder, 2015:55). This data were repackaged and grouped according to the sub-categories which inductively emerged from the data under each category (Archer, 2016:101). Relationships in the data as well as overall trends, emphasis and possible gaps were identified (Miles & Huberman, 1994:92).

Level 3: Identify patterns and propose explanations

During the analysis process the data were scrutinised to provide possible frameworks for interpretation (Danner-Odenwelder, 2015:56). During the *first step* the themes, categories and sub-categories were cross-checked to ensure accuracy of the data, identify overlapping categories and reduce the data to analyse trends (Miles & Huberman, 1994:92). The data were also scrutinised to identify the content for the online Delphi technique (cf. Ch. 4, sect. 4.4.3).

The *second step* constituted combining the data from the main sources (interview data from the managers, anaesthetists, ODAs, students and educators) with the quantitative data (questionnaire). A discussion of the interview data (Round 1) findings is done in Chapter 5. The paper-based questionnaire findings are discussed in Chapter 6 (cf. sect. 6.3).

Finally, the data (which included the outcomes of the Delphi technique consensus and Round 2 interviews) were combined into one explanatory framework (Miles & Huberman, 1994:92) in an attempt to answer the research questions, synthesise the findings (Archer, 2016:102) (cf. Ch. 9) and to develop a proposal framework for the revision of the current anaesthetic and recovery room curriculum (cf.Ch. 10). The latter constitutes Level 4 of the adapted analytical abstraction ladder (cf. Fig. 4.2) discussed in the next section.

Level 4: Propose a framework for the revision of the current curriculum

This level constitutes the proposed framework for the revision of the undergraduate anaesthetic and recovery room curriculum within the operating department assistance programme which is provided in Chapter 10.

4.4.2.4. Data quality

Qualitative data are often criticised for its lack of trustworthiness due to the lack of objectivity (Costandius, 2012:108). Conformability, dependability, genuineness, transferability and credibility are criteria that could guide the trustworthiness of qualitative data (Creswell, 2009:191; Polit & Beck, 2012:175). Three criteria in particular have been proposed to judge the validity of the data of the current study, namely transferability, credibility and authenticity (Creswell, 2009:191). Polit and Beck (2012:180 & 585) view transferability as the extent to which qualitative data findings can be transferred to or have applicability to other groups or settings. Hence, the reader has to be able to evaluate the applicability of the sufficient descriptive data to other contexts.

Although the data were generated from manifold lines of evidence to enhance *transferability* by means of thick data descriptions (Yazan, 2015:138), a detailed description of the research settings, participants and processes was provided (Polit & Beck, 2012:526). This enabled the researcher to think conceptually and provide readers with the opportunity to make judgments about their own environment and the proximal similarity of the study context. *Dependability*, referring to data which is stable and consistent (Polit & Beck, 2012:175) was attained by using a diversity of participants (cf. Table 1.1) (Constandius, 2012:108). These participants, who had diverse knowledge and experience of the phenomenon being studied, were included in

an attempt to answer the research question from various viewpoints – thus enhancing trustworthiness (Patton, 2015:684-685).

Conformity, which refers to the degree data are derived from participants, was achieved by recording all interviews and transcribing them verbatim to reflect the accurate view of the participants. The nature of the research was in the teaching and learning environment with the students and educators subordinates of the researcher. Hence, it was important to create a safe environment for the participants to express their views and not to exploit the researcher's power position (Constandius, 2012:108). Therefore, an external researcher was employed to conduct the interviews. Although the anaesthetists and management group were not subordinates of the researcher, the same external researcher was used to conduct their interviews to ensure consistency.

The *credibility* of research is reflected in how well the subject has been identified and described as well as in the boundary setting of the study (Polit & Beck, 2012:175). This was achieved by means of a full description of the setting, population and theoretical framework. Credibility also refers to the researcher's truthful interpretation of the data (Polit & Beck, 2012:175) which were achieved by methodological triangulation and triangulating the data from five participant groups. The aim was to corroborate the findings (Yin, 2014:120).

It is important to mention that although all interviews were conducted by one person, the data analysis and interpretation was done by the researcher and cross-checked by the external researcher (auditor) who conducted the interviews. Hence, it assisted in strengthening the construct and content validity of the case inquired into (Yin, 2014:120-121). Yin (2014:118-119) recommends several sources of proof or evidence when using the case study approach. Similarly, Polit and Beck (2012:590) identify three methods to obtain data triangulation, namely time, space and person whereas four types of triangulation, namely data, investigator, theory and methodological triangulation are described by Yin (2014:120). In the current study the following types of triangulation were used:

- Various participants; differently positioned to the anaesthetic and recovery room curriculum: managers, anaesthetists, graduates, students and educators.
- Multiple data collection methods: semi-structured individual interviews, paired interviews and focus group interviews as well as a paper-based questionnaire.
- Cross-checking of all interview data with an external auditor.

According to Creswell (2009:190-191), there are particular strategies a researcher can employ to enhance the validity of the findings and convince readers of its truthfulness. The different data sources, obtained by means of focus group, paired and individual interviews and the document analysis were triangulated by scrutinising the evidence (Creswell, 2009:191). To limit bias, the position of the researcher was checked and revised throughout this study (Polit & Beck, 2012:176). Consequently, the researcher constantly made use of self-reflection to identify any possible bias related to the research (Creswell, 2009:192). Checks of the themes, categories and sub-categories were done with the external researcher (auditor) who did the interviews, but checking with the study participants was not possible due to practicality issues such as

participants spread over various geographical areas in SA (Creswell, 2009:191). Rich, thick descriptions were made to convey findings (a detailed contextual perspective is provided in Chapter 3 to enhance realistic and context-rich results). Furthermore, interviews were done to obtain both rich (quality) and thick (quantity) in-depth data (Creswell, 2009:191-192). The study results reached data saturation. Data saturation was confirmed by the auditor who did the data cross-checking by means of data triangulation. There is a direct link between the two as the one ensures the other (Fusch & Ness, 2015:1408-1411). There was sufficient data to replicate the study and no new data, themes, or codes emerged (Guest *et al.,* 2006:74-78). According to Fusch and Ness (2015:1408), this enhances the quality of the research and has a positive impact on the validity of the study.

Ecological validity, the degree of naturalness of the groupings, research location and situation (Plowright, 2011:15 & 30) was achieved by generating data closely related to the actual problem. Plowright (2011:30 & 34) states the level of ecological validity for case studies is relatively high since participants can be interviewed in a natural setting and within their natural groups or individual settings with the minimum disruption of their daily ongoing activities. The data collected was analysed and compared to the current ODA curriculum. A list of possible topics for the anaesthetic and recovery room component was used to compile the Delphi technique questionnaire (cf. Ch. 4, sect. 4.4.3).

4.4.2.5. Ethical considerations

To adhere to the highest ethical standards, measures were put in place to protect the participants during the different stages of generating data (Brink, 2006:30-32). A full census was used to select all participants, except the anaesthetists. The latter group was selected by means of non-probability quota sampling (cf. Ch. 4, sect. 4.4.2.1). All respondents invited to participate in the study were directly related to the study problem. Furthermore, ethical clearance was obtained from the Research Ethics Committee: Human and Social Sciences, Stellenbosch University (cf. Annexure E). Permission was also obtained from the PHEI training and development general manager (cf. Annexure D) and the nursing executive of the private hospital group. Written permission was obtained from all the participants who participated in the study as well as from those who participated in the pilot studies after they had been briefed and asked to consent to participate in the study by voluntarily signing the consent form (cf. Annexure C).

The fundamental ethical principles of justice, respect for human dignity, beneficence and non-maleficence were upheld throughout this study (Brink, 2006:31; Keeney *et al*., 2011:106; Polit & Beck, 2012:152) in various ways. The participants were selected based on the study requirements which ensured the right to fair treatment (Polit & Beck, 2012:155). Participation was voluntary as no participants were forced to participate. They could withdraw without any consequences during any stage of the research (Brink, 2006:32; Keeney *et al*., 2011:108; Polit & Beck, 2012:154). There was also no financial incentive attached to participation. The principle of non-maleficence was adhered to as there was no risk for loss of physical, emotional or financial well-being for the participants (Brink, 2006:32; Polit & Beck, 2012:152) as no sensitive personal data were required or recorded. Lastly, an external researcher was used to collect the data to prevent the participants

feeling coerced to participate as the researcher held a senior education management position at the PHEI where the study was conducted.

The ethical considerations discussed adhere to the National Health Research Committee's (Department of Health, 2015:14-15) key norms and standards of "relevance and value, scientific integrity, role-player engagement, fair selection of participants, fair balance of risks and benefits, informed consent and ongoing respect for participants which includes privacy and confidentiality..."

4.4.3. Stage 3: Expert inquiry (Delphi technique)

A Delphi technique was used to obtain consensus from experts, as stakeholders in the curriculum, on possible content areas for inclusion in the anaesthetic and recovery room component of the ODA as the main premise of the Delphi technique rests upon the assumption that group opinion is more valid, reliable and representative than any individual opinion (Keeney *et al*., 2011:3; Murphy, Black, Lamping, McKee, Sanderson, Askham *et al*., 1998:4).

The next five sections provide an overview of the Delphi technique (cf. sect. 4.4.3.1), its population and sample criteria, (cf. sect. 4.4.3.2), the instrumentation and data collection (cf. sect. 4.4.3.3), data capturing and analysis (cf. sect. 4.4.3.4), data quality (cf. sect. 4.4.3.5) and ethical considerations (cf. sect. 4.4.3.6).

4.4.3.1. The Delphi technique

The Delphi technique, originally developed in the USA in the 1950s, attracted mixed views (Goodman, 1987:729; Linstone, 1975:573; Murphy *et al.,* 1998:4; Waters, Smith, Young & Jones, 2014:5) when experts had to predict the effects of a possible atomic bomb (Green, Jones, Hughes & Williams, 1999:199; Keeney *et al.,* 2011:3). Since then the Delphi technique has been used for a variety of purposes in diverse disciplines (Murphy *et al*., 1998:4), including healthcare. It was first used in nursing in the 1970s and later in radiography, physiotherapy, dentistry (Vernon, 2009:69), education (Green *et al*., 1999:198) and social policy (McKenna, 1994:1221).

The popularity of the Delphi technique has grown over the years as observed by Gupta and Clarke (1996:185) who state it was used in 463 studies between 1975 and 1994. Today, it is commonly used and accepted across a wide range of disciplines such as business, industry, healthcare, nursing and medical science (Asselin & Haper, 2014:11; Fallon & Trevitt, 2006:139; Keeney *et al*., 2011:3; Powell, 2003:376). For example, the technique was used to develop standards for neonatal intensive care nursing education (Mannix, 2011:25), in the development of a special dentistry undergraduate curriculum (Dougall, Pani, Thompson, Faulks, Romer & Nunn, 2013:46) and a syllabus for undergraduate palliative medicine (Paes & Wee, 2008:360). Additional examples of making use of the Delphi technique in nursing and medical science include its use to determine the content of a lumbar manipulation course (O'Donnell, Smith, Abzug & Kulig, 2016:1), to develop core competencies for emergency medicine clerkships (Penciner, Woods, McEwen, Lee, Langhan & Bandiera, 2013:24) and minimum competencies for non-surgical oncology (Benstead, Palmieri, Brewster, Gilson, Jenkins & Booth, 2015:373). Louw (2016:38) used it to determine the outcomes for

clinicians completing a postgraduate diploma in transfusion medicine and Mash, Couper and Hugo, (2006:14a) to build consensus on the procedural skills for South African doctors in family medicine training. To prioritise the teaching topics in an obstetrics and gynaecology postgraduate programme Siraj, Benerjee, Cooper and Ismail (2011:692) made use of this technique. The Delphi technique was found suitable to determine outcomes (Louw, 2016), competencies (Penciner *et al.,* 2013) and teaching content areas (Siraj *et al.,* 2011:692).

The Delphi technique was used in this study to obtain a measure of consensus from a panel of identified experts without them being physically assembled (Asselin & Harper, 2014:11; De Villiers, De Villiers & Kent, 2005:639; Polit & Beck, 2012:725; Powell, 2003:377). The latter position was particularly relevant to the current study as the participants were from different geographical regions in SA. But, making use of the Delphi technique made it possible for the researcher to reach expert panel members in various provinces in SA which was convenient due to the time and distance limitations (Vernon, 2009:71). The online version made it easier and faster to reach and to include participants located in the various geographical areas (Sinha, Smyth & Williamson, 2011:1) owing to its global communication specifications (Vernon, 2009:71). Face-to-face participation was thus not required which prevented contestation or persuasion by the opinions of the other experts, especially where the students and ODAs were subordinates of the management and educator group. The Delphi technique was therefore used in the current study for two reasons. One, to investigate a range of opinions and attributes held by the experts and two, to obtain the most reliable consensus of opinion with regard to the possible knowledge, skills and attitudes to be included in the anaesthetic and recovery room course by means of independent thought on the part of the experts (Dalkey & Helmer, 1963:458-460; Fallon & Trevitt, 2006:139; Goodman, 1987:729; Green, 2014:1; Sinha *et al*., 2011:1; Waters *et al*., 2014:5).

The three distinguishing features of the Delphi technique, namely anonymity, controlled feedback and statistical responses were of significant value as anonymity was a way to reduce the effect of dominant individuals. Iteration and controlled feedback were applied to reduce noise whereas statistical responses were used to avoid group pressure for conformity and to ensure the opinion of each panellist was represented in the exercise (Dalkey, 1969:16; Rowe & Wright, 2001:126). The researcher could find only four studies related to the ODA profession, but none of them addressed the specific knowledge, skills and attitudes which should be included in an anaesthetic and recovery room course to prepare ODAs for their role as an A/RRA as confirmed in the study topics. Viszolai ‘s (2016a:6) study focused on “Experiences of operating room staff about the role of theatre technicians in perioperative nursing” and Botha (2015:3, 74-82) engaged in a study entitled “minimum competencies for the diploma in non-nursing operating department assistance in South Africa” which centred on the competencies ODAs need to fulfil in their scrub and circulating roles. She did not focus on the specific competencies an ODA requires to function as an A/RRA. Milton (2005:i) investigated “Continuing professional development for operating department practitioners”. Harper (2014) concentrated on “Transforming the student’s experience in operating department practice: Learning through simulation”’. Of the four research studies, only Botha (2015:6) made use of the Delphi technique – in particular the online version.

As one of three possible consensus methods, the Delphi technique was chosen for its positive attributes and well-known use in health sciences education and training. The other predominate methods to obtain consensus were not suitable for this study for reasons mentioned briefly. The consensus development conference does not focus on experts but on a public forum more suitable for policy development (Murphy *et al*., 1998:4-6). The Glaser's state-of-the art approach (Vernon, 2009:70) was not suitable due to the small size of the population used in the current study. The nominal group technique was rejected because it required a face-to-face meeting which is usually conducted in one day. The experts' in the current study could not join a face-to-face meeting and, because of the nature of the research question, two to three Delphi technique rounds were needed to reach consensus (Vernon, 2009:70). The social judgment analysis and staticised group consensus methods were also eliminated. The former due to its primarily feedback function as opposed to a true consensus method (Murphy *et al*., 1998:7) and the latter due to its lack of participant interaction and superficial analysis of the results (Murphy *et al*., 1998:6; Vernon, 2009:70).

Additional reasons why the researcher chose the online Delphi technique, notwithstanding its limitations and pitfalls were that it also allowed the researcher to utilise multiple individual questionnaires which allowed the participants to change their opinions based on the feedback of previous rounds. Also, a statistical analysis of responses could be generated (Hejblum, Ioos, Vibert, Böelle, Chalumeau-Lemoine, Chouaid *et al*., 2008:1108; Stefan, 2010:70) to determine when consensus was reached.

4.4.3.2. Research population and sample criteria

The first step, as recommend by Green *et al.* (1999:200) was to select the panel members. The panel members consisted of experts who were considered as informed individuals in the perioperative field (Goodman, 1987:730; McKenna, 1994:1221) as this study was based in the health sciences arena (Keeney *et al.,* 2011:24). Hence, each participant was a representative of her or his profession (Goodman, 1987:730; McKenna, 1994:1221) and could provide an expert opinion on the anaesthetics and recovery room course (Green *et al*., 1999:200; Keeney *et al.,* 2011:24; Nworie, 2011:25; Vernon, 2009:71). Expert status is seen as some guarantee towards the validity of the results (Hsu & Sandford, 2007:3). In this regard, Goodman's (1987:731) following statement is of value, "if the panellists participating in the study can be shown to be representative of the group or area of knowledge under study then content validity can be assured". The experts were chosen by means of purposive sampling to prevent answers that might carry less meaning (Duffield, 1993:228).

Sampling

Keeping in mind that experts should have the necessary capacity, time, communications skills and willingness to participate (Keeney *et al*., 2011:24), the participants were asked during Stage 2 of the study whether they would be willing to participate in the Delphi survey. Another criterion was that they had to have access to the internet and email to facilitate communication due to the nature of the online Delphi technique. Those who volunteered indicated their willingness on a separate document to maintain confidentiality. To ensure expertise and insight into the theory and practice of anaesthetic and recovery room

education and training at the level of allied health nursing, the stakeholders were invited to participate in the Delphi technique if they held a Diploma in Operating Room Nursing Science or Diploma in Operating Department Assistance qualification as both these programmes include an anesthetic and recovery room component.

The literature search revealed that the size of a Delphi technique panel is a grey and labile area with no actual agreement among researchers of what purports to be an ideal size (Green *et al.*, 1999:200; Nworie, 2011:25; Waters *et al*., 2014:6). Stefan (2010:63) seems to find this a challenge as the author states the panel size does, in fact, have a material influence on study results. In the absence of clear guidelines on the mathematical calculations to determine the size of the group, De Villiers *et al*. (2005:641) advocate for a manageable group which will make regular follow-up also more manageable. The stance of Murphy *et al*. (1998:37 & 64) on the size of a Delphi technique panel is that group judgment and accuracy of results may be affected by the size up to a certain point and widening the group selection may not necessarily assure improvement in reliability. According to Duffield (1993:228), for a study conducted in a specialised field, a small homogeneous panel of 10 to 15 is sufficient. Keeney *et al*. (2011:22) reckon a bigger heterogeneous panel is needed to obtain wider consultation and to enhance the validity of the results whereas De Villiers *et al*. (2005:641) argue large numbers are difficult to manage and have a low response rate while a small panel size can end up with too few participants in the last few rounds and they therefore reason an ideal group would be 32. Vernon (2009:71) claims a panel size can be between four and 100 participants. Dalkey and Helmer (1963:460) and Botha (2015:50) included fewer than 10 participants in their studies. Choi, Yoon and Jeung (2012:27) chose 15 panel members. Although determining a precise and ideal number of Delphi technique participants is undoubtedly an ongoing debate, it also emerged from literature that many researchers who used the Delphi technique opted for between 19 to 30 experts and considered the sizes sufficient (Fallon & Trevitt, 2006:140; Geist, 2010:149; Matthews, Mahaffey, Lerner & Bunch, 1975:495; Milson, Tickle, Jenner & Moulding, 1999:38; Scheife, Hines, Boyce, Chung, Momper, Sommer *et al.,* 2015:197).

For the current study, a total of 53 panellists were invited. This included 15 managers employed at hospitals, regional offices and the corporate office in the Free State, Western Cape, and Gauteng provinces; 7 ODAs employed at hospitals in the Western Cape, Gauteng, North West and Mpumalanga provinces; 20 students who graduated in December 2016 and were subsequently employed at hospitals in the Western Cape, Gauteng, North West and Mpumalanga provinces and 11 educators employed at learning centres in the Western Cape, the Free State, Gauteng, Mpumalanga provinces. The students initially participated in the interviews as students, but during the Delphi technique phase of the study they had already graduated. They were thus well positioned to provide the required information needed for this stage of the study. The three different groups, dispersed over the provinces, were chosen to balance any potential competing interests (Mash *et al*., 2006:14e). The final Delphi technique panel therefore consisted of seven (41%) managers spread over three provinces (the Free State, Gauteng and Western Cape), two (12%) ODAs and eight (47%) educators spread over three provinces (the Free State, Gauteng and Western Cape). Although the sample size

was small, it was consistent with the Delphi technique panel size used by Duffield (1993:229), Ludwig (1997:2) and Choi *et al*. (2012:27).

4.4.3.3. Instrumentation and data generation

The Delphi technique was used to generate data from experts who had completed a questionnaire and returned it (cf. Annexure G). The questions mainly consisted of closed-ended questions or statements (Asselin & Harper, 2014:11; McKenna, 1994:1221). A 4-point Likert scale was used with the following agreement option statements: 1 = 'Strongly disagree'; 2 = 'Disagree'; 3 = 'Agree' and 4 = 'Strongly agree'. The 4-point Likert scale was chosen to eliminate central tendency which sometimes poses a problem (Tolsgaard, Todsen, Sorensen, Ringsted, Lorentzen, Ottesen *et al.,* 2013:2). Making use of the Likert scale allowed for the quantitative statistical evaluation of the meaning and level of dispersion of the opinions because the meaning of each response was obtained from the collective opinions of the participants (Stefan, 2010:71).

The Delphi technique questionnaire was developed after a list of knowledge components, skills, attitudes and non-technical skills were identified. It included the proposed skills and those already addressed in the existing anaesthetic and recovery room component (cf. Annexure G). The external EvaSys evaluation system administrator converted the questionnaire into an online version which the experts could easily access on the Internet.

The panellists, invited via email to participate and who agreed, were provided with the link to complete the questionnaire on the Internet once it was opened by the administrator. The questionnaire and adapted versions were repeatedly sent to the panellists until an acceptable level of consensus was reached (cf. Annexures G & I). Consensus is defined as the percentage of participants agreeing about an item (Polit & Beck, 2012:268). There is, however, no standard threshold for consensus with varying opinions of what acceptable levels entail (Keeney *et al*., 2011:46). The statistical approach and percentage levels are the two criteria most commonly used to describe when consensus is reached. This is recommended as a range between 51% and 70% (Keeney *et al*., 2011:46; Polit & Beck, 2012:268). Nevertheless, many researchers have used a percentage level set at a range from a liberal 50% to a more cautious 80% with the majority using a rate of 70% to 75%. For example, Botha (2015:57), Mash *et al*. (2006:14a) and Waters *et al*. (2014:5) used a 70% consensus level whereas O'Donnell *et al.* (2016:1), Penciner *et al*. (2013:26) and Paes and Wee (2008:360) set consensus at 75% and Louw (2016:40), Stefan (2010:71) and Dougall *et al*. (2013:49) suggested a level of 80% or more.

For this study the researcher decided beforehand, as recommended by Keeney *et al*. (2011:46), on a consensus level of a minimum of 70% of experts supporting a statement. Hence, consensus was reached when 70% or more of the experts agreed which corresponds to an element skill being rated a '3' or a '4' on a statement. The same principle of combining scores was applied by Tolsgaard *et al.* (2013:2) and Waters *et al*. (2014:5-6) in their respective health science studies. The decision of using a consensus of 70% was based on the consensus percentage used by Botha (2015:57) in her study of a similar nature. She focused on

developing minimum competencies for ODAs in SA. However, Botha's study focused only vaguely on the competencies an ODA needs to perform the A/RRA functions.

Panel members had a certain period of time to respond during which email reminders were sent on a weekly basis to prompt non-responders to complete the questionnaire. A new questionnaire was compiled of the items which did not achieve a minimum of 70% votes. An explanatory letter which showed the distribution of vote (in percentages) was sent to the panellists (cf. Annexure I) as well as the statistical version of the questions that did not achieve consensus and the link for the new questionnaire. The new questionnaire gave the panellists an opportunity to rerate the items if they chose to do so. This process was repeated with each Delphi technique round. The invitation clearly stated the importance of completing all rounds as recommended by Sinha *et al*. (2011:3). As majority agreement was obtained by the third round, the process was stopped (Stefan, 2010:63; Polit & Beck, 2012:267; Waters *et al*., 2014:5). Conversely, for an outcome to be excluded the majority must agree that the topic is not important (Waters *et al*., 2014:6). The process can, however, also be stopped in the absence of consensus when there is little or no change from the previous round or when similar scores are obtained in various rounds; this is referred to as 'stability' (Stefan, 2010:63; Polit & Beck, 2012:331; Waters *et al*., 2014:5).

4.4.3.4. Methods of data analysis

The external EvaSys evaluation system administrator processed the Delphi technique data after each round and emailed the statistical version to the researcher who analysed it to determine the consensus of the participants on the value of the items. The standard deviation (SD), mean (*M*) and percentage was calculated for each of the responses. The mean was used to determine the overall support and level of importance for each statement whereas the response on each statement was measured on a scale from 1 to 4 (De Villiers *et al*., 2005:641). The rating of each statement was presented as a percentage to determine the level of consensus (Keeney *et al.,* 2011:87) whereas the SD presented a measure of the dispersion of each response (De Villiers *et al*., 2005:641; Polit & Beck, 2012:387). The same process was followed for all three rounds after which conclusions were drawn regarding the knowledge, skills, attitudes and non-technical skills for inclusion in the anaesthetic and recovery room course (cf. Ch. 5). Reflection was done on the importance of ratings allocated to the responses which was used to direct the proposal towards a framework (cf. Ch. 10, sect. 10.5) for the redesigning of the anaesthetic and recovery room curriculum (Stefan, 2010:72).

4.4.3.5. Data quality

Reliability and validity when using the Delphi technique are significant as questionnaires are used to obtain consensus (Brink *et al.,* 2012:165). These questionnaires have to adhere to specific elements such as visual appeal, clarity, logical flow, simplicity and being pilot tested to ensure validity and reliability (Saunders *et al*., 2009:371-372; McCreanor, 2015:175). A valid questionnaire will facilitate accurate data (Polit & Beck, 2012:745) whereas a reliable one will facilitate the same data consistently when given to the same respondent at different intervals (Polit & Beck, 2012:741). Consequently, the aforementioned elements were taken into account while developing the questionnaire. But, although reliability and validity of the

questionnaire is important, Keeney *et al*. (2011:103) specify the Delphi technique's reliability and validity is more reliable with group responses than the opinion of individual panel members as the "diversity is replaced by a single representative opinion" of the group (Dalkey, 1969:10). With an increase in panel size there is an increase in reliability (Dalkey, 1969:10 & 12). However, testing the Delphi technique's reliability is challenging to achieve because a large number of repetitions are required which is not consistent with the nature of the Delphi technique (Gupta & Clarke, 1996:187; Stefan, 2010:68).

With regard to the validity of the results, the degree of knowledge (expertise) and familiarity of the experts with the research problem narrates to the results' validity (Hsu & Sandford, 2007:2; Stefan, 2010:68). Thus, selecting panel members are the most important step in the Dephi process (Hsu & Sandford, 2007:3). By selecting the right panellists the quality of response is maximised and the credibility of the study enhanced (Nworie, 2011:25). In this study all panellist were connected to the anaesthetic and recovery room curriculum and all were in possession of the relevant required qualification (cf. Ch. 4, sect. 4.4.3.2).

According to Stefan (2010:69), another issue related to the validity of Delphi technique results is whether the consensus obtained is an indication of the correct value. Stefan's (2010) view mirrors Dalkey's (1969:73) opinion that the consensus obtained through value judgments are seen as true or accurate. In a study performed at the American Research and Development Corporation (RAND), upper-class and graduate university students were invited to answer almanac type questions in a Delphi exercise. A significant result of the study, which comprised of 11 experiments involving 14 groups ranging from 11 to 30 members, was that consensus indicated in the Delphi technique was at a close range to the real answer and answer errors decreased with an increase in sample size. Group estimates also became more accurate due to the anonymous feedback process (Dalkey, 1969:18-20). Dalkey (1969:20) found that consensus increased while answer errors decreased with iteration and controlled feedback. The accuracy of responses followed the same pattern as the consensus, mostly with the first repetition. Afterwards it became less accurate on subsequent rounds (Dalkey, 1969:58; Stefan, 2010:68). Thus, in summary, an important aspect to ensure validity in a Delphi technique is choosing the members of the panel and deciding on the size of the group (cf. Ch. 4, sect. 4.4.3.2).

4.4.3.6. Ethical considerations

Regardless of the type of Delphi technique used, it is open to the same ethical considerations as any postal, online or email surveys and group or individual interviews as it serves as the basis of ethical analysis (Keeney *et al*., 2011:105). It is the researcher's role to ensure research ethics are maintained (Crisp, Pelletier, Duffield, Adams & Nagy, 1997:117; Keeney *et al.,* 2011:108). In the current study the researcher's role (which was an objective one) was applicable to the methodological (dealing with expert feedback and proceeding towards consensus), pragmatic (to get the whole picture of the study) and ethical (avoiding influencing decisions) factors which were achieved by remaining impartial. This impartiality on the researcher's side was effected by making use of an external administrator and determining the level of consensus beforehand (Keeney *et al*., 2011:108).

It is the researcher responsibility to safeguard the study participants during all three Delphi technique rounds (Brink, 2006:30). The fundamental ethical principles upheld during this stage were justice, respect for human dignity, beneficence and non-maleficence (Brink, 2006:31; Keeney *et al*., 2011:106; Polit & Beck, 2012:152). After a written explanation (cf. Annexure F) it was again inquired via an email whether the panel members wanted to participate. They were given two weeks to make an informed decision. A cover letter (cf. Annexure H & I) attached to every questionnaire informed the recipients that, by implication, those who completed and returned the online questionnaire would demonstrate their willingness to voluntary participate in the study. It would therefore be automatically assumed that recipients who did not respond with a completed questionnaire declined participation.

Anonymity and confidentiality (Keeney *et al*., 2011:106) were continuously ensured by protecting the identity of the participants and not revealing any names. Individual feedback was provided online with only the external Delphi technique administrator having access to the raw data. Panel members answered the questionnaires anonymously as they were not required to reveal their names. Even the researcher did not know which participant completed which questionnaire as the process was managed by the external administrator. There was inevitably the risk that panel members could logically deduct who the other members of the expert panel were as the current study was conducted in a highly specialised area with limited numbers of available experts (Keeney *et al*., 2011:107; Vernon, 2009:71). In other words, because there was the possibility that panel members might not remain fully anonymous to each other, the researcher intensified the rigour with which she handled the responses to guarantee the identity of the originator remained anonymous as recommended by Vernon (2009:71) and Keeney *et al*. (2011:107). Confidentially was assured and all data kept secure on a password-protected personal computer (PC) to which only the researcher had access.

Furthermore, there was no risk to the physical, emotional or financial wellbeing of the panel members. The questionnaires of the Delphi technique rounds took only 5 to 10 minutes to complete. Participants had the choice to complete the questionnaire at home or in their workplace at a time convenient to them. There were no risks of harm, fatigue or loss of wages to the participants (Van Zyl, 2014:85-86).

4.4.4. Stage 4: External stakeholder interviews

This stage was included in the study after analysing the data of Stages 2 and 3. Individual interviews were conducted with managers on executive level in the private and public healthcare sector, external to the research boundary of the PHEI. This was done to clarify and justify the need for ODAs' anaesthetic and recovery room assistant role and functions.

4.4.4.1. Research population and sample criteria

The participants were all employed in executive managerial positions and involved in policy development in their respective companies or professional associations. The purposive sample consisted of five participants: one nursing executive of a private hospital group; two nursing and training executives of two other private hospital groups; a nursing executive of a provincial Department of Health and one anaesthetist who is a

member of the anaesthetist association based at a provincial hospital. Two of the nursing executives were based in Gauteng and one in the Western Cape. The nursing executives were selected because their hospital groups were already assisting in the training of ODAs or awaiting Department of Higher Education and Training registration to commence with the training of ODAs.

The researcher planned to involve representatives of the SANC and Health Professionals Council of South Africa (HPCSA) as this is the two health professional bodies in SA which register health professionals. However, after numerous attempts the researcher was unable to secure meetings with representatives of these two bodies. The HPCSA referred the researcher to the South African Society of Anaesthesiologists**.**

4.4.4.2. Instrumentation

A questionnaire (cf. Annexure M) containing open-ended questions was compiled to conduct the structured individual interviews. This type of interview was chosen because of the small population, the information quality it yields, and opportunities afforded to obtain clarity and probe participants to ensure in-depth questioning (Polit & Beck, 2012:265 & 307). Careful thought was given to the wording of the questions to ensure it was pitched at the participants' elevated level of expertise. Three senior research specialists (a retired health science professor and two professors from the University of Stellenbosch) appraised the interview questionnaire before it was piloted with a training manager who had knowledge of the ODA profession as well as its education and training. The necessary changes were made to the initial interview questionnaire as per recommendations and advice from the three senior research specialists to finalise the questionnaire. This training manager did not participate in the actual study and the data generated were not used in the actual study (Brink, 2006:166; Creswell, 2009:149; Polit & Beck, 2012:195 & 331).

4.4.4.3. Data capturing and analysis

The five individual interviews were conducted between 23 August and 9 October 2017. The same external researcher who conducted the first round of interviews generated the data to ensure consistency. Once again the researcher of the current study was not present during the data collection stage (Stage 4). Although the external researcher planned to conduct the interviews in a period of two weeks to maintain consistency, the individual interviews could only be secured in the timeframe indicated above due to the participants' busy schedules and geographical locations.

After they were briefed and their written voluntary consent (cf. Annexure N) had been obtained, the interviews were conducted at the workplace of each interviewee. The conversations were guided by prompt guides and probes consisting of open-ended questions (cf. Annexure M) pertaining to the need for ODAs to assist the anaesthetist and RN, ODA supervision, their regulation and scope of practice, ethical concerns, their academic level and career path.

Data capturing and analysis

The same process as with the first round of interviews (cf. Ch. 4, sect. 4.4.2.3) was used to capture, transcribe, transfer, secure, scrutinise, classify, sort, analyse and combine the data.

Level 1: Summarise and package data

During the first step, the data were transcribed, coded (Miles & Huberman, 1994:92; Saldana, 2013:26) and read three times to obtain a general sense and to reflect on its overall meaning (Creswell, 2009:185) by underlining phrases, making margin notes and restating identified phrases (Miles & Huberman, 1994:87-88). This was done by means of content analysis to reduce the data, identify categories and ultimately themes as well as meanings (Patton, 2015:541; Saldana, 2013:13). This is covered in Chapter 8.

Level 2: Repackage and aggregate data

The interview data were categorised in the sequence it was conducted and transcribed verbatim. Next, themes, categories, sub-categories and relating data were captured, repackaged and grouped according to the sub-categories which inductively emerged from the data under each category (Archer, 2016:100-101; Saldana, 2013:11-14 & 26-27) on a Microsoft Excel spreadsheet as was done during Stage 2 of the study (cf. sect. 4.4.2.3). Relationships in the data as well as overall trends, emphasis and possible gaps were identified (Miles & Huberman, 1994:92).

Level 3: Identify patterns and propose explanations

During the *first step* the themes, categories and sub-categories were checked and cross-checked to confirm the accuracy of the data and identify overlapping categories (Miles & Huberman, 1994:92). During the *second step* the data were synthesised by integrating it into one explanatory framework with all the other data in an attempt to answer the research questions and synthesise the findings (Ch. 9). The discussion of the second round of interview data findings is presented in Chapter 8.

Level 4: Propose a framework for the revision of the current curriculum

The data of this dataset was used in combination with all the other datasets to develop a proposed framework for the revision of the undergraduate ODA anaesthetic and recovery room curriculum which is provided in Chapter 10.

4.4.4.4. Data quality

Transferability, credibility and authenticity (Creswell, 2009:191) were used to judge the validity of the data. Thick rich data were obtained by means of individual interviews done by the same data collector to ensure consistency (Yazan, 2015:138). Dependability was achieved by using a diversity of participants (Constandius, 2012:108; Polit & Beck, 2012:175). The participants (cf. Ch. 4, sect. 4.4.4.1) had diverse knowledge and experience of the phenomena being studied – thus enhancing trustworthiness (Patton, 2015:684-685).

Conformity was achieved by recording all interviews and transcribing them verbatim. Credibility was achieved by triangulating the data and scrutinising the evidence after which it was converged to identify the categories and themes (Creswell, 2009:191) to corroborate the findings (Yin, 2014:120). Once again, the data were analysed and interpreted by the researcher. Creswell's (2009:190-191) strategies – the same as

applied during the first round of interviews – were applied to enhance the validity of the findings and convince readers of the truthfulness (cf. Ch. 4, 4.4.2.4). To limit bias the same external researcher, who collected the data during the first interview round, conducted the five structured individual interviews for data collection. The researcher, of the current study, then checked and revised the collected data (Polit & Beck, 2012:176) by means of self-reflection to identify possible bias related to the study (Creswell, 2009:192). Because member checking with the study interviewees was impossible due to practical constraints, themes, categories and sub-categories were cross-checked with an external auditor who holds a master's degree based on qualitative data (Creswell, 2009:191). Rich, thick descriptions of the interview data are provided in Chapter 8 to convey the findings. A detailed contextual perspective is provided in Chapter 3 to enhance realistic and context-rich results (Creswell, 2009:191-192).

4.4.4.5. Ethical considerations

To adhere to the ethical standards the same measures were put in place (cf. Ch. 4, sect. 4.4.2.5) as during the first interview round. There was no unfair selection of the study participants as all of them were employed in policy making positions. Some of the participants were involved in the decision to train ODAs while the latter was employed by the others. Permission was obtained from the three private hospital groups; written informed consent (cf. Annexure N) was received from all the participants who all voluntarily participated. Anonymity and confidentiality was maintained and ensured (Brink 2006:34; Polit & Beck, 2012:156). The data transcribed verbatim by the external transcriber (who ensured an oath of confidentiality) (cf. Annexure O) was kept secure by the researcher (cf. Ch. 4, sect. 4.4.4.3).

Once again, there was no risk of physical, emotional or financial harm befalling the participants (Brink, 2006:32; Polit & Beck, 2012:152) as the interviews were conducted at the participants' workplace at a time convenient to them. The five interviews lasted between 20 and 37 minutes each. This duration was in line with the 20-60 minutes Gill *et al.* (2008:292) suggest as a guideline for healthcare interviews.

4.4.5. Stage 5: Determining curriculum priorities

During this stage the curriculum priorities were determined. The priorities were drawn on to develop a proposed framework towards redesigning the anaesthetic and recovery room component of the Diploma in Operating Department Assistance (cf. Ch. 10, sect 10.5).

4.5. CONCLUSION

This chapter provided an overview of the research design and methodology used in this study. The researcher's decision to use a programmatic case study design and the selected methods to generate data was motivated. The position of the researcher in this study was explained and her reasons for choosing a modified online Delphi technique were stated and motivated. The two interview data collection and analysis processes were individually attended to as was the implementation thereof to obtain consensus on the content of the anaesthetic and recovery room course. Ethical aspects adhered to throughout were highlighted.

In Chapter 5 the research findings and results from the interview (Stage 2) data are presented. Chapter 6 discusses the data from the limited questionnaire survey and Chapter 7 informs the reader about the Delphi technique results. Chapter 8 provides an overview of Stage 4 interview findings and results.

CHAPTER 5
QUALITATIVE STAKEHOLDERS NEEDS: DATA ANALYSIS AND DISCUSSION

5.1. INTRODUCTION

In this chapter, which represents Stage 2 of the current study (cf. Table 1.1), the data generated from the individual, pair and focus group interviews are analysed and reported on in an attempt to determine the needs of stakeholders as guided by Kern's six-step approach. Interviews were used to determine stakeholder needs by means of rich, descriptive data to answer the research questions. The planned, null, hidden, received and taught curriculum is touched on in relation to the identified categories. The overall picture, however, is provided in Chapter 6. The data were analysed and presented according to the three levels of the analytical abstraction ladder (Miles & Huberman, 1994:92) as discussed in Chapter 4, section 4.4.2.3 (cf. Fig. 4.2).

5.2. LEVEL 1: SUMMARISING AND PACKINGING DATA

The first level of the analytical abstraction ladder was followed to transcribe and code the data. The next step was to summarise and package the data.

5.2.1. Transcribing and coding the data

The recorded interview data were prepared for the analysis process by firstly transcribing it verbatim. The 35 printed transcribed data sheets (cf. Addendum J as an example) were coded and read through three times by the researcher to become acquainted and obtain a general sense of the information as she did not conduct the interviews herself. Naturally this process was made easier because the researcher had an intimate knowledge of the topics discussed.

5.3. LEVEL 2: REPACKAGING AND GROUPING DATA

In this section the qualitative data were repacked and grouped to identify themes, trends, gaps and emphasis.

5.3.1. Identify themes and trends in data

For the purpose of this study Saldanha's (2013:13) concept of overarching themes, categories and sub-categories was used to relay the data. The content of the data generated from the manager interviews was the starting point. Marginal notes were employed as a coding aid to this analysis. Within the analytical framework approach, key phrases were identified and restated by remaining as descriptive and literal as possible; thereafter, the data were grouped. The data came together as categories from which themes emerged (Miles & Huberman, 1994:87-89). Iterative, repetitive and comparative methods were used to compare the data obtained from all interview participants. The themes, categories, sub-categories and content were summarised on an Excel spreadsheet which enabled the data analysis process.

During the earlier phases of the study questions were formulated to identify the needs of the stakeholders affected by the competencies of the ODAs who perform anaesthetic and recovery room assistant functions. The first two steps of Kern's six-step approach were used as a guideline. Five main themes running like a thread throughout almost all the categories were identified (cf. Table 5.1). Two additional themes, indirectly related to the course under scrutiny, were identified, namely ODAs not clearly identifiable and distinguishable from nurses (6) and ODAs' career prospects (7). Collaterally, themes 1 to 6 touched on patient safety as a potential threat to the patient which is directly related to the anaesthetic and recovery room module.

Table 5.1: Summary of themes, categories and sub-categories from datasets

Themes	Categories	Sub-categories
1. Emergency care assistance	1.1. Emergency situations in the operating department	1.1.1. Operating department assistants' inability in dealing with emergency situations 1.1.2. Knowledge and skills required to deal with emergencies 1.1.3. Suggestions to address the ODAs' lack of knowledge, skills and attitudes 1.1.4. Scope of practice limits ODAs' assistance during emergency situations
2. Pharmacology	2.1. Drug knowledge and administration	2.1.1. Theory does not cover all drugs used in practice 2.1.2. Operating department assistants lack competence to administer drugs 2.1.3. Operating department assistants have limited exposure to drug handling 2.1.4. Not allowing ODAs to handle scheduled drugs limits their function and acceptance as anaesthetic assistants 2.1.5. Drug theory to be included in the course content
3. Company-specific scope of practice	3.1. Divergent opinions of the company-specific scope of practice	3.1.1. Anaesthetic and recovery room assistant functions 3.1.2. Operating department assistants doing call 3.1.3. Concerns about the legality of ODAs working in the operating department 3.1.4. Uncertainty about the ODAs' anaesthetic and recovery room functions 3.1.5. Tension and frustration in the operating department due to ODAs' limited scope of practice
4. Operating department assistant contribution	4.1. Overall contribution to the operating department	4.1.1. Operating department assistants add value and make a major contribution 4.1.2. Current contribution as anaesthetic and recovery room assistants 4.1.3. Operating department assistants lack knowledge, skills and attitudes
	4.2. External determinants – attitude, self-efficacy and perceived norms affecting the ODAs' intention to contribute	4.2.1. Students unaware that the anaesthetic and recovery room education and training forms part of the operating department assistance programme 4.2.2. Operating department assistants feel uneasy, useless, unsafe, unsure and inferior to fulfil their AA and RRA roles 4.2.3. Operating department assistant students perceived negativity towards the anaesthetic and recovery room course 4.2.4. Mixed perceptions among stakeholders with regard to the ODAs' anaesthetic and recovery room assistance role and functions
	4.3. Stakeholder needs for AA and RRAs	4.3.1. Expressed needs of stakeholders 4.3.2. Knowledge, skills and attitudes required by an anaesthetic and recovery room assistant

5. Operating department assistant education and training	5.1. Overall anaesthetic and recovery room training	5.1.1. Current anaesthetic and recovery room training 5.1.2. Flow of current anaesthetic and recovery room course 5.1.3. Limited clinical exposure 5.1.4. Clinical placements dictated by staff shortage 5.1.5. Anaesthetic and recovery room clinical assessments do not enhance learning 5.1.6. Conflicting preference for a longitudinal versus concentrated condensed course
	5.2. Theory and practice integration	5.2.1. Clinical theory integration is required 5.2.2. Poor alignment of theory and practice 5.2.3. Methods to improve theory-practice integration
	5.3. Clinical mentoring	5.3.1. Clinical mentoring by operating department staff 5.3.2. Clinical mentoring by operating department staff is problematic due to environmental constraints 5.3.3. Clinical accompaniment and mentoring by educators
	5.4. Anaesthetic and recovery room specific training	5.4.1. Current anaesthetic and recovery room specific training content 5.4.2. How the anaesthetic component of the course could be changed 5.4.3. How the recovery room component of the course could be changed
6. Operating department assistants not clearly identifiable and distinguishable from the nurses		
7. Operating department assistants' career prospects		

It is important to mention that the word 'behaviour' instead of 'attitude' was used in the paper-based questionnaire (cf. Ch. 2, sect. 2.9.1).

The next step was to identify and group categories together via an inductive process. This approach, popular with qualitative data analysis, was used as there was no set themes (Patton, 2015:541). Themes, which formed the basis of the study, were identified as a result of reflecting on and categorising the data. The researcher was constantly aware of the fact that the data had to be looked at afresh and inductively to identify emerging themes and categories. The categories were, however, very broad and thus further grouped as sub-categories which emerged inductively from the datasets (cf. Table 5.1).

At the Level 2 analysis, all the datasets were relooked and repackaged after summarising them. During the third level of Carney's Ladder of Analytical Abstraction (1990, in Miles and Huberman, 1994:92), the findings were cross-checked with an external researcher (also referred to as an auditor). The data were integrated to compile a Delphi questionnaire for consensus purposes. During the third step of the analytical ladder (Level 3) the data were integrated with all datasets, including the IBM, to motivate changes made to the anaesthetic and recovery room curriculum.

5.3.2. Emphasis in the data

Four phrases repeatedly emerged from the data, namely (1) ODAs' scope of practice; (2) emergency care assistance; (3) ODA training and contribution and (4) ODAs' lack of in-depth drug knowledge. As regards the scope of practice (SOP), all participants mentioned the restricted scope of practice limited the ODA's role in the operating department. Handling and administering medication and taking care of a patient in the recovery room (monitoring and interpretation of vital signs) were mentioned repeatedly. Emphasis was also placed on assistance during emergency situations as the majority of participants were unsure whether the

ODAs would be able to handle emergency situations. The argument was that while everything goes according to plan and runs smoothly, the ODA might demonstrate competency and be in control. However, anaesthesia is a discipline in which the situation can change rapidly and unexpectedly; therefore, in an instantaneous critical situation it is crucial for all healthcare professionals to be able to react immediately and adapt to the situation without erring (Kluger *et al.,* 1999:272; NES, 2012:1; The Association of Anaesthetist of Great Britain and Ireland, 2007:3-4).

5.4. LEVEL 3: DISCUSSION OF THE FINDINGS

This section constitutes a discussion of the identified themes, trends and findings as it emerged from the data analysis done at Level 2 of the analytical abstraction ladder. It represents step 1 of Level 3 of the analytical abstraction ladder. Step 2 of Level 3 is dealt with in Chapter 9 where the findings of all datasets are synthesised.

5.4.1. Cross-checking tentative findings

As a Level 3 intervention in accordance with the analytical abstraction ladder, the tentative themes, categories and sub-categories were cross-checked with an auditor who read all the transcriptions and made her own notes. This was done to reduce the bulk of data for analysis purposes and to validate the accuracy of the data captured (Miles & Huberman, 1994:92). Where necessary the titles of the themes, categories and sub-categories were adapted. These findings are discussed according to the themes, categories, sub-categories and types of curricula.

5.4.2. Analysis of data according to themes and categories

This section presents a discussion of the findings which emerged from the analysis of the interview data. In Chapter 9 these findings are integrated (synthesised) with the data discussed in Chapter 6 (curriculum-mapping and questionnaire data), Chapter 7 (the Delphi technique consensus findings) and Chapter 8 (second round interview data). The themes and categories, as they emerged from all the datasets, are introduced first followed by the sub-categories.

The findings from the datasets as they are discussed under each sub-category are sequenced as follows: (i) the data from management; (ii) the data from the anaesthetists; (iii) the data from the ODAs and students, and (iv) the data from the educators. The reason for this specific sequencing is that the data from the first three groups' interviews represent the *received curriculum* and the fourth group, the educators, the data concerning the *taught curriculum*. The ODAs' and student's data are related as the ODAs graduated eight to nine months before this study was conducted. A bar diagram (cf. Fig. 5.1) illustrates the numbers of participants per group who participated in this round of the study. Of the participants invited, 86% managers, 58% anaesthetists, all ODAs (100%) as well as 92% students and all educators (100%) attended the interviews. Except for the anaesthetists, the overall participant rate was good.

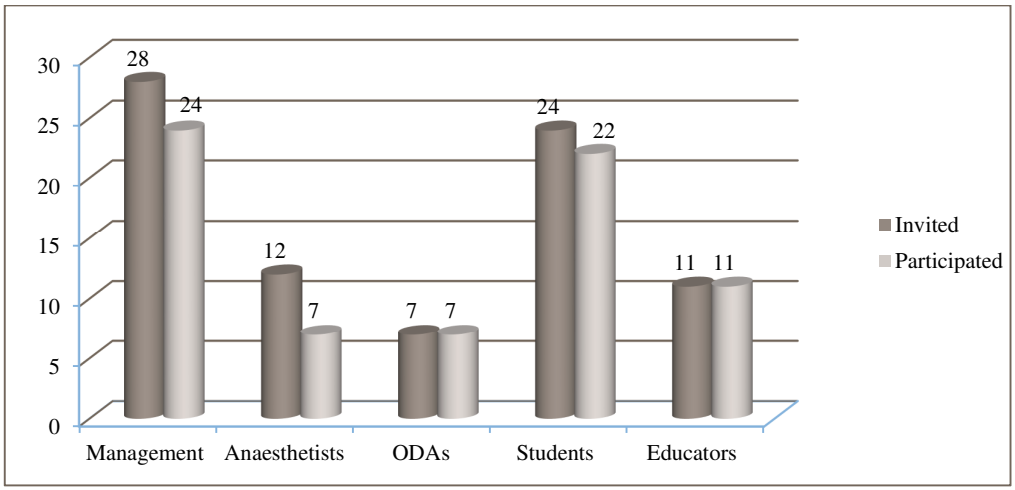

Figure 5.1: Summary of interview participants

The following codes applied to the findings regarding the different participant datasets:

- Gr = Group
- P = Participant
- IV = Interviewer
- E = Educator
- MGT = Management
- ODA = Operating department assistant
- A = Anaesthetist
- St = Students

Example:

• StGr2P3	Student; group 2, participant 3
• StGr4WG, p17, L2	Student; group 4, whole group, page 17, line 2
• MGTGr5P3, p6, L8-11	Management; group 5, participant 3, page 6, lines 8 to 11
• A5, p1, L10	Anaesthetist; participant 5, page 1, line 10
• ODA3, p10, L5, 6 & 8	Operating department assistant; participant 3, page 10, lines 5, 6 and 8
• E8, p6, L22-24	Educator; participant number 8, page 6, lines 22 to 24
• E10, p13, L24-27 & p.14, L2-3	Educator; participant number 10, page 13, lines 24 to 27 and page 14, lines 2 to 3
• ODA4IV, p2, L8-9	Operating department assistant; participant 4, interviewer, page 2, lines 8-9

It is important to note that the findings from the datasets represent the particular curriculum type which guided the compilation of the Delphi questionnaire (Dent & Harden, 2013:9; Harden, 2001:3-6; Kelly, 2004:7-8; McKimm & Barrow, 2009:714; Posner, 2004:13; Quinn & Hughes, 2007:109). The curriculum types guiding the various datasets were:

- managers, anaesthetists, ODAs and students: the received curriculum
- educators: the taught and null curriculum
- ODAs and students: the null and hidden curriculum – knowledge, skills and attitudes learnt as by-products of the planned curriculum

The identified stakeholder needs were thus compared to the planned curriculum to identify gaps and changes which, if needed, could be made to the current anaesthetic and recovery room curriculum (cf. Ch. 6). The

data are discussed under the five main themes (cf. Ch. 5, sect. 5.3.1). The two additional themes, not directly linked to the ODA course but which emerged from the data analysis, are discussed separately.

It is also important to mention that although all the questions were asked in English some of the participants were more comfortable to answer questions in Afrikaans. Thus, for the purpose of this study, the direct Afrikaans quotations were translated into English. The translations were checked by colleagues whose mother tongue was Afrikaans and English respectively (all hold master's degrees) to ensure correct wording and messages were conveyed.

THEME 1: EMERGENCY CARE ASSISTANCE

Emergency care assistance is a theme that was referred to by all participant groups. In the context of this study, the theme 'emergency care' referred to the care provided to a patient, in an emergency situation, by a healthcare professional (doctor, RN) with the assistance of an ODA. It thus reflects on the ODA's assistance in emergency situations. However, an aspect that became clear in the early stages of the data analysis was that all participant groups indicated concern about how the ODA would react in an emergency situation. This theme emerged constantly throughout the interviews. One category, 'emergency situations in the operating department', emerged from the theme 'emergency care assistance'. The category was divided into four sub-categories which emerged inductively from the data, namely (1.1.1) ODAs' inability in dealing with an emergency situation; (1.1.2) knowledge, skills and attitudes required to deal with emergencies; (1.1.3) suggestions to address the lack of knowledge, skills and attitudes and (1.1.4) the ODAs' scope of practice which limited their assistance during emergency situations.

CATEGORY 1.1: EMERGENCY SITUATIONS IN THE OPERATING DEPARTMENT

Overall, participants indicated an overwhelming concern about the ODAs' competency to deal with emergency situations when assisting the healthcare professional.

Sub-category 1.1.1: Operating department assistants' inability in dealing with emergency situations

Management

Representatives of management displayed a major concern about whether ODAs' knowledge base equipped them to deal with emergency situations. Their responses indicated that ODAs lacked knowledge to react appropriately and instantaneously when an emergency suddenly and unexpectedly occurred. According to them, anaesthesia assistance is relatively easy until something goes wrong. The following quote serves to illustrate:

"… when anaesthesia is simplistic, then it is simple. Then anyone can do it but as soon as there is an emergency situation … or something goes wrong, I do not think they have enough knowledge to know how to react in that situation.". (MGTGr5P3, p6, L8-11)

Linked to the above statement was the perception that ODAs lacked sufficient exposure to emergency situations to be left alone with the anaesthetist during an emergency situation. According to the staff, they must 'babysit' the ODAs all the time as the following quote confirms:

"… in that situation you're got to babysit them so much that, just leave them in scrubbing … not feeling safe." (MGTGr1P3, p24, L9-12)

The managers also referred to the situation with ODA students who have to be mentored. They linked the lack of knowledge and skills to patient safety – central to this was the ODAs' knowledge and skills of basic life support (BLS) which the managers viewed as an essential skill. The ODAs lacked experience in BLS exposure and, as a result, they were not trained or skilled to manage cardiopulmonary resuscitation on their own; they needed assistance as illustrated in the next quote:

"… they can't do CPR alone. You need to be there to help.". (MGTGr1P2, p8, L11)

One manager said it was imperative for ODAs to be competent to assist with emergency care because a doctor will 'grab' the closest person to assist and the ODA did not always have time to call for help or ask somebody else to assist as the quote below verifies:

"… the thing is during emergencies, doctors don't worry about who is here or there. Doctors will grab a person who is fresh and in an emergency situation you must know.". (MGTGr1P2, p18, L7-9)

Anaesthetists

The anaesthetists shared similar sentiments regarding the ODAs' inability to assist in emergency situations. They confirmed anaesthesia is a discipline which is easy and non-life-threatening if everything goes as planned, but the patient's situation can change rapidly. They were very unsure whether an ODA had sufficient experience to deal with such a critical situation (A5, p1, L10; A3, p6, L25 & 27; A2, p2, L8). By way of illustration two quotes are provided:

"… anaesthesia is one of those disciplines where things change rapidly..." (A5, p1, L10)

"… do they [ODAs] *have the necessary training if there is a crisis on hand and you have a resuscitation and you have a patient who arrested, if they will be effective?"* (A2, p2, L7-8)

It was difficult for anaesthetists to assess their assistants during emergency situations to determine how the latter reacted to and dealt with the pressure because their focus was first and foremost on patient safety as the following quote illustrates:

"… the speed at which things happen and when they do happen is very difficult to actually evaluate the person on." (A5, p1, L12-13)

Operating department assistants and students

Two ODAs voiced they would not be able to assist the healthcare professional during emergency situations as they did not feel comfortable or equipped (ODA3, p4, L18-22; ODA4, p11, L15 & 22). Some ODAs indicated they had never been exposed to an emergency situation during training – not even in the classroom. In fact, they admitted they had never been exposed to any scenarios relating to emergency situations (ODA3, p10, L6 & 8; ODA5, p11, L8-9) as illustrated in their verbatim quotes:

"[I] *will not be able to assist with an emergency … everyone is in crisis mode I would not know what to do … in that regards I am not comfortable with anaesthesia.".* (ODA3, p4, L18-20 & 22)

"… [I have] *never* [been] *exposed to it in my rotation during anaesthesia." (*ODA3, p10, L6 & 8)

Some ODAs confirmed that although they had CPR training, they would not be able to cope and might only be a hindrance (ODA2, p20, L26-27; ODA3, p10, L6, 11, 15 & 20). This observation was enhanced by the fact that they may not handle or administer drugs during an emergency situation (ODA3, p7, L11-14) as verified by the next quote:

"… you don't have anything valuable to add in that situation, you become more of an obstacle." (ODA2, p20, L26-27)

Conversely, one student (StGr4P3, p17, L16-17 & 23-24) shared they were taught all types of emergencies. They were also taught how to anticipate and foresee when an emergency might occur; how to react quickly and get the emergency trolley, and how to assist the healthcare professional. The participant highlighted this awareness:

"… we are taught to anticipate and see, foresee before something has happened.... We are taught all those different types of emergencies. … we are taught how to help the anaesthetist and how to help the RN in recovery, how to manage the emergencies..." (StGr4P3, p17, L14-17 & 23-24)

Other students shared they felt they needed more exposure and experience as this would enable them to correlate the information and get a clearer picture (StGr5P2, p11, L1-4). However, because they were not allowed to administer drugs their ability to assist during an emergency situation, according to them, was limited (ODA3, p7, L11-14 & 17; StGr4P3, p17, L16-21). The quote below confirms and is verified by an ODAs quote:

"*We are taught all those different types of emergencies. But there are certain things we can't do, like medication … it's not in our SOP.".* (StGr4P3, p17, L16-21)

"So here is an emergency. The doctor tells me … 'pull [up] *Scoline and inject it as he is busy with the* [patient's] *airw*ay. *Then I may not do it. So in that sense, it feels why am I doing* [assisting with] *anesthesia if I may not work with medication. … actually, I do not offer any help* [assistance] *to the doctor* [anaesthetist]*…"* (ODA3, p7, L11-14 & 17)

Educators

Although the ODAs were taught to identify emergencies and get assistance, three educators were unified in their opinion that ODAs were not competent to deal with emergency situations. ODAs were only taught BLS and normal vital signs parameters which did not include the abnormal (E5, p7, L26; E9, p1, L12-16 & p2, L3-4). ODAs also lacked the knowledge to identify abnormal vital signs and what to do about it (E9, p2, L2-3), deal with difficult intubation, oxygen saturation drop and how to apply cricoid pressure (E9, p15, L20-24) as the next quote illustrates:

"If it goes as planned … they [ODAs] *do well with anaesthesia; if there is a complication;* [anaesthetist] *struggling to intubate, if the patients saturation drop, if they must apply cricoid pressure, it is not things they exposed to every day.".* (E9, p15, L20-24)

The educators ascribed this to an apparent lack of exposure to emergency situations. If and when the unexpected happens, the ODA would not be able to provide the necessary support to the anaesthetist (E8, p6, L22-24) as quoted:

"And when it comes to an emergency … that person [ODA] *cannot provide the necessary support for that* [the] *anaesthetist, i.e. administering Scoline. Is that right?"* (ODA8IV, p6, L22-24) *"Yes.".* (ODA8, p6, L25)

Another hindrance mentioned was that although ODAs might know how to do CPR, they were not allowed to administer drugs during emergency situations. One educator said:

"When the anaesthetist asks them to give medication during an emergency, they are not allowed to do it. They may resus [resuscitate] *but not give medication.".* (E9, p3, L17-19)

Conclusion

There was an overwhelming perception that ODAs were unable to effectively assist during emergency situations due to insufficient training, lack of sufficient clinical experience and exposure as well as limited knowledge and skills.

Sub-category 1.1.2: Knowledge and skills required to deal with emergencies

It was clear the main skill required was the handling and administration of drugs. A participant cited it posed a risk to patients if ODAs were not able to administer drugs during emergency situations when the RN was unable to assist:

"So in an emergency she [RN] *is the only person, but if she is busy with a patient in the recovery room and there is a resus in theatre, then she is the only one who can do it and that poses a risk.".* (E9, p8, L28-29)

The knowledge, skills and attitudes an ODA needed to assist during an emergency situation as identified by the anaesthetists, managers and educators are summarised in Table 5.2 (cf. Annexure S).

Sub-category 1.1.3: Suggestions to address the ODAs' lack of knowledge, skills and attitudes

In the previous section the knowledge, skills and attitudes ODAs lacked to effectively assist during emergencies were identified. In this section the managers, ODAs and students provided suggestions on how to address those shortcomings.

Management

Management suggested the following teaching activities: more clinical exposure to emergency situations, basic (BLS) and advanced cardiac life support (ACLS) workshops to equip ODAs to deal with emergencies and relevant medication (MGTGr1P2, p8, L10-11; MGTGr2P1, p7, L1, 8-10; MGTGr2P3, p7, L5). One manager said:

"... in an emergency situation, if they must assist with anaesthesia, then they must know Adrenaline [emergency drug]*, how much to mix, how often do I give it … ACLS is supposed to be a part of their course."* (MGTGr2P1, p7, L1, 8-10)

Operating department assistants and students

Two students indicated they also needed more clinical exposure to emergency situations (StGr2P1, p4, L19-24; StGr5P2, p11, L1-4) to know what to do in such situations as illustrated:

"… you have to be exposed to emergency that you can know okay, I must do this…" (StGr5P2, p11, L1-4)

One ODA suggested practicing emergency situation assistance in simulation, more in-depth knowledge of normal values of vital signs, contribution(s) to be made in emergency situations and how to manage emergencies (ODA5, p12, L17-19). The same ODA also added theory-practice integration by means of scenarios, simulations and workshops (ODA5, p12, L21-27). By way of illustration:

"… in the practical field you do not know exactly how to apply it but you know what stands there and what is expected from you, but you do not know how to apply it. It will be nice to have a scenario." (ODA5, p12, L21-27)

Conclusion

The overall impression from the data was that ODAs definitely needed more exposure to emergency situations. These could be facilitated by providing scenarios and simulation, both classified as student-active teaching and learning methods.

Sub-category 1.1.4: Scope of practice limits ODAs' assistance during emergency situations

Of significance here is to mention the SOP referred to in this study was a company-specific SOP (cf. Annexure K for a copy) developed for ODAs by the private hospital group mainly because a formalised SOP developed by a statutory body was non-existent. Although the ODAs' scope of practice is dealt with separately (cf. Ch. 5, category 3.1), it is important to mention that one student and one educator implied the ODAs' scope of practice limited their assistance during emergency situations as they may not administer or handle drugs (StGr4P3, p17, L18-20; E8, p6, L22-24) as quoted above (cf. Ch. 5, sub-category 1.1.1).

THEME 2: PHARMACOLOGY

From the previous sections it is apparent the competence to handle and administer drugs in an emergency situation was considered a vital function for any AA. The ODAs' competence to administer drugs was therefore a theme which was highlighted as it was linked to their SOP, their ability to assist during emergencies situations and their overall role and functions.

CATEGORY 2.1: DRUG KNOWLEDGE AND ADMINISTRATION

The focus of this category was on the ODAs' lack of drug knowledge which was foregrounded by the managers and ODAs. For the purpose of this study drugs also refer to medication used in the operating department. The two terms are used interchangeably in this chapter.

The category was divided into four sub-categories which emerged inductively from the data, namely (2.1.1) theory does not cover all drugs used in practice; (2.1.2) operating department assistants lack competence to administer drugs; (2.1.3) operating department assistants' limited exposure to drug handling; (2.1.4) not allowing ODAs to handle scheduled drugs limits their function and acceptance as anaesthetic assistants and (2.1.5) drug theory to be included in the course.

Sub-category 2.1.1: Theory does not cover all drugs used in practice

As mentioned, any other reference to drugs relates to the medicine and anaesthetic agents used in the operating department. Many participants verbalised that ODAs lacked in-depth knowledge of the drugs used in the theatre and recovery room environment. This is well illustrated by the findings that follow.

Management

One manager was of the opinion the ODAs' lack of knowledge about drugs was a major hindrance to their overall performances as an A/RRA (MGTGr1P2, p22, L9-12). It was highlighted as follows:

"It's only drugs that's a hindrance because they don't know.". (MGTGr1P2, p22, L9)

Another focal point was ODAs did not know the amount of drugs to be given per kg (MGTGr4P3, p6, L12), indication for use and physiological reaction (MGTGr4P2, p6, L25-26), side-effects (MGTGr4P3, p6, L27-29) and reversal of drugs (MGTGr4P3, p6, L12). According to management, it was difficult to work with a person who did not know why certain actions are performed. Therefore, it was considered vital to upgrade the drug component of the curriculum to improve the ODAs' anticipation, observation and interpretation skills. Another manager observed:

"… that medication [drug] *part, it needs to be upgraded, or … modified to fit into their programme in a certain way."* (MGTGr1P2, p22, L11-13)

The ODAs' contribution as A/RRAs was limited because they were not allowed to handle any drugs which included schedule 5, 6 and 7 drugs. As a result, they could not be allocated to assist the healthcare professional as one manager participant confirmed:

"… they are restricted with medication and … may not actually touch it. It feels … at the end of the day ... you cannot actually place them there.". (MGTGr5P2, p3, L26-28)

Operating department assistants and students

Some ODAs (ODA1, p1, L19; ODA2, p5, L3-5; ODA3, p3, L18 & 21; ODA5, p15, L9-12; ODA6, p8, L2-3 & 9) were of the opinion the pharmacology done in the course did not really prepare them for practice as it did not cover the drug knowledge required. While one ODA agreed the topic of all drugs used in the operating department was dealt with in the course (ODA1, p2, L24-25), another ODA stated the pharmacology theory was overwhelming and too much to master and therefore caused much confusion as verified below. The need was to be taught the drugs used on a daily basis (ODA3, p3, L16-21). The next dialogue supports this:

"Okay, and the reason you're linking to it, is that they've exposed you to so many medications that it actually caused confusion?" (ODA3IV, p3, L16-17) "*It did.*". (ODA3, p3, L18) "Y*ou suggest they should only teach you the medication that is used."*(ODA3IV, p3, L19-20*) "Yes."*. (ODA3, p3, L21)

A further problem emphasised was that ODAs had to assist with procedures which they were not prepared for. These included checking and drawing up drugs, labelling vaculiters, completing fluid balance forms (ODA2, p3, L2-8 & L14-17) and handling scheduled drugs (ODA2, p5, L4). They also lacked knowledge of reversal drugs in terms of what happens if the reversal drug does not work (ODA2, p13, L31 & L35); also

antibiotics (ODA6, p8, L9) and indication for use (ODA5, p15, L9-10). The majority of ODAs requested for a more detailed pharmacology section to be included in the course. To illustrate two quotes from the ODAs are given:

"… go into a little bit more detail ... with drugs". (ODA5, p15, L6-7) "*What it* [drug] *is used for and why it is injected…"* (ODA5, p15, L9-10)

"… when it comes to the drugs, … we could have focused more on pharmacology…" (ODA6, P8, L2-3)

It was evident ODAs were unwilling to assist the healthcare professional due to their lack of knowledge. A participant stated:

"... okay, I do not know for what this thing [drug] *is for ... this is the main reason why I do not really want to get involved with anaesthesia ... I have no idea what it is for…*" (ODA6, p8, L4-7 & 10)

No students made a comment about the heavy pharmacology workload or a lack of knowledge. A possible reason is that they were at the time of study still busy with the course and some students still needed to rotate through anaesthesia and the recovery room. One student, however, asked for only one prescribed textbook, namely the MIMS which contains all the drugs listed in the course because they found the use of medication leaflets confusing and time consuming. The student said:

"… [one] *pharmacology book which actually describes all the medication used, maybe …* [the] *MIMS."*. (StGp5P1, p4, L33-3 & p5, L1)

Conclusion

There was a perception from the managers and ODAs that the ODAs are not well prepared to handle drugs due to shortcomings in their knowledge base.

Sub-category 2.1.2: Operating department assistants lack competence to administer drugs

Linked to their lack of knowledge regarding drugs, the ODAs were furthermore questioned about their competence to administer drugs. The latter includes all drugs used in the operating department, including emergency drugs such as Atropine and suppositories. Many participants perceived the non-competence of ODAs to administer drugs disturbing because it is directly related to their A/RRA functions.

Management

Management found the fact that ODAs may not administer drugs, even in emergency situations (MGTGr1P1, p23, L19-20), baffling and challenging when considering the ODA programme did indeed cover pharmacology and physiology (MGTGr1P1, p26, L12-14; MGTGr4P3, p6, L16-17). By way of illustration:

"*I think it's a challenge if they are not giving* [drugs] *… in an emergency situation.*". (MGTGr1P1, p23, L19-20)

"… [ODAs] *are taught physiology …* [we] *are introducing them to this pharmacology. Why are they not allowed to give medication because they learn about pharmacology…?"* (MGTGr1P1, p26, L12-14)

Anaesthetists

According to one anaesthetist, a necessary part of the function of ODAs in the recovery room was to administer drugs which include emergency and scheduled drugs. Acknowledging that administering drugs was indeed not part of the existing curriculum, the anaesthetist wondered whether including learning about the administration of drugs would require registration with a statutory body:

"It also requires them to be able to administer drugs, which is not part of the current curriculum, and that would again probably require some sort of further registration.". (A4, p2, L21-22)

Operating department assistants and students

Some students and ODAs confirmed they were prohibited from giving drugs and they therefore did not administer it (ODA6P, p8, L31; StGr2P1, p8, L10; StGr4P3, p17, L18-21). In fact, they pointed out it was not in their current SOP. One student said:

"… medication is the only thing we don't give … it's not in our SOP. We are not allowed to do that…" (StGr4P3, p17, L18-21)

The majority of participants found it very limiting and problematic (StGr2P1, p8, L10-11) that they were not allowed to handle or administer drugs. They viewed it as an uneconomical practice to allocate ODAs to function as assistants when they were in any case forced to call a RN to assist with the drugs. To them it was a problematic issue because it was time-consuming and frustrating (ODA6, p8, L25-26) as illustrated below:

"… as an ODA we're not allowed to administer medication … so it becomes a problem actually.". (StGr2P1, p8, L9-11)

"... it is not part of our SOP. So we may not work with drugs … you do anaesthesia … but there is always somebody that must come and do the drugs for you … from a business point of view … to put an ODA on anaesthesia [to assist the anaesthetist]*…"* (ODA6, p8, L20-26)

Moreover, ODAs were often humiliated – in front of a patient – and shouted at if they refused to administer a drug requested by the anaesthetists, but which they were prohibited to administer as the next quote indicates:

"… you'll get shouted at … because … they don't want to hear, 'no I can't do it, I am an ODA', because the patient comes first…" (StGr2P1, p9, L13-15)

Hence, according to one student, it would be better if ODAs were allowed to administer drugs under direct supervision as they would then feel competent and there would be no reason for the anaesthetist to get angry:

"… get to a point where we are allowed to administer … maybe under direct supervision of the doctor…" (StGr2P1, p9, L28-30)

Educators

Four educators confirmed that although the ODA programme included pharmacology, ODAs were still not allowed to administer drugs (E1, p4, L15; E4, p5, L4; E8, p3, L22; E9, p2, L24). However, according to one educator, ODAs may administer drugs in an emergency situation (E1, p4, L19); but, it was emphasised although they (the educators) did teach the ODAs to draw up drugs as it sometimes happened that practice required it from them, but they were under no circumstances allowed to administer it (E1, p5, L7-817-19; E8, p4, L16-17) not even in an emergency situation (E8, p4, L18; E9, p3, L18-19). One educator went so far as to say ODAs must not handle drugs at all (E9, p3, L17). The diversity observed in the opinions of the

educators basically indicated the inconsistencies currently existing in the training of ODAs. The following two quotes clearly signify the dissimilar interpretations of the curriculum by two educators:

"… we teach them [ODAs] *the drugs … but they may never administer it themselves, only in an emergency situation."*. (E1, p4, L17-19)

"… they may offer it [drug] *to the anaesthetist, draw it up as well, but may not administer it themselves."*. (E1, p5, L7-8)

It was further highlighted ODAs were not allowed to administer drugs into vaculiters when preparing for central venous pressure or arterial line insertion. These procedures are usually performed when patients are booked for major surgery and when intensive monitoring is required. A participant said:

"... preparing a single venous pressure line or arterial line and heparin needs to be injected as part of doctor's orders, they [ODAs] *are not allowed to do that … because they cannot administer medication…"* (E8, p4, L15-19)

On the contrary, a situation sometimes arose where the ODA had no option but to administer drugs under direct supervision as the next quote illustrates:

"… they [ODAs] *always have to give under supervision, and sometimes they … have to draw up and give things."*. (E5, p15, L14-15)

Conclusion

From the data rendered it was obvious the anaesthetists were given assistance, but this assistance was unfortunately very limited due to the fact that ODAs were not allowed to handle or administer drugs under any circumstances including an emergency. Moreover, vital differences occurred in ODAs' learning theory with regards the administering of drugs which had dire implications on the assistance rendered by ODAs to anaesthetists, even more so in an emergency situation for which they were not prepared. Indeed, some ODAs did administer drugs under direct supervision although it was not in their current SOP. There further seemed to be disagreement among educators on how each interpreted the planned curriculum and what should be taught to students about administering drugs.

Sub-category 2.1.3: Operating department assistants have limited exposure to drug handling

Although the theoretical part of training included learning about drug handling, it had to be determined whether the ODAs had sufficient exposure to drug handling in practice.

Management

The ODAs had limited exposure to anaesthetic drugs due to their limited SOP (MGTGr5P2, p3, L26-27). They are not allowed to handle any drugs (MGTGr3P1, p11, L32) and may only handle empty ampoules (MGTGr3P1, p11, L33). By way of illustration:

"So their exposure to drugs or to anaesthesia, it's not enough.". (MGTGr1P1, p8, L8-9)

"… because they [ODAs] *are limited with medication and may actually not touch it* [the ampoules]."*.* (MGTGr5P2, p3, L26-27)

There was uncertainty in the clinical field about some aspects of the extent to which ODAs may handle drugs, what they were taught and the depth of their pharmacology knowledge as indicated by the following quote:

"… how in-depth is their pharmacology knowledge … and what are they allowed?" (MGTGr5P1, p1, L13-14)

One manager was of the opinion the ODAs totally lacked insight and knowledge of the drugs used:

"They do not have knowledge of the drugs that is administered …. Thus, they [ODAs] *actually do not have insight.".* (MGTGr5P1, p2, L27-28)

Operating department assistants and students

One student (StGr2P1, p2, L13-15, 17 & 19) explained they were only allowed to handle the drugs on the anaesthetic trolley when they prepared for anesthesia. After preparation they then handed it to the anaesthetist who then drew it up. Hence, their exposure to drugs was very limited as confirmed in the quote below:

"… we can check with them … we check expiry dates … but furthermore we don't handle it.". (StGr2P1, p2, L13-15)

Educators

The educators also perceived the drug component of the course as a problematic issue (E8, p3, L22-30; E9, p3, L17-23). Although it was taught in detail in the classroom, ODAs were nevertheless not allowed to handle drugs (E9, p3, L17), complete the drug register or fetch drugs from the pharmacy (E8, p3, L24-26 & p4, L11-12) which caused a lot of frustration (E8, p4, L6-7) because of time wasted. It also limited clinical exposure and ultimately theory-practice integration (E10, p2, L3-6) as explained in the quote:

"… go into a lot of detail with specific medication used … sometimes the theory is not integrated with the practice. So, we would teach it in the learning centre but they don't get the exposure really to work with it in practice.". (E10, p2, L3-6)

Conclusion

It seems that the ODAs had limited experience of handling drugs as suggested by the participants' responses. There was an overwhelming response to the ODAs' limited skills with regard to drug handling. It was a disturbing matter that discrepancies between the planned and received curriculum emerged with educators disagreeing about what ODAs may or may not be allowed to do with regard to drug handling.

Sub-category 2.1.4: Not allowing ODAs to handle scheduled drugs limits their function and acceptance as anaesthetic assistants

When referring to 'scheduled drugs', it implies drugs registered by the Medicines Control Council as schedule 5, 6 and 7 substances (Medicines Control Council, 2014:10-11). A strong emphasis was placed on scheduled drugs by the majority of participants. The major issue was the handling of scheduled drugs. It was one of the tasks which, in fact, limited the function and acceptance of ODAs assisting the anaesthetists because it was one of the main functions of an AA.

Management

According to some managers, ODAs may not handle scheduled drugs which meant they could not collect it from the recovery room, complete the drugs register and count or co-sign as a witness. Currently, an enrolled/RN must perform this task (MGTGr5P1, p2, L1; MGTGr3P1, p8, L22-24; MGTGr5P4, p9, L26-27) as stated by a manager:

"*… they* [ODAs] *do not sign our drug registers. They also do not check our drugs. So if they do anaesthesia* [assist the anaesthetist] *… the floor nurse checks with the sisters.".* (MGTGr3P1, p8, L22-24)

It posed a major problem when there were only ODAs and RNs in the theatre:

"… they [ODAs] *may not check the medication in the books. So with whom are the RNs going to check her medication with?"* (MGTGr5P4, p9, L26-27)

Some managers were therefore reluctant to allocate ODAs to assist the anaesthetists due the logistic difficulties such a placing caused. The major part of the AA's function was to handle, check and count drugs:

"… you have an ODA doing the anaesthesia, but there is only one sister between two theatres. So now you can't do that because who is going to look after the drugs? ... just easier to let them scrub…" (MGTGr1P4, p9, L21-24)

Operating department assistants and students

Training prepared ODAs and ODA students to handle scheduled drugs and take responsibility for it (StGr4P3, p4, L13-18) as they were taught and assessed on the applicable legislation and policies related to scheduled drugs:

"… the legislation that governs everything that has to do with anaesthesia and the drugs, we have been taught … have assessments and all those … policies…" (StGr4P3, p4, L13-17)

Mixed responses were received by the participants on this aspect. According to two ODAs and two students, ODAs did handle scheduled drugs the same way as the anaesthetic nurse. It entailed fetching drugs from the recovery room, locking it away in the theatre drug cupboard, locking it out for the anaesthetist, completing the drug registers, counting the drugs, carrying the key (until the anaesthetist was in theatre to hand it over to him or her), debiting the drugs used as well as co-signing as a witness (StGr4PF, p3, L1-12; StGr4P3, p3, L17-24; ODA, p4, L16-17; ODA5, p5, L17). However, two ODA indicated they felt uncomfortable doing it because, according to both, it was the RN's responsibility:

"… take drugs in recovery room … countersign for them … take the drugs … inside the theatre I must record it on the designated book of that scheduled drug … and sign and write my designation.". (StGr4P3, p3, L17-24)

"I still feel uncomfortable counting medication because I believe that a RN should.". (ODA4, p3, L22-23)

On the other hand, one student and three ODAs asserted they may not handle scheduled drugs at all. It was locked away and only a RN had the authority to log it out (ODA1, p3, L1-2; StGr2P1, p2, L3-6). The ODA may not even complete the drug register or co-sign it as a witness (ODA6, p8, L20-12, 30) or carry the drug cupboard key. The participants declared this was an inconvenient bother. Every time the anaesthetist needed drugs, they had to first find a RN to assist (ODA5, p15, L22-30) which caused a lot of tension in the theatre (ODA5, p16, L17) as illustrated in the quotes below:

"… we are not allowed to log it out. So we go with the anaesthetic nurse … and a RN in the recovery room. They then check it out. We are not allowed to sign the register book…" (StGr2P1, p2, L2-5)

"… it makes it very tense … must walk every time to find somebody to log the drugs away for me.". (ODA5, p16, L17-18)

Another student stated the fact that they may not handle scheduled drugs limits their contribution as AA:

"What I understand you say is, I'm an ODA, my scope of practice does not allow medications. Anaesthetics include a lot of high scheduled medication, serious medications and so because of that it limits what your contribution can be and you will always be in an assisting position rather than anaesthetic support position. Is that right?" (StGr3IV, p9, L21-25) *"Yes."*. (StGr3, P7, p9, L26)

Once again, a discrepancy between the taught curriculum and received curriculum was perceived. Some students were allowed to handle scheduled drugs in practice but others were not allowed to do it.

Educators

Two educators said ODAs may handle scheduled drugs (E2, p28, L25-26; E4, p4, L24-26); one said they may co-sign the drug register (E7, p15, L1) and two verbalised ODAs may definitely not handle scheduled drugs (E6, p5, L24-25; E9P, p11, L17-24). Another also reported ODAs may not carry the drug cupboard key (E4, p15, L7). Thus, once again there were discrepancies on how the students were taught which reiterates the ODAs'/students' feedback. Some were taught to handle scheduled drugs while others were told they may not handle those drugs. By way of illustration:

"… they will manage it … do the documentation…" (E4, p4, L25-26)

"… they can co-sign…"(E7, p15, L1)

"… they are not allowed to handle schedule 5 and 6 medication…" (E6, p5, L24-25)

Conclusion

The managers' opinion was that ODAs may not handle scheduled drugs which seemed to limit the contribution the AAs made. Quite a significant mix of responses was received from the ODAs, students and educators. Some indicated the ODAs may handle scheduled drugs, others were of the opinion this could be allowed to a limited extent while the rest felt ODAs should not handle scheduled drugs at all.

Sub-category 2.1.5: Drug theory to be included in the course content

All participant groups indicated knowledge (topics) which should be included in the anaesthetic and recovery room course (cf. Table 5.3, Annexure S). However, some educators mentioned the following topics were already included in the current programme:

- Introduction to drugs (E5, p2, L19).
- Drugs used for anaesthesia and during emergency situations (E4, p1, L8; p2, L5-6) including indication, effects, action of drugs (E1, p4, L17-22; E5, p2, L1-2), contraindications and linking it to patient history and allergies (E4, p 5, L9-11, 14 & 16).
- Administration of drugs in emergency situations (E1, p4, L17-22).
- Handling of drugs (preparation, draw-up and check with anaesthetists) (E1, p5, L7-8 & 14).
- Premedication (indications and effects which are linked to patient safety) (E3, p8, L19 & 23).
- Anaesthetic gasses (including types, how it is mixed with oxygen and effects) (E3, p8, L24-25).

Some educators noted the above topics were taught by means of student-centred approaches where students were encouraged to find the information themselves by using the drug paper backings and prescribed textbooks. By way of illustration:

"… study the drug themselves … use the paper backings in the drugs … use the prescribed books the MIMs … in the class this group must compile … the most often used drugs, so that they discuss and interchange their knowledge.". (E4, p5, L9-10, 14, 16-19)

As mentioned, the students requested prescribed text books, i.e. the MIMS because they had to consult the drugs paper backing together with the many pharmacology textbooks which caused much confusion. Another problem was that the prescribed textbooks were not always available at the learning centre and if it was, they were not allowed to take it home as indicated in the quote:

"Due to the number of books we use, I find that sometimes … hard … to actually find information … it is sometimes confusing…" (StGrP1, p1, L8-9 & 12)

THEME 3: COMPANY-SPECIFIC SCOPE OF PRACTICE

It became evident early in the data analysis process that the ODA scope of practice (SOP) posed a problem. Many participants linked the lack of performance to the existing SOP which, in their opinion, was too limiting.

CATEGORY 3.1: DIVERGENT OPINIONS OF THE COMPANY-SPECIFIC SCOPE OF PRACTICE

As evidenced in the analysis below, there seemed to be divergent opinions on the existing company-specific SOP and its direct link to the ODAs training as well as how the SOP was handled in practice. The category was divided into five sub-categories, namely (3.1.1) anaesthetic and recovery room assistant functions; (3.1.2) operating department assistants doing call; (3.1.3) concerns about the legality of ODAs working in the operating department; (3.1.4) uncertainty about the ODAs' anaesthetic and recovery room functions and (3.1.5) tension and frustration in the operating department due to ODAs' limited scope of practice.

Sub-category 3.1.1: Anaesthetic and recovery room assistant functions

Management

The ODAs may not handle drugs (cf. Ch. 5, sub-category 2.1.4) or insert a urinary catheter (MGTGr6P1, p2, L1-5). Participants from management linked the aforementioned two assisting activities directly to the ODAs' limited SOP. For this reason, ODAs could not optimally function in the AA role (MGTGr5P2, p5, L30-31; MGTGr6P1, p2, L1-5) as signified in the two quotes below:

"They will never be able to be the anaesthetist's assistant due to their limited SOP and this is directly related to the medication.". (MGTGr5IV, p5, L30-31) "*Yes*". ((MGTGr5P2, p5, L32)

"… when they must assist with anaesthesia, with induction of anaesthesia, they are also not allowed to insert catheters … thus, at the end of the day, they cannot function optimally in those roles.". (MGTGr6P1, p2, L1-5)

One group asked for an adaption of the ODAs' scope of practice to allow them to function independently in the recovery room:

"... [once] their [ODAs'] course is of such a nature that it will allow them [ODAs] to function independently in the recovery room, because it is a good course ... once they completed the course ... I will allow her [ODA] with confidence to function alone in the recovery room, look after a patient..." (MGTGr2, p9, L16-19)

Operating department assistants and students

The majority of participants said ODAs had limited functions due to their SOP which did not allow them to insert a urinary catheter, check, handle or administer drugs (not even a suppository) or observe the patient's vital signs. Some supportive quotes are provided:

"… in anaesthesia there is many times we must put in a suppository … I may not put in the suppository … taught us all that anatomy, we may be scrubbed with our hands inside the patient's abdomen … but we may not put in a suppository ... they should have broaden our SOP a bit more.". (ODA3, p6, L13-18)

"... insertion of a catheter … you are the only one available to insert it, but then you cannot … not allowed…" (StGr4P1, p24, L1-3)

"… doctor tells me … pull up Scoline and administer it … he is busy with the airway. Then I may not do it.". (ODA3, p7, L11-13)

"… you are taught to do the patient's vital signs but you can still not … it comes in at your SOP. It limits you…" (ODA6, p11, L20-23)

It emerged from the verbal sharing of their experiences that some ODAs felt they were useless due to the limited SOP and thus did not want to work as AAs or RRAs. They could see no point in assisting the healthcare professional if they could not fulfil all the functions required of them as the following quote shows:

"For me anaesthetics are mainly about drugs … we are not able to handle drugs in any way, so basically we're useless. We will always be the anaesthetic nurse's assistant and not the anaesthetist himself.". (StGr3P1, p9, L18-20)

Thus, the limited SOP had undoubtedly become a problem for the ODAs and management as the former could not function to their full capacity. The following quote confirms:

"… we're not allowed to administer medication in any way. So it becomes a problem actually.". (StGr2P, p8, L9-11)

Educators

In the view of some educators, the ODAs did have the knowledge and insight to assist the healthcare professional; however, they were not allowed to because of their SOP as shown in the next two quotes:

"If they're qualified it's going to be a SOP issue, especially when it gets to anaesthetics where you have to sometimes assist the anaesthetist in administering medication or putting in a suppository or putting in a catheter, because that is not part of your SOP. Then you are the only person assisting the anaesthetist, so then it is expected of you.". (E10, p13, L24-27 & p14, L2-3)

"Yes, I think the ODA will have the insight … but their scope [scope of practice] *limits them…"* (E10, p5, L21-23)

Another educator further mentioned ODAs may not work with intravenous infusion and vaculiters although it was expected from an AA:

"*They may not inject medication; they may not work on the drips…"* (E9, p2, L24)

Thus, it was evident ODAs may not administer drugs or fluids, work with intravenous infusions or insert a suppository or urinary catheter. If the ODA was the only one present to assist the patient, these restrictions

could lead to unnecessary problems. It was also worrying that one educator said ODAs were not allowed to interpret or analyse data and that they did not know the normal parameters as the quote verifies:

"They have a lot of theoretical knowledge, but they are not allowed to interpret data. So, if we are just looking at vital science, they don't know what [the] *normal parameters are…"* (E8, p3, L19-21)

Even in their scrub role ODAs were supposed to be able to interpret and analyse data and know the normal parameters. However, the statement of the following participant contradicts what the previous participant shared:

"The ODA is able to connect the patient to the monitoring devices, can establish what the normal values are, can see what is abnormal, and then make a judgement and say there is something wrong with this patient…" (E6, p1, L18-21)

Educators were once again in disagreement – this time on what the students should be taught (planned curriculum) and the competencies they needed to function as an A/RRA. According to one educator, ODAs could not function in the recovery room because of the conflicting SOP (E8, p7, L1). Conversely, another educator disagreed and asserted ODAs could function in the recovery room because the problem was not their SOP, the problem was in practice where ODAs were expected to recover a patient and that was beyond their SOP and what they were taught:

"*They can help, they may attach the monitors, they may monitor a patient for the time in the recovery room but there must be a RN. I think the practice want them to wake the patient alone…"* (E1, p4, L31-34)

In other words, the argument of the above participant was that ODAs were taught enough, but what was expected from them in practice was the problem. ODAs had the knowledge and training, but what practice expected of them was to function as a RN which they were not. The following quote supports this:

"I think we teach them adequately, but the problem is what the practice expects from them. The practice expects them to perform the same as a nurse and they cannot because it is not what they are trained for.". (E1, p4, L18-21)

In real life, it is not abnormal for a situation to occur in the operating department which requires ODAs to work outside their SOP, but this depends on the real-life situation which dictates what the ODA has to do. When the ODA refuses – because it is not in his/her SOP – it leads to conflict and the perception that the ODA is not competent. On the other hand, if the ODA performs the task while it is not in his/her SOP, the potential unsafe practice could pose a safety risk to the patient as stated below:

"… conflict … and unsafe practices because I would be an ODA and there are things expected of me which is not in my SOP, I am not willing to do that but sometimes expressing it … causes conflict and then also that thing of incompetence…" (E10, p4, L14-18)

Conclusion

Many participants, the ODAs and students in particular, were of the opinion that the existing SOP was a major limiting factor. However, in the educators' view, the problem seemed to be in comparing the ODA's role with that of a RN and expecting an ODA to function as RNs which she/he was not.

Sub-category 3.1.2: Operating department assistants doing call

A number participants were of the opinion the ODA's scope of practice prevented them from doing call.

Management

Some managers stated ODAs were unable to function independently. According to those managers, ODAs were always dependent on another healthcare professional and for that reason ODAs could not be called out for a procedure. Those managers voiced that the essential skills ODAs lacked to do call were their inability to recover a patient fully (MGTGr4P2, p16, L11-12; MGTGr7P1, p15, L32-33) and therefore a RN was required to be placed on call with the ODA (MGTGr4P2, p16, L11-12; MGTGr7P1, p15, L32). Two managers said:

"… if they are on call there has always got to be a RN backing them up because they can't recover a patient.". (MGTGr4P2, p16, L11-12)

"… recovery room … can't have that ODA until the patient is out, because the skills here are lacking in the recovery room..." (MGTGr7P2, p16, L5-6)

Operating department assistants and students

One ODA said she did call (was on standby) but was not allowed to recover a patient. She therefore had no other option than to call a RN to perform the function:

"There are times when I am on call, but I can't recover a patient, I'm not allowed to. So then I have to call someone else in.". (ODA4, p9, L4-5)

Educators

Two educators observed that ODAs who required the assistance of RNs during situations they were not allowed to handle caused a lot of frustration to the RNs. However, the ODAs were doing the right thing because they adhered to their limited SOP which did not allow them to recover a patient and handle scheduled drugs. Consequently, a RN must be called out even though if it could cause frustration as stated below:

"… they are placed on call to cover emergencies after hours … again frustration … When … ODA is placed on call a RN has to be place on call with them to take care of the recovery…" (E8P, p7, L33-34 & p8, L5-7)

Conclusion

It was evident from the data that the main perception among participants was that ODAs could not do call due to their limited SOP however frustrating it might be for the RN – or the ODA for that matter.

Sub-category 3.1.3: Concerns about the legality of ODAs working in the operating department

Only a limited number of participants expressed their concern about the legality of ODAs in the operating department.

Management

One participant group assumed the ODAs were legally protected, but they were concerned about that the fact that ODAs were not registered with any particular professional body. They were also unsure about what ODAs may and may not do as the next quote shows:

"… do not have a professional body … people also get scared of what happens in the hospital environment … there are a lot of losses … we don't know … how far they [ODAs] *are covered…"* (MGTGr6P3, p7, L32-34 & p8, L1-2)

Operating department assistants and students

A student was worried that if something went wrong she/he would not be protected in legal action against her/him (StGr1P1, p14, L7, 15-17). By way of illustration:

"What if a legal action comes against me?" (StGr1, p14, L7)

Conclusion

Only a few participants were concerned about legal issues regarding ODAs and whether management and ODAs were indemnified.

Sub-category 3.1.4: Uncertainty about the ODAs' anaesthetic and recovery room functions

What emerged from the previous sections was mainly related to uncertainty about the ODAs', AA's and RRA's role and functions which caused confusion and tension in the operating department.

Management

Some managers stated they were not familiar with what was really expected from the ODAs (MGTGr6P1, p1, L9-10). Their uncertainty is confirmed by the next quotes:

"… ODA, I don't know if they are supposed to scrub at all … they are to assist the anaesthetists.". (MGTGr6P3, p5, L19-21)

"There is an ODP, that's the scrub side, and there's an ODA, that actually is supposed to be the assistant to the anaesthetist. The ODP … we had a lot of exposure to [ODPs] … [they are] *concentrating on scrubbing … when it comes to the ODA … we just assume they are like the ODPs…"* (MGTGr6P3, p3, L26-32)

The 'ODP' to whom the participant referred was actually an ORP (operating room practitioner). It was evident some managers were not aware that the current ODA programme also prepared ODAs to assist not only in the recovery room but to also assist the surgeon (as a scrub practitioner). Those participants were under the impression the programme only prepared ODAs to assist the anaesthetists (MGTGr6P3, p4, L22-23; MGTGr6P3, p5, L21-21). This confirmed some managers were uncertain about the role and functions of the qualified ODA. Therefore, they wanted guidelines to know what they could or could not expect from an ODA (MGTGr6P1, p15, L5-6). This specific participating group also wanted to know whether the ODA was equal to an enrolled or registered nurse (MGTGr6P1, p14, L23-24 & L33-34). The following quote illustrates:

"… what are their tasks really … there is not clearance [clarity] *about it. Are they used as a scrub sister? Are they used as overalls? Are they equal to a staff nurse, or an assistant nurses … what can I really expect them to do, and ask to do..."* (MGTGr6P1, p14, L20-25)

The unclear role and function of the ODA confirmed the educators' perception (cf. sub-category 3.1.3) that the ODA was constantly compared to an enrolled or a RN and not seen as a team member with his/her own unique skills. Although the managers did not have clear guidelines of what they could expect from the ODA, their staff, on the other hand, expected the same from an ODA as from an ORP, namely to perform the

functions of a scrub nurse. The difference between the curriculum of an ORP and an ODA is that the former is not taught to function as an AA or RRA (Cummings, 2008:3). Seemingly, some managers did not know what the outcomes and content of the anaesthetic and recovery room course entailed which made them question how they would be able to supervise and guide the students in the clinical environment. The following quote verifies this:

"… we don't know what they [ODAs] *are learning in class and we are supposed to guide them when they are here with us…"* (MGTGr6P3, p18, L7-8)

In the anaesthetic and recovery room course, a considerable amount of teaching and learning happens in the clinical environment (Van Zyl, 2012:36-37) which could be a nurturing environment where knowledge, skills and attitudes are fostered, extended and developed. This is usually achieved through competent staff who have knowledge of the competencies students must achieve and can therefore support the students accordingly. The same environment can, however, also be so dysfunctional that it prevents students from achieving the required competencies set out in the curriculum (Morris & Blaney, 2014:97). Therefore, it is vital for the staff to know exactly what to expect from the students and what they as staff must do to create an optimal learning environment for the students (Morris & Blaney, 2014:98). For example, in the current study interviews one management group said they did not see any reason why ODAs should be trained to work in the recovery room:

"... but the recovery room component ... I do not see the point of it at the end of the day.". (MGTGr5P2, p4, L28-29)

A contributing factor to this kind of reasoning could be that there was no clear framework indicating the reason behind the training of ODAs to work in the recovery room and their role and functions in this area.

Operating department assistants and students

Apparently most of the participants had no background information and were uncertain about the ODAs role and function in the recovery room (ODA6, p17, L21-24; StGr1P1, p7, L23-24; StGr3P7, p18, L14-15; StGr5P1, p9, L12-14 & 29) with some participants indicating they definitely needed clarification, as illustrated:

"… I don't know the SOP of an ODA in the recovery room …. So what is it that we do in the recovery room I don't understand.". (StGr5P1, p9, L12-14)

"More clarification is needed about what we can and cannot do." (ODA6, p17, L23-24)

Some participants perceived the line between an ODA and a RN as difficult to understand. For example, some queried the logic behind giving an ODA the responsibility of taking care of a patient in the recovery room – but without being allowed to insert a suppository or a urinary catheter or extubate a patient (ODA3, p6, L30-34). Seen by some participants as an apparently arbitrary measure because they did not understand the reason behind the ODAs' training, strengthened other colleagues' belief that not all professional staff working in the operating department were acquainted with and had insight into the ODA programme outcomes (ODA6, p17, L18-21). The verbatim transcribed words of an ODA confirm this perception:

"A lot of people do not understand the ODA course and what it entails … why there are ODAs. Even your unit managers…" (ODA6, p17, L18-20)

Educators

The educators confirmed what some managers and ODAs and students said, namely operational staff did not know what they could expect from the ODAs, what their role and functions were and the reason for them being there in the operating department (E5, p12, L11-15). Because of this, there was still some resistance towards the ODAs' presence in the operating department (E5, p12, L11-15 & 26-28). What added to the confusion was that there was no clear framework regarding what was expected from the different categories of staff, especially in the recovery room (E8, p7, L9 & 14-17). By way of illustration:

"… our recovery rooms do not have that framework reference. It is a lack of understanding of where the bar stops for the ODA and they [recovery room staff] *cannot understand that…"* (E8, p7, L9 & 14-17)

"… the RN … don't understand what the actual reason for them [ODAs] *being there is…"* (E5, p12, L13-14)

It further emerged some anaesthetists were not familiar with the ODAs' scope of practice which made the former sceptical and often unwilling to work with the ODAs (E2, p3, L11-15; E7, p6, L2-5). Some anaesthetists expected from ODAs the same assistance and functions (i.e. the interpretation of data and what to do) as they expected from RNs. This misconception indicated the anaesthetists possibly also had no comprehension that the ODAs had a SOP which differed from that of a RN (E2, p3, L12-13). Consequently, they expected the same competence in fulfilling their role and functions from ODAs as they did from RNs (E2P, p3, L23-26) – except that the anaesthetists did not realise the roles and functions of each group differ. This is illustrated in the quote below:

"… the anaesthetists … [do] *not have a clear understanding that there is a difference in the SOP …* [the anaesthetists] *see them* [ODAs] *as someone who can take care of the patient…"* (E2, p3, L12-15)

Conclusion

There was an overwhelming indication that there was no clarity about the scope of practice of ODAs which led to a lot of confusion, tension and unhappiness in the operating department.

Sub-category 3.1.5: Tension and frustration in the operating department due to ODAs' limited scope of practice

The tension and frustration mentioned seemed to be caused by uncertainties and a lack of insight into the ODAs' limited scope of practice.

Management

In stark contrast to the tension and frustration mentioned, the situation was quite different in a particular hospital. In this hospital the operating department manager was acquainted with and had insight into the ODAs' scope of practice and a learning culture in the operating department was developed and maintained whereby all healthcare professionals, including the anaesthetists, assisted the ODAs to reach their course outcomes. These ODAs were buddied and mentored and allocated according to their SOP.

"The entire department is very suppotive ... if they [ODAs] *ask anybody something, they are not rejected but supported, they are suported, they are helped."*. (MGTGrP2, p5, L14-16)

Operating department assistants and students

The positive learning culture and supportive human environment proved to be highly successful as the graduates were familiar and confident to work in anaesthesia or the recovery room. One of the ODAs, who experienced the unique learning culture in the operating department in this hospital firsthand, captured the fruitfulness of her engagement with the environment and all staff members in her interview. Although the quotes are all from this one participant, they are arranged numerically according to the page numbers of her verbatim transcribed data for easy reading and reference purposes:

"... buddy part gave me a confidence boost..." (ODA5, p2, L30)

"... they put me with the mentors ... I worked two to three weeks with the person.". (ODA5, p3, L8-10)

"... the doctors were also very understanding..." (ODA5, p4, L3)

"I am confident in the recovery room ..." (ODA5, p9, l3)

"I am very familiar with anaesthesia.". (ODA5, p9, L34)

Educators

According to the educators, there was a lot of frustration expressed in operating departments due to the limited assistance provided by the ODAs:

"… [the] *anaesthetists get extremely frustrated when he is busy maintaining an airway and things need to be done and the pair of hands is not allowed to do certain things."*. (E8, p3, L32-34)

"… frustration because why may you [ODA] *not put in a catheter … may not insert a suppository … must get somebody in the recovery room to insert the catheter."* (E9, p8, L4-6 & 10-11)

The limited SOP also caused conflict in the recovery room when ODAs were unable to take an intubated patient from the anaesthetist. The ODAs were allocated to the recovery room as workforce, and the staff see them as such but they (the ODA) may not recover a patient. For example, during an emergency situation ODAs were automatically regarded as an extra 'pair of hands' to assist in helping with the patient; but, if the additional assisting pair of hands showed incompetence and added to the patient's plight (E8, p7, L18-26) it caused tension and friction among the rest of the staff trying to get the situation under control. This frustration was enhanced by the fact that ODAs were a new category of healthcare workers moving into the operating department. The healthcare professionals were not used to them; they were not a familiar with the newcomers' outcomes of their course and what ODAs could and could not do. Thus, some viewed ODAs as the enemy as verified below:

"Where things can go wrong very quickly and you sit with pair of hands that cannot help you competently.". (E8IV, p7, L24-25)

In support of the above quote, a second participant interjected:

"Correct". (E8, p7, L26)

More participants commented on the frustration and tension issue as follows:

"… a lot of resistance … it's something new … a new category of staff that is moving into the operating theatre, and I think there … is a lot of kingdom building … they are not the enemy, they are here to help…"(E6, p5, L8-11)

"… the RN does not want to support … [the] *ODA, because they don't belong here … and they don't really take easily to them."*. (E5, p12, L12-15)

In fact, ODAs are trained because of the shortages of trained theatre nurses. Thus, they are not in the operating department to replace the RNs, but to bridge the nursing shortage gap (Jordaan, 2011:10; Stroh, 2010:1-2). The resistance was especially high when the managers in the operating department changed. It reiterated the fact that the frustration was caused by the lack of insight into the SOP of the ODAs as one educator said:

"… you get resistance, especially if the management component in the theatre has changed.". (E6, p10, L26-27)

Conclusion

It was quite obvious that tension and frustrations experienced in the theatre and recovery room was not only caused by the ODAs' limited SOP, but by various other contributing factors as well. The ODA was a new category of health worker which the operating department staff members were unfamiliar with; therefore, the ODAs' presence in the operating theatre domain was often met with opposition and, unfortunately in some cases, animosity as mentioned.

THEME 4: OPERATING DEPARTMENT ASSISTANT CONTRIBUTION

CATEGORY 4.1: OVERALL CONTRIBUTION TO THE OPERATING DEPARTMENT

This category highlighted the contribution ODAs make and the value they add as A/RRAs. This section therefore addresses the first research question (cf. Ch. 1, sect. 1.5). The focus will be on (4.1.1) operating department assistants adds value and make a major contribution; (4.1.2) current contribution as anaesthetic and recovery room assistants and (4.1.3) operating department assistants lack knowledge, skills and attitudes.

Sub-category 4.1.1: Operating department assistants adds value and make a major contribution

What emerged from the data were an overwhelming positive response about the value ODAs added and the contribution they made as scrub practitioners. In this section the overall contribution ODAs made is addressed whereas the contribution they made as A/RRAs is dealt with in section 4.1.2.

Management

Management was immensely positive about the value ODAs add to the operating department (MGTGr2P1, p4, L5; MGTGr4P15, p1, L16-17; MGTGr1P2, p26, L22-23 & 25). ODAs were appreciated as all-rounders who could be utilised in all settings (MGTGr2P1, p1, L13-16) to assist professionals (MGTGr1P4, p5, L14). In general, if used within the boundaries of their SOP, their assistance was excellent. According to the managers, they did not want to be without the ODAs in the operating department (MGTGr4P3, p20, L1& P2, p20, L2) as they ensured more staff security (MGTGr1P2, p7, L4-5). The following quotes confirm this:

"They [ODAs] *are the most excellent scrub persons that I ever have worked with. Their knowledge is 'wow' for that side. They are absolutely our right and left hands, and you can depend on them…".* (MGTGr4P3, p15, L11-13)

"So they add a lot of value?" (MGTGr4WG, p15, L16)

"And the doctors are *very complimentary.".* (MGTGr4P1, p15, L17)

Two participants experienced ODAs as very positive and a big help while another participant said ODAs bridged the staff shortage gap as illustrated below:

"… I experience them very positively …" (MGTGr3P1, p1, L17)

"*… they are a big help for us.".* (MGTGr3P2, p3, L35 & p4, L1)

"They are doing a great job … it's helping the whole country … it is a positive idea. We are lacking nurses and they are bridging this gap.". (MGTGrP2, p26, L22-25)

Although management was positive about the value the ODAs added, their appreciation was mainly aimed at the ODAs' capacity as scrub practitioners (MGTGr4P3, p16, L26-27; P2, p17, L30-31; MGTGr5P1, p17, L5-6 & 10-11) as illustrated below:

"Without them I think the theatre would have been much compromised in patient care if we didn't have them to scrub.". (MGTGr4P3, p16, L26-27

Some participants stated although the ODAs' assistance was limited, they still added value as RRAs and, to some extent, as AAs. The ODAs were perceived as a big help in the recovery room due to the shortage of nurses as illustrated:

"They help with scrubbing a great deal, they help in anaesthetics to some extent … and they are really a help because of the shortage of nurses in the recovery room?" (MGTGr1IV, p21, L18-20) "*Yes*…" (MGTGr1P2, p21, L21)

The majority were of the opinion ODAs only added value as scrub practitioners and not as AAs and RRAs.

Anaesthetists

According to one anaesthetist, the ODAs functioned at a high level. Their knowledge foundation was good, but they still needed time to enhance their anaesthetic knowledge and skills as quoted:

"… they are functioning very good … are functioning very high … cannot inject drugs because … not registered for it but he can look after a patient in the recovery room. He can initiate a resuscitation…" (A6, p7, L34-36 & p8, L6-8)

Another anaesthetist had a different opinion and said the ODAs were not adequately trained regarding anaesthesia and the recovery room. It seemed this anaesthetist's viewpoint was based on the fact that the specific operating department the participant worked in did not have an anaesthetic and recovery room trained RN overseeing the training of staff. The same anaesthetist also had reservations about ODAs working in the recovery room due to the high-risks to patient safety:

"In terms of anaesthesia and recovery they are not adequately trained … we don't have an anaesthetic trained person at all … who does training or mentoring … [I] *have great reservations … safety of our patients.*". (A3, p1, L8, 18-19 & 22-23 & p2, L6)

Clearly, the second anaesthetist quoted viewed ODAs as healthcare professionals functioning independently in the recovery room, whereas the aim of the current programme was to train the ODA to assist the RN (Van Zyl, 2012:4) and not to replace them.

Operating department assistants and students

This ODA and student groups' perceptions of the value they added as AAs and RRAs were directly linked to their instrumental attitude (outcomes of the assisting function they perform) (Wee *et al*., 2016:16). The majority of these ODAs and students were of the opinion their main contribution was that of a scrub practitioner but they still needed to have background knowledge of anaesthesia as shown in the dialogue below:

"… your focus is scrubbing, that your also need to be informed and knowledgeable about anaesthetic and how to assist the anaesthetist. Am I right?" (ODA4IV, p6, L27-29) "*Yes.*". (ODA4, p6, L30)

The data indicated no consensus was achieved about the contribution ODAs made as A/RRAs, but the overall implication identified by the researcher was that the ODAs themselves did not really believe they added value as AAs and/or RRAs. One student shared her contribution was equal to that of the rest of the staff (StGr1P1, p17, L17); two participants (a student and an ODA) said they were familiar with anaesthesia and contributed by means of preparation and assistance to the anaesthetist (ODA2, p6, L8-9 & L19-20 & ODA5, p7, L12-19); two (a student and an ODA) stated their contribution is rather limited (ODA6, p10, L14-17; StGr3P7, p9, L14) and one participants (a student) said she/he does not make any contribution (StGr2P1, p6, L9). By way of illustration:

"… make the same contribution as much as the other personnel.". (StGr1P1, p17, L17)

"… my contribution is rather very big … [I] *prepare everything for them … what they need is on hand … lock everything out of the drug cupboard what they will be using."*. (ODA5, p7, L12-14 & L17-18)

"So you don't feel you make much of a contribution to the anaesthetist?" (StGr3IV, p9, L12-13) *"No."* (StGr3P7, p9, L14)

"… not really a contribution towards anaesthesia except … to assist the … nurses where necessary…" (ODA6, p10, L14-17)

Other students were of the opinion their contribution was limited or not much mainly because the ODA may not handle drugs as illustrated:

"For me anaesthetics are mainly about drugs, and we are not able to handle drugs in any way, so basically we're useless." (StGr3P1, p9, L18-19)

Another ODA (ODA4, p6, L23-24) stated her contribution was limited to helping when the anaesthetic nurse was not available or late and sometimes assisting the anaesthetic nurse who needed help. This was confirmed by ODA number 6 (p10, L14-17). This opinion correlates with the opinion of a student (StGr3P1, p9, L19-20) who stated the ODA will always be the anaesthetic nurse's assistant and not the anaesthetist's assistant:

"If I'm scrubbing and the anaesthetic nurses in not there yet … I am able to help the anaesthetist.". (ODA4, p6, L23-24)

"*… if there is two RNs* [in the operating room]*, they can alternate* [as circulator and scrub practitioner]*. So then I have the opportunity to assist the … nurses* [anaesthetic nurses] *where assistance is needed.*". (ODA6, p10, L16-17)

"We will always be the anaesthetic nurse's assistant and not the anaesthetist himself.". (StGr3P1, p9, L19-20)

Educators

All 11 educators agreed the ODAs were seen as workforce and they agreed that the ODAs added value and made a huge contribution, but primarily only as scrub and circulating practitioners (E1, p7, L25, 28-29 & 35;

E2, p19, L26; E3, p21, L1-6; E4, p12, L17; E5, p10, L20-23; E6, p12, L32-33; E7, p19, L2-4; E8, p19, L5-20; E9, p15, L3-4; E10, p18, L12 & 16; E11, p12, L14-17). By way of illustration two quotes are given:

"… they really add value to the department … I really see them as an asset.". (E5, p10, L14, 24 & 26)

"… their contribution is huge … they are competent scrub people…" (E7, p18, L25 & p19, L2)

Thus, the ODAs were regarded as a huge asset in terms of carrying out a lot of the scrub functions and, by doing so, lightening the scrub sisters' workload as illustrated:

"… a huge asset … there was a huge shortage of theatre trained sisters…" (E3, p21, L7-8 & 10-11)

One educator confirmed the viewpoint of the ODA who said that although she felt confident and competent to assist the healthcare professionals, she was always used as a scrub practitioner. It seemed it was easier for management to get a nurse to assist the anaesthetist than getting a scrub practitioner with knowledge and skills to assist the surgeon:

"… of more use being a scrub person … easier to get a … nurse for anaesthetics … than getting a scrub person…" (E10, p12, L15-20)

Another educator was of the opinion the ODAs were capable to prepare for anaesthesia and assist the anaesthetist:

"I think they are quite capable to … prepare and assist the anaesthetist, because ultimately the anaesthetist is the person that's anaesthetising the patient.". (E6, p2, L10-12)

Two educators verbalised the ODAs did add value to the recovery room (E1, p6, L36-37 & p7, L1-2 & 9; E6, P1, L18-21) as follows:

"… in the recovery room … one sister will with the ODA be able to manage two patients with … ODA maybe doing the monitoring of the patient … the sister must be there to care for the patient. So they are a help … the ODA can connect the monitors and do the observations.". (E1, p6, L36-37 & p7, L1-2 & 9)

Conclusion

The majority of the managers and all the educators perceived the ODAs as definitely making a huge contribution, but primarily as scrub practitioners. Only a few were of the opinion that ODAs were capable to prepare and assist the anaesthetist and RN, and they therefore did add value as A/RRAs. One anaesthetist asserted ODAs did make a contribution. Further, the majority of ODAs and students did not feel very optimistic about their A/RRA roles. For an ODA, who was certain she was competent to assist the anaesthetist and RN, it was disappointing for her to be utilised as a scrub practitioner most of the time. The overall feeling therefore was that ODAs, apart from being exceptional scrub practitioners, otherwise made a limited contribution and were not readily equipped to function as independent A/RRAs.

Sub-category 4.1.2: Current contribution as anaesthetic and recovery room assistants

Examples given of the contribution ODAs made as AAs are summarised in Table 5.4 (cf. Annexure S). Compared to the functions required it was evident some ODAs already provided services as an AA. The concern was that it seemed as if the students did not receive the same anaesthetic and recovery room

curriculum and were used differently in the various regions. A reason could have been the lack of a clear framework or guideline as mentioned by some participants. The ODAs' current contribution made in the recovery room is summarised in Table 5.5 (cf. Annexure S). Once again, it was apparent that some ODAs did deliver an assisting service in the recovery room. However, it was also evident that some ODAs were required to work outside their SOP as mentioned by one educator:

"I think we teach them adequately … the problem is what the practice expects from them … expects them to perform the same as a nurse and they cannot because it is not what they are trained for.". (E1, p4, L18-21)

The feedback from the participants as to the value the ODAs added as A/RRAs is analysed next.

Management

One manager commented the ODAs were utilised as AAs and not as RRAs as they could be utilised better in anaesthesia:

"... we use her in anaesthesia, not in the recovery room ... this is where I can utilise her better.". (MGTGr2, p3, L17-18)

Four managers indicated they did not really use ODAs as AAs because ODAs were not suitably equipped and were also not allowed to handle scheduled drugs (MGTGr1P4, p9, L21-24; MGTGr1P1, p12, L19-21; MGTGr5P2, p8, L20) as stated in the quote below:

"… [you] *keep them* [ODAs] *on scrubbing because they are not adequately equipped to replace the anaesthetic nurse…?"* (MGTGr5IV, p8, L16-18) *"Yes…"* (MGTGr5P3, p8, L20)

Other managers voiced they only used ODAs as AAs when a nurse was not available. Due to the shortage of RNs to scrub, ODAs were preferably used as scrub practitioners (MGTGr3P1, p4, L9-11). In other words, it was not always due to their lack of competence but rather due to the shortage of nurses that ODAs were not utilised in the AA role:

"Only if we do not have anaesthetic nurses ... a shortage of sisters. So then they [ODAs] *must mostly do the scrub work..."* (MGTGr3P1, p4, L9-11)

Only one commented the anaesthetists did not want to work with ODAs because they were not regarded by the anaesthetists as nurses. This is confirmed in the quote below:

"It is a nurse's job and therefore they [anaesthetists] *do not want to work with with these people* [ODAs].". (MGTGr6P1, p8, L22-24)

The reason given for the refusal might be a lack of insight on the side of anaesthetists because the new ODA curriculum had not been discussed with them (MGTGr6P3, p12, L22-24). The anaesthetists might have been familiar only with the ORP training which was replaced by the ODA programme. The ODA programme included the anaesthetic and recovery room component which the ORP training did not have as illustrated in the quote:

"... I do not think the entire new curriculum ... was introduced to them [anaesthetists] *so that they know ... it incorporates all these aspects. I think it could maybe be a problem of perception on the doctors' side."*. (MGTGr6P3, p12, L22-24)

Anaesthetist

The ODAs' contribution to anaesthesia was probably limited as an anaesthetist was not even aware that ODAs were also trained as AAs. This anaesthetist as well as a colleague did not see or experience ODAs being trained as AAs (A2, p1, L19 & 24-25; A4, p1, L8 & L14-15). This reiterated the educators' comments that some anaesthetists were not aware of the ODAs' anaesthetic assistant role and function. According to them, the ODA usually only stands in when a nurse is not available (A2, p1, L22-23) as quoted:

"I was not under the impression that they are also trained as AAs. They are sometimes used … when some … anaesthetic nurses are not available … they help you … nowhere in our theatre context … do they get … training to function as an assistant to the anaesthetist.". (A2, p1, L19-25)

Operating department assistants and students

The students and ODAs seemed to have a low sense of belief (instrumental attitude) regarding the contribution they made (StGr3P7, p8, L31; StGr3P2, p9, L4; StGr3P2, p8, L33-34 & p9, L1; StGr2P1, p6, L9; ODA3, p1, L16-17 & 19-20; ODA6, p1, L13 & 27). They apparently felt ill-equipped to assist the anaesthetist, were not allowed to not handle drugs and lacked experience as claimed in the previous sections. Thus, overall they experienced a sense of self-doubt and not being competent as illustrated below:

"… [the ODAs] *knowledge of anaesthesia is not so good … I did not come into the routine to do … it was a bad experience for me to do* [assist with] *anaesthesia because I never felt that I'm good in it.". (ODA3, p1, L16-17, 19-20 & 22-23)*

"… preparation for anaesthesia was good but a bit fussy … must get a sister to handle the drugs … one of the reasons why they prefer not to put us on anaesthesia … we only occasionally assisted [with anaesthesia] *when you felt competent enough…"* (ODA6, p1, L12-17 & 26-27)

On the other hand, two students indicated they were left alone to care for patients. This is a concern as ODAs are not trained to recover a patient. It is beyond their SOP (cf. Annexure K). They are there to assist the registered healthcare professional (SAQA, 2017:1-6). The students said:

"The SOP in recovery is that we have to assist the RN with the recovering of patients in terms of connecting the monitoring equipment, doing paperwork to record vital signs and … patient observations…" (StGr4P3, p13, L5-8)

"… very often … there are really not enough people in the recovery room … you are the one that stands by the patient…" (StGr4P1, p13, L15-17, 22-23)

Educators

Almost fifty per cent of the educators indicated the ODAs did not make a contribution as an A/RRA (E7, p15, L19; E8, p2, L23-29; E9, p15, L14; E10, p19, L35; E11, p14, L3-8) because they were not competent (E9, p10, L16-19). The main reason given was the lack of clinical exposure during their training:

"… are they not competent enough to assist the anaesthetist and in the recovery room…?" (E9IV, p10, L17-17) "*No, the recovery room is totally out.*". (E9, p10, L19 & 20)

"… it is not anaesthetics and they [ODAs] *are not there, they are not helping, they are not assisting …. So it is limited exposure…"* (E8, p2, L23-24 & 26)

Educator 7 (p15, L11-12) stated that although the ODAs do not fulfil the A/RRA roles on a regular basis they do see the need:

"In terms of anaesthetics and recovery, I don't have a single one that does that regularly, but we do see the need.". (E7, p15, L11-12)

One educator said although management could fall back on the ODAs to assist the healthcare professional, it posed a problem as the ODAs did not stay competent in anaesthesia and recovery after training due to limited placement and lack of exposure in these areas (E8, p2, L26). This statement was confirmed by ODAs:

"… they can definitely be a backup … [ODA] *was found competent in anaesthetics and recovery but … in these seven months he has been applied to recovery I think twice…"* (E3, P11, L24 & p12, L7-8)

"I don't have a single one working in any of the areas after training.". (E7, p15, L19)

"… even now they will not place me in an anaesthetic position … when there is no staff … they will ask me to do anaesthesia…" (ODA3, p4, L27-29 & L31-32)

Conclusion

Although only a few ODAs and students indicated they made a contribution as a RRA, the analysis of the feedback (cf. Annexure S, Table 5.5) showed that they actually made a contribution in the recovery room when utilised within their SOP. Some of them did assist the RN which is at present one of the exit-level outcomes and associated assessment criteria of the SAQA published qualification (SAQA, 2017:1-6). It appeared as if management expected more from the ODAs, i.e. taking responsibility for the care of a patient – but this was beyond their SOP. The tasks summarised (cf. Annexure S, Table 5.5,) seemed to contradict the statement of the educator who said ODAs could not function in the recovery room because of the conflicting SOP. Interestingly, in some departments ODAs had limited functions while in others they had to function beyond their SOP. The reason could be the lack of a clear framework.

Sub-category 4.1.3: Operating department assistants lack knowledge, skills and attitudes

As mentioned in the previous section (cf. Ch. 4, sub-category 4.1.2) the majority of participants indicated ODAs lack the essential knowledge and skills to function as A/RRAs (cf. Annexure S, Tables 5.6 & 5.7). One anaesthetist was also of the opinion the ODAs lack accountability (AGr1P2, p7, L8).

Conclusion

The majority of the competencies the managers mentioned the ODAs did not have (recover patient, handle abnormalities, take care of bleeding patients, manage pain and administer drugs) was beyond their current SOP. The managers' lack of knowledge of the ODAs' anaesthetic and recovery room course content was therefore highlighted. The ODAs and students similarly shared the competencies they lacked (recover patient, observe and intubate patient, extubate a patient, handle emergency situations and pain control). In this regard, it was a possibility that these were competencies expected from them in the clinical environment. A concerning factor was that three educators also mentioned these competencies (care for and recover a patient, ensure an open airway, bag a patient and handle complications). It is not common practice for ODAs in SA to recover patients, but they (ODAs) seem to observe the patient alone for five minutes (when they take the patient to the recovery room after surgery as a scrub practitioner) until a RN can take over. And in

this time period there is a possibility that an emergency situation can occur. Indeed, as the next quote verifies, sometimes ODAs did perform certain functions as a scrub practitioner in the recovery rooms due to circumstances which demanded it:

"… I'm [ODA] *standing there, there's nobody to take over, what do I do? The patient's life is in my hands so I do what I am not supposed to do and that is looking after the patient until somebody can take over."*. (E6, p6, L30-33)

From the feedback it appeared the knowledge and skills the ODAs lacked were, in fact, exactly those required from them but which was beyond their scope of practice. Conversely, there were periods when the ODA had to take care of the patient (when they transferred them to the recovery room) and there was no a RN to take over. Additionally, although the ODAs were utilised as scrub practitioners, the staff shortage gap was not entirely bridged as the ODAs were not utilised as A/RRAs due to the various reasons mentioned.

CATEGORY 4.2: EXTERNAL DETERMINANTS – ATTITUDE, SELF-EFFICACY AND PERCEIVED NORMS AFFECTING ODAs' INTENTION TO CONTRIBUTE

Self-efficacy, attitude and perceived norms are seen as important determinants influencing the students' intention to assist the healthcare professional (Wee *et al*., 2016:160-161). Self-efficacy, also known as confidence towards the intended behaviour, is defined as a person's beliefs about her or his capabilities to perform a specific skill or task (Akhtar, 2008:1; Bandura, 1994:1; Redmond, 2016:1). A person with a high self-efficacy sees new skills as a challenge and not a threat which needs to be avoided or be scared of. The latter is most likely due to insufficient role-modelling, encouragement and/or anxiety (Redmond, 2016:11). External variables such as a specific attitude can, however, influence the way intended behaviour is formed (Fishbein, 2000:275; Wee *et al.,* 2016:160). The next section highlights specific attitude and the ODAs' and students' self-efficacy and perceptions.

Sub-category 4.2.1: Students unaware that the anaesthetic and recovery room education and training forms part of the operating department assistance programme

Management

It emerged from the data that students viewed the anaesthetic training as an afterthought and not part of the ODA programme. For this reason, they were not too concerned about the knowledge and skills they had to achieve which would enable them to assist the anaesthetists and RNs (MGTGr4P1, p3, L22-24; MGTGr4P2, p4, L19-20; MGTGr6P1, p1, L25-26; MGTGr6P2, p3, L16-17). A manager said:

"They do anaesthetics as part of their course, but it's almost like an afterthought. They don't put enough emphasis on that, that they can be competent in doing anaesthetics or recovery.". (MGTGr4P2, p4, L19-21)

Anaesthetists

Four anaesthetists each shared they wondered whether the students knew what the programme entailed when they enrolled because they did not take it seriously (AGr1P1, p3, L16; AGrP2, p3, L17; A3, p2, L25; A6, p12, L1-2). One said:

"... walk into the course with the perception of thinking 'I am only going to scrub.". (A3, p2, L25)

Students must be informed this programme is more than passing tools; it would be required from them to also assist the anaesthetist and RN (A6, p11, L36 & p12, L1-2).

Operating department assistants and students

One student indicated that she was unsure whether an ODA can work as an anaesthetic assistant (StGr5P1, p18, L12-14) after graduation as verified in the quote below:

"One thing which is unclear for me is after qualification … can an ODA also work as an anaesthetic assistant?" (StGr5P1, p18, L12-14)

One student and one ODA confirmed they were unaware the ODA programme included the recovery room component. They were also unaware they would be taught to assist the anaesthetist and RN (in the recovery room). Their perception was they would be taught to assist the surgeon (StGr2P2, p13, L8-10; ODA4, p2, L10). They were therefore prepared to learn to perform the role and functions of a scrub practitioner as explained by an ODA in the interview:

"Do you see your primary function as anaesthetics or scrubbing or recovery room?" (ODA4IV, p1, L29) *"Scrubbing … When I started the course I wasn't sure."*. (ODA4, p2, L2 & 6) *"… then as you started did you think your focus would be scrubbing?"* (ODA4IV, p2, L8-9) *"Yes, definitely."*. (ODA4, p2, L10)

Educators

Two educators confirmed the students had the idea that they were only going to learn to scrub and assist the surgeon. Anaesthetic assistance was not part of their expectations (E8, p2, L9-10; E10, p13, L3-4 & 9)

"*… they do not cope as well because that is not their focus of training…"* (E8, p2, L9-10)

"… they've [ODAs] *got this picture in their mind they're becoming a scrub person … it was never part of their own expectations.*". (E10, p13, L3-4 & 9)

Conclusion

There seemed to be the misperception among students that the ODA education and training only focused on the scrubbing aspect of their perioperative role. Upon discovering it included anaesthetic and recovery room assistance, it could have a negative influence on the three identified psychological factors (attitude, self-efficacy and perceived norms) which might affect their intention to assist the anaesthetist and RN.

Sub-category 4.2.2: Operating department assistants feel uneasy, useless, unsafe, unsure and inferior re. their AA and RRA roles

Most participants indicated the ODAs seemed to feel uneasy, uselessness, uncertain (attitude) and lacked self-confidence (self-efficacy) to fulfil the AA and RRA role and functions. Some managers or students also mentioned experiencing a sense of not feeling safe and not being supported (perceived norms).

Management

According to four managers, some students' attitudinal perspective or way of thinking was a hindrance to fulfil their AA and RRA roles and functions. The managers mentioned six obstacles in this regard, namely (i) students did not have the confidence to think critically and analyse data to make it their own (MGTGr6P2,

p2, L28-29); (ii) they demonstrated no confidence to assist the RN (MGTGr6P2, p3, L3); (iii) they felt unsure about anaesthetics (MGTGr4P1, p3, L29 & p4, L13-15); (iv) students were afraid or seemed scared to assist the anaesthetists (MGTGr7P1, p9, L34) and work in the recovery room (MGTGr7P1, p9, L34 & p10, L6; MGTGr6IV, p2, L33-34 & P2, p3, L1); (v) they were not competent due to their lack of experience (MGTGr4P3, p4, L28-31) and (vi) and avoided assisting the anaesthetist and working in the recovery room (MGTGr6P1, p1, L10-11). By way of illustration:

"They feel unsure about anaesthetic.". (MGTGr4P1, p3, L29)

"So they don't feel confident themselves because they didn't have enough exposure.". (MGTGr7P1, p10, L30-33)

"… being afraid of helping the anaesthetist…" (MGTGr7P1, p9, L34) *"… to be with the anaesthetist to anaesthetise this patient, to be next to the patient who has been anaesthetised in the recovery room."*. (MGTGr7 P1, p10, L5-6)

It seems their training did not provide enough background information for the students to understand the content and feel sure as quoted:

"*… the training doesn't give them enough background and information so that they can understand it to feel … sure when they are there."*. (MGTGr4P1, p4, L13-16)

The perception of the managers was that some students have the attitude and mindset that they cannot work in recovery room; do not belong there and are not supposed to be there. Certain students also thought from the onset of their training that they would only have to focus on the scrubbing section of the programme and not on the anaesthetic and recovery room sections as the following quote illustrate:

"That's where the attitude is coming in. They will tell you … I'm not supposed to be here.". (MGTGr4P3, p4, L34 & p5, L2-4)

Thus, as stated by the managers, the ODAs tended to avoid the A/RRA functions (MGTGr6P1, p1, L10-11). They also lacked the security and confidence to call the anaesthetist when something is wrong while they would call the surgeon in the same situation if performing the scrub practitioners' functions (MGTGr4P3, p7, L19-22; MGTGr4P2, p7, L26-28; MGTGr4P2, p8, L2). Hence, they did not migrate naturally to their A/RRA functions which they did with their scrubbing role as illustrated in the quotes:

"It is [as] *if they avoid it..." (MGTGr6P1, p1, L10-11)*

"Okay, so what I hear you say is that the ODAs feel they are not … self-confident to assist the anaesthetist … and assist in the recovery room … and consequently you say you feel the ODAs are not completely self-confident enough … to make a contribution?" (MGTGr6IV, p1, L17-22)

"It's correct.". (MGTGr6P1, p1, L23)

Operating department assistants and students

Quite a few ODAs and students indicated they felt useless, inferior, unsafe, uneasy, not competent and unsure to function as an A/RRA. Mainly because they were not supported and adequately supervised in the clinical setting (ODA3, p5, L3-4, 10-11; ODA6, p1, L26-27; StGr1P1, p7, L8-12; StGr2P1, p3, L30 & 32; StGr3P2, p2, L34; StGr3S7, p13, L5-6;) and lacked the necessary exposure. The quotes confirm this:

"Because we feel useless. You can't really do anything and they also get annoyed with you…" (StGr3P7 p13, L5-6)

"I do not feel so competent in anaesthesia…" (StGr3P2, p2, L34)

The distressing fact was that some ODAs stated they did not feel safe or competent and lacked confidence as the anaesthetic and recovery room course did not prepare them for their A/RRA role and functions:

"... I do not think I have enough confidence to do it because I did not have enough exposure. I feel I forgot. No, I think I feel unsafe, because I feel I will not be able to provide him the assistance which he must have at this stage.". (ODA3, p5, L3-4, 10-11)

One ODA participant indicated that once the team members (healthcare professionals) demonstrated their belief in her, she started to believe in herself (ODA5, p6, L24-25). Also, with the sheltered supervision and support she gained confidence, lost her fear to work there, her negative attitude changed to a more positive one and she felt confident to work in the recovery room (ODA5, p9, L3, 7-13). By way of illustration:

"I did not have confidence in myself ... it was nice to know they have confidence in me. ... it built me a lot.". (ODA5, p6, L24-25 & 27).

"I was very scared and said I do not want to work there. I made myself negative ... I said I do not want to anymore ... but then one person ... said, 'listen..., I will hold your hand ... you oberve what I do'. It ... boosted my confidence and made me see ... this is important that you know this and that you can do it.". (ODA5, p9, L7-13)

Students also had the idea that the anaesthesia component was difficult, especially if one did not have the background knowledge as indicated in the quote:

"Anaesthetics is a difficult component. It is not easy…" (StGr3P1, p6, L8)

"… especially if you don't have the background knowledge … it makes it even more difficult.". (StGr3P2, p6, L10-11)

Of note is that the majority of ODAs and students who said they felt useless, unsafe and unsure seemed to be those from whom it was expected to work beyond their SOP as illustrated:

"I feel so unsafe. … I find myself extubating, which I know I am not allowed.". (StGr1P1, p6, L18, 20-21)

Another student commented she almost feared the recovery room and that it made her very stressful (StGr1P1, p7, L8-12). It can be assumed some students started with a disadvantage as he/she was entering the field with a negative feeling (cf.Ch. 5, sub-category 4.2.3).

Educators

The educators' feedback iterated the managers' and students' perception that the students felt incompetent, did not have confidence and was scared to work in anaesthesia and the recovery room (E8, p14, L3; E9, p16, L25-29). The reason was seemingly ascribed to the lack of a solid learning environment since the mentors and anaesthetists changed on a daily basis (E8, p14, L18-22). Hence, there was no environmental consistency enabling students to gain confidence, feel comfortable and become competent. In the contrary they were scared (E8, p14, L18-22). By way of illustration:

"Both the mentor and the anaesthetist are new on a daily basis, and then they work completely differently. So they [students] *always feel completely overwhelmed. They're not getting their bearings at all and they never feel comfortable or confident or competent while they are doing it."*. (E8, p14, L18-22)

Another reason seemed to be the emphasis placed on the scrubbing component of the programme with limited clinical rotation through the anaesthetic and recovery room disciplines. Thus, the students did not get enough exposure to build confidence and become competent:

"So for three years …the focus is scrubbing. It is not anaesthetics and they [students] *are not assisting…"* (E8, p2, L22-24)

The third reason given was that the students did not feel comfortable, secure and confident when rotating through anaesthesia and the recovery room (E11, p14, L29-31) due to the lack of appropriate mentoring (cf. Ch. 5, sect. 5.5) as indicated in the next quote:

"Recovery room … they are not feeling comfortable and secure enough, or confident … they should be mentored properly in there.". (E11, p14, L29-31)

In addition, the staff appeared to feel unsafe with the students in the recovery room for two reasons: there were no guidelines as to what an ODA may or may not do in the recovery room and, secondly, no clinical outcomes to be assessed. The educator said:

"… but there are no guidelines … not being assessed on anything.". (E8, p5, L21-22)

Conclusion

The data reflected the students felt uncomfortable, scared and lacked confidence owing to inconsistent mentoring. The students were mentored by different staff and had to work with a different anaesthetist on a daily basis. The consensus was that the ODAs and students felt insecure, unsafe, inferior, uneasy and unsure to function as an AA or RRA due to the lack of guidance, mentoring, assessments, experience and a clear framework.

Sub-category 4.2.3: Operating department assistant students perceived negativity towards the anaesthetic and recovery room course

It emerged from the interviews early in the process that the participants' attitude (experimental) about assisting the anaesthetists and RNs seemed negative. Some students, ODAs and even some educators also demonstrated a dismissive attitude towards the anaesthetic and recovery room course.

Management

Four managers indicated some students demonstrated a negative attitude in that they did not belong in the anaesthetic and recovery room (MGTGr4P1, p5, L2-4; MGTGr6P2, p2, L31). Others reasoned the students did not take the anaesthetic and recovery room course seriously:

"So that's the mindset from the training, is that you don't belong there in any case.". (MGTRGr4P1, p5, L2-4)

The students saw it (anaesthetic and recovery room component) as an afterthought; as not part of the ODA programme and were only there to scrub. In the opinion of most managers not enough emphasis was placed on the anaesthetic and recovery room course (MGTGr6P1, p1, L25-27; MGTGr4P2, p4, L20-24; MGTGr4P1, p3, L22-24) as illustrated:

"They do not spend enough time in anaesthesia and recovery and also have so many objectives to fulfil as far as their scrubbing is concerned that the anaesthetics and recovery seems to be a bit of an afterthought.". (MGTGr4P2, p4, L21-24)

Anaesthetists

Three anaesthetists assessed the students did not take their AA role seriously as it was more important for the latter to assist the surgeon than to focus on the anaesthetic side of the programme (AGr1P2, p2, L12-14 & p3, L2; AGr1P1, p3, L16; A6, p12, L1-2). The ODAs did not realise the seriousness of anaesthesia; what exactly was expected from them and had a negative attitude towards the RRA role as one anaesthetist's quote signifies:

"I don't think they want to do anaesthesia and definitely don't want to do recovery. So their attitude is negative.". (A3, p2, L22-23)

Another anaesthetist, however, perceived the ODAs as having a positive attitude and their assistance as professional (A2, p4, L20, & 22) as indicated in the quote below:

"… their attitude at us is very positive … and their help … professional…" (A2, p4, L20 & 22)

Operating department assistants and students

One student voiced it was pointless to be trained as an AA because they were not allowed to handle drugs which is, in fact, the bulk of an AA's function (StGr2P1, p4, L1-3). The same student also commented anaesthesia theory was still vital and useful for them as scrub practitioners (StGr2P1, p4, L6-8). Anaesthesia theory taught them to know how to react when the patient's vital signs drop and to ensure the anaesthetic nurse's preparation and actions are correct (StGr2P1, p4, L11-16). The quotes illustrate:

"… it is pointless … to do anaesthetics if we're not allowed because the bulk of the anaesthetics go around drugs…" (StGr2P1, p4, L1-3)

"… to be an effective scrub person it is good for us to know … anaesthetics … so that you also have a background as to what's happening.". (StGr2P1, p4, L6-7 & 16-17)

Thus, the ODAs did not make a contribution as they were not placed in an AA role after procedures had been signed off as illustrated:

"… and then we don't do anaesthetics again after our procedures.". (StGr2P1, p6, L11)

One ODA's approach was that she would not assist the anaesthetist if asked, because she did not feel competent due to the lack of exposure and insufficient clinical training. She commented:

"… when there is no staff … they will ask me to do anaesthesia … then I say no because I do not feel competent … I do not feel competent to it [assist the anaesthetist] *alone…"* (ODA3, p4, L27-29 & 31-32)

Some participants shared when they enrolled in the programme they thought they would only be trained to scrub and assist the surgeon when qualified (StGr2, P1, p13, L10; ODA4, p2, L8-10) as illustrated:

"On, alright, and then as you started did you think your focus would be scrubbing?" (ODA4IV, p2, L8-9) *"Yes, definitely."*. (ODA4, p2, L10)

Only two ODAs verbalised they felt equipped, comfortable, confident and safe to assist the anaesthetists (ODA4, p4, L18-21; ODA5, p9, L34) and two indicated they are comfortable to assist the RN in the recovery room (ODA3, p5, L18-26; ODA4, p8, L4-7& 32-33) as shown below:

"... I enjoy it .... I am very familair with the anaesthesia.". (ODA5, p9, L31 & 34)

"I feel comfortable in recovery room. I know it is an area where emergency situations can develop, but I will, for example, if the ... anaesthetist wheel in an intubated patient will attached him and put on the sats and blood pressure cuff.". (ODA3, p5, L18-22)

Educators

Three educators confirmed they perceived some students did not think of anaesthesia as their focus of training (E8, p2, L10) as they thought they were only taught to scrub and assist the surgeon (E10, p13, L3-4 & 9). They only did the clinical anaesthesia and recovery room procedures to pass the course (E7, p15, L17-19). The next quotes substantiate:

"… that is not their focus of training.". (E8, p2, L10)

"… they've [students] *got this picture in their mind they're becoming a scrub person…"* (E10, p13, L3-4)

"… it would seem in the anaesthetic part and the recovery room, they don't seem to, they only do their prac [practical] *to pass the course. Is that right?"* (E7IV, p15, L17-18) "*Yes.*". (E7, p15, L19)

However, one educator was negative towards the anaesthetic and recovery room course as she was of the opinion an ODA would not be a safe AA and RRA. She commented as follows:"

"… for me the problem with anaesthetics and recovery room is that from the outset we've decided that they will not be safe…" (E8, p3, L26-27)

At this point, and after considering the specific educator's verbalised opinion, the researcher was piqued by the question, 'if the academics were negative about it, how could it be expected of the ODAs to have a positive attitude towards their AA and RRA role and function?' Although this educator's stance was an isolated case in the study, the value of her contribution lay therein that all stakeholders needed to have clarity about how graduates from the programme could (and should) contribute to have a skilled, competent and an effective anaesthetics and recovery room team available at all times in the operating department – even in times of staff shortages.

Conclusion

The perceived negativity towards the anesthetic and recovery room course was indicated by the monitory of the participants. A contributory factor appeared to be the ODAs' lack of knowledge regarding the content of the programme as they had not been properly informed before enrolment.

Sub-category 4.2.4: Mixed perceptions among stakeholders with regard to the ODAs' anaesthetic and recovery room assistance role and functions

This sub-category is related to the social pressure the students and ODAs experience to assist the healthcare professional in the operating department. The injunctive norm is the belief what should be done (i.e. policy and SOP) and the motivation received to do it whereas the descriptive norm relates to the support given to the ODAs carrying out the functions of the AA and RRA (Wee *et al.*, 2016:161).

Management

It became clear some managers were not informed with regard to the company's policy documentation such as the ODAs' scope of practice (what they may and may not do) (MGTGr6P3, p7, L34 & p8, L1-2;

MGTGr6P1, p14, L19-34; MGTGr6P1, p15, L5-7; MGTGr5P2, p4, L4-6; MGTGr5P1, p8, L32-33) as illustrated in the quote:

"So you don't know how far you can go … how far they are covered in terms of doing what they can do on a patient.". (MGTGr6P3, p7, L34 & p8, L1-2)

In fact, some managers who knew the ODAs' scope of practice used them as scrub practitioners thereby neglecting their anaesthetic and recovery room training as confirmed in the quote below:

"… we [managers] *don't expose the ODAs so much to anaesthesia … because we need them in the scrubbing…"* (MGTGr1P1, p8, L23-25)

Anaesthetists

Two anaesthetists (A4, p1, L21-23; A6, p18, L2) were of the opinion an ODA can work as an AA, but then they must be competent (A2, p3, L3) to assist the anaesthetist efficiently (A6, p18, L2). Another anaesthetist confirmed there was a place for ODAs in the perioperative team (A5, p3, L1 & 3) which is in line with the feedback of educator number 7 (p5, L9-10) who commented only the odd anaesthetists did not want to work with the ODAs. Only one anaesthetist (A4, p1, L21-23) remarked ODAs could be employed in the recovery room, but then they had to be adequately trained and work under the supervision of a trained senior RN. The participant said:

"… there would be a very definite value in having them trained in these areas because they are certainly highly competent in the scrub department, and there is no reason why they shouldn't be adequately trained as either anaesthetic assistants or as recovery personnel, provided they went through a formal training programme.". (A4, p1, L21-23)

However, one participating anaesthetist had reservations whether an ODA could work in the recovery room because of the lack of having a nursing background which he linked directly to patient safety (A3, p2, L7-9). He made the following statement:

"… I have a great difficulty in seeing or exposing people who have not done the full nursing course to then say all right, now you're going to be a recovery room person as well. I hope it works, but I have great reservations.". (A3, p2, L7-9)

Operating department assistants and students

This group had mixed opinions of what their team members and educators believed they should do – the expectations ranged from the one extreme to the other. Some were expected to function as RNs whereas others were not allowed to touch the patient in the recovery room but were allowed to only observe. Another example was that some students were allowed to assist the anaesthetists in accordance with the functions required from an AA whereas others felt they were trained to assist the anaesthetic nurse (cf. sub-category 4.1.1.). Obviously, no clarity existed on what their AA and RRA role entailed with some participants indicating they were not aware the programme included the anaesthetic and recovery room component (cf. Ch. 5, sub-category 4.2.2). One ODA perceived the RNs as negative towards the anaesthetic and recovery room course because the RNs viewed the ODA's role as scrub nurses only. This is confirmed by the next quote:

"The sisters are negative towards the course. They only see us as scrub [practitioners]. *We are here to help them to scrub."*. (ODA3, p17, L11-12)

Educators

A number of educators were supportive of the ODAs being trained as AA and RRAs because they saw value in such training as illustrated below:

"I think it's a good thing that you have the ODAs because with everything that we train them currently, I think they will have the theory, the skills and the knowledge and the experience to actually do what I do…" (E11, p12, L2-5)

Conclusion

It is clear that there was mixed perception among the stakeholders whether the ODAs could and should fulfil the role and functions of an anaesthetic and recovery room assistant. A contributory factor appeared to be the lack of clarity on what the ODAs' role and functions as AAs and RRAs entailed.

CATEGORY 4.3: STAKEHOLDER NEEDS FOR AAs AND RRAs

The next category focuses on the needs of the stakeholders and dictates how, if at all, the anaesthetic and recovery room course should be changed. The category was divided into two sub-categories which emerged inductively from the data, namely (4.3.1) expressed needs of stakeholders and (4.3.2) knowledge, skills and attitudes required by an anaesthetic and recovery room assistant.

Sub-category 4.3.1: Expressed needs of stakeholders

In this section the reported data centres on the expressed needs of participants as stakeholders (cf. Ch. 2, sect. 2.5.2). The need for ODAs to fulfil the AA and RRA roles from a manager's and an anaesthetist's viewpoint as well as the special needs required for an ODA to efficiently fulfil the AA and RRA role and functions are addressed.

Management

It appears the ODAs were used in the AA role, but only when needed and not permanently (MGTGr1P1, p12, L19-21; MGTGr3P1, p4, L9-11). The comments received revealed managers experienced the ODAs' contribution as better than that of nurses who had completed the short course in anaesthetic and recovery room (MGTGr3IVP1, p2, L25-28). Three managers, however, stated that they did not use ODAs in the AA role and that they would never replace the anaesthetic nurse (MGTGr4P3, p13, L18-20; MGTGr5P1, p16, L34). By way of illustration:

"So you won't really use them as anaesthetic assistant?" (MGTGr4IV, p13, L16) "*We don't …"* (MGTGr4P3, p13, L19)

"Cannot replace the anaesthetic nurse.". (MGTGr5P1, p16, L34)

One manager, however, later changed her opinion about using ODAs in the AA role:

"The need change. Like previously the need was in the scrub, but at this stage we're seriously looking for anaesthetic staff and if I could have ODAs … to do anaesthetics that would have made my life so much easier.". (MGTGr4P3, p20, L9-12)

A need was expressed for AAs who were competent, self-confident, hands-on and caring, and not just technicians who could only work with machines (MGTGr6P3, p4, L2-4; MGTGr4WG, p20, L9-11 & 13-15)

due the staff shortages in the operating department. But, currently they are unable to utilise the ODAs as illustrated:

"The environment that they are in does not require a technician. It's an environment of caring. It actually needs you to be hands on.". (MGTGr6P3, p4, L2-3)

There were mixed responses as to whether ODAs should work in the recovery room as assistants. One manager group said 'yes' (MGTGr1P2, p21, L21) but warning there could be risks involved due to the shortage of RNs to supervise the ODA in the recovery room (MGTGr1IV, p25, L9-10 & P1, p25, L12).

"… they [ODAs] *are really a help because of the shortage of nurses in the recovery room?"* (MGTGr1IV, p21, L19-20) *"Yes ma'am."*. (MGTGrP2, p21, L21)

"… the lack of RNs, that is perhaps where the biggest threat is?" (MGTGr1IV, p25, L9-10) *"Yes."*. (MGTGrP1, p25, L13)

The majority, however, said 'no' to the utilisation of ODAs in the recovery room due to the risks involved (MGTGr2P1, p2, L29 & 33; MGTGr3P1, p14, L15-17; MGTGr4P3, p13, L20; MGTGr5P3, p8, L20; MGTGr6P2, p22, L6-7). The two main reasons seem to be the basic nursing principles which are required and the potential risk to the patient. By way of illustration:

"… recovery room is the basic nursing. I think we will also be putting a patient at risk, to have them in the recovery room.". (MGTGr7P1, p4, L11, 15-16)

Although one manager was of the opinion the ODA could work in the recovery room, one agreed the ODA cannot replace the RN (MGTGr1P1, p24, L2-3) and another said the ODA must not be allowed to work alone in this area of the operating department (MGTGr1P3, p24, L6). It stays the domain of the RN (MGTGr1P1, p24, L3; MGTGr5P3, p8, L20). By way of illustration:

"… they can't administer it [drugs]. *And therefore, at the moment they cannot replace the PN."*. (MGTGr1IV, p24, L1-2) *"They cannot."*. (MGTGr1P1, p24, L3)

"… you can never leave them [ODAs] *alone in the recovery … if there is not a RN."*. (MGTGr1P3, p24, L6-7)

Operating department assistants and students

Some ODA and student participants expressed they would like to assist the healthcare professional provided they were equipped to execute the following tasks: (i) extubate a patient; (ii) insert a urinary catheter; (iii) administer drugs under direct supervision and on doctors' orders and (iv) handle drugs as the following quotes confirm:

"… you would like the training to train … how to safely extubate a patient?" (StGr4IV, p17, L1-2) "*Yes*.". (StGr4WG, p17, L2)

"… I want to … put in catheters and suppositories … because when on anaesthesia we must put in suppositories a lot of time…" (ODA3, p6, L11-14)

Educators

The majority of educators recommended for the ODAs to be equipped to fulfil the role and functions of an AA and RRA by broadening their SOP to ensure patient safety as seen in the next quote:

"… have to sometimes assist the anaesthetist in administering medication or put in a suppository or putting in a catheter … you are the only person assisting the anaesthetists, so then it is expected of you." (E10, p13, L24-27 & p14, L2-3)

In the next section the needs of all stakeholders regarding the AA and RRA knowledge, skills and attitudes are summarised.

Sub-category 4.3.2: Knowledge, skills and attitudes required by an anaesthetic and recovery room assistant

The knowledge, skills and attitudes which an AA and RRA must have according to the stakeholders are summarised, per participant category, starting with the managers as stakeholders.

Management

The essential knowledge and skills identified by the managers an AA and RRA must have are summarised as knowledge, skills and attitudes in Tables 5.8 and 5.9 (cf. Annexure S).

Anaesthetists

The required AA and RRA knowledge, skills and attitudes identified from the anaesthetists' viewpoint are summarised in Tables 5.10 and 5.11 (cf. Annexure S).

Operating department assistants and students

The AA and RRA knowledge, skills and attitudes mentioned by these participants are summarised as cognitive, psychomotor and affective skills in Tables 5.12 and 5.13 (cf. Annexure S).

Educators

According to the educators, the ODAs need the knowledge, skills and attitudes as summarised in Tables 5.14 and 5.15 (cf. Annexure S) to fulfil the role and functions of an AA and RRA.

Conclusion

Although the managers and educators provided a more in-depth version of the AA role than the other two participant groups (ODAs and students group and anaesthetists group), the interpretation of the RRA role in the two groups (managers and educators) varied. A possible reason might be the lack of formal guidelines as to what an ODA as a RRA may or may not do. The ODAs are the first category of non-nurses who fulfil this role and function in the recovery room. However, similar needs emerged from the data gathered from all participants interviewed. The needs were: (i) interpretation of data and vital signs; (ii) inserting a urinary catheter and suppository; (iii) limited drug administration under direct supervision; (iv) handling of scheduled drugs; (v) holistic patient care; (vi) patient extubation; (vii) airway management; (viii) assistance with oxygen administration and (ix) attaching a patient to the monitors. All these procedures are generic and are applied in anaesthesia and in the recovery room. All of these pointers were used to compile the Delphi questionnaire.

THEME 5: OPERATING DEPARTMENT ASSISTANT EDUCATION AND TRAINING

CATEGORY 5.1: OVERALL ANAESTHETIC AND RECOVERY ROOM TRAINING

This section focuses on the overall anaesthetic and recovery room training as perceived by the participant stakeholders. The category was divided into six sub-categories, namely (5.1.1) current anaesthetic and recovery room training; (5.1.2) flow of current anaesthetic and recovery room training; (5.1.3) limited clinical exposure; (5.1.4) clinical placement dictated by staff shortage; (5.1.5) anaesthetic and recovery room clinical assessments do not enhance learning and (5.1.6) conflicting preference for a longitudinal versus concentrated condensed course.

Sub-category 5.1.1: Current anaesthetic and recovery room training

Management

Only two managers were satisfied that the current anaesthetic and recovery room training is sufficient and covers all components (MGTGr2P1, p10, L25 & 27; MGTGr3P1, p7, L10) and equip ODAs to do what are expected from them (MGTGr3P1, p7, L18). By way of illustration:

"… their training is very good at the moment…" (MGTGr2P2, p9, L11)

"… they cover everything in it…" (MGTGr3P1, p7, L10)

Most managers felt the course did not equip the ODA to fully function as an AA or RRA as it does not equip them to do call duty owing to the following reasons: (i) not enough emphasis on this component of the course; (ii) too little exposure and insufficient practise; (iii) skewed training due to too much emphasis on the scrub component and (iv) lack of important knowledge (MGTGr4P3, p10, L5-7; MGTGr4P2, p4, L21-22; MGTGr4P5, p16, L5; MGTGr4WG, p21, L4; MGTGr5P2, p13, L23). By way of illustrations:

"They don't put enough emphasis on that … that they can be competent in doing anaesthetic and recovery. They don't spend enough time doing anaesthetics and recovery…" (MGTGr4P2, p4, L21-22)

"So the course does not equip them [ODAs] *to be on call as an anaesthetic assistant and recovery room…?"* (MGTGr5IV, p13, L20-21) "*Yes.*". (MGTGr5P2, p13, L23)

"… skewed training … weight on the scrubbing side…" (MGTGr4IV, p16, L5) *"Yes, 95% scrubbing."*. (MGTGr4P5, p16, L6)

Anaesthetists

The opinion of one anaesthetist was that the ODA was sufficiently trained to assist him with minor cases and straightforward airway management. There was, however, insecurity with the intubation procedure as they did not know how to hold the tube and the steps that followed after the endotracheal tube has been placed:

"My experience with the ODAs has been limited to minor cases or elective cases only when they assist with anaesthesia, so the anaesthesia had no special requirements. It was straightforward airway management … the girls were adequately trained. They were following what was going on, what was going on next. Here was a bit unsurety from their side where to hold the tube in position, whether I hold the tube, whether they old the tube, what happens next?" (A6, p1, L9-11, 14-15 & 24-25)

Operating department assistants and students

There was a disagreement between the participants on how they perceived the received curriculum. Some said the theory and clinical components were useful, sufficient and prepared them for practice (ODA6, p19, L14) whereas others were of the opinion the theory was sufficient but supervised clinical exposure lacked (StGr1P3, p23, L16) as illustrated below:

"… the training, the knowledge, the skills, the behaviour was sufficient and useful…?" (ODA6IV, p19, L12-13) *"Yes."*. (ODA6, p19, L14)

"I think it is sufficient. It's only the practical that is lacking.". (StGr1P3, p23, L16)

A third group was of the opinion the training did equip them, but they were not 100% competent and confident to fulfil the roles (ODA4, p2, L24; ODA4, p2, L29). Another group' view was that the theory and clinical skills were insufficient and did not equip them at all (ODA1, p4, L28) as illustrated:

"... you have done … what your course requires and it did not equip you, for anaesthesia or recovery room…?" (ODA1IV, p4, L26-27) "*Yes…"* (ODA1, p4, L28)

A fifth group agreed the training did equip them to work according to their SOP, but the practice required additional work and they sometimes had to fulfil functions beyond their SOP. One student said:

"Well, it is, if what you are expected to do during training was correlated with what you did in the practice…" (StGr4P, p12, L24-25)

Educators

Of the educators who delivered the planned curriculum, some indicated the anaesthetic and recovery room training (knowledge and skills) was sufficient (E4, p15, L21-23). One added the ODAs were taught the same content as the RNs (E4, p5, L24-27). Moreover, in some cases they were taught more theory than the RNs who completed a post-basic diploma in operating room nursing science, as the quote signify:

"… we do much more with those students than we do with the diploma in theatre students.". (E1, p13, L29-30)

Educators were mostly satisfied with the overall theoretical component of the course, but not the clinical component due to the lack of clinical exposure and experience as the quote signify:

"… I don't think it's got enough exposure in the three-year course as such now.". (E10, p19, L34-35)

A main concern was the differences between the educators' perceptions on how they saw the planned curriculum and what was taught to the ODAs (delivered curriculum) as illustrated below:

"We do … the complications … put on oxygen mask, the blood pressure cuff, the stats probe, they know when there is a crisis…" (E2, p6, L18 & 23-25)

"They learn what the normal is. So they do not learn what dyspnoea is and what apnoea is. They do not know how to identify it.". (E9, p2, L9-16)

During her interview, an educator provided a useful summary of the overall course by remarking the training was sufficient to prepare the ODAs for their AA and RRA functions. Such training, however, could be insufficient due to the operations which require a broader SOP:

"… their knowledge, the skills, is it sufficient or insufficient?" (E8IV, p17, L25-26) *"Insufficient."*. (E8, p17, L27)

"Insufficient if they need to do the broader scope of practice?" (E8IV, p17, L28) *"Correct."*. (E8, p17, L31)

Conclusion

In brief thus, although the same curriculum was used countrywide, it appears the students did not always receive the same content. It was also apparent that the theoretical component was sufficient but the clinical exposure and experience were lacking for various reasons.

Sub-category 5.1.2: Flow of current anaesthetic and recovery room training

The next section covers data on the flow of the current ODA course.

Management

Two managers asserted the flow of the course currently presented was logical (MGTGr2P1, p11, L11; MGTGr3P1, p17, L2). A few were of the opinion students should be introduced to anaesthesia and recovery room in their first year of studies to deal with emergencies; this initial skill and knowledge gained then need to be supplemented and built on throughout their second and third year as illustrated in the quote:

"… introduced anaesthesiology and recovery room from the first year, just for emergency, and then build on it right through?" (MGTGr1IV, p25, L24-25) "*I agree…"* (MGTGr1P3, p26, L11)

Anaesthetist

One anaesthetist suggested the ODA training should follow a natural progression. They must first be taught to function as an AA and then progress to the recovery room. Thus, through the natural progression pathway, the student would acquire essential knowledge and skills as an AA which would be useful in the recovery room:

"… follows that route of going via AA to recovery, it would also be a natural progression, and a lot of the skills they would pick up as an AA would be useful as a recovery room person later on.". (A4, p2, L33-34)

Operating department assistants and students

According to the nine students who participated in interview group four, the theory component had a logical flow, but it did not correlate with the practical clinical rotation. The main reason for this was they were not allocated to the clinical areas according to their programme planners, but according to operational needs. One student said:

"In the training it's a logical flow, yes … but when you go to the practice … they allocate us according to their own needs. The next thing you find that maybe you were supposed to do for that week local anaesthetic, you find yourself already doing general or sometimes doing regional.". (StGr4P3, p25, L11-19)

Two ODAs agreed the current course had a logical flow and should not be changed (ODA1, p11, L12-14; ODA5, p15, L29). The next quote illustrates this opinion:

"… at the moment it does, because they first taught, for example, to prepare, what you must prepare and then you must do anaesthesia and then you do recovery room. So I will say that it does flow logically…" (ODA1, p11, L12-14)

However, it seems the flow was depended on the operating department management – where the students were placed and whether they were treated as students or as part of the workforce. According to one ODA, her clinical rotation programme did not correlate with the theoretical programme:

"I don't think it is flowing … because you'll find that when you come in your work requires you to be in the recovery room to observe the patients being recovered but then when you are at school you were doing preparing for anaesthesia.". (ODA2, p19, L7-10)

As a result, the ODAs and students felt the clinical rotation was not in alignment with the theory done in the classroom. Obviously, for these participants it was logical that for theory-practice integration it was important for consistency in that the theory should be followed with the related clinical exposure as suggested:

"… say this week we're doing theory for general anaesthesia, it's more convenient if when you go back to the clinical environment, you go back to do general anaesthesia…" (ODA2, p19, L19-21)

Another ODA recommended the recovery room care theory and practical to be done after anaesthesia. This correlated with the anaesthetist's opinion that the students must follow a natural progression path. In this respect, the ODA said:

"… if I learnt anaesthesia then I had to see the post-op in the recovery room afterwards. So I would have learnt more about it if they taught me to go to recovery room directly after anaesthesia to see what recovery is…" (ODA3, p11, L4-7)

Educators

Ten of the eleven educators (E1, p3, L22, 24-25 & 29-30; E2, p31, L5; E3, p25, L24; E4, p16, L4 & 6; E5, p18, L2 & 7; E6, p15, L4; E7, p24, L23-24; E8, p19, L34-35; E9,p18, L33-34; E10, p28, L6-8) perceived the current anaesthetic and recovery room course as having a logical flow with preparation for anaesthesia covered in the first year. In the second year the students were taught to assist the anaesthetist for minor anaesthesia and in the third year for major anaesthesia, invasive monitoring and to assist the RN in the recovery room. By way of illustration:

"[At the] *end of first year they must be able to prepare … for anaesthesia … end of the second year they must assist with a minor case, must they be able to help the anaesthetist … major anaesthesia … and … recovery room only in the third year."*. (E1, p3, L22, 24-25 & 29-30)

"For me it flows logically … the components that we are teaching have been broken up nicely and staggered nicely across the three years.". (E8, p19, L34-35)

Conclusion

Although the educators and some managers regarded the flow of the planned curriculum as logical, the majority of ODAs and students did not experience it as such. This was seemingly mainly due to students not being allocated to anaesthesia and recovery room as indicated in their programme planners or because the programme planner was not correlating with the theory offered in class. The lack of clinical exposure and experience can therefore mainly be ascribed to these issues.

Sub-category 5.1.3: Limited clinical exposure

The literature search revealed sufficient clinical exposure is crucial to build confidence, self-efficacy and achieve competence (cf. Ch. 2, sect. 2.8.10.5). However, what emerged from the empirical data was the lack of sufficient clinical exposure caused by various reasons as explained in the next section.

Management

The managers reported students' lacked anaesthesia and recovery room clinical exposure because the clinical rotation through anaesthesia was too short to apply in-depth knowledge (MGTGr4P2, p4, L22 & p23, L15-16; MGTGr5P3, p6, L13-16 & P2, p23, L4; MGTGr6P1, p2, L2 & P3, p5, L12), to become confident, correlate theory-practice and ultimately achieve competence. Thus, they did not have enough clinical exposure and experience in the practicalities of anaesthesia (MGTGr4P3, p10, L5-7). Two managers stated:

"They do not spend enough time doing anaesthesia and recovery..." (MGTGr4P2, p4, L22-23)

"… their exposure to anaesthesia is too short and limited." (MGTGr5P3, p6, L13-14)

Two managers were in agreement the students were not supernumerary (not over and above) when placed in the clinical environment, especially during their recovery room rotation. They were seen as part of the workforce as illustrated in the quotes below:

"So what I hear you say, and your previous participant has said that in fact their training, they're not super numeri in recovery … is that right?" (MGTGr4IV, p4, L2-4) *"Yes.".* (MGTGr4P3, p4, L5)

"So when they are there they are part of the workforce in recovery…" (MGTGr4IV, p4, L6-7) "*Definitely.". (*MGTGr4P1, p4, L8)

This could be one reason for the limited clinical exposure and experience as management did not afford students the opportunity to rotate through anaesthesia and the recovery room as students which limited their learning time (MGTGr1P1, p8, L23-25). They rather utilised the students as scrub practitioners:

"… we don't expose the ODAs so much to anaesthesia … because we need them in the scrubbing…" (MGTGr1P1, p8, L23-25)

Another reason could be the students' rotation period, per year, which was too short. By the time they progressed to the following year of their studies, they had forgotten previous learning as quoted:

"Two weeks is a bit short …" (MGTGr5P2, p23, L4) *"… you forget it by the next year…"* (MGTGr5IV, p23, L6) *"Yes, then you must start from the beginning.".* (MGTGr5P2, p23, L7)

Hence, longer clinical rotation periods would provide students with the opportunity to apply their knowledge and skills thereby enabling them to anticipate and see, e.g., the effect of drugs; have first-hand experience of things which can go wrong, e.g., intubation can be difficult, and what to do in such a situation. The following interview quotes affirm:

"Must it be longer … to apply the knowledge to enable them to anticipate, so that they realise what this drug does to the patient and get more opportunity to see it?" (MGTGr5IV, p23, L27-30) *"Yes.".* (MGTGr5P3, p23, L33)

Conversely, the students who were supported and allocated to the anaesthetic and recovery room disciplines according to the programme planner, especially in one operating department, did not experience a lack of

clinical exposure (MGTGr2P2, p10, L13-14). This student progressed from a novice to a competent assistant with no reservations or fear to assist the anaesthetist or RN in the recovery room.

Anaesthetist

One anaesthetist was of the opinion ODAs needed more exposure to function optimally and be alert:

"… more on anaesthesia … understand the functions better and are more alert.". (AGr1P2, p3, L5-7)

Operating department assistants and students

The analysis of the interview data obtained from this group (nine students and four ODAs) showed the participants agreed with the manager group's stance that students lacked exposure and experience in all study years, but specifically in their third year (StGr1P2, p3, L9-10; StGr1P1, p5, L9-11; StGr2P1, p2, :29-34 & p3, L20-25). The reason being mainly the emphasis placed on the scrubbing and management components of the ODA programme (StGr1P1, p5, L9-11; StGr1P2, p5, L19-21) as illustrated in the quotes:

"Lots of scrubbing, compared to anaesthetics…" (StGr1P2, p4, L5)

"… only for like two, three weeks of anaesthetics in the whole year, that we're exposed to anaesthesia … don't think it's adequate.". (StGr2P1, p2, L29-30)

Therefore, the majority of students and few ODAs expressed the need for more mentored clinical exposure as they linked the lack of adequate clinical exposure to their feeling of incompetence as confirmed by their quotes:

"I do not feel competent in anaesthesia because the exposure I got is too little…" (StGr3P2, p2, L34; p3, L1)

"I do not feel confident with anaesthesia. Maybe if they gave us more exposure I would.". (ODA6, p3, L31-32)

A positive 'yes' was further received from three students in student group 1 (StGr1WG, p20, L15) in response to the question:

"Okay, so it's not just being allocated more clinical hours but it is actually more clinical hours, mentored clinical hours. Is that right?" (StGr1IV, p20, L14-15)

A further reason for not getting enough clinical exposure was because the ODAs and students were constantly reallocated to scrub or circulating duties when they were supposed to rotate through anesthesia or the recovery room (staff shortages were apparently constantly experienced). One student commented on this as follows:

"If they don't have enough scrubs [practitioners], *they're not going to put you in anaesthetics and that's our daily challenge that we have in our theatre, shortage of staff…"* (StGr1P1, p28, L4-7)

ODAs and students shared they believed with more continuous placement their negative feeling towards anaesthesia would probably change, their confidence level would increase resulting in feeling more competent and comfortable to work with the anaesthetist as one explained:

"… if it was 'n bit longer, more exposure then I would have felt a bit more competent and felt a lot more confident to do it. Is that correct?" (ODA6IV, p4, L31-33) "*Yes.*". (ODA6, p4, L34)

The ODAs who were allocated to the disciplines according to their programme planners, received mentored clinical supervision and positive role modelling felt confident and comfortable in those areas and knew what was expected from them (ODA3, p5, L18-22; ODA5, p3, L17-18) as indicated in the following interview summary:

"... the recovery room. You said you worked there for two consecutive weeks full time and you feel more [safe and comfortable]*?* (ODA3IV, p5, L16-17) *"Yes. I enjoy the recovery room. I think the reason is becasue they taught me ... there. I feel comfortable in recovery room.".* (ODA3, p5, L18-22)

In the opinion of an ODA, the sheltered mentored clinical training she received in the operating department boosted her confidence, self-belief and augmented her feeling of being trusted. She also experienced teamwork and therefore felt she did make a contribution in the operating department (anaesthesia and recovery room). In fact, she emphasised the overall supportive and coordinated theory-practice learning environment prepared her to function as an AA and RRA (ODA5, p2, L30; p3, L5-12, 21-22 & 33; p4, L8-13; p6, L16-22; p7, l2 & 26-27; p9, L3 & p10, L7-12). The following exchange between her and the interviewer illustrate the student's positive experience:

"The buddy part gave me a confidence boost..." (ODA5, p2, L30)

"...and the doctors [anaesthetists] *was very understanding ... prepared to assist us and to explain to us..."* (ODA5, p4, L3 & 5)

"... they immediately made me part of the family..." (ODA5, p4, L12-13)

"It was nice to know they trust me." (ODA5, p6, L24-25)

"... my contribution is quite big..." (ODA5, p7, L12 & p10, L7)

The lack of clinical exposure had consequences. It only prepared the students to assist the anaesthetic nurse and not the anaesthetist as illustrated:

"… we train in practice to be the anaesthetic nurse's assistant, but we are taught in class how to basically be the anaesthetist's assistant.". (StGr3P7, p20, L10-12)

The time allocated only allowed them enough time to sign off their procedures and then they never worked there again as shown in the quote:

"… we [ODA students] *are only in anaesthetics for as long as we need to be, to learn our assessment and after that we just leave. So we only know enough to pass assessments…"* (StGr3P5, p3, L31-33)

Not only was the clinical exposure limited, it was also not consistent on consecutive days/weeks as students were time and again (per day or per week depending on the situation) taken out of anaesthesia to scrub when there was a shortage of scrub nurses. Further, if placed on anaesthesia, the ODA – because being viewed as a student – was never allowed to function as an AA independently. The quotes below contain some of the ODAs' and students' versions of the inconsistency in clinical exposure:

"… three weeks of practical anaesthetics … you would be called out of anaesthetics to go and scrub.". (StGr3P2, p3, L6 & 10-11)

"… so little staff … could never do anaesthesia myself … had to floor every time …. if I was lucky and I done three executive days anaesthesia, then I started to feel a little bit comfortable…" (ODA3, p2, L19-20 & 24-25)

Consequently, the ODAs and students were not grounded in anaesthesia. More clinical time could help the students to perceive anaesthesia more positively, increase their confidence, and make them more comfortable to work with the anaesthetists by getting to know them and their preferences. Again, only the one ODA was of the opinion the clinical placement and exposure prepared her to function as an AA due to the sheltered mentored training she received in the clinical environment:

"*Physical prepared me for what to expect, what can happen and what can be expected from me.".* (ODA5, p3, L17-18)

As regards the recovery room training, the majority of participants voiced clinical exposure was not sufficient. Two contributing factors were mentioned – students being pulled out of the recovery room to assist the surgeon and, secondly, they were not allocated to the recovery room according to their programme planners which happened quite often (StGr2P1, p7, L13-17; StGr4P1, p14, L1-3; ODA3, p11, L15-18). A quote illustrates this situation regarding recovery room training:

"It's not to say that we're going to get it … not going to allocate us only to recovery room because of the need for scrub people. So it is difficult for us to get around … that is also why we lack exposure and experience to … recovery.". (StGr2P1, p7, L13-17)

Therefore, some ODAs recommended continuous clinical placement, especially with anaesthetics, as quoted:

"It needs to be continuous, not broken…" (ODA4, p12, L25)

The lack of anaesthetic exposure and experience due to the continuous clinical placement as scrub practitioners lead to ODAs and students perceiving their scrub role and function as their main job and priority as illustrated below:

"I think that's our main priority as ODAs. That's our main job, the scrubbing. So the experience and exposure in anaesthetics, it's lacking there.". (StGr1P2, p3, L8-10)

Another reason mentioned by a few students for the limited clinical exposure related to the fact that they were allocated to the clinical area as qualified ODAs, not as students, which did not allow for any training time (StGr1P1, p6, L7-9; StGr1P2, p8, L25). In addition, they were sometimes left alone to recover patients, they were not mentored and guided as students as supposed to which might have had legality consequences and impacted negatively on the students' overall training:

"… they use us as if I'm a PN, they count us as a plus one. You don't get a change there, you learn by force. They make you independent.". (StGr1P1, p6, L7-9)

On the other hand, two participants (one a student and the other an ODA) were of the opinion the current clinical rotation period was too long if they were only allowed to prepare the recovery and attached monitors (ODA6, p11, L29-33; StGr3P7, p14, L19). Their verbatim quotes follow:

"It was very frustrating and all I could do was come in the morning and prepare the recovery room. You can prepare each station for them [RNs] *and all but then when the patients get out then you can quickly connect the things* [patient to monitors] *… Then you just sit there while they* [RNs] *have to do the rest…"* (ODA6, p11, L29-33)

"Two weeks is way too long in the recovery room…" (StGr3P7, p14, L19)

Educators

Six educators shared the same viewpoint as the managers, namely ODAs and students did not get enough clinical exposure, experience and practise (anaesthesia and recovery room) in a safe environment (EP3, p10, L25-26; E7, p16, L9; E8, p2, L26; E9, p5, L31-33; E10, p12, L9-10 & p26, L10; E11, p13, L25-29). According to one of the students, in the first year they were allocated to anaesthesia for only a week instead of the three prescribed weeks due to operational requirements (E10, p12, L6-8). The rest of the time was allocated to their scrubbing and circulating functions. The quotes verify this viewpoint:

"… the time they're allowed to practise such skills and to be exposed … is too short every time.". (E8, p14, L9-10)

"… for the first years we try and put them or place them in anaesthetics for at least three weeks. At the end of the day when we calculate the hours they've been there for a week.". (E10, p12, L6-8)

Thus, although the theory seemed to be sufficient (E10, p12, L18-10 & p26, L9-16) the students did not have nearly enough clinical exposure to practise the required procedures to promote their confidence and competency. Even when allocated to the required clinical area, it was not on a continuous basis. In fact, just enough time was provided to clinical exposure to chase assessments and get the portfolio of evidence (PoE) signed off; it was by far not enough time to retain knowledge and skills. Therefore, educators urgently requested for more clinical exposure time for ODAs and students:

"… exposure to anaesthetics lacks because they've been chasing assessments, chasing their PoE … but don't get confident in the procedures…" (E10, p12, L18-19)

"… if we can have them for more hours on anaesthetics and recovery it will be nice.". (E3, p10, L13-14)

On the contrary, a longer clinical allocation time was ostensibly not the answer. Students needed to be allocated according to the curriculum requirements on a continuous basis (E11, p14, L16-19 & p21, L5) as the quotes of an educator during an interview indicate:

"… you say their training and theory and practice should be … continuous…?" (E11IV, p14, L16-18) *"Yes."*. (E11, p14, L19)

The ODA who received sheltered close supervision (from the operating department staff and anaesthetists) and treated as a student and allocated according to the curriculum requirements, found the planned allocated time as sufficient. She also exited the programme with the confidence to assist the anaesthetist and RN (ODA5, p3, L5-12 & 34; p4, L9; p5, L28-31; p9, L3, 28 & 34; p10, L7-12). Unfortunately, the discrepancy between the clinical timelines perceived by the educators remained a concern. For example, one mentioned three weeks while two other educators mentioned five and six weeks respectively as timelines for the anaesthesia clinical rotation period in the third year as indicated in their quotes:

"… in the third year they spend six weeks there…" (E7, p16, L9)

"… five weeks in the third year are allocated to anaesthesia…" (E8, p2, L14)

"Third, second year also so three weeks…" (E9, p5, L31)

Conclusion

As shown in the data, consensus was reached that the clinical experience/exposure component of the anaesthetic and recovery room course was lacking because of the limited disciplinary rotation time which

was mainly caused by students who were not allocated according to their programme planners. A possible reason mentioned was that students were seen as qualified ODAs and required to function as such and they therefore did not receive the essentially needed support and guidance. The second reason was that the students were not kept in the anaesthesia and recovery room disciplines according to their course planners. Instead, they were used to fill gaps as circulating and/or scrub practitioners. Overall, it seemed as if the clinical rotation hours were sufficient provided that students were allocated to anaesthesia and the recovery room according to their course planners. But, a lack of clinical exposure was not the only problem – operational needs and staff shortages seemed further problematic issues as it dictated the clinical placement of students.

Sub-category 5.1.4: Clinical placement dictated by staff shortage

As noted by the managers and ODAs/students in the previous section, it appeared the clinical placement of students was dictated by the staff complement. This was evidently the reason why the students were seen as the workforce and thus not treated properly as students.

Operating department assistants and students

According to four students and one ODA, they were not allocated to anaesthesia and recovery room as indicated on their course planner. This was as a result of the staff shortage(s) in the operating department. The three students of group one was in agreement as illustrated in the quote:

"So it actually, there's a very understaffed in order to support you to be the students that you want to be. Is that right?" (StGr1IV, p30, L11-13) "*Yes.*". (StGr1WG, p30, L13)

They were placed where they were needed (StGr1P1, p28, L5-6 & P2, p28, L12) and not according to their learning needs (StGr1P1, p28, L15). The random placement affected their studies since it was difficult to get the required exposure and experience (StGr1P2, p28, L12; StGr1P1, p18, L13-16). Even when allocated to anaesthesia and the recovery room, it was not on a continuous basis which made it very difficult to achieve the required clinical outcomes (StGr1P2, p28, L8; P1, p28, L22-26 & P2, L25-26) as mentioned:

"… they only put us there inside if they've got enough staff [to scrub] *and that hardly happens."*. (StGr1P1, p30, L7-8)

"So to complete our objectives becomes difficult.". (StGr1P2, p28, L8)

"… our main problem, completion of our objectives, and the allocation doesn't work out the way it is supposed to because of it.". (StGr1P2, p29, L25-26)

Educators

One educator confirmed students were treated as part of the workforce due to staff shortages. This meant they were allocated to other duties instead of rotating through the required clinical discipline (E10, p12, L14-17). A combination of continuous clinical exposure, training and experience is, however, required to achieve competence and ensure skill proficiency (Sollid, Bredmose, Nakstad & Sandberg, 2015:1). Hence, without the necessary clinical exposure acquiring competence was compromised as an educator noted:

"So they are part of a workforce. So … utilise them where there are gaps than gobbling them on anaesthetics…" (E10P, p12, L15-17)

Conclusion

It was deduced from the data students were not allocated to the clinical areas according to their course planners – mainly due to staff shortages – and thus not treated as students. This impacted negatively on their training and learning and resulted in students chasing assessments to pass the course and not to achieve competence and migrate to become an 'expert'.

Sub-category 5.1.5: Anaesthetic and recovery room clinical assessments do not enhance learning

Assessment drives quality as it drives students to achieve and demonstrate the intended learning outcomes, i.e. competence to assist the anaesthetists. Thus, the nature of the assessment influences what and how students study (Amin & Eng, 2003:8; Educational network LINQED, 2011:iii; Meyer & Van Niekerk, 2008:104; Schuwirth & Van der Vleuten, 2014:246).

Management

Management had a negative perception of the student assessments done during the anaesthetic and recovery room course. A student could score 100% for a clinical assessment, but in practice the way he/she was executing the procedure was very different. The focus of an assessment should not simply be to pass it, but to develop competence. A manager explained:

"For an evaluation they get 100% because they do the show [the procedure] *as she* [educator] *wants it, but in the practice it happens differently.".* (MGTGr5P4, p20, L13-15)

Some managers commented the students were not assessed on any outcomes (MGTGr6P3, p4, L32-34); not even on their ability to handle emergency situations, i.e. compromised airway, aspirating patients and crash induction (MGTGr5P4, p16, L18 & 20-22). Additionally, if they were assessed on a procedure, it was made so easy that they could not fail it (MGTGr5P4, p16, L16). Two quotes from managers support this:

"… haven't actually evaluated … on any objectives…" (MGTGr6p3, p4, L32-34)

"… assisting for anaesthesia, evaluation of it, is very limited and anybody can pass it. There is not a lot that you [the student] *can do wrong to fail it.*". (MGTGr5P4, p16, L16-18)

Operating department assistants and students

One ODA confirmed what a manager observed, namely that assessments were not difficult or strict. For example, students were not required to perform the AA functions independently when assessed on their competence to assist the anaesthetist (ODA3, p11, L23-25). Hence, the ODA was questioning the reason for them being taught anaesthesia (ODA3, p11, L26-27) as it was taught and learnt superficially (ODA3, p11, L29-30). Two quotes from and ODA are provided to support the aforementioned:

"… my assessor … said that she is not going to evaluate me strict because we are never left alone … with an anaesthesia case…. So I feel why [do] *they let us do anaesthesia…"* (ODA3, p11, L22-26)

"Okay, you are now assessed, you can do the basic stuff, but we are not going to teach you in-depth.". (ODA3, p11, L29-30)

In fact, the students were never challenged to work independently as an AA and/or RRA which was required from them as an outcome of the current SAQA registered ODA programme (SAQA, 2017:2-6).

Educators

Two educators affirmed the previous participants' viewpoint that assessments were only done as a tick-off exercise to pass the year and not to assess whether they were, in fact, competent. One educator even stated during an assessment the anaesthetic nurse stood by as quoted:

"… do it [assessment] *with a theatre anaesthetic nurse standing by…"* (E9, p16, L28-29)

It can be posited that students were never left alone or assessed as an independent practitioner assisting the anaesthetist as stipulated within their SOP when considering the interview example:

"Okay, but it would seem that assessment is just to tick off and get the certificate. Is that right?" (E8IV, p15, L20)

"Correct, yes. It is to get assessments done, because that's required to pass the year.". (E8, p15, L23-24)

"Yes, but it is not to become a competent anaesthetic support or recovery?" (E8IV, p15, L25) *"No."*. (E8, p15, L26)

In the recovery room the students were only assessed on preparation of the recovery room and not on their competence to assist the RN which an educator regarded as a drawback.

"In terms of assessments we only teach them to prepare the recovery room. There are no other assessments that we do in terms of even assisting a recovery room sister.". (E8, p5, L10-12)

Conclusion

From the data it was clear there was some agreement between the managers, ODAs and educators that assessment practices were compromised as the main purpose was to get it done, tick it off on a sheet and pass the student. But, signing off the competency without properly assessing whether the student had the necessary competence was an impediment to the students' learning because assessments play an important role in student learning.

Sub-category 5.1.6: Conflicting preference for a longitudinal versus concentrated condensed course

Although there is conflicting evidence supporting a longitudinal versus condensed course, the literature search the researcher undertook shows students prefer a condensed course whereas academics prefer a longitudinal course (Wisdom *et al*., 1993:S34-36).

Management

Two managers recommended a condensed six-month course (MGTGr5P3, p21, L6; MGTGr5P2, p22, L2-10). One suggested a condensed three-month course (MGTGr5P2, p22, L15-17). The quote confirms some managers preferred a condensed course:

"… for six months ... only focus on anaesthetics and recovery room because I feel people learn better if they stay in one discipline ... because they are exposed to it on a daily basis…" (MGTGr5P3, p21, L4)

Two other participants (MGTGr5P1, p22, L21-29; MGTGr5P3, p23, L26) of the same interview group

proposed a longitudinal course over a three-year period could also work:

"I am more for the longitudinal exposure…" (MGTGr5P1, p22, L21-29).

Anaesthetists

Three anaesthetists recommended a condensed intense course with the theory reinforced by the clinical component (A6, p2, L23-24; A3, p5, L25; A5, p2, L17-22) as illustrated in one verbatim quote:

"… trained in one area at a stage … if training is to widely spread, example … first year and then again in their third year … they forget it …. Anaesthesia and recovery room must be done as one component together …. with theory and the clinical reinforcement and practice…" (A6, p10, L10-12 & 17-26)

In the opinion of another anaesthetist, the length of a condensed course was embedded in a delicate balance. He asserted it was vital to obtain the right balance regarding the length of a condensed course: if too short the students would be unable to achieve the course outcomes; if too long the possibility existed that students would become complacent:

"… they had a misperception of anaesthesia when the course was too short … with a too short course there is so much theory and things are thrown on them that they lose interest.". (A6, p12, L15-16 & 24-25)

"They will come to a point like any other young clinician and that danger point has always been six months. If you do anesthesia for six months, you will be so practised and you feel here is nothing going wrong.". (A6, p12, L32-34)

Operating department assistants and students

The majority of students and one ODA preferred a condensed course with some mentioning it should be a six-month course (StGr1P2, p27, L13-15; StGr2P1, p5, L30-31 & p11, L28; StGr3P3, p2, L23 & 27; StGr3P2, p2, L26 & 28-32; StGr3P4, p4, L31; StGr5P1, p13, L6 & 8; StGr5P3, p13, L12; ODA4, p13, L5-9) to allow for more exposure and theory-practice integration.

"… we [ODA students] *need full time for a six-month period, it* [anaesthesia knowledge] *will also stick."*. (StGr1P1, p27, L15-16)

They argued such course would allow for longer clinical rotation in practice. The latter would give students more practice time to internalise the knowledge and apply it to practice which they found difficult with the scattered course over a three-year period. Thus, allowing students more clinical exposure time would help them to feel more at ease, gain confidence and to become competent (StGr3P2, p2, L28-32; StGrt3P1, p5, L31-32). In the meantime, it was their perception that by their third year of study they would have forgotten what they had learnt and would have to start from scratch which they found very frustrating and demoralising (StGr5P2, p2, L12). Two participants' quotes illustrate this issue:

"... combining it, like having anaesthesia training as a whole at once, just to grasp the whole concept of anaesthesia, and thereafter just put it into practise and see, unlike when you do this part first year then that other part second year, sometimes maybe forget something that you learnt in the first year. So at least if you practise it at once, you actually start understanding.". (StGr5P1, p12, L33-34 & p13, L1-3)

"… I will feel more competent because I will get more exposure to anaesthesia then.". (StGrt3P1, p5, L31-32)

Some students recommended for the condensed courses to be offered in the second year of study (StGr1P2, p27, L12; StGr5P1, p13, L18) or to overlap with the third year (StGr3P3, p5, L10 & L19-20; StGr3P7, L24) of the ODA programme. These two recommendations are confirmed by verbatim quotes from the data:

"… must be moved to the second year…" (StGr1P2, p27, L12)

"The end of your second year and then we go on to the different types of anaesthesia.". (StGr3P3, p5, L19-20) "*In your third year*?" (StGr3IV, p5, L21) "*Yes.*". (StGr3P7, p5, L22)

Although no students or ODAs recommended the longitudinal system, two ODAs (ODA1, p10, L21; ODA5, p16, L28) and numerous students (StGr2P1, p11, L28; StGr3P7, p20, L21; StGr4P3, p25, L6 & 11) stated no changes were needed to the ODA programme. This could imply the ODAs and most students perceived the current flow of the anaesthetic and recovery room course (offered over three years) as satisfactory and fulfilling their learning and training needs and, therefore, it should remain as currently offered. Their perception was tested in the paper-based questionnaire (cf. Ch. 6, sect. 6.3.1.1).

Educators

Only one educator recommended a condensed course (E10, p28, L8-12) to be offered in the second year of the ODA programme. The majority said that no changes were needed to the current flow of the course (cf. Ch. 5, sub-category 5.1.2) which is currently presented according to the longitudinal system. These educators therefore wanted to keep the anaesthetic and recovery room course spread over the three years which correlates with the literature that a longitudinal system is preferred by academics (Wisdom *et al.,* 1993:S34-36). To illustrate the latter's preference, a quote is provided:

"For me it flows logically at the moment. I think the components that we are teaching have been broken up nicely and staggered nicely across the three years.". (E8, p19, L34-35)

Conclusion

The data showed consensus was not reached as to whether a longitudinal or condensed block system should be used for ODA training. Some managers and the majority of ODAs, students and anaesthetists preferred a condensed block system whereas the majority of educators preferred the current longitudinal system. Except for the managers, this result correlated with the results of the paper-based questionnaire (cf. Ch. 6, sect. 6.3) where the majority of students and anaesthetists chose a condensed block system and most educators and managers preferred a longitudinal system. Overall, the majority of participants chose a longitudinal system.

CATEGORY 5.2: THEORY AND PRACTICE INTEGRATION

The next sections focus on the integration of theory-practice in the clinical environment. The category was divided into four sub-categories which emerged inductively from the data, namely (5.2.1) clinical theory integration is required; (5.2.2) poor alignment of theory and practice and (5.2.3) methods to improve theory-practice integration.

Sub-category 5.2.1: Clinical theory integration is required

The overall opinion was that theory-practice integration was of significance as conveyed in the next four sections.

Management

One management group was of the opinion the theory must be aligned to the practice to foster and enhance students' learning experience (MGTGr2P2, p10, L13-14 & p11, L15). In their hospital the operational side supported the students and was committed to do so (MGTGr2P2, p11, L20) as illustrated:

"So it is to correlate the theory and practice and this is where we play a role.". (MGTGr2P2, p10, L13-14)

This was the same hospital in which the ODA who received supervision, according to the course planner, was placed for her clinical rotation. This student exited the programme as a confident and component ODA capable of assisting the anaesthetist and recovery room RN. But, in another hospital theory-practice integration was obstructed as the students were constantly allocated on theatre lists as scrub practitioners and not as anaesthetic and recovery room assistants as illustrated in the quote below:

"*They are not under the anaesthetic people; they're under the scrub people."*. (MGTGr4P3, p13, L16-20)

Anaesthetists

Two anaesthetists confirmed theory-practice integration was of great importance and could be enhanced by means of intensive theory which should include basic anaesthetic and recovery room theory, anatomy and physiology followed by clinical practice (A5P, p6, L1-2; A6P, p2, L8-10). They regarded constant exposure and feeling comfortable as of further significance. The latter can be achieved by means of placing a student with one anaesthetist on a regular basis as this would enhance the student's learning – specifically with reference to what she/he should know and was expected from them and the level of expertise required (A5P, p1, L24-26) as illustrated below:

"... it just goes with basic knowledge … constant exposure and begin comfortable in that particular field..." (A5, p6, L1-2)

Questioned by the interviewer on whether theory should be followed with clinical practice (A6IV, p2, L26-27) an anaesthetist had no doubt as his quoted answer reveals:

"Absolutely." (A6, p2, L28)

Operating department assistants and students

One student verbalised clinical placement brought the theory to practice which enabled them to learn and remember better:

"If I do it practical then I understand it more than writing it down. So in practice I learnt more.". (StGr3P7, p17, L6-7 & 10)

Educators

Some educators stated although theory-practice integration was an important component of the course, some RNs, clinical facilitators and unit managers were obstructive to training which impacted negatively on the

theory-practice integration that was strived for (E6, p10, L26-31; E7, p6, L7-8, 11 & 12; E11, p8, L33-34). By way of illustration:

"… some of the theatre sisters would still be obstructive because it is invading. They [students] *invade their* [theatre sisters'] *power space…"* (E7, p6, L7-8) "… [RNs in theatre] *is not acceptant and supportive?"* (E7IV, p6, L11) *"And* [theatre sisters] *won't teach…*" (E7, p6, L12)

Conclusion

The data indicated that managers, anaesthetists and educators emphasised the importance of theory-practice integration while the students confirmed they learnt more through clinical placement. Clinical placement helped them greatly to recognise and experience the link between theory and practice.

Sub-category 5.2.2: Poor alignment of theory and practice

As acknowledge by participants, the theory-practice integration was important. Yet, there seemed to be poor alignment between theory and practice in the clinical environment.

Operating department assistants and students

Students were not allocated to the clinical areas as indicated on their programme planners. This meant clinical exposure did not follow the contact sessions presented in class. One student said:

"On our year plan it's displayed as three consecutive weeks but as we see in hospitals it doesn't happen so basically whenever there is time they put us in anaesthetics. It is not to even say that we get out for three weeks of exposure.". (StGr3P1, p4, L14-17)

Educators

Another example of poor theory-practice alignment was students who were allocated to anaesthesia at the end of a year; yet, theory was offered more towards the middle of an academic year as illustrated in the quote:

"… mostly allocated to anaesthesia at the end of the year…" (E1, p3, L10-11)

Furthermore, students were allocated but then taken out of the discipline due to operational issues such as staff shortages (cf. sub-categories 5.1.3 & 5.1.4).

Conclusion

The data showed some agreement was reached in that most participants felt theory and practice was poorly aligned in the ODA programme due to students not being placed in disciplines according to their clinical programme planners. Often programme planners also did not align theory and practice.

Sub-category 5.2.3: Methods to improve theory-practice integration

Management

The following methods were suggested to promote theory-practice integration: (i) continuous exposure; (ii) creating a learning culture in the operating department; (iii) scenario-based teaching; (iv) repetition of

procedures and (v) more clinical exposure and experience (MGTGr2P1, p8, L30 & p9, L5; MGTGr4P1, p12, L26; MGTGr4P2. p12, L30-31).

Anaesthetists

Two anaesthetists suggested simulation in a non-threatening environment to bridge the theory-practice gap (A2, p5, L18-19; A4, p4, L1-2). One anaesthetist confirmed this as follows during the discussion:

"… you also mentioned expose them to simulation so that they can be exposed to when something goes wrong.". (A4IV, p3, L34 & p4, L1-2) *"Absolutely. I think simulation in a non-threatening environment…"* (A4, p4, L3)

Operating department assistants and students

Clinical rotation had to follow theory as some participants confirmed. If clinical rotation followed soon after the theory taught in the classroom, it would make it easier for students to integrate theory and practice (StGr5P1, p11, L19-23*;* ODA2, p5, L11-13; ODA4, p1, L10-13; ODA5, p6, L13; ODA6, p6, L27). To illustrate:

"… in college we were taught the theory … when we came backs to work we were able to practise it…. So we were able to combine the theory and the practical together…" (ODA4, p1, L10-13)

"… the theory is very helpful. It's the primary guidelines of what to do, or what principles to apply when doing anaesthetics, and how to actually do things, but then also, the clinical part is it also very important because you actually practise, as we said, practise what the theory says, so the theory becomes clearer because now you get to do and understand it.". (StGr5P1, p11, L19-23)

Educators

Only two educators affirmed educators play an important role in theory-practice integration by means of assisting and supporting students (E2, p17, L12-14; E3, p6, L21-23) whereas eight educators suggested one or a combination of teaching and learning methods to enhance theory-practice integration. Their suggestions involved the following teaching and learning methods: (i) clinical rotation practice to follow directly after theoretical block (E1, p3, L13-14; E2, p15, L22-24; E3, p4, L1-13; E6, p2, L30-32; E10, p12, L3; E11, p2, L2-10); (ii) clinical accompaniment/mentoring of students (E1, p13, L9-10 & p17, L12-14; E2, p15, L25 & p16, L1-5; E3, p5, L14-15; E5, p13, L9-14; E6, p4, L24-27; E7, p6, L17-15; E10, p24, L17-21; E11, p14, L31); (iii) the use of examples, scenarios and demonstrations (on manikins) in simulation, including role-play followed by reflection sessions (E3, p2, L10-11 & 22-23; E11, p4, L21, 26 & p9, L10-18, 31); (iv) exposure to the clinical field one week prior to the theoretical session (E3, p4, L1-3); (v) making use of visual illustrations/aids in class by means of life visuals (e.g. monitors), DVDs, pictures, etc. (E5, p5, L6-9; E7, p7, L23-24; E11, p2, L6-7); (vi) students to observe anaesthesia and recovery room care (role modelling) in first year and in-between circulating duties (E5, p5, L1-6; E11, p1, L22-28) and (vii) refreshing theory during clinical accompaniment (E11, p6, L14-15).

Conclusion

Although several methods to improve theory-practice integration were mentioned, the emphasis was mainly on simulated training, student clinical accompaniment and active student involvement in learning.

CATEGORY 5.3: CLINICAL MENTORING

Linked to theory-practice integration was the clinical mentoring of students. This data were analysed under the following three sub-categories: (5.3.1) clinical mentoring by operating department staff; (5.3.2) clinical mentoring by operating staff is problematic due to environmental constraints and (5.3.3) clinical accompaniment and mentoring by educators.

Sub-category 5.3.1: Clinical mentoring by operating department staff

It emerged from the data analysis the participants' perceptions of the clinical mentoring provided by the operating department staff differed quite substantially. The managers were of the opinion the students were supervised and mentored, but the students did not share the same opinion.

Management

Four of the seven management interview groups seemed quite supportive of students receiving clinical mentoring by means of allocating them to a mentor on a daily basis according to their clinical outcomes (MGTGr1P2, p14, L8-11; MGTGr1P1, p15, L8 & p13, L24-26). For example, one manager said:

"… a day-to-day-thing … she will allocate them [mentor] *with a competent individual that will mentor them throughout the day according to the desired objective."*. (MGTGr1P2, p14, L8-11)

Another group was adamant that the students were, in fact, their responsibility. This group viewed the clinical teaching and learning of students in a serious light and therefore the whole department was supportive to student training. Hence, they assisted students to integrate theory-practice by creating a learning-oriented environment. Thus, students were supported to prevent them feeling isolated and not part of the team. By way of illustration a few quotes from this group of managers:

"We support them.". (MGTGr2P1, p4, L22) *"We must, because at the end of the day they are our product. It does not help I say it is not my responsibility."*. (MGTGr2P1, p5, L1-2)

"… very important how the theatre management and the theatre personnel teach, educate and utilise this person … if we do not create a learning opportunity and they do not get the opportunity to apply the responsibility they have, it cannot work. So … it is to xxx [not mentioned to maintain anonymity] *and the doctors and to everybody's advantages that we train people. So the support and the mentor in that aspect are very important."*. (MGTGr2P2, p10, L7-12)

Members of a different group shared they mainly allocated students to anaesthetists who were positive and willing to teach. This group further viewed the students as superfluous to the daily workforce – a view which was by no means standard practice in any of the other hospitals (cf. sub-category 5.1.3) (MGTGr3P1, p5, L28). One member felt students must be allowed to observe first and then assist the anaesthetist with the help of a mentor in a non-threatening environment (MGTGr3P1, p5, L30-31). By way of illustration:

"We bring them in with anaesthetists who are positive.". (MGTGr3P1, p5, L3-4)

"By the third, fourth case, I will ask him [anaesthetist] *that the anaesthetic nurse just stands next to her* [student] *and she tries to do the anaesthetics."*. (MGTGr3P1, p5, L30-31)

In the discussion, a member reacted as follows to the question posed by the interviewer:

"Oh, then the ODA student will be superfluous?" (MGTGr3IV, p5, L27) *"Yes."*. (MGTGr3P1, p5, L28)

Consequently, the students were supervised and taught step by step as illustrated in the quote:

"… I teach them … take them step by step…" (MGTGr6P1, p18, L23 & 25)

Operating department assistants and students

Some ODAs and a few students believed they received adequate mentoring and assistance to integrate theory and practice (ODA1, p1, L24-26 & p2, L1-2; ODA2, p5, L31-33; ODA4, p1, L11-12 & p4, L28-32; ODA5, p2, L30-34; StGr1P2, p1, L17-18; StGr1P3, p16, L3). They voiced both the mentors and anaesthetists supported and guided them throughout their clinical placement which made them feel safe and appreciated. They also perceived the staff as trusting them (ODA5, p4, L3-5). By way of illustration:

"… back to work we were able to practise it and lots of the staff member was able to help. So we were able to combine the theory and the practical…" (ODA4P, p1, L11-12)

"We [ODA students] *were allocated with an anaesthetic nurse, who was mentoring us."*. (StGr1P2, p1, L17-18)

One ODA and three students experienced their clinical rotation as very positive. The ODA was buddied for two to three weeks after the theoretical contact session before allocated to a theatre list with a mentor (ODA5, p3, L9-10; StGr2P1, p1, L15-18; StGr5P2, p4, L15-18). Only then was she allowed to prepare and assist the anaesthetist, but with the guidance of the mentor. After that she was allowed to assist the anaesthetist alone (ODA5, p3, L11-12). By way of illustration:

"… they placed me with one of our staff nurses … then they put me with the mentors … who said you do it like this…. Then I work with this person for two to three weeks and she decided, 'okay … you take this case alone. Let me watch you.". (ODA5, p3, L5-12)

"… I buddied with an anaesthetic sister or nurse … she will tell you how to put the machine through and what preparation you must do for this doctor and other doctors. So they are just leading you practically.". (StGr5P2, p4, L16-18)

On the whole, the majority of students still lacked clinical guidance and supervision as they were seen as part of the workforce; some were even expected to function as a RN, i.e. one was left alone to recover patients and without support (StGr1P1, p6, L7-12). There was apparently no mentoring or guidance given to them; yet, it was expected from them to function beyond their SOP as illustrated in a student's' quote below:

"… in recovery … you find that me, as an ODA student with two patients…" (StGr1P1, p6, L7-12)

The majority of students requested more clinical mentoring as reflected in a student's answer:

"That request earlier on to have additional mentored clinical hours would sort of close it and finish it off?" (StGr1IV, p23, L4-5)
"Yes.". (StGr1P1, p23, L6)

Educators

Some educators were of the opinion that the students were supported and mentored. In some departments there seemed to be good mentorship programmes with the unit manager overseeing the clinical training and mentoring of students (E1, p10, L1-4; E3, p22, L19-20; E4, p14, L22; E10, p24, L17-20). One said:

"We try and allocate a mentor to each student … so that there is someone that they work with very day…" (E10, p24, L17-18)

However, it appears the mentoring of students was dependent on staff availability. One educator mentioned although the department was sometimes very busy, the students were still accommodated (E5, p13, L3-5)

whereas two other educators indicated the students were not mentored due to the mentor's enormous workload and lack of available time to teach students (E2, p15, L4-6; E7, p22, L28 & 30; E10, p24, L20). By way of illustration the relevant snippet of the discussion follows:

"And you do get the clinical mentoring sometimes if it's busy and it can't happen, but they still accommodate … your students there?" (E5IV, p13, L3-4) *"Yes."*. (E5, p13, L5)

"There are mentors in the theatres. When they have the time…. Terrible short-staffed…" (E7, p22, L28 & p23, L8)

Conclusion

The data showed although operational staff played an important role in student training, there seemed to be no consensus on student mentoring. In some departments the managers were very much in favour of training and creating a learning environment which included student mentoring. An example of just how empowering good training in a favourable learning environment can be is to observe the case of a specific ODA. This ODA was mentored for a few weeks and only when she was ready they allowed her to assist the anaesthetists with an accompanying mentor. Her competence, efficiency, self-confidence and superb ability to successfully work in the team have been reported on throughout this chapter. In other departments, students unfortunately received limited or no mentoring due to various reasons of which primarily mentor overload and staff shortages seemed the most notable.

Sub-category 5.3.2: Clinical mentoring by operating department staff is problematic due to environmental constraints

The data revealed the clinical mentoring of students seemed problematic in some departments mainly due to environmental constraints.

Management

In some operating departments the managers saw their most important task as ensuring students were allocated to a theatre list as workforce. This was as a concern because they did not view mentoring students as essential. It posed a problem because they were the staff members who were supposed to be constantly available to assist the students. Some managers were of the opinion the clinical mentoring of students was challenged due to staff shortages and thus no RNs were available to mentor the students as illustrated in the quote below:

"… the lack of RNs … that is perhaps where the biggest threat is?" (MGTGr1IV, p25, L9-10) "Yes.". (MGTGr1P1, p25, L13)

Students were also allocated as part of the workforce, which means there was no time for mentoring or teaching (MGTGr4P3, p4, L5) (cf. Ch. 5, sub-category 5.1.3). Another reason why staff struggled to mentor students was the lack of clear guidelines indicating what was expected from them and the outcomes they had to achieve (MGTGr6P3, p4, L32-33). To illustrate:

"… nobody has got objectives … to achieve … to be evaluated on…" (MGTGr6P3, p4, L32-34)

Student mentoring was further compromised by mentors and educators who adopted different teaching styles and had different ways of performing the clinical procedures. What the mentor taught the students differed

from what the educator expected from them during assessments and this inconsistency posed major problems for the mentor as well as the student (MGTGr5P4, p17, L32-33 & p18, L6-11; MGTGr7P1, p14, L18-20, 27-30) as the quote verify:

"So I teach them one way and then it is expected of them in another way.". (MGTGr5P3, p17, L32-33)

"… the school will come with a different method … we clash with them…" (MGTGr7P1, p14, L18-19)

It also appeared that some educators were very rigid and not practice-oriented which caused a lot of frustration, challenges and complicated the mentoring process (MGTGr5P4, p17, L34; MGTGr5P4, p18, L11 & p19, L22; MGTGr7P1, p14, L30 & p15, L7-9).

"*So that makes clinical mentoring very difficult…?"* (MGTGr7IV, p14, L28-29) "*Yes.*". (MGTGr7P1, p14, L30)

Further, it was posited educators did not teach the students how to do procedures in a logical and practical way to enhance learning and retention of knowledge (MGTGr4P2, p18, L20-21 & 25-27; MGTGr5P4, p18, L6-11 & p20, L13-14) since the focus was on simply passing the clinical assessments (MGTGr5P4, p19, L5-7 & 22-23). By way of illustration:

"… there are too much focus on the evaluation…. It is a show that is put up for the evaluation. This I find frustrating.". (MGTGr5P4, p19, L5-7 & 22-23)

Students were held back and not guided to reach their full potential. They were not taught to use their initiative but to work according to rigid methods which were not always practical as illustrated:

"… we underestimate what these people can actually do and we must not keep them back with it.". (MGTGr5P2, p19, L33-34)

Anaesthetists

One anaesthetist was of the opinion student mentoring was impaired due to the absence of a specific anaesthetic and recovery room trained RN to mentor, support and teach the students:

"… no specifically employed anaesthetic sister who does training or mentoring…. We've had a major problem with recovery because there is no … such recovery staff.". (A3, p1, L22-23 & 27-28*)*

Operating department assistants and students

Some students explained that their clinical mentoring was compromised because they were allocated to a different mentor every day which was mainly due to the high staff turn-over and staff shortage. This complicated things because the mentors could not keep track of what the student knew and was able to do:

"… each and every day, they change…. So it's also very hard because they can't actually keep track of what you know, how much you know, do you actually know this.". (StGr5P1, p4, L25-29)

Educators

Although the theatre managers supported the mentoring of students it appears that the training was obstructed by some RNs who perceived the ODAs as invading their space (E7, p6, L7-8). Thus, they were not supportive and would not teach or assist the students (E5, p12, L25-27; E7, p6, L11-14) which hampered the students' clinical training and, ultimately, resulted in the latter struggling to correlate theory and practice (E7, p6, L24-25) as the next quote confirms:

"… some … theatre sisters would still be obstructive … a RN who is unwilling to teach a student … the student will struggle … they can't put the clinical with the theory because they don't get the exposure.". (E7, p6, L7-8 & 22-25; E7, p7, L1)

The situation was further embroiled by using students to fill the gaps – in other words they were not seen as students but as part of the workforce which further compromised clinical mentoring (E7, p22, L6-7 & 18-20; E10, p12, L14-17) as illustrated in an exchange between the interviewer and a student:

"They are the workforce … that complicates the opportunity of clinical mentoring because of the lack of theatre staff [then]*?"* (E7IV, p22, L18-19) *"Absolutely."*. (E7, p22, L20)

Although some mentors shared it was their wish to support the students (E5, p14, L18-19), they said they did not always have the time or capacity to provide supervised clinical mentoring (E5, p13, L13-14; E7, p21, L29) due to staff shortages. Furthermore, clinical mentoring was compromised due to mentors not adhering to the correct standards and procedures (E10, p24, L23-25; E11, p18, L1-4) as illustrated:

"There are mentors, but they are really … so busy so they hardly have time to spend with the students.". (E5, p13, L13-14)

"I said [told the mentor] *my student is in this theatre and she is going to learn the wrong things. She needs to learn the correct way of doing it and you are teaching her the wrong thing…"* (E11, p18, L1 & 3-4)

Moreover, in some operating departments no learning culture was established with the result that no mentors were assigned to students:

"Do you have a clinical mentor assigned to your students?" (E5IV, p13, L6) *"No."*. (E5, p13, L7)

An educator affirmed students were not allocated to the same mentor every day (E6, p4, L24-27; E8, p14, L14-15) due to staff shortages and a high staff turnover which, by implication, meant the student's mentors would be there one day and gone the following day. Hence, such inconsistency was inconvenient and problematic as a student could not be assured he/she would constantly have the same mentor:

"In the theatres there are supposed to be mentors, but people come and go. So the mentor that you had this month might have resigned, and then you will have to find another person that can mentor the student.". (E6, p4, L24-27)

Conclusion

The data revealed clinical mentoring was a problematic issue as the staffing numbers did not complement the training. Mentoring seemed to be more obstructive to training than supporting it. It also appeared as if student training was seriously compromised by the lack of dedicated anaesthetic and recovery room trained RNs who could act as mentors and supervisors.

Sub-category 5.3.3: Clinical accompaniment and mentoring by educators

According to the analysed data, although the educators relied on operating department staff to mentor students, they themselves did clinical accompaniment of the students in the clinical environment.

Management

Only one manager confirmed the students did receive clinical accompaniment from the educator, as illustrated:

"And she [educator] *is the one, most of the time she comes to theatre to mentor them … where I just supervise..."* (MGTGr1P1, p13, L21-22)

However, the educators did not have the capacity to do follow-up on a daily basis or stay with the student the entire day. One manager was of the opinion the clinical accompaniment done by the educators was too limited. Students were sometimes not even seen once a month. In addition, if and when the educators did do clinical follow-up, they did not work with the students but only checked whether the students were on standard as shared in the following quote:

"… their educators come, I think once a month, not even once a month. They will come and just do regular checks and see if they are on standards.". (MGTGr6P2, p20, L6-8)

Operating department assistants and students

Some feedback from ODAs and students was quite negative as they found it very frustrating that educators only did assessments and no clinical accompaniment:

"… she [educator] *came when we had procedures to do and it also frustrated me because according to XXX* [not mentioned to maintain anonymity] *protocols you have the right to be accompanied first before your procedure comes, but then … she says, no I want to do the procedure."*. (ODA6, p14, L1-5)

The result of the aforementioned was that no practise runs were done and students were forced to learn from the RNs who did not always perform procedures the correct way. Hence, the ODAs and students found clinical accompaniment and mentoring by educators challenging and confusing:

"As student it is a bit difficult … at the end you are dependent of an already qualified person…. It is confusing…" (ODA6, p13, L22-23 & 30)

According to the participants, the time spent by educators mentoring them was not sufficient. They would prefer more contact time with the educator in the clinical environment as illustrated:

"We had very little contact time with our educator. So it will be nice for me if your educator has more contact time with you in your discipline, in the theatre, so that they can teach you the correct way.". (ODA6, p12, L22 & 30-32)

Educators

Nine educators indicated they did clinical accompaniment by means of individual support and demonstrations – 6 to 12 hours per month – to integrate theory and practice and to assist students to achieve their learning outcomes (E1, p9, L18; E2, p13, L10; E3, p4, L17 & 22-23; E4, p12, L28-29; E5, p13, L7; E6, p3, L15-19; E7, p20, L2 & p21, L5; E10, p21, L2 & 10-11; E11, p18, L12). This is illustrated in the next two quotes:

"You [educator] *do the practical facilitation with the students … incorporating their theoretical knowledge…"* (E4, p6, L31-32)

"… see the students for that month…" (E5, p13, L21)

The educators perceived it as inadequate; it only allowed enough time for clinical assessment and therefore they would prefer more time to do follow-up with the students:

"To see a student once a month is not adequate … you should see your student at least four times a month.". (E7, p23, L12 & 14)

"… it is mainly assessment we do because that is what we have time for.". (E1, p9, L34-35)

Two educators (E3, p7, L17 & 23; E11, p18, L12) indicated they did clinical accompaniment on a weekly basis with one educator indicating she saw students on a daily basis in the operating department. This is confirmed in the quote below:

"I am in theatre on a daily basis … accompanying my students in theatre…" (E3, p4, L17 & 23)

Conclusion

The data indicated some agreement among the educators that clinical accompaniment was done to some extent by the educators; but, the time they spent with the students was probably not sufficient. They further agreed they mainly focused on clinical assessments.

CATEGORY 5.4: ANAESTHETIC AND RECOVERY ROOM SPECIFIC TRAINING

This section provides an overview on the anaesthetic and recovery room component (related to the current course) under following sub-categories: (5.4.1) current anaesthetic and recovery room specific training content; (5.4.2) how the anaesthetic component of the course could be changed and (5.4.3) how the recovery room component of the course could be changed.

Sub-category 5.4.1: Current anaesthetic and recovery room specific training content

Management

One manager said the content of the current course was sufficient while another suggested the ODAs should be introduced to vital signs and patient care before they were allocated to the operating room:

"At the moment it is sufficient.". (MGTGr3P1, p16, L10)

"Introduce them [ODAs] *to … vital signs, patient before coming to theatre…"* (MGTGr1P2, p2, L22-26)

Operating department assistants and students

Participants found the theory content useful and vital (ODA6, p19, L14; StGr2P1, p4, L6-8) with four ODAs stating no content must be excluded from the current course (ODA1, p10, L21; ODA2, p19, L2; ODA5, p14, L30-32; ODA6, p19, L24-26). The students confirmed all knowledge and skills taught needs to stay in (StGr1P2, p27, L1-4; StGr2P1, p11, L6; StGr4WG, p25, L6; StGr5P1, p18, L7; StGr5P2, p18, L-8). Everything was relevant to what they needed to know and what they were using in practice (ODA1, p10, L4; ODA4, p9, L32; p11, L30-32 & p12, L20; ODA5, p14, L31; StGr1P2, p27, L1-4). The quote serves as in illustration of their overall feeling:

"No, everything was relevant to what we needed to know.". (ODA4, p12, L20)

One student was of the opinion the anaesthetic theory was too much it they are trained to be the anaesthetic nurses' assistant but found the recovery room theory useful as the interview dialogue illustrate:

"Sometimes I feel that the theoretical [anaesthesia] *component is a bit too much in detail with regards to our practical because we basically train in practice to be the anaesthetic nurse's assistant…"*(StGr3P7, p20, L9-11)

"And in terms of the recovery room, is there something in the training that you found that was too much, it was not useful?" (StGr3IV, p20, L19-20) *"No."* (StGr3P7, p20, L21)

Educators

Four educators stated the current course did not need to be changed as the theory and the skills taught were adequate (E1, p6, L7-8; E2, p30, L28; E4, p9, L20; E6, p5, L5); two indicated the current course included the required theory/clinical skills to equip the ODAs to assist the RN (E2, p30, L28; E5, p9, L15) and eight said no content should be excluded from the current course (E1, p15, L26; E3, p24, L5; E4, p15, L24-27; E5, p15, L9; E6, p13, L28; E7, p24, L15-16; E8, p18, L11-13; E11, p21, L6-7). By way of illustration:

"I don't think the training of the ODA per se should change.". (E6, p5, Ll5)

"Is there anything that is not useful or that shouldn't be there?" (E11IV, p21, L6) "Currently no." (E11, p21, L7)

The overall perception was that everything the ODAs were taught from the current curriculum added value (E6, p13, L24; E8, p18, L12-13). By way of illustration:

"From a theoretical point of view I don't think that there's anything we're teaching that does not add value.". (E8, p18, L12-13)

One educator stated in her view the knowledge, skills, attitudes taught to the students were sufficient but the clinical allocation time was too short (cf. sub-category 5.1.3), as quoted:

"… it is definitely sufficient. I think it is the practical time that is lacking.". (E10, p26, L9-10)

Another educator suggested the following competencies: (i) assisting the anaesthetist with major complicated anaesthesia; (ii) paediatric anaesthesia and (iii) inserting CVPs and arterial lines should be removed from the course as it could become too complicated for the ODA. According to this participant, these three competencies were not applicable to ODAs. She said:

"… when that major anaesthesia becomes major complicated anaesthesia … [I] *don't think that is applicable to them …* [I] *don't think paediatric anaesthesia is applicable to them … central venous pressure lines and arterial line which I don't think is in their scope of practice to do, maybe to prepare … but not to assist with it."*. (E8, p18, L22-24 & 27-29)

Conclusion

The data showed many recipients of the received curriculum (ODAs and students) as well as the majority educators who offered the planned curriculum felt no content from the current curriculum should be excluded if revision of the curriculum was contemplated.

Sub-category 5.4.2: How the anaesthetic component of the course could be changed

On the question how the anaesthetic course could be changed, participants provided useful information. This information was also used to compile the Delphi questionnaire (cf. Ch. 4, sect.4.4.3).

Management

Some managers believed the following knowledge was essential and needed to be included in the course: (i) in-depth drug knowledge; (ii) electrocardiogram knowledge (MGTGr5P2, p11, L17); (iii) observation of the whole patient to identify physical changes (MGTGr4WG, p21, L7); (iv) physiology changes due to anaesthesia and effects of drugs on the body (MGTGr4P2, p2, L22); (v) knowledge of normal and abnormal vital signs to analyse, recognise and interpret it (MGTGr4P2, p5, L27-28); (vi) ethics and loyalty

(MGTGr7P1, p12, L29-30); (vii) basic patient care and (viii) knowledge of medical and surgical conditions (MGTGr6P3, p17, L6-11).

Anaesthetists

Two anaesthetists suggested more simulation type of teaching methods to expose ODAs to: (i) intubation to equip them with the knowledge to know what the procedure entails and how a patient is intubated and an airway is manipulated (AGr1P1, p10, L19-20; A6, p18, L21-24 & p19, L21) and (ii) emergency situations (cardiac or respiratory failures) in a team to equip the ODA to assist the anaesthetist during such situations (A2, p5, L1-9; A6, p18, L22-23). By way of illustration:

"... put them with the doctor with whom they work through a mock emergency ... once a year ... with the anaesthetist as leader of the team delegating tasks..." (A2, p4, L28 & p5, L1, 3 & 6)

One suggested students should be placed with one anaesthetist on a regular basis (as requested by the students as well) to learn what was expected from them as well as the level of expertise expected. To illustrate:

"… once they have worked with a specific anaesthetist on regular basis, they know what is expected from them and the level of expertise required.". (A5, p1, L24-26)

It was also advised formal lectures highlighting the effect of anaesthesia on the respiratory and cardio-vascular systems and the impact of spinal anaesthesia on the patient (A6, p16, L25-28) should be included in the course.

Operating department assistants and students

The following changes and more in-depth theory (ODA5, p10, L33-34 & p11, L15) were suggested as it was functions fulfilled by an AA. Some ODAs were required to do it and the lack thereof hampered their competence in practice: (i) handling of scheduled drugs (ODA2, p4, L14-15; p5, L4-10 & p6, L19-20; StGr1P2, p13, L4; StGr1P1, p13, L10-13); (ii) prepare and insertion of IV cannula (StGr1P2, p17, L8); (iii) in-depth pharmacology knowledge (ODA1, p9, L19; ODA2, p13, L23-33: ODA5, p15, L6-7; ODA6, p8, L3; StGr1P2, p26, L12); (iv) only the basic drugs used in theatre (ODA3, p3, L24-25); (v) insertion of a male and female urinary catheter (ODA3, p6, L12, 22-24 & p14, L26-27; StGr4P1, p24, L6-8); (vi) methods to draw-up drugs (ODA2, p3, L3; ODA3, p7, L11-12; StGr4Pp18, L9-10); (vii) anaesthetic preparation and assistance for all disciplines and procedures including intubation in all types of situations (ODA1, p9, L17-18 & 20-22; ODA2, p14, L9); (ix) injecting of drugs into a vaculiter on the anaesthetist's orders under direct supervision (ODA2, p2, L35; p4, L4, L14-15 & p5, L4-10); (x) draw-up drugs, handling and administration of drugs including suppositories (ODA3, p6, L17 & p7, L29; StGr1P1, p12, L23; StGr1P2, p12, L8-9; StGrP2, p9, L29-31 & p10, L4-7); (xi) the care of an unconscious patients (what to expect and how to prevent complications) (ODA5, p11, L2-4); (xii) management of emergencies (ODA5, p11, L8-15) and changing drips (StGr4P1, p18, L14-20).

Some participants (ODAs as well as students) recommended the following changes to the clinical component of the course to enhance their confidence: (i) more supervised clinical exposure (StGr2P1, p4, L19; ODA6,

p12, L17-18 & 20-31); (ii) clinical allocation to follow theoretical contact sessions (ODA4, p1, L23; ODA6, p5, L29-30); (iii) simulated training (ODA4, p10, L1) and (iv) the use of videos and scenarios to enhance training (ODA4, p10, L13; ODA5, p11, L6 & p12, L24-26).

Educators

Topics to be included in the course suggested by the educators were: (i) knowledge of various types of anaesthesia, drugs and equipment (E1, p14, L1-4); (ii) influences of diseases on anaesthesia and co-morbidities (E1, p14, L4-5); (iii) positioning of patients for various procedures (E7, p13, L12-14); (iv) method to draw-up drugs (E5, p15, L14-16); (v) handling of drugs (E9, p3, L17 & 26); (vi) effects and side effects of drugs (E9, p3, L18, L13-14); (vii) identification of abnormalities (E9, p3, L31); (viii) effect of local anaesthesia and how to manage anaphylactic shock (E9, p18, L15-17); (ix) prepare for and assist the anaesthetist with anaesthesia for advanced surgery and (x) theory of drugs used in theatre (E10, p26, L25).

Some educators also requested more supervised clinical time for students to get exposure to emergency situations, difficult intubation and different doctors (E10, p27, L17-26; E7, p12, L22-24) to build their competence (E7, p18, L11-12).

Conclusion

The interview data showed some overlaps among participant groups in terms of the content to be included in the course. These content suggestions were duly included in the Delphi questionnaire.

Sub-category 5.4.3: How the recovery room component of the course could be changed

In spite of the participants' suggested curriculum changes, the biggest issue that emerged was the limited clinical exposure and the work profile which might limit the ODAs' contribution in the recovery room. In this regard, the participants provided useful suggestions pertaining to the knowledge, skills and attitudes to be included in the recovery room component and which were used to compile the Delphi questionnaire.

Management

The following knowledge and skills were suggested: (i) in-depth knowledge of premedication, scheduled and anaesthetic drugs as well as drugs used in the recovery room (MGTGr1P2, p22, L10-12; MGTGr1P1, p23, L1-3); (ii) management of emergencies in the recovery room (MGTGr1P1, 22, p24, L23; MGTGrP2, p14, L26-27); (iii) holistic care of the patient which could include airway, breathing, circulation and drugs to identify changes (MGTGr1P2, p21, L10-12; MGTGr1P1, p23, L6; MGTGr4P1, p6, L2-7); (iv) full recovering of the patient (MGTGr3P1, 2, p15, L23-24; MGTGr6P3, p5, L10); (v) observation and interpretation of vital signs (MGTGr5P2, p14, L19-22; MGTGr4P2, p5, L28; MGTGr6P3, p5, L6-8); (vi) knowledge and interpretation of abnormal vital signs (MGTGr4P2, p5, L27-28; MGTGr6P3, p5, L7-8); (vii) knowledge of adverse effects linked to medication (MGTGr4P5, p7, L17); (viii) exactly what is expected from the ODA (MGTGr6P3, p5, L6) and (ix) indications for patient extubation (MGTGr6P3, p5, L8, 10-11).

Operating department assistants and students

Although the four ODAs and four students proposed no content of the current curriculum should be excluded if revised (cf. Ch. 5, sub-category 5.4.1) they did, however, advocate for a more in-depth and higher standard of training (ODA1, p11, L17-18; ODA2, p9, L20-21). They suggested the following content to be added to the recovery component of the course to provide more in-depth knowledge (ODA5, p10, L33-34 & p11, L15) as they are sometimes to perform the procedures in the clinical environment: (i) patient extubation (ODA2, p18, L31-32; ODA6, p15, L11-12; ODA3, p6, L19; StGr1P1, p12, L5; StGr4WG, p17, L1-2; StGr5P1, p16, L18-19); (ii) injections (StGr1P1, p12, L12); (iii) handling of scheduled drugs (StGr1P2, p13, L4 & 11-13); (iv) documentation of medication given (StGr4P1, p19, L17-21); (v) draw-up and administrating drugs under direct supervision, including suppositories (ODA3, p6, L12; ODA4, p7, L6-7 & 29; StGr4P1, p18, 6-13; p19, L11-13 & p21, L6-10); (vi) changing of drips (StGr4P1, p18, L15-20); (vii) preparation of recovery room including equipment needed (ODA1, p10, L8); (viii) assisting the RN to recover patients who had different types of anaesthesia (ODA1, p11, L3-7); (ix) management of emergencies to proactively assist the RN (ODA2, p10, L20-22 & 29-33; ODA5, p11, L5-15); (x) basic knowledge and routine to recover a patient (ODA2, p9, L29-30; StGr5P2, p15, L26-30); (xi) how to handle a patient who does not wake up in recovery room (ODA2, p14, L2); (xii) haemoglobin test procedure (ODA3, p8, L15); (xiii) interpretation of vital signs (ODA6, p15, L11-12); (xiv) urinary catheterisation (ODA3, p6, L12); (xv) recovery room discharge criteria (ODA2, p10, L4-5) and (xvi) role and function of the ODA in the recovery room (ODA1, p10, L11-12;ODA3, p6, L30-31; ODA5, p12, L2-3; StGr5P1, p16, L29-32).

Educators

In spite of some educators' assertion that the course as it was, was in order and sufficient (cf. sub-category 5.3.1), they did, in fact, also offer a few additional suggestions to enhance to the content: (i) intubation (E5, p17, L11-13); (ii) patient extubation (E5, p17, L11-13; E6, p7, L15-16); (iii) preparation and administrating of drugs up to schedule 5 (E5, p17, L10-11); (iv) discharging a patient from the recovery room (E5, p17, L12-13); (v) airway management (E5, p18, L1) and (vi) in-depth knowledge of theatre-specific drugs (E10, p26, L22-23).

Conclusion

As have been shown in the data, the notion that no content should be removed from the current course was greatly supported by all participants. However, many participants maintained some knowledge and skills were still lacking and should be included in the course. These included patient extubation, in-depth knowledge of drugs used in theatre, administration of intravenous drugs under direct supervision, observation and interpretation of vital signs, observation of the whole patient, care of the patient and knowledge of emergency management.

As mentioned, at the beginning of the chapter (cf. Ch. 5, sub-category 5.3.1), the next two themes – ODAs not clearly identifiable and distinguishable from nurses (Theme 6) and ODAs' career prospects (Theme 7) – were not directly related to the anaesthetic and recovery room curriculum. However, it was established

during the data analysis these themes could have a negative impact on the training and learning experience of ODAs, their perception of the anaesthetic and recovery room course as well as patient safety.

THEME 6: OPERATING DEPARTMENT ASSISTANTS NOT CLEARLY IDENTIFIABLE AND DISTINGUISABLE FROM NURSES

It emerged from the data that identifying ODAs and distinguishing them from the nurses working in the operating department was a simple yet crucial issue in the larger context of the department. The problem was that outwardly both the ODAs and nurse looked the same because they wore the same theatre garments. This made it impossible for any professional medical staff working in the area to immediately differentiate between an ODA and a nurse by simply looking at their uniform. Arguably, nobody – especially in an emergency situation – has the time to look at an assistant's outward appearance; yet, it is a well-known fact that colour or some kind of 'difference' or 'out of the ordinary' detail can immediately be recognised by the brain even if unbeknownst to the human being (Bramão, Faísca1, Forkstam, Reis & Petersson, 2010:164, 165 & 172).

Management

All managers did not perceive this as a problem because, in their opinion, the permanent staff knew each other (MGTGr1P1, p10, L24; MGTGr3P1, p4, L29; MGTGr5P3,p15, L3; MGTGr5P2, p15, L4) as they worked with each other on a daily basis. One manager said:

"*… we've got permanent staff that doesn't move.".* (MGTGr1P1, P10, L24)

On the contrary, non-theatre and agency staff as well as anaesthetists may find it difficult to identify ODAs, unless they read the name badge – which some of the ODAs did not wear in any case as quoted:

"Oh, they won't know. Unless you read my name.". (MGTGr7P1, p12, L16 & L24)

Anaesthetists

Two anaesthetists said the identification of ODAs was not a problem because they knew all the staff, including the ODAs as it was a small department (A5, p3, L11-13 & 16-19; A6, p5, L22-23;

"I know the students and I know who the sisters are … who the nursing assistant is and who the ODA is.". (A6, p5, L22-23)

Conversely, if he did not work with the ODAs regularly he would probably not be able to differentiate between nursing staff and ODAs another anaesthetist agreed:

"… but I think if you only work with somebody in the recovery room, you will not have an idea if it is somebody running up and down the passage to deliver messages and letters and if it is a sister with whom you work.". (A6, p5, L27-30)

It was therefore suggested the wearing of a name badge should be compulsory. A further suggestion was for different colour badges for students (a different colour for each year of study) and ODAs which would allow the anaesthetist to identify the category of staff assisting him/her – whether it was a student or an already qualified staff member:

"… specific colour name badge … made compulsory … I must know what I have to deal with and … I want to speak to a person. It is very embarrassing to say, nurse or so, to call somebody on their name…" (AGr1P1, p4, L15 & 17-21)

Operating department assistants and students

Only two ODAs and three students opined the identification of ODAs did not pose any problems. The staff and doctors knew who they were; if the latter did not know the ODA or student would introduce her- or himself (StGr3P7, p9, L9). They said they were identifiable by their nametags (ODA2, p9, L5 & 12; ODA6, p17, L2). By way of illustration two quotes. The first from a group discussion and the second from a personal interview:

"Do the anaesthetist and the staff know that you're an ODA?" (ODA2IV, p12, L11) *"They do."* (ODA2, p12, L12)

"You wear your name tags…" (ODA6, p17, L2)

The majority of ODAs and students stated the anaesthetists and agency staff did not know who they were and what their SOP entailed (StGrP1, p8, L3; StGr1P1, p9, L11; ODA2, p16, L30-31; ODA3, p14, L14-15; ODA4, p5, L6-10). They were called 'sister/sisters' (StGr3P7, p9, L9; ODA4, p5, L6-10; ODA6, p17, L8) because the doctor and agency staff misjudged them as scrub nurses and simply assumed they were RNs and it was thus natural for the former to expect ODAs and students to perform RN functions (StGr4P2, p21, L17-19). To complicate matters further, if they then refused to perform a delegated task and the anaesthetist or RN became angry and irritated, it caused personal stress and in the environment which could have been prevented if, in the first place, everybody knew they were ODAs or students (StGr4P1, p22, L2 & 4). To illustrate, the relevant verbatim transcribed portion of a group discussion is given:

"… they see us scrubbing … decide we are RNs … then they expect us to do everything that RNs do.". (StGr4P2, p21, L17-19)

"… you can't tell the anaesthetist, that it's not in my SOP?" (StGr4P1, p21, L25-26) *"Yes, then you might get them angry?"* (StGr4IV, p22, L1) *"Yes." (StGr4P1, p22, L2) "And irritated, is that right?"* (StGr4IV, p22, L3) *"Yes."* (StGrP1, p22, L4)

What seemed to be a problem, especially in emergency situations, was that ODAs wore the same colour theatre garments as the nurses. This led to frustration, stress, anger and confusion which are extremely detrimental to patient care in a life-threatening situation (ODA4, p12, L8; ODA5, p14, L10; ODA6, p17, L7). The doctor would grab an ODA to assist him with orders, e.g., to administer drugs intravenously because he might be under the impression he's dealing with a trained and experienced RN (StGr2P1, p8, L6-11). ODAs and students mentioned the frustration uniforms could cause:

"We all have the same uniform. It is quite frustrating when there is new staff…" (ODA6, p17, L7-8)

"Some of them think I am a RN … they say … 'Can you just put up the suppository quickly sister'…" (StGr2P1, p8, L6-9)

To avoid confusion, ODAs requested different colour theatre garments or a different colour badge/epaulette to distinguish them from the nurses (ODA2, p16, L31-32; ODA2, p17, L3, 11 & 16) and to avoid doctors expecting them to work beyond their SOP (ODA3, p14, L20-22) as illustrated:

"… there needs to be something that distinguishes us from the … nurses … because if … I forgot my nametag, you still need to be able to see she's an ODA, she is not a nurse. So if there could actually be a difference in the uniform.". (ODA2, p16, L30-32 & p17, L1-3)

Educators

The educators iterated that ODAs were identifiable by means of a name badge (E2, p8, L22; E7, p5, L19); the staff and anaesthetist also knew who were ODAs and, if anaesthetists did not know, they were informed (E7, p5, L20; E8, p17, L10-16; E9, p6, L17-18; E10, p9, L17; E11, p15, L13-17). By way of illustration:

"They wear name badges. Otherwise the staff tells them [anaesthetists].". (E7, p5, L19-20)

However, it was a concern that ODAs and nurses wore identical theatre garments (E2, p8, L5-6 &9). It could very well be a serious problem if an anaesthetist cannot differentiate between the two categories (E2, p8, L19-21) and simply assumed the person assisting him was fully trained to cope with the patient and situation, especially in the recovery room as revealed in an interview:

"… you [educator] *are concern they use the same uniform, there is a concern on your side of being confused with the RN and then the assumption is made there is a fully trained person that can cope with the patient, is that right?"* (E2IV, p28, L5-8) *"Yes."* (E2, p28, L9)

The lack of visible identification especially posed problems when agency staff or new anaesthetists entered the department as they did not know who the ODAs were and who the nurses were. Usually the onus then rested on the ODA to inform the agency staff and anaesthetist that he/she is an ODA (E8, p16, L31-33). The quote illustrates this:

"The problem comes with agency staff. They don't know, and the onus rests on the ODA to say, 'I am an ODA." (E8, p16, L31-33)

Moreover, the identity of the ODA could be discovered during an emergency situation which, apart from causing frustration among team members, could also impact negatively on patient safety. The dialogue between the interviewer and the participant illustrates:

"But that can be discovered when there is an emergency. Is that right?" (E8IV, p16, L34) "*Yes, correct, and then the frustration there, 'I thought I had someone who could help me, and now she can't'.".* (E8, p17, L1-2)

Conclusion

The data indicated awareness among all the participants of how unclear ODA identification was. The ODAs wore the same theatre garments as the nurses which made it difficult to differentiate between them. This raised the concern that the healthcare professional may assume, especially in emergency situations, a trained RN was assisting but actually it was an ODA who could not perform the same competencies as a RN.

THEME 7: OPERATING DEPARTMENT ASSISTANTS' CAREER PROSPECTS

It additionally emerged from the data that the ODAs' career path was a concern for managers, ODAs and educators. The question which arose was how being trained as an ODA would ensure they would be able to build a future professional career if their current choice of career seemed too blocked once they graduate.

Management

Some managers voiced ODAs reached a career ceiling once they graduated. If they wanted to grow/develop themselves professionally, they needed to exit the ODA profession and leave the hospital to pursue other

career paths, e.g., become an orthopaedic representative or enrol at a university to study nursing as confirmed in the group discussion:

"So what you say is that ... those who has potential cannot go further. Then they must quit as ODA and go [and] *study further?"* (MGTGr5IV, p12, L3-4) *"Yes."* (MGTGt5P2, p12, L9)

Operating department assistants and students

Two ODAs iterated the managers' viewpoint that there was no future career path for them. This realisation left some disappointed, frustrated and demoralised (ODA3, p8, L28-33; ODA6, p16, L12-15). Even if they would apply for short courses, i.e. a supervisor's course, they would be stopped at hospital level due to staff shortages. Thus, they would not be afforded the opportunity to grow and develop (ODA3, p8, L11) as the ODA stated:

"I applied for the supervisor's course ... was said to me I cannot ... it is bad for me .... no apportunity to grow..." (ODA3, p9, L2-5)

Two participants provided suggestions on how to develop themselves and their career, i.e. by enrolling in courses specialising in anaesthetic and recovery room (StGr1P1, p12, L22) or credit transfer towards a diploma in nursing which would enable them to enter a nursing career path (ODA3, p8, L19-22). Another participant suggested potential students should be fully informed about the possible career paths for ODAs and the differences between a nurse and an ODA (ODA3, p18, L20-22). It would empower novices to make an informed decision whether to enrol in the programme or not. The following quote serves as an example that there were alternatives to consider regarding a future career as an ODA:

"If they can get a short course to specialise more in anaesthesia as an ODA…" (StGr1P1, p12, L22)

Educators

Three educators suggested specialisation (after graduation) in anaesthesia or recovery room, a managerial or supervisory role in specific units, i.e. the gastroenterology unit, central sterile supply department, anaesthesia or specifically theatre (E2, p21, L26-27 & p22, L4-6; E7, p19, L19-20; E10, p19, L31 & 33). Two educators said:

"… they can do a further course in anaesthetics … or recovery…" (E10, p19, L31 & 33)

"… don't have a problem … seeing them as a supervisor in a CSSD … a gastro unit or anaesthetic department…" (E2, p22, L4-6)

According to one educator, the ODAs were already leaders in the operating department as confirmed by a very positive quote:

"… last year the ODA … the managers were all ill, so she actually took over the whole theatre.". (E7, p19, L18-20)

Conclusion

The data highlighted only a few participants mentioned the lack of a career path which seemed to be a valid point for further exploration – especially when considering the ODA programme is a new qualification offered in South Africa.

5.4.3. Integrating the explanatory framework

The IBM framework, as the second step of the third level of Carney's Ladder of Analytical Abstraction, is used in Chapter 9 to motivate the possible changes to the current anaesthetic and recovery room curriculum.

5.5. SYNTHESIS

It emerged from the data that the key feedback and problems identified revolved around particular factors within ODA education and training. These included anaesthetic and recovery room knowledge and skills, salience of the behaviour, environmental constraints and current habits of educational practice which all exerted influence on the teaching and learning of anaesthesia and recovery room assistance. The IBM framework suggests that all four of the above mentioned factors may directly affect and determine whether the competency is carried out or not (Fishbein, 2000:275; Wee *et al.,* 2016:160).

It was furthermore apparent that students and ODAs had negative views regarding their anaesthetic and recovery room education and training. This negativity was mainly ascribed to external variables such as environmental constraints, including obstructive staff, which had serious implications for their educational success. Those students who were taught, supported and guided in a positive learning environment indicated a more positive attitude towards their anaesthetic and recovery room education and training than others who were neglected as students.

Despite good intentions to assist the healthcare professional, some ODAs were apparently prevented from doing so for numerous reasons. Firstly, they were seen and utilised as scrub practitioners; secondly, they did not have all the required competencies as identified by the stakeholders in this study to perform the needed duties and demonstrate the correct behaviour; thirdly, they did not realise how important their contributions were and, in the fourth place, they found it difficult to perform particular tasks as these were not part of their existing daily routine. It therefore seemed as if the ODAs were not enabled to acquire the necessary experience as they were not involved in anaesthesia practices or recovery room situations for continuous, uninterrupted periods.

What also emerged was that while part of the anaesthetic and recovery room curriculum was for students to be allocated to the clinical environment (workplace) for exposure and experience in anaesthesia and recovery room care, the majority of students and ODAs did not think this was the case. They constantly referred to a lack of clinical experience and exposure due to various reasons which included insufficient clinical time, limited mentored supervision, no/limited clinical accompaniment by educators, inadequate role modelling, limited opportunities to assist the anaesthetists and RNs, a lack of appropriate clinical assessments, low assessment standards, and the fact that they were not seen as students but as part of 'the workforce'. All these factors could lead to a sense of low self-efficacy in ODAs. However, for a programme to be effective, all four constructs of the IBM framework must work together (Fishbein, 2000:275; Wee *et al.,* 2016:160). Thus, to enhance the effectiveness of any course it is important to employ intervention strategies that address all four components of the IBM framework.

5.6. CONCLUSION

From the interview data it became clear that although ODAs added value to the operating department it was mainly as scrub practitioners and not as AAs or RRAs. There also seemed to be inconsistencies in the anaesthetic and recovery room education and training which prevented the ODAs being employed to their full potential. Hence, it problematised the alleviation of staff shortages.

An important issue was that ODAs had to know what to do in emergencies, e.g., administering drugs and performing CPR as the anaesthetist tended to use whoever was available (or around) to assist him/her. Of further importance was that ODAs had to have in-depth knowledge of the drugs used and the management thereof to allow for better anticipation, observation and interpretation of patient data. Without these knowledge and skills they could not be employed independently as AAs.

Further there appeared inconsistencies in the education and training of ODAs in the different provinces. In some training hospitals ODAs were taught to observe and interpret the patient's vital signs whereas in others they were not taught to do it. Another inconsistency seemed to be the interpretation of the ODAs scope of practice as some were expected to work beyond the scope of practice and others were not allowed to do what was expected of them. Although the outcome of the current ODA course is to train ODAs to assist healthcare professionals, their current training prepares them only to assist the anaesthetic nurse.

In Chapter 6 the results of the curriculum-mapping as well as the data rendered by the questionnaire survey are analysed and reported on.

CHAPTER 6
CURRICULUM-MAPPING AND QUESTIONNAIRE DATA

6.1. INTRODUCTION

The main method used to obtain data was by means of structured individual, pair and focus group interviews. The participants were also requested to complete and return a brief self-administered questionnaire consisting of closed- and open-ended questions to generate more specific data related to stakeholder needs. This was done during Stage 2 (cf. Table 1.1) of the current study.

Curriculum-mapping (CM) was done on the interview data and compared to the current curriculum and study material. Harden's (2001:3) stance is that in the re-exploration of curricula, CM is a suitable tool to determine whether a curriculum is effective and if the students actually achieve the expected learning outcomes. Thus, this chapter constitutes of the data analysis using CM which considers the planned versus the received curriculum, the delivered curriculum, the hidden and null curriculum (cf. sect. 6.2) as well as an analysis of the paper-based questionnaire data (cf. sect.6.3).

6.2. CURRICULUM-MAPPING: ANALYSIS OF INTERVIEW DATA

The curriculum data are discussed according to the five types of CM options (cf. Ch. 2, sect. 2.2.2) starting with the planned and received curriculum to identify curriculum gaps. Exploring the taught, implicit (hidden) and null curricula follows thereafter. These areas – which represent eight of the 10 windows through which CM is viewed (cf. Ch. 2, sect. 2.2.2) – dealt with the expected learning outcomes; curriculum content; student assessment; learning opportunities; learning location; learning resources; timetables and staff. The first stage of the study was the needs assessment. In the second stage, the windows were 'opened', as it were, according to Kern's six steps (cf. Ch. 2, sect. 2.5.3.2) to postulate the received curriculum. In the next five sections the planned (from the findings of the curriculum material analysis) (6.2.1), the received (from managers', anaesthetists', ODAs' and students' viewpoints) (6.2.2), the taught (from the curriculum material and the educators' viewpoints) (6.2.3), the implicit (from all participants' viewpoints) (6.2.4) and the null curriculum (from all participants' viewpoints) (6.2.5) as it emerged from the curriculum documents and first round interview data, are discussed.

6.2.1. The planned curriculum

The planned curriculum constitutes the intention of the curriculum planner on competencies students must achieve (Harden, 2001:3). Hence, the content of the current anaesthetic and recovery room curriculum material was analysed to determine the planned curriculum (cf. Summary of the knowledge, skills and attitudes in Annexure L). Table 6.1 presents an alphabetical summary of the theoretical topics not necessarily coffered in the anaesthetic and recovery room modules, but included in the ODA curriculum in other modules.

Table 6.1: Summary of knowledge not in the current anaesthetic and recovery room module, but presented in other modules of the ODA programme

Content related to professional practice	Content related to patient care	Content related to anatomy, physiology, pharmacology and infection prevention and control
• Client service • Communication methods (verbal/non-verbal/listening skills) • Comprehensive history taking • Confidentiality • Conflict management • Critical thinking • Decision-making (clinical/ethics) • Ethics and legislation • Organisation, delegation and leadership principles • ODA scope of practice and role clarification • Safety standards • Principles of: - problem-solving - professionalism - professional behaviour - professional accountability - patient rights and advocacy • Teamwork • Problem-solving	• Basic patient care principles through the scientific process: - basic human needs - patient safety - admit, transfer and discharge a patient from the recovery room - nutrition and fluid therapy (incl. calculations, IV therapy) - vital signs (incl. equipment, procedure, normal values and associated abnormalities) - comfort and pain - medical conditions and management - pre- and post-operative care in the nursing unit • Blood transfusion • Closed chest drainage system • Fluid intake/output • Intravenous therapy • Medical-legal risks • Patient preparation for theatre • Patient monitoring (vital signs) • Principles of patient identification • Scientific process: perioperative care • Surgical pause of the WHO	• Basic infection prevention and control principles • Sterilisation methods/principles • Anatomy: tissues, organs and systems • Physiology and pathophysiology • Medical terminology • Pharmacology: - pharmacodynamics - pharmacokinetics - drug properties, forms and classification per body systems - drugs used in theatre - drug-handling techniques - drug calculations - legal/ethical responsibilities associated with drugs - management of drugs, incl. scheduled drugs - pull-up drugs in syringe - factors influencing a patient's response to a drug; adverse reaction - required documentation - routes of drug administration - safety issues related to administration of drugs

(Sources: Minnie, 2016; Roos, 2016a; Roos, 2016b; Roos, 2016c; Roos, 2017; Van den Berg, 2016; Van Zyl, 2012; Van Zyl, 2015; Van Zyl, 2016b; Van Zyl, 2017b; Viszolai, 2016b)

An analysis of the current anaesthetic and recovery room assessment requirements revealed the various procedures the students are assessed on (cf. Table 6.2). These procedures represent the curriculum content on competencies the ODAs are assessed on during their three-year anaesthetic and recovery room training. The skills identified with an asterisk (*) are incorporated in the anaesthetic and recovery room course whereas all the other skills are incorporated in the other modules of the operating department assistance programme. These assessments – which constitute the focus of the students' learning – include knowledge, skills, attitudes and non-technical skills relevant to the procedure (also known as expertise mapping) (Harden, 2001:7).

Harden (2001:9) views assessments as the key factor influencing what and how students learn and what educators teach. He sees it as window 3 of CM which is linked to window 9 (curriculum management).

Table 6.2: Summary of the procedures in the planned curriculum

Clinical skills in alphabetical order		
• Assess the patient's vital signs* • Assist the anaesthetist with anaesthesia for minor/ major surgical procedures under general anaesthesia for different disciplines • Apply aseptic/sterile technique principles* • Care and clean the anaesthetic equipment • Check and prepare the recovery room • Check the defibrillator and emergency trolley	• Identify the patient and check documentation prior to surgery • Perform cardiopulmonary resuscitation (BLS) • Perioperative assistance with closed chest drainage systems • Prepare for anaesthesia for: - general anaesthesia for minor and major cases/surgery - emergency surgery	• Prepare for and assist the anaesthetist with: - blood transfusion - emergency situations - insertion of invasive haemodynamic lines, incl. central venous line - insertion endotracheal tube - local anaesthesia - paediatric anaesthesia - regional blocks • Transfer and assist with positioning of a patient

(Sources: [redacted], 2016b; [redacted], 2016c; [redacted] 2016d; [redacted] 2017a; [redacted] 2017b; [redacted] 2017c; Roos, 2016a; Roos, 2016b; Roos, 2016c; Roos, 2017; Van Zyl, 2012; Van Zyl, 2015; Van Zyl, 2016b; Van Zyl, 2017b)

According to the currant anaesthetic and recovery room curriculum material, every time students prepare for anaesthesia and assist the anaesthetist, they perform specific skills (cf. Table 6.3). Thus, with each assessment on preparing for anaesthesia and assisting the anaesthetists the students are assessed on these skills which form the bulk of their required AA skills.

Table 6.3: Summary of skills performed each time the student is assessed on preparing for anaesthesia and assisting the anaesthetist

Function	Skills
Prepare for anaesthesia	**Pre-operative** • Assess and plan for anaesthesia according to the patient data (e.g., age, weight), type of procedure, type of anaesthesia and dr. preference • Check and connect the anaesthetic machine and suction unit • Check and prepare the equipment and supplies needed: ventilation, intubation and intravenous requirements • Check the availability of applicable non-invasive monitoring equipment • Check the availability of drugs (volatile anaesthetic agents, induction agents, muscle relaxants, antibiotics, scheduled drugs, reversal drugs, resuscitation drugs, local anaesthetic agents and drugs from the refrigerator) • Check the availability of emergency equipment • Check the availability of equipment and supplies for safe patient positioning
Assist the anaesthetist	**Pre-operative** • Assisting includes**:** - Identifying the patient - Checking operative consent form for legality and confirming allergies - Checking investigations/observations recorded and preparation of patient, e.g., premedication, nil per mouth status - Identifying and reporting any potential medical legal risks **Intra-operative** • Assistance with induction and maintenance of anaesthesia includes: - Assisting with safe transfer/positioning of the patient to/on the operating table - Applying applicable monitoring devices correctly - Assisting with establishing intravenous access, pre-oxygenation, intubation and patient connection to the anaesthetic machine - Applying cricoid pressure when necessary - Assisting with the safe application of warming devices - Assisting with the maintenance of intravenous lines and infusions - Accurately document fluid intake/output on fluid balance record

	- Controlling scheduled drugs, incl. drug registers • Assistance with reversal of anaesthesia includes: - Assisting with extubating a patient - Ensuring monitoring equipment is removed - Assisting with the safe transfer of the patient to the unit bed • Assistance with patient safety and comfort **Post-operative** • Clean and disinfect anaesthetic equipment perioperatively • Replace anaesthetic supplies and prepare for next patient

(Source: [redacted] 2015a:1-4; [redacted] 2015b:1-3; [redacted] 2015c:1-4)

Table 6.4 shows the affective skills and Table 6.5 the non-technical skills included in the current planned ODA curriculum. According to the curriculum documents, the following affective and non-technical skills are assessed with each assessment: problem-solving; organising and managing of activities; collecting, analysing and evaluating data; teamwork and effective communication [redacted], 2015a:4; [redacted], 2015b:3; [redacted] 2015c:4).

Table 6.4: Summary of affective skills included in the planned curriculum

Values/Attitudes/Behaviours		
• Accountable • Approachable • Conflict management • Cultural sensitivity • Entrustment	• Ethical • Friendly and courteous • Honest • Professional conduct and behaviour • Proactive	• Reassuring • Legal record-keeping • Responsible • Truthful • Apply work ethics

(Sources: Van den Berg, 2016; Van Zyl, 2012; Van Zyl, 2016b)

The non-technical skills, defined as those cognitive, social and personal resource skills which contribute to safe and efficient task performance as well as complementing technical skills (Flin *et al.,* 2008:1; Flin *et al*., 2010:38), are directly related to expertise and encompass the skills summarised in Table 6.5 (also see cf. Ch. 2, sect. 2.8.9).

Table 6.5: Summary of non-technical skills in planned curriculum

Non-technical skills		
• Teamwork • Situation awareness	• Communication, incl. information systems	• Organising • Leadership

(Sources: Van den Berg, 2016; Van Zyl, 2012; Van Zyl, 2016b)

Table 6.6 provides a summary of the time periods the students were allocated to the anaesthesia and the recovery room domain in the clinical environment during the three-year programme according to the planned curriculum. These time periods do not include the time spent in class. It is evident from Table 6.6 that the clinical anaesthetic allocation time was reduced with one week in the second and third year in 2016. This could be the reason why some participants were confused about the clinical allocation time and others opined the period spend in anaesthesia was too short (cf. Ch. 5, sub-category 5.1.3).

Table 6.6: ODA clinical allocation period per year

Policy effective date	Year 1	Year 2	Year 3
2014	• 3 weeks anaesthesia	• 4 weeks anaesthesia	• 4 weeks anaesthesia • 2 weeks recovery room
2016	• 3 weeks anaesthesia	• 3 weeks anaesthesia	• 3 weeks anaesthesia • 2 weeks recovery room

(Sources: [redacted], 2014:4; [redacted] 2016a:6)

The next four sections comprise the received, taught, implicit and null curriculum components. After analysing the interview data, it became clear there were conflicting responses from the managers, anaesthetists, ODAs and students on how they perceived the taught curriculum. Their perceptions aligned with the educator interview data in that a discrepancy existed on how the educators interpreted the planned curriculum content and what they taught the students. For example, in the one region ODAs were taught to observe and interpret vital signs data according to the planned curriculum, but in another region they were not even allowed to obtain the data and interpret vital signs (cf. Ch. 5, sub-category 3.1.1).

6.2.2. The received curriculum

The received curriculum represented the managers', anaesthetists', ODAs' and students' experience of the planned, official curriculum (cf. Ch. 2, sect. 2.2.2). A discrepancy was that the participants perceived the ODA programme as excellent from a circulating and scrub practitioner's viewpoint. However, when they gauged it from an anaesthetic and recovery room assistant's viewpoint, gaps and discrepancies were identified. The majority of stakeholders were of the opinion that too little emphasis was placed on anaesthetic assistance during emergency situations. The collective serious concern was no one knew how an ODA would react during an emergency situation. In fact, some ODAs indicated they would not be able to assist during an emergency situation (cf. Ch. 5, sub-category 1.1.1).

In the first interview round, the majority of stakeholders' perception was that the ODAs lacked the knowledge, skills and attitudes as summarised in Table 6.7.

Table 6.7: Knowledge, skills and attitudes students lacked with regard to assisting the anaesthetist and RN

Anaesthesia	Recovery room
• Assessing and interpreting vital signs • Confidence and insight • Knowledge: - of emergencies/related drugs to assist effectively - of physiology, vital signs and intubation supplies - of basic patient care and medical terminology - to check monitors - to control theatre related drugs - to prepare for anaesthesia and assist the anaesthetist • Perform cardiopulmonary resuscitation (BLS)	• Interpretation of data on the fluid balance sheet • Managing scheduled drugs and registers • Knowledge, identification and reporting of abnormalities • Knowledge and skills to assist the RN • Knowledge of vital signs, premedication and anaesthetic drugs (incl. pain drugs) • Interpretation of vital signs • Preparation of the recovery room • Self-confidence • Troubleshooting

But, according to the curriculum material analysis, those knowledge, skills and attitudes were indeed contained in the planned curriculum (cf. Annexure S, Table 5.6). It therefore appeared as if they were simply

not taught to the ODAs and/or the ODAs were not given enough clinical exposure to obtain the necessary competencies (cf. Ch. 5, sub-categories 5.1.1. & 5.1.3).

The curriculum was also perceived as skewed with too much focus on the circulating, scrub and managerial components and too little focus on the anaesthetic and recovery room components which constituted window four of CM (Harden, 2001:9). The majority of students did not have enough anaesthetic and recovery room clinical learning opportunities (cf. Ch. 5, sub-category 5.1.3) which linked to window five (learning location). There was also the perception of limited exposure and experience as well as limited mentored supervision (cf. Ch. 5, sub-categories 5.1.3 & 5.1.4) which linked to window eight of the CM. This occurred mainly due to staff shortages which had a major impact on the clinical allocation of students. The mentors were too busy to assist the students and the majority of educators only had enough time to see each student once a month in the workplace (cf. Ch. 5, sub-category 5.3.3).

Another barrier identified was that the majority of students were not allocated to the various clinical areas according to the programme timetable (cf. Table 6.6) which constituted window seven. This resulted in limited learning opportunities which were aggravated by the fact that many participants, including some educators, were not certain about the time periods the students had to spend in the different disciplines. The students' learning opportunities were also compromised due to the educators' and managers' lack of insight into the ODAs' scope of practice (cf. Ch. 5, category 3.1). For example, students were not allowed to interpret data or handle scheduled drugs, but their in-house SOP indicated they may. The majority of managers, students and ODAs expressed they did not know what an ODA was allowed to do or not to do in the anaesthetic, and especially the recovery room, department (cf. Ch. 5, sub-category 3.1.4) which, in turn, caused frustration and tension in the operating departments (cf. Ch. 5, sub-category 3.1.5).

According to some managers and ODAs, the clinical assessments (window three) were lacking, of a low standard and did not prepare the ODAs for practice (cf. Ch. 5, sub-category 5.1.5). The managers pointed out although there were set guidelines on staff responsible for student assessments (window nine), it was apparent some educators did not adhere to these guidelines. For example, student assessment is the responsibility of an educator. But what happened was that an educator would delegate the student assessment to a mentor or clinical facilitator on short notice (cf. Ch. 5, sub-category 5.3.3). Thus, the clinical facilitator or mentor assessed the student performing a procedure which the educator was supposed to do.

Learning resources (window six), which is linked to the 'learning outcomes' and 'content' windows, emerged early in the interview data. Some anaesthetists observed simulated training was needed for emergency care training (cf. Ch. 5, sub-category 1.1.3) while some students said the recommended books were not always available and the many prescribed pharmacology textbooks caused much confusion. Overall, the perception was (cf. Ch. 5, sub-category 4.1.3) that the majority of ODAs were not competent to independently assist the anaesthetist and RN.

The students' comments further indicated low self-efficacy (cf. Ch. 5, category 4.2) which could compromise their anaesthetic and recovery room training and learning. Self-efficacy (better known as confidence) towards the intended behaviour (specific skill) influences the student's perception of new skills

to be mastered (Akhtar, 2008:1; Bandura, 1994:1; Redmond, 2016:1). Students with a low self-efficacy see new skills as a threat or are scared of it as confirmed in this study. Students expressed feelings of fear, anxiety, low self-confidence and feeling unworthy which could have an effect on task choices, persistence, effort and achievement (Redmond, 2016:11). Many of the reasons provided by students show a similarity with the social cognitive theory of learning where the external learning environment plays an important role as mirrored in the implicit curriculum.

6.2.3. The taught curriculum

The taught curriculum is the programme implemented by the educator and constitutes what was taught; resources and opportunities used as well as the sequence in which the topics were offered (Harden, 2001:3). There seemed to be a discrepancy in what the educators in the various geographical regions taught their students. One such example related to vital signs. In some regions students were taught to interpret vital signs and identify abnormalities, but in other regions they were not taught this and also not allowed to interpret data as illustrated below:

"The ODA is able to connect the patient to the monitoring devices, can establish what the normal values are, can see what is abnormal, and then make a judgement and say there is something wrong with this patient…" (E61, p1, L18-21)

"*They have a lot of theoretical knowledge, but they are not allowed to interpret data. So … just looking at vital signs, they don't know what normal parameters are…"* (E8, p3, L19-21)

The educators identified ODAs lacked the following knowledge and skills:

- To assist with blood transfusion.
- To interpret ECG rhythms, readings on monitors and abnormal vital signs.
- To deal with difficult intubation, saturation dropping and cricoid pressure.
- To assist with intubation.
- To identify and handle abnormalities and complications.
- To deal with specialised anaesthesia.

The connected interpretation of the lack of these skills is twofold: the educators did not teach the knowledge and skills to the students or the students did not get the necessary exposure and experience to become competent. The next section focuses on the implicit curriculum which represents learning – especially in the clinical setting – that occurred but did not form part of the planned curriculum.

6.2.4. The implicit curriculum

The implicit curriculum constitutes the hidden and informal part of the total curriculum and is usually used interchangeably (Balmer *et al*., 2013:1140; Wear & Skillicorn, 2009:453). A major part of an implicit health science curriculum manifests in the clinical environment where the educator and clinical staff play an important role to shape the hidden curriculum which is seen as the vehicle for the teaching and learning of professionalism and 'good' practice (Bruce & Mtshali, 2017:243-244). It also reinforces the students' affective skills by means of actual experiences in the operating department (Thomas, 2009:49). An example of good practice in this study was the student who mentioned she was expected to be on duty an hour before

a theatre list commenced to prepare for anaesthesia and liaise with the anaesthetist; it could have instilled punctuality, communication with a professional and teamwork as illustrated below:

"... we had an arrangement ... if our list starts at 07:00 we had to be there an hour before the time. Then we fill up the trolley with all the medication, necessary airways, syringes and needles ... prepare everything for the theatre. Then he [anaethetist] *will come and say, 'okay, what do we have on the list?' Then he will tell me, 'listen you are aware that ths is a big procedure. I will probably do a spinal. So get your stuff ready'."* (ODA5, p4, L20-27)

It further emerged that the anaesthetic and recovery room component of the ODA programme was not deemed as an important part of the ODAs' work profile as students spent less time in the A/RRA roles than the scrub role during training (cf. Ch. 5, sub-categories 4.1.2; 4.2.3 & 5.1.3). Possible reasons for this perception included clinical assessments were neglected, students were not assessed as independent assistants and assessments were not done according to standards. The following serves as illustration:

"… [the educator] *said that she is not going to evaluate me strict because we are never left alone in with an anaesthesia case…*" (ODA3, p11, L22-26)

Other expectations which emerged from the students' interview data were that some of them were expected to perform all the skills required from a RN who assists the anaesthetist. Expectations were created that ODAs could perform skills that were not included in the planned curriculum as a result of the culture of the particular operating department where they learnt and worked. For example, ODAs were taught to administer intravenous drugs under direct supervision of a healthcare professional. After cross-checking the data with the current curriculum and study material, other skills which ODAs were expected to perform which did not form part of the planned curriculum (cf. Ch. 5, sub-category 4.1.2) are listed in Table 6.8.

Table 6.8: Identified implicit curriculum skills

Anaesthetic assistance related skills	Recovery room assistance related skills
• Administer intravenous drugs (incl. intravenous drugs into vaculiters) on the anaesthetist's request • Insert a suppository • Fill-up a syringe with a drug • Handle and change drips • Observe an intubated patient	• Receive a patient in the recovery room • Care for a patient in the recovery room under direct supervision • Observe an intubated patient • Airway management and suctioning of a patient • Extubate a patient • Hand patient over to unit staff

6.2.5. The null curriculum

The null curriculum represents the skills included in the planned curriculum which were not taught to some students (Posner, 2004:13; Quinn & Hughes, 2007:109). Skills not taught in some regions that emerged from the interview data were: (i) assisting the RN in recovery room; (ii) handling of drugs, incl. scheduled drugs; (iii) identifying and handling of abnormalities and complications; (iv) interpretation of data, incl. vital signs; (v) knowledge/skills to deal with difficult intubation, saturation dropping, cricoid pressure and (vi) knowledge and skills to deal with specialised anaesthesia.

The next section constitutes an analysis of the brief paper-based questionnaire which was completed after each interview (individual and group) session.

6.3. ANALYSIS OF QUESTIONNAIRE DATA

6.3.1. Self-administered paper-based questionnaire data procedure

A questionnaire was used to complement the interview data. The data generated was also used as guideline to compile the online Delphi questionnaire. The descriptive statistical data generated by means of the STATISTICA 13.2 software program is discussed in correspondence with the relevant questions. As mentioned before, the data were obtained from five populations (cf. Ch. 4, sect. 4.4.2.1). In this study an overall response rate of 90.1% was achieved (cf. Table 6.9).

Table 6.9: Summary of the number of questionnaires distributed and returned

Respondents	Questionnaires distributed	Questionnaires returned	Questionnaires used	Response rate per group
Managers	24	21	21	87.5%
Educators	11	11	9	100%
ODAs	7	7	7	100%
ODA students	22	20	20	90.9%
Anaesthetists	7	5	5	83.3%
Total	**71**	**64**	**62**	**90.1%**

A total of 71 participants participated in the interviews, but only 64 completed the questionnaire. Two questionnaires were discarded because of inadequate completion. Although the data were obtained from various populations, the analysis and discussion of the data will be done together and compared for similarities and discrepancies. Frequency tables, percentage tables and a pie diagram will reveal the survey findings. In the next section the analysis of all participant groups is analysed.

The following codes applied to the findings regarding the different participant datasets:

- M = Manager
- E = Educator
- A = Anaesthetist
- ODA = Operating department assistant
- ODA student = Operating department assistant student

Example:

- E1, p1 Educator, participant 1, page 1
- A3, p2 Anaesthetist, participant 3, page 2

6.3.1.1. Data analysis: All groups

The questionnaire data are analysed and discussed according to the following categories: demographic data (Category 1), competence related questions (Category 2) and a suitable time to offer anaesthetic and recovery room course and related content (Category 3).

Category 1: Demographic data: age group

The demographic data of only the ODAs and students was obtained to determine whether the maturity of the students affected their perception of competence. These participants were asked to indicate their age.

Twenty-seven ODAs and students (n=27) participated in this study of which 20 (74%) were students and the rest ODAs (26%). The majority of participants, namely 60% (n=15) were between the ages 18-25 at the time of the survey and 40% (n=10) between 26 and 35 as illustrated in Fig. 6.1. No participants were older than 35.

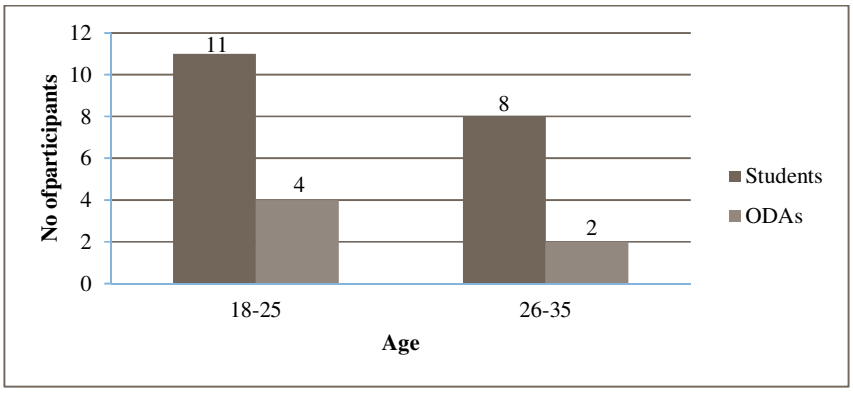

Figure 6.1: ODAs' and students' age groups

Category 2: Perceptions of operating department assistants' competence

Next, the participants were requested to indicate, on a 4-point Likert scale, the competency level of the ODAs, where 1 = 'Not competent'; 2 = 'Lack the bulk of knowledge, skills and attitudes'; 3 = 'Lack minimal knowledge, skills and attitudes' and 4 = 'Adequate knowledge, skills and attitudes'. These competencies were categorised according to their functions in the operating department as well as the functions indicated by the literature. Some did not respond to every option given, but left the block blank. The researcher did not code this data.

Preparation for anaesthesia

As shown in Fig. 6.2 the majority of participants indicated the ODAs lacked minimal knowledge, skills and attitudes with regard to the preparation for anaesthesia. The majority of managers (56%, n=10) were of the opinion at the time of the survey the ODAs were not competent to prepare for anaesthesia. Only one (6%) manager was of the opinion ODAs did have adequate knowledge to prepare for anaesthesia and 25% (n=2) of the educators shared the same opinion. On the other hand, the majority of students (60%, n=12) and ODAs (57%, n=4) indicated they only lacked minimal knowledge, skills and attitudes. It also aligned with the manager and educator respondents' views that the ODAs seemed to lack competence. The fact that students said they lacked minimal skills as opposed to the 56% managers who believed they were nor competent was a worrying factor considering some of the ODAs had graduated only eight months before.

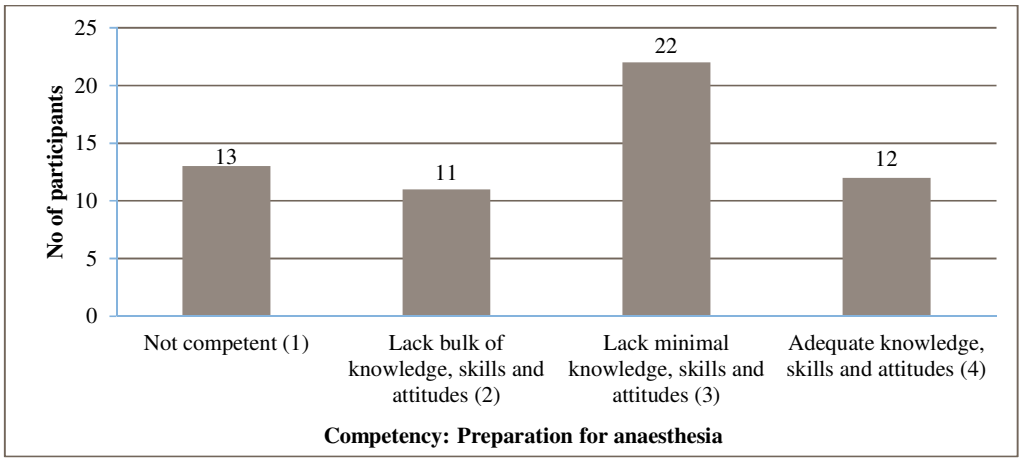

Figure 6.2: Perception of ODAs' competency level with regard to preparation for anaesthesia

Two (40%) anaesthetists opined the ODAs lacked the bulk of competencies, one (20%) indicated the ODAs lacked minimal knowledge, skills and attitudes and another two (40%) saw them as competent. The discrepancy could be an indication that the stakeholders had different views of what was expected from the ODA when preparing for anaesthesia. Many ODAs and students were of the opinion that they were competent to prepare for anaesthesia, but the managers did not share the same view.

In the comment blocks, three ODAs (ODA20, p1; ODA22, p1; ODA23, p1) and three students (student2, p1; student3, p1; student19, p1) indicated they lacked the experience and exposure to competently prepare for anaesthesia. One educator (E8, p1) confirmed by commenting the ODAs were not at all involved with preparation for anaesthesia which was a concern as one of the course outcomes was 'preparing for anaesthesia'. Of greater concern, however, was the perception of one educator (E2, p1) who noted preparing for anaesthesia and assisting the anaesthetist were not the main functions of an ODA. A student (student5, p1) stated she only felt safe if a trained anaesthetic nurse was available to mentor and assist her, should she get the anaesthetist's preferences wrong. One ODA wrote: *"To assist is not such a big challenge as is the preparation for the anaesthesia."* (ODA21, p1).

Assisting the anaesthetist with minor and major cases

The participants were asked to indicate how they perceived the competence of ODAs to assist the anaesthetist with general anaesthesia for minor and major cases. Although some respondents left these questions blank, the majority did indicate how they perceived the ODAs' competence. Twenty-two participants held the view that the ODAs 'Lack minimal knowledge, skills and attitudes' to assist the anaesthetists with *minor* cases. Four ODAs (57%) and seven students (35%) indicated they had 'Adequate knowledge, skills and attitudes' to assist the anaesthetist whereas nine (50%) managers indicated the ODAs 'Lack bulk of knowledge, skills and attitudes' required to assist the anaesthetists with minor cases (cf. Table 6.10).

Table 6.10: Perception of ODAs' assistance for minor cases

Participants	Number of participants per group	Not competent (1)	Lack bulk of knowledge, skills and attitudes (2)	Lack minimal knowledge, skills and attitudes (3)	Adequate knowledge, skills and attitudes (4)
Managers	18	22% (n=4)	50% (n=9)	22% (n=4)	20% (n=1)
Educators	9	11% (n=1)	0% (n=0)	67% (n=6)	22% (n=2)
ODAs	7	0% (n=0)	14% (n=1)	29% (n=2)	57% (n=4)
Students	20	0% (n=0)	25% (n=5)	40% (n=8)	35% (n=7)
Anaesthetists	5	0% (n=0)	40% (n=2)	40% (n=2)	20% (n=1)

- *Note: The summary was made per individual participant groups. The researcher is aware that the indicated percentages, due to the small number of participants per group, could be misleading*

Four (22%) managers and one (11%) educator agreed that the ODAs were 'Not competent' to assist with minor cases whereas none of the students or ODAs believed they were 'Not competent'. It was a concern that only four (57%) ODAs thought they were competent to assist the anaesthetist with minor cases (cf. Table 6.10). A possible explanation for the students' perception of their lack of competence is that they were still busy with the course at the time of this survey. A few indicated (ODA student3, p1; ODA20, p1; ODA student19, p1) in the written feedback that they lacked clinical exposure and experience in the workplace.

When asked to indicate how they perceived the competence of ODAs to assist the anaesthetist with *major cases*, 21 participants indicated the ODAs lacked minimal knowledge, skills and attitudes and 20 were of the opinion the ODAs did lack the bulk of knowledge, skills and attitudes (cf. Table 6.11). Only 13 participants indicated the ODAs had 'Adequate knowledge, skills and attitudes' to assist with major cases.

Table 6.11: Perception of ODAs' assistance for major cases

Participants	Number of participants per group	Not competent (1)	Lack bulk of knowledge, skills and attitudes (2)	Lack minimal knowledge, skills and attitudes (3)	Adequate knowledge, skills and attitudes (4)
Managers	18	0% (n=0)	44% (n=8)	44% (n=8)	11% (n=2)
Educators	9	11% (n=1)	11% (n=1)	44% (n=4)	33% (n=3)
ODAs	7	14% (n=1)	14% (n=1)	43% (n=3)	29% (n=2)
Students	20	5% (n=1)	45% (n=9)	25% (n=5)	25% (n=5)
Anaesthetists	5	40% (n=2)	20% (n=1)	20% (n=1)	20% (n=1)

- *Note: The summary was made per individual participant groups. The researcher is aware that these percentages, due to the small number of participants per group, could be misleading*

Ten (50%) of the students were of the opinion they were 'Not competent' or lacked the bulk of the knowledge, skills and attitudes Possible reasons could be that: (i) they were still in training and had not yet completed their anaesthetic and recovery room course when the research was done from August to September 2017 and (ii) that they were not exposed to regional blocks and assisting the anaesthetist with major cases. Two (40%) of the anaesthetists also perceived the ODAs as 'Not competent'. Three (43%) ODAs indicated they 'Lack minimal knowledge, skills and attitudes' while two (29%) ODAs were of the opinion they had 'Adequate knowledge, skills and attitudes' to assist the anaesthetist with major cases (cf. Table 6.11).

Although an equal number of participants were of the opinion the ODAs were not competent to assist with minor or major cases (cf. Fig. 6.3), the participant group opinions differed. It was mostly the managers and one educator who indicated the ODAs were not competent to assist with minor cases. As concerns the major cases, an educator, one ODA, one student and two anaesthetists agreed that the ODAs were not competent to assist with major cases.

A comparison between the overall view of the ODAs' competence to assist the anaesthetists with *minor* and *major cases* showed more participants (n=37) were of the opinion that the ODAs only lacked the minimal knowledge, skills and attitudes and were competent to assist the anaesthetist with *minor cases* whereas 34 participants were of the opinion the ODAs lacked the minimal knowledge, skills and attitudes or were competent to assist the anaesthetist with *major cases* (cf. Fig. 6.3). The numbers correlated with the participants' perception where more indicated the ODAs lacked the bulk of knowledge, skills and attitudes to assist with major cases (n=20) than with minor cases (n=17) (cf. Fig. 6.3).

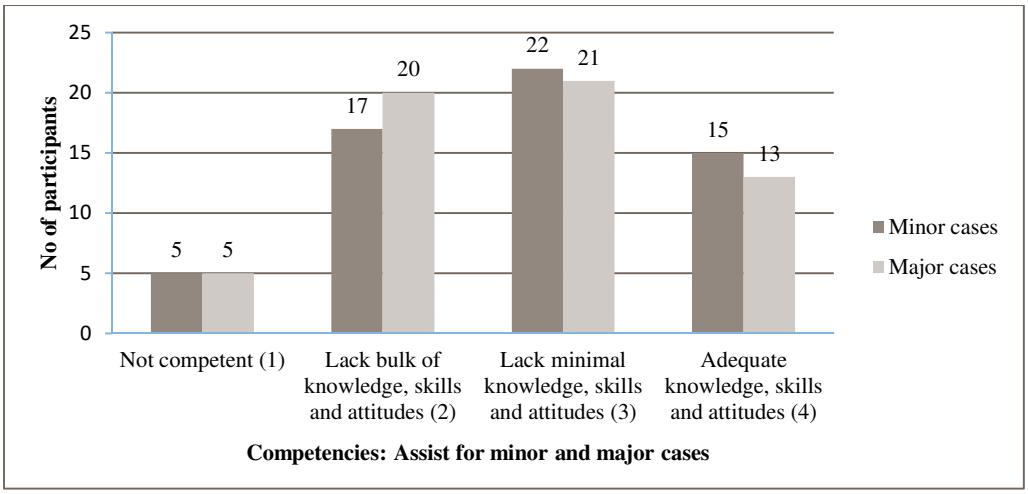

Figure 6.3: Participants' views of ODA competence to assist the anaesthetist with minor and major cases

In the written feedback five students (student2, p1; student2, p1; student4, p1; student19, p1; student20, p1) and two ODAs (ODA16, p1; ODA22, p1) indicated they lacked exposure and experience in assisting the anaesthetist during minor and major cases. This was confirmed by two educators (E3, p1; E6, p1) who noted the anaesthetic rotation during the programme was much too short. One participant (student15, p1) stated he/she never had the opportunity to apply the anaesthetic theory in practice. Another participant (ODA16, p1) wrote "… *it's only a few times that I've been allocated to assist with anaesthesia for minor procedure"*. The same participant reflected that he/she had more exposure to major cases and thus felt he/she only lacked minimal skills to assist the anaesthetist during major cases: "… *had to assist the anaesthetic team in a number of occasions due to more opportunity to assist as there's lot to be done …"* (ODA16, p1). Six managers (M4, p1; M6, p1; M7, p1; M8, p1; M9, p1; M21, p1) noted the ODAs lacked exposure with one stating this was due to them (ODAs) only observing and not assisting (M6, p1). Another manager (M18, p1) maintained the ODAs were competent after completion of training but still had to work under supervision. No reason was given for this remark.

Assisting registered nurses in the recovery room

Next, the participants were asked to indicate the competence of ODAs in assisting RNs in the recovery room. According to the results, the majority of participants which totaled 37 (13 managers, five educators, five ODAs, 12 students and two anaesthetists) indicated the ODAs only lacked the minimal knowledge, skills and attitudes or were competent. None of the anesthetists perceived the ODAs as 'Not competent'. The reason for this may be that they only saw the ODAs when patients were handed over to the recovery room staff and not while they worked in the recovery room assisting the RN. Once the anaesthetist handed the patient over to the recovery room RN, she/he returned to the operating room to care for the next patient scheduled on the operating list. Overall the response (cf. Table 6.12) reflected the ODAs lacked minimal skills or were viewed as competent to assist the recovery room staff.

Table 6.12: Perception of ODAs' competence to assist in the recovery room

Participants	Number of participants	Not competent (1)	Lack bulk of knowledge, skills and attitudes (2)	Lack minimal knowledge, skills and attitudes (3)	Adequate knowledge, skills and attitudes (4)
Managers	17	12% (n=2)	12% (n=2)	65% (n=11)	12% (n=2)
Educators	8	25% (n=2)	13% (n=1)	38% (n=3)	25% (n=2)
ODAs	7	0% (n=0)	29% (n=2)	57% (n=4)	14% (n=1)
Students	20	5% (n=1)	35% (n=7)	35% (n=7)	25% (n=5)
Anaesthetists	3	0% (n=0)	33% (n=1)	67% (n=2)	0% (n=0)

- *Note: The summary was made per individual participants groups. The researcher is aware that these percentages, due to the small number of participants per group, could be misleading*

In the comments blocks, one anaesthetist (A3, p1) stated he/she viewed ODAs as *"not adequately trained for anaesthesia and recovery"* and *"not at all competent"*. Two students (student3, p2; student15, p2) and one ODA (ODA23, p2) indicated it was due to the lack of clinical exposure and experience. Three educators (E6, p1; E7, p1; E11, p1) noted ODAs lacked experience and exposure due to the short rotation period which was much too limited. One educator (E1, p1) was of the opinion ODAs were unable to assist the RN due to their inability to assess the patient as they did not have a nursing qualification. Two educators (E6, p1; E9, p1) perceived ODAs competent to function in the recovery room, but they [ODAs] lacked ongoing exposure to stay competent in this area.

Two managers (M7, p1; M8, p1) commented the ODAs did assist the RNs whereas one (M5, p1) opined the ODAs were preferably used in the scrub role and not in the recovery room. However, one manager indicated the ODAs lacked knowledge and confidence to work in the recovery room (M11, p1) and another felt the ODAs did show a keenness to work in this area (M12, p1). Three managers (M4, p1; M20, p1; M21, p1) indicated the ODAs lacked nursing skills – an issue which also emerged during the interviews analysis (cf. Ch. 5, cub-category 4.2.4) and thus observation skills while another (M9, p1) commented the ODAs lacked the knowledge and skills to recover a patient. In fact, it was not the intention of the current curriculum to teach ODAs to recover patients which indicated the manager's lack of insight into the ODAs' anaesthetic and recovery room curriculum and work profile.

Category 3: A longitudinal or a concentrated and condensed anaesthetic and recovery room course

The respondents were asked to indicate whether they preferred a longitudinal (spread over the three years of the ODA programme) or concentrated and condensed 6-month anaesthetic and recovery room course. Not all the participants completed this question and some preferred both systems. The majority of students (n=14) opted for the block system which corresponded with the literature that students favour the condensed system (Wisdom *et al*., 1993:S34-36). Four ODAs, seven managers and three anaesthetists also preferred the block system. However, the higher response rate of the managers (n=11) indicated they preferred a longitudinal system which means three managers did not favour any system. Then again, two ODAs and one student favoured both systems (cf. Fig. 6.4). Furthermore, all the educators (n=8) indicated the longitudinal system (with one not favouring any of the systems). This corresponded with the literature that faculty prefers the longitudinal system (Wisdom *et al.*, 1993:S34-36).

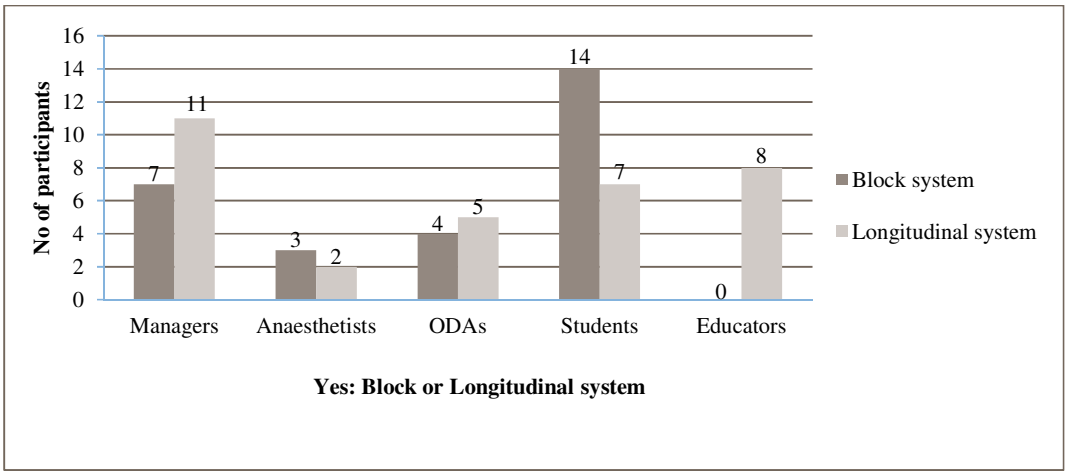

Figure 6.4: Participant choice of block or longitudinal system

Overall, 28 respondents favoured the block system and 33 chose the longitudinal system (cf. Fig. 6.4) which indicate an obvious mixed response. The literature review in this study (cf. Ch. 2, sect. 2.8.10.1) reflected the ongoing debate regarding the use of a longitudinal or condensed concentrated course for healthcare education and training as each of these options have different advantages and disadvantages (Kurth *et al*., 2001:327).

Next, the respondents who chose the condensed concentrated system were asked to indicate in which year of the programme the anaesthetic and recovery room course should be offered. One did not indicate a specific year, but three (11%) respondents specified the first year of study, 12 (44%) the second year and 12 (44%) the third year (cf. Fig. 6.5). Nine ODAs/students chose the second year and seven the third year of study.

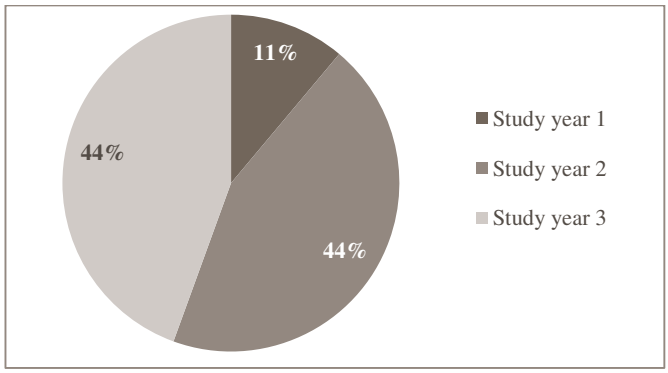

Figure 6.5: Participants' preferred choice of study year for the block system

- *Note: The researcher is aware the percentages due to the small number of participants could be misleading*

The respondents who chose the longitudinal system were asked to list the content areas which could be taught in each year (cf. Table 6.13).

Table 6.13: Summary of content areas to be included per study year

Year 1	Year 2	Year 3
• Preparation for general, spinal and epidural anaesthesia (incl. basics) • Setting-up the anaesthetic machine • Knowledge of gases/equipment • Knowledge of oxygen and ventilation mask • Basic life support • Anatomy • Physiology of anaesthesia, dangers and complications • Abnormal vital signs • Basic pharmacology (incl. anaesthetic drugs) – side effects and affects • Role of the AA • Assisting the anaesthetist with minor cases • Recovery room: basic layout, emergency trolley and equipment • Preparing the recovery for patients (various types of procedures/surgery) • Taking care of patients who had regional anaesthesia • Physiological monitoring of patient in the theatre and the recovery room • Patient privacy and safety • Communication • Medical-legal risks • Legal record-keeping	• Assisting/supporting the anaesthetist • Pharmacology – more specific to drugs used in the theatre • Emergency trolley, incl. drugs • Airway management • Anatomy/physiology (specific to anaesthesia and patients with special needs) • Assisting the anaesthetist with uncomplicated general and regional anaesthesia – minor cases • Preparing/assisting with complicated cases (incl. IV lines) • Various anaesthetic techniques (incl. effects, where and how it is used) • Preparing for various anaesthetic techniques and taking care of the patient • Intravenous access • Airway management (incl. difficult intubation) • Basic life support • Assisting the RN with receiving and monitoring of patients in the recovery room • Recovering of patients who had general anaesthesia for minor surgery/procedures • Stages of recovery for various anaesthetic techniques • Patient assessment • Signs and symptoms of anaesthetic related complications, e.g., laryngospasm • Handover of patient to unit staff • Legislation and record-keeping	• Assisting the anaesthetist with general, spinal and block anaesthesia • Preparing for and assisting with major cases (incl. central and A-lines) • Pharmacology (incl. resuscitation drugs and specific drugs used in anaesthesia) • Patient intubation and extubation • Basic and advanced cardiac life support • Anaesthetic-related complications (incl. identifying it) • Recovery room: recognise complications, report and summon help • Work independently under indirect supervision in the recovery room • Recover a patient who had major anaesthesia (incl. paediatric, ENT, neurosurgery/cases) • Expected vital signs post-anaesthesia • Drugs (affects and side effects) • Ordering/controlling scheduled drugs • Assisting with intubation and emergency situations in the recovery room • Patient discharge criteria • Professional behaviour and ethics • Teamwork • Record-keeping • Patient safety

The topics above were compared to the data generated by the analysis of the qualitative data. This was repackaged and grouped into Level 2 to ensure that a comprehensive Delphi list (cf. Ch. 7) was compiled.

6.4. CONCLUSION

From the curriculum-mapping interview data some discrepancies were noted with regard to how the planned curriculum was interpreted and taught by the educators. From the viewpoint of the participants in the study, certain skills were not taught or were lacking. This primarily pointed to limited insights into the scope of practice of the ODA. What also emerged early in the data analysis phase was that some ODAs were taught psychomotor skills which were indeed not included in the planned curriculum, e.g., extubating a patient and the administration of intravenous drugs.

The 62 participants whose questionnaire data were analysed constituted a small sample size and thus resulted in the lack of a meaningful descriptive statistical analysis. Overall, however, the data revealed students who graduated were not considered competent to fulfil their anaesthetic and recovery room functions. This result corresponded with the interview data. As regards the type of training system to be used, an almost equal number of respondents chose the longitudinal and the condensed block system. The fact that most ODAs were not seen as competent to assist the anaesthetist and RN, as expressed by the majority of participants in the study, might be due to several reasons. These include a lack of knowledge and skills, a lack of commitment, a lack of intention to demonstrate appropriate behaviours, a lack of habit as well as environmental constraints. All these factors seemed to influence the ODA students' ability to achieve competence.

The data reported on in Chapter 5 and 6 were used to compile an online Delphi questionnaire. The Delphi questionnaire, as well as the data reported is discussed in Chapter 7.

CHAPTER 7
DELPHI EXERCISE: DATA ANALYSIS AND DISCUSSION

7.1. INTRODUCTION

In this chapter, which represents Stage 3 of the study, the results of the Delphi exercise based on the findings of Stages 1 and 2 (cf. Table 1.1) of the current study are analysed and a brief discussion provided.

7.2. PARTICIPANT SELECTION

Seventeen participants (seven managers, two ODAs and eight educators) participated in the Delphi exercise. They were selected owing to their knowledge of anaesthesia and recovery room care and each held either a Diploma in Operating Room Nursing or a Diploma in Operating Department Assistance which both include an anaesthetic and recovery room component. The aim with the Delphi technique was to obtain consensus on the knowledge, skills, attitudes and non-technical skills ODAs require to not only enter the workforce, but also to enable them to assist the anaesthetist and RN. The researcher would have preferred a bigger sample size, but only 17 (32%) of the 53 invited participants agreed to participate. This was in line with literature on the sample size of a Delphi exercise and reflective of the genuine population as explained in Chapter 4, sect. 4.4.3.2. It is important to take note that the results obtained were specific to the 17 participants as representatives of the panel of experts (Keeney *et al.,* 2011:92).

7.3. PROCESS FOLLOWED

In Stage 3 of this study (cf. Table 1.1) an online Delphi exercise which comprised of three rounds was executed.

7.3.1. Round 1

The data derived from Stage 1 (literature) and Stage 2 (stakeholders' needs) formed the basis of Round 1 of the Delphi questionnaire (cf. Ch. 4, sect. 4.4.3 & Annexure G) (Keeney *et al.*, 2011:119). The questionnaire was divided into eight sections: (i) sequencing of the ODA curriculum; (ii) ODA career path; (iii) AA knowledge and skills; (iv) RRA knowledge and skills; (v) emergency situation assistance knowledge and skills; (vi) pharmacology knowledge and skills; (vii) affective skills (values, attitudes, behaviours and beliefs) and (viii) non-technical skills. The last four sections were classified according to the knowledge and skills needed by both an AA and a RRA. Each section provided space for panel members to provide qualitative feedback or to clarify the meaning of a statement (Mash *et al.,* 2006:14a).

An electronic questionnaire was sent via a link, provided by the EvaSys evaluation system administrator, to the participants for completion. They had to indicate the importance of the particular knowledge, skill, attitude and non-technical skill as well as the sequence of the ODA curriculum and possible career opportunities for ODAs on a 4-point Likert scale.

The same Likert scale was employed as follows:

- 1 = a topic the respondent strongly disagreed with and which should not be included in the curriculum.
- 2 = a topic the respondent disagreed with and should not be included in the curriculum.
- 3 = a topic the respondent agreed with and should be included in the curriculum.
- 4 = a topic the respondent strongly agreed with and should be included in the curriculum.

Accordingly, scale points 3 and 4 indicated the skill that should be included in the anaesthetic and recovery room curriculum. Participants were reminded to complete the questionnaire within a week. After the first week only six (35%) responses were received. The participants were again reminded via an email to complete the questionnaire. Within a week-and-a-half a total of 13 (76%) of the 17 respondents returned their completed the questionnaires. Another email was sent prompting the participants and two days later all participants (100%) had completed the questionnaire. After a two-week period the EvaSys evaluation system administrator was able to close the system for the first round of the Delphi exercise. All ratings of the first round were analysed and the distribution of each element was presented as a percentage, mean and standard deviation. Applying the 70% consensus level, the responses were analysed to determine those on which consensus had been reached. Important, however, is to note the consensus level was determined prior to Round 1. The statements which did not reach this level were included in the Round 2 questionnaire. Comments were also analysed and questions rephrased (cf. Table 7.1) in cases of ambiguity. Eight additional statements (cf. Table 7.2) were added after Round 1 to the Round 2 questionnaire as a response to the respondents' comments.

Table 7.1: Wording changes

	Before Round 1	After Round 1
Sequencing of the ODA curriculum	Concentrated on continuous 6-month anaesthetic and recovery room module	Concentrated on continuous 6-month anaesthetic & recovery room module presented as part of the ODA programme
	Anaesthetic and recovery room module: 2nd year	Anaesthetic and recovery room 6-month module only presented in 2nd year *OR*
	Anaesthetic and recovery room module: 3rd year	Anaesthetic and recover room 6-month module only presented in 3rd year *OR*
	Anaesthetic and recovery room module: last 3 months of 2nd yr. and first 3 months of 3rd yr	Anaesthetic and recovery room 6-month module presented during the last 3 months of 2nd year and spilling over to first 3 months of 3rd year
ODA career path	Advanced anaesthesia: complete Diploma in Nursing (by means of credit transfer) and anaesthetic short course	To provide advanced anaesthesia assistance: after ODA graduation complete the Diploma in Nursing (by means of credit transfer) and then an anaesthetic short course
	To work full-time in recovery room complete the Diploma in Nursing (by means of credit transfer) and post-anaesthetic care CPD course	To work full-time in recovery room: after ODA graduation complete the Diploma in Nursing (by means of credit transfer) and then a post-anaesthetic care (recovery room) CPD course
	Manage an operating department: complete Diploma in Nursing (by means of credit transfer) and postgraduate management course	To manage an operating department: after ODA graduation complete an undergraduate Diploma in Nursing (by means of credit transfer) and then a postgraduate management course

The eight additional statements added after Round 1 to the Round 2 questionnaire as a response to the respondents' comments are shown in Table 7.2.

Table 7.2: Additional statements added to Round 2 questionnaire

Content area	Statements added
Sequencing of the ODA curriculum	• Anaesthetic and recovery room module must be presented over the three years as currently offered (year 1: prepare for general minor anaesthesia; year 2: assist the anaesthetist for minor surgery; year 3: prepare for major surgery, assist the anaesthetist with spinal/epidural anaesthesia and assist the RN in the recovery room) • First year: year-end competent as circulator • Second year: year-end competent as scrub practitioner • Third year: year-end competent as advanced scrub practitioner to scrub, e.g., for vascular, joint replacements *AND* • Third year: year-end competent as CSSD supervisor (professional practice module) *AND* • Third year: year-end competent as anaesthetic and recovery room assistant
ODA career path	• To provide advanced anaesthesia assistance: after ODA graduation complete a Diploma in Nursing (by means of credit transfer) and then an anaesthetic short course • To manage an operating department: after ODA graduation complete a postgraduate management course

7.3.2. Round 2

Round 2 questionnaires were constructed taking into consideration the results of Round 1. The new statements as well as those on which consensus were not obtained during Round 1 formed the basis of the Round 2 questionnaire (Stefan, 2010:71; Tonni & Oliver, 2013:e175; Mash *et al*., 2006:14b). All the statements related to the sequencing of the ODA curriculum and career path – even those on which consensus was reached – were included in the Round 2 questionnaire owing to the new statements which were added. This was done to give the respondents an opportunity to reconsider their choices in light of the new statements added.

The EvaSys evaluation system online link was sent to the same panel members for completion. Once again they had to indicate their vote on the 4-point Likert scale as previously indicated (cf. sect. 7.3.1). The panellists were informed about the distribution of the scores where consensus had not been reached during the first round (cf. Annexure I). They were instructed to reconsider the responses presented and proceed to comment in the same way as in the first round. All 17 (N=17) participants who were invited to participate completed the second round questionnaire. Thus, once again a 100% response rate was achieved. Applying a 70% consensus level meant the responses which did not reach this level were included in the Round 3 questionnaire.

7.3.3. Round 3

The statements for which consensus was not achieved in Round 2 were included in the Round 3 questionnaire to provide the panel with an opportunity to vote again (cf. Annexure I). The EvaSys evaluation system online link was sent to the same 17 panel members for completion. After a one-week time lapse the EvaSys evaluation system administrator was able to close the third round. All seventeen (100%) participants completed the questionnaire which does not usually happen as illustrated in other studies where the Delphi technique was used (Aigbavboa, 2015:5; De Villiers *et al*., 2005:641; Mash *et al*., 2006:14e; Miles-Tapping, Dyck, Brunham, Simpson & Barber, 1990:450; Tolsgaard *et al*., 2013:2). McKenna (1994:1224) confirms

that a limitation of the Delphi technique is the poor response rate of the panellists. A possible reason for the 100% return in Round 3 of the current study may be that all panellists were involved with and concerned about ODA education and training in the operating department and were hopeful that this study would contribute to better outcomes for all stakeholders including the patients and the hospitals. Another possible reason may be that the researcher of the current study was known to the majority of the panellists (McKenna, 1994:1224).

Feedback on all three questionnaires was provided by the EvaSys evaluation system administrator in PDF format after the mean, standard deviation and percentage per statement were calculated. The findings of each Delphi round were analysed separately and the statements which had consensus were ranked according to level of importance (the mean).

The panel members did not know who the other members were and feedback after each round was given anonymously. All the data were collected by the EvaSys evaluation system administrator and forwarded anonymously to the researcher to avoid bias and preconceptions in the interpretation of the findings (Mash *et al*., 2006:14b).

The Delphi process was discontinued after Round 3 as stability was reached (Stefan, 2010:63; Waters *et al*., 2014:5) with regard to the two statements which did not reach a positive or negative 70% level of agreement. There was little change from the previous rounds (Stefan, 2010:63) and similar scores were obtained from the 17 respondents in all three rounds (Polit & Beck, 2012:331).

7.4. RESULTS

Although there is no general agreement in the literature that defines when consensus has been reached in a Delphi exercise, researchers Holey, Feeley, Dixon and Whittaker (2007:2) suggest consensus is the same as agreement which can be determined in many ways and by using various methods. Some researchers use a single element, i.e. an agreement percentage (Asselin & Harper, 2014:13; McKenna, 1994:1223), whereas others additionally use the SD (which should be less than 1.5) (Christie & Barela, 2005:112) and the interquartile range (which should be less than 1.0) (Rayens & Hahn, 2000:311) to assess consensus. In their studies De Villiers *et al*. (2005:641) and Jones, Day and Quadri-Felitti (2013:720) utilised the mean and SD to assess consensus while other researchers used other combinations. For instance, Holey *et al.* (2007:1) used the agreement percentages, importance rankings, amount of comments per statement and Kappa values. However, Keeney *et al*. (2011:84 & 89-93) suggest using the agreement percentage of response per statement to determine consensus and the mean to rank the importance of statements. These methods were adopted for the current study to present the information concerning the collective judgments of the 17 respondents.

The same statistical analysis and feedback methods as used by Botha (2015:96) and Stefan (2010:96-97) in their Delphi studies were employed. Hence, in the current study agreement was reached if more than 70% of responses indicated ‘Agree’ or ‘Not agree’ whereas the mean was used to rank the statements in order of importance.

The abbreviations used in the simple descriptive statistics in the study were as follows:

- '*M*': indicates the mean of each statement used to rank the statements in order of importance (Keeney *et al*., 2011:90)
- 'SD': is how much the average score of each item deviated from the mean (Polit & Beck, 2006:358)

The following codes and colour codes were used to indicate the rating of the skills and when consensus was reached.

'R'1…4 Rating of the importance of the skill

Round 1 consensus reached

Round 2 consensus reached

Round 3 consensus reached

7.4.1. Analysis and brief discussion of results

The following data are analysed and briefly discussed below. The participants' biographical data (cf. sect. 7.4.1.1); the sequencing of the ODA curriculum and ODA career path (cf. sect. 7.4.1.2); the anaesthetic assistant knowledge and skills (cf. sect. 7.4.1.3); the recovery room assistant knowledge and skills (cf. sect. 7.4.1.4); emergency situation assistance (cf. sect.7.4.1.5); the pharmacology within the operating department knowledge and skills (cf. sect. 7.4.1.6); the affective skills (cf. sect. 7.4.1.7) and the non-technical skills (cf. sect. 7.4.1.8).

7.4.1.1. Biographical data of panel members

The respondents were asked to indicate their professional position if they held a Diploma in Operating Room Nursing Science or a Diploma in ODA qualification. All participants (*N*=17) completed the first round questionnaire. Thus, a 100% response rate was achieved.

Current position held by respondents

Feedback from the respondents indicated they held the following positions: Eight (47%) were educators at the time of the survey, two (12%) were ODAs and seven (41%) were managers (cf. Fig. 7.1).

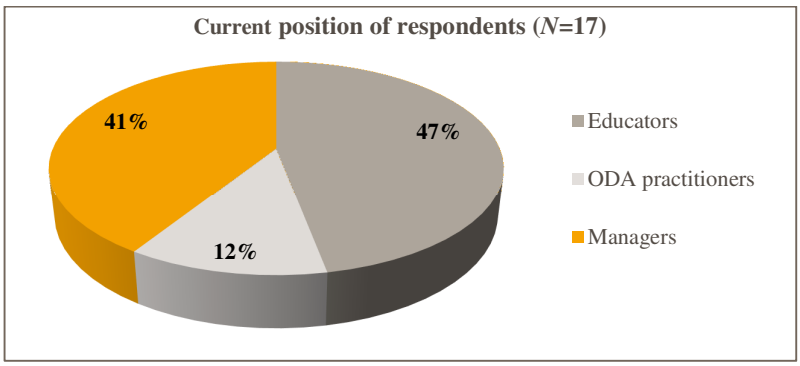

Figure 7.1: Position held by the respondents at the time of the Delphi exercise

The managers held the following positions at the time: one theatre unit manager, two deputy theatre nursing managers, one nursing manager, one operating theatre clinical facilitator, one regional clinical manager and one clinical quality specialist in the operating department.

Qualifications of respondents

Fifteen (n=15) respondents held a postgraduate qualification or a diploma in Operating Room Nursing Science and two (n=2) a Diploma in Operating Department Assistance at the time of the exercise. The fact that all respondents held an operating department qualification and were working in the operating department (or had previously worked there) was considered a valuable contribution due to their knowledge and expertise of operating department science.

Years of experience in the operating department

The respondents' operating department experience ranged between zero (0) and 25 years or longer (cf. Fig. 7.2). Two (11.8%) respondents had between zero (0) and 5 years' experience, three (17.6%) between 11 and 15 years and another three (18%) had between 16 and 20 years' experience. Two (17.6%) respondents had between 21 and 25 years' experience. The majority of respondents (n=7; 41.1%) had had experience in the operating department for 25 years or longer.

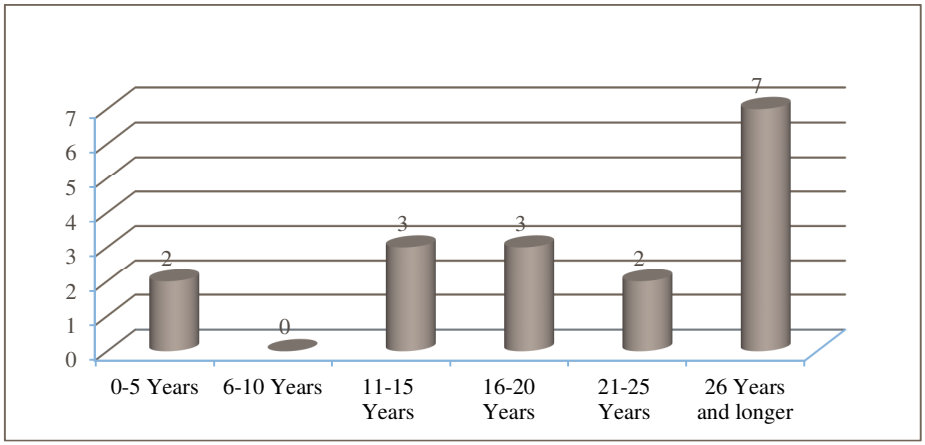

Figure 7.2: Years' experience of Delphi participants

From these results it was clear the majority of respondents had on average more than 11 years' experience in the operating department. This range of years' experience implied the respondents had sufficient experience of perioperative patient care. It could therefore be claimed that they were experts in their field.

In the following section feedback from the respondents regarding the content areas to be included in the anaesthetic and recovery room curriculum are addressed. It is important to mention that this study used a relatively small sample size as only 17 of the 53 invitees were willing to participate. Additionally, although the small size corresponded to the sample size used by many other researchers (Aigbavboa, 2015:8; Choi *et al*., 2012:27; Dalkey & Helmer, 1963:460; Vernon, 2009:71), the results were treated with caution. Aigbavoa (2015:5) sent out 55 invitations but only 17 invitees responded to the invitation. Thus, it is not uncommon for Delphi studies to use a small sample size.

7.4.1.2. Sequencing of ODA curriculum and career path

A summary statistics was run on the data to determine the number of statements that reached consensus (Keeney *et al.*, 2011:77) on whether to offer a 6-month condensed anaesthetic and recovery room (and in which year of study to offer it) or a longitudinal course over three years. Consensus was reached in Round 2 (cf. Table 7.3) that the anaesthetic and recovery room module should be presented as a longitudinal system over the three-year period.

Table 7.3: Sequencing of the ODA curriculum

Sequencing of the ODA curriculum statements	*M* (SD)	*N*=17	% agreement
Anaesthetic and recovery room module must be presented over the three years as currently offered (year 1: prepare for general minor anaesthesia; year 2: assist the anaesthetist for minor surgery; year 3: prepare for major surgery, assist the anaesthetist with spinal/epidural anaesthesia and assist the RN in the recovery room)	2.9 (1)	17	70.6

The comments by the respondents to motivate their choice of system are summarised in one representative statement: "*This will enable the learner to integrate and build their knowledge and skills over a three year period... You only become knowledgeable with experience gained.*" (Round 2 report, p2)

Five questions which related to the sequencing of the ODA curriculum were added to the second Delphi questionnaire (cf. Table 7.4). This was done to obtain consensus on the sequencing of the ODAs' circulatory, scrub, AA, RRA and CSSD supervisory competence throughout the three-year programme should the longitudinal system reach 70% agreement as the chosen system. The additional questions were used to clarify the sequence of the ODA programme and to determine how the competencies should build onto each other and how the summative clinical examinations should be scheduled. Consensus was obtained on all five statements (cf. Table 7.4).

Table 7.4: Sequencing of ODA competence over the three-year period

Operating department assistant competence	*M* (SD)	*N*=17	% agreement
First year: year-end competent as circulator	3.8 (0.4)	17	100
Second year: year-end competent as scrub practitioner	3.8 (0.4)	17	100
Third year: year-end competent as advanced scrub practitioner to scrub for, e.g., vascular, joint replacements *AND*	3.6 (0.6)	17	94.1
Third year: year-end competent as CSSD supervisor (professional practice module) *AND*	3.5 (0.9)	17	88.2
Third year: year-end competent as anaesthetic and recovery room assistant	3.3 (1.1)	16	81.2

One respondent queried one statement by affirming that although she/he supervised the central sterilisation supply department (CSSD) staff while the post was vacant, she/he was not allowed to apply for the post due to the nursing qualification that was required as follows:

"I myself have been supervising our CSSD because the SPN had resigned and there was nobody to do the job but then when I wanted to apply for the job I got told that I could not because I am not a registered nurse and I felt that it was very unfair because I was doing everything that the SPN was doing." (Round 2 report, p4)

Another respondent noted for an ODA to progress to a supervisor's position in the hospital environment management would have to change their mindset to embrace the ODAs as future supervisors:

"For ODAs to advance to supervisor posts hospital managers, nursing managers and Human Resources Managers would have to change the way they think and embrace the fact that our qualified ODAs are competent to lead and organize." (Round 2 report, p4)

The above statements indicate that although the ODAs were trained to fulfil supervisory and managerial posts, clear communication was required. This meant ODAs were trained to fulfil supervisory roles but a mindset change was needed among policymakers to accept and understand ODAs could be appointed in managerial positions.

Next, the respondents were asked to indicate possible career paths for the ODA practitioner as it was one of the themes which emerged from the interview data during Stage 2 of the current study. Because some participants commented in Round 1 that ODAs should be able to advance in their career without a nursing qualification, all the options of Round 1 were included in Round 2 and rephrased to prevent misinterpretation. Two further questions were added which did not include a nursing qualification as requirement. Consensus was reached on four statements with a percentage of 81.2% and beyond (cf. Table 7.5).

Table 7.5: Possible career paths for ODAs

Possible career paths for ODAs	*M* (SD)	*N*=17	% agreement
To provide advanced anaesthesia assistance: after ODA graduation do an anaesthetic short course	3.4 (0.8)	16	81.2
To work full-time in recovery room: after ODA graduation complete the Diploma in Nursing (by means of credit transfer) and then a post-anaesthetic care (recovery room) CPD course	3.4 (0.8)	16	81.2
To fulfil senior ODA practitioner position (which is equivalent to SNP role) to focus on the administration aspect and mentoring/coaching of staff in the operating department: Diploma in Operating Department Assistance	3.8 (0.4)	16	100
To manage an operating department: after ODA graduation complete a postgraduate management course	3.5 (0.9)	15	86.6

The comments from the respondents supported the choices they made. The majority of respondents (81.2%) agreed that for an ODA to provide advanced anaesthetic care after graduation (highlighted in light blue) they did not need a nursing qualification but needed to enrol in an anaesthetic short course. On the second topic (highlighted in orange) 86.6% respondents agreed that an ODA could progress to an operating department managers' post after completing a postgraduate management course and therefore did not need a nursing qualification. Eighty-one per cent of respondents did, however, agree a diploma in nursing was necessary to work full-time in the recovery room.

7.4.1.3. Anaesthetic assistant knowledge and skills

In this section the knowledge (cognitive skills) and skills (psychomotor skills) required by an AA are addressed separately.

Anaesthetic assistant knowledge

Table 7.6 provides the percentage agreement on responses. Of the respondents 70% or more indicated they 'Agree' and 'Strongly agree' on the knowledge necessary for an ODA to assist the anaesthetist. Agreement was reached on all the topics during this round (Round 1). The topics in Table 7.6 are arranged in the order of importance for inclusion in the anaesthetic and recovery room course.

Table 7.6: Knowledge needed by an ODA to function as an anaesthetic assistant

Knowledge required to perform the anaesthetic assistant functions	*M* (SD)	*N*=17	% agreement
Operating table and positioning equipment	3.8 (0.4)	17	100
Surgical positions: physiological changes and cautions required for each	3.8 (0.4)	17	100
Patient positioning for spinal anaesthesia	3.8 (0.4)	16	100
Standard precautions for known/suspected infection risks, e.g., HIV/Hepatitis B/serious or resistant organism infection	3.8 (0.4)	17	100
Patient transfer	3.8 (0.4)	17	100
Accurate and legal recording	3.8 (0.4)	17	100
Geriatrics anaesthesia: perioperative considerations	3.6 (0.5)	16	100
Equipment and supplies for IV fluids: infusion sets, cannula, infusion pump, syringe pump, blood and infusion warmer, intravenous fluids (crystalloids and colloids)	3.6 (0.6)	17	94.1
Risks of deep venous thrombosis, principles of prophylaxis and equipment involved	3.6 (0.6)	17	94.1
Principles to maintain normo-thermia and fluid balance	3.6 (0.6)	17	100
Role and responsibilities of AA in preparing and assisting doctor during all phases of anaesthesia	3.6 (0.8)	17	94.1
Evidence-based approach to holistic care of anaesthetised patient	3.6 (0.8)	17	94.1
Purpose anaesthesia	3.6 (0.8)	17	94.1
Phases of anaesthesia	3.6 (0.8)	17	94.1
Classification of anaesthesia	3.6 (0.8)	17	94.1
Anaesthetic trolley/cue cart (incl. indication for each item)	3.6 (0.8)	17	94.1
Monitors: pulse oximeter, capnography, ECG, blood pressure (function, prepare, connect)	3.6 (0.8)	17	94.1
Oxygen therapy equipment: features, role and mode of use	3.6 (0.8)	16	93.7
Endotracheal intubation: set up, tubes: types, sizes, preparing tube, determining size and length , assistance	3.6 (0.8)	17	94.1
Difficult intubation: set up, procedures for unexpected difficult intubation/failed intubation	3.6 (0.8)	17	94.1
Rapid sequence induction and intubation, incl. cricoid pressure	3.6 (0.8)	16	94.1
Regional anaesthesia: equipment and supplies	3.6 (0.8)	17	94.1
Well-being and rights of patient during all phases, incl. elderly and specific disciplines	3.6 (0.8)	17	94.1
Legislation applicable to anaesthetic practice	3.6 (0.8)	17	94.1
Receive, identify, check patient and interpret findings, incl. informed consent, fasting, possible difficult intubation, obesity, premedication	3.5 (0.8)	17	94.1
Patient with special needs (obesity, diabetic, HIV): perioperative considerations	3.5 (0.8)	17	94.1
Paediatric anaesthesia: perioperative considerations	3.5 (0.8)	17	94.1
Applied anatomy, physiology and pathophysiology related to anaesthesia and positioning	3.5 (0.8)	17	94.1
Methods of administration of general anaesthesia (incl. motivation for each item)	3.5 (0.8)	17	94.1
Anaesthetic machine and components (carbon dioxide absorption, gas and vacuum pipelines, gas cylinders) before, between-cases and after list	3.5 (0.8)	17	94.1
Intravenous therapy management	3.5 (0.8)	17	94.1
Complementary role of AA in airway establishing and management	3.5 (0.8)	17	94.1
Effect of anaesthesia on lungs, lung functions, vital capacity	3.5 (0.8)	17	94.1

Care of anaesthetised patient	3.5 (0.8)	17	94.1
Local anaesthetic agents: mechanism of action, classification, disadvantages, advantages, dosage, toxic reaction	3.5 (0.8)	17	94.1
Regional anaesthesia techniques: spinal and lumbar	3.5 (0.8)	17	94.1
Anaesthetic emergencies according to definition, signs and symptoms, management	3.5 (0.8)	17	94.1
Common breathing systems	3.5 (0.8)	17	94.1
Blood products, grouping and transfusion: indication, supplies, checking, cross-matching and hazards	3.5 (0.8)	17	94.1
Principles of nerve-stimulation during local anaesthesia	3.5 (0.8)	17	94.1
Assess, plan, implement and evaluate perioperative care	3.4 (0.9)	17	82.3
Depth of anaesthesia	3.4 (0.9)	17	88.2
Outcomes of persisting abnormal vital signs	3.4 (0.9)	17	88.2
Upper airway block management	3.4 (0.9)	17	88.2
Principle and practice of autologous transfusion	3.4 (1.0)	17	94.1
Vital signs: observation, interpretation, analysing and reporting of abnormalities	3.3 (0.9)	17	82.3
Job description: anaesthetic assistant (AA) and recovery room assistant (RRA)	3.3 (1.0)	17	88.2
Electrocardiogram: interpret ECG rhythm and arrhythmias	2.9 (1.0)	17	76.5

Anaesthetic assistant skills

Table 7.7 illustrates the percentage agreement on responses, arranged in order of importance, on the skills necessary for ODAs to function as AAs. Except for two skills *('Insert and care for a male and female urinary catheter'*) all skills from Round 1 were regarded necessary for inclusion in the anaesthetic and recovery room curriculum. Thus, agreement was reached on 36 statements and it was evident that the majority of skills were seen as important, with means that varied between scores of 3.5 and 3.9. The statement *'Safe transfer and correct positioning of patient according to booked procedure'* was viewed as the most important skill with a mean of 3.9.

Table 7.7: Skills required by the ODA to function as an anaesthetic assistant

Skills required to perform the anaesthetic assistant functions	*M* (SD)	*N*=17	% agreement
Safe transfer and correct positioning of patient according to booked procedure	3.9 (0.3)	16	100
Position patient for spinal/epidural anaesthesia	3.8 (0.4)	16	100
Check, prepare, clean operating table and positioning equipment	3.8 (0.4)	17	100
Maintain safety, privacy, dignity, well-being and comfort of patient	3.8 (0.4)	16	100
Promote well-being and rights of patient during perioperative journey	3.8 (0.4)	17	100
Apply aseptic and sterile technique/principles before, between-cases, after list	3.8 (0.4)	17	100
Maintain standard and safety measures	3.8 (0.4)	17	100
Assess, plan, implement and evaluate perioperative care	3.8 (0.4)	17	100
Prepare and safe/skilled assistance with all types of anaesthesia during induction, intubation, maintenance and reversal	3.8 (0.4)	16	100
Assist to maintain normo-thermia and fluid balance	3.7 (0.6)	17	94.1
Maintain necessary records	3.7 (0.6)	17	94.1
Care of anaesthetic equipment, incl. identifying and managing faulty/broken equipment	3.7 (0.8)	16	93.7
Pre-operative check of patient and documentation and interpret findings	3.6 (0.6)	17	94.1
Utilise evidence-based approach to holistic care for anaesthetised patient	3.6 (0.8)	17	94.1
Prepare, maintain a safe therapeutic environment and prevent anaesthetic related risks	3.6 (0.8)	17	94.1
Check, prepare, clean, handle anaesthetic machine, worktop, monitors and accessories	3.6 (0.8)	17	94.1
Check and fill up anaesthetic/drug trolley/cue cart (incl. medication and drugs)	3.6 (0.8)	17	94.1

Prepare, setup and change IV fluids	3.6 (0.8)	17	94.1
Participate in rapid sequence induction, incl. cricoid pressure	3.6 (0.8)	17	94.1
Assist with face mask bag-mask ventilation	3.6 (0.8)	17	94.1
Prepare and assist anaesthetist with basic anaesthesia for all disciplines, excl. neuro, cardiac and thoracic anaesthesia	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with patients with special needs	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with geriatric anaesthesia	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with paediatric anaesthesia	3.6 (0.8)	16	93.7
Set up and assist with difficult intubation	3.6 (0.8)	16	93.7
Assist with patient with unstable cervical spine	3.6 (0.8)	16	93.7
Prepare, setup and assist with establishing invasive monitoring	3.6 (0.8)	16	93.7
Assist with insertion nasogastric tube	3.6 (0.8)	17	94.1
Assist during anaesthetic crisis management	3.6 (0.8)	17	94.1
Identify and prevent anaesthetic related medical-legal risks	3.6 (0.8)	17	94.1
Assist with blood transfusion (cross-checking and record-keeping)	3.6 (0.8)	17	94.1
Manage minor troubleshooting	3.6 (0.8)	17	94.1
Prepare equipment for nebulised drugs, intravenous and epidural infusion and warming of fluid	3.5 (0.8)	17	94.1
Identify critical problems and complications and report to anaesthetist	3.5 (0.9)	17	88.2
Observe, interpret and analyse vital signs	3.4 (0.9)	17	82.3
Clear upper airway block	3.4 (1.1)	17	82.3
Insert and care of urinary catheter: female	3.2 (1.0)	17	88.3
Insert and care of urinary catheter: male*	2.1 (1.1)	17	70.6%
Comments: • *"High % of C-sections done in our Hospital requires skills to ensure correct inserting of catheters. PN and ODA allocated to list. PN cannot scrub and insert all catheters. Need skilled support from ODA."* (Round 2 report, p4) • *"… very often a catheter required intra-operatively. ODA's will be more of help when we are competent for this type of patient care in theatre."* (Round 2 report, p4) • *"Female catheterization should be a standard skill taught to ODA learners. It could be a great time saver … if ODA's would be allowed to perform this."* (Round 2 report, p4)			

* Excluded as an essential skill for ODAs

The two skills on which consensus were not reached were then included in the Round 2 questionnaire. Consensus was reached on '*Insert a urinary catheter for a female patient'* in Round 2, but the participants did not agree that ODAs should be allowed to '*Insert a urinary catheter for a male patient'*. This statement was repeated in the Round 3 questionnaire. The comments made by the respondents were to motivate why an ODA ought to be able to insert a urinary catheter for female patients and not for male patients as they both needed skilled support from the ODAs.

During Round 3 consensus (70.6%) was reached that the skill '*Insert and care for a male urinary catheter'* should not be included in the anaesthetic and recovery room course.

7.4.1.4. Recovery room assistant knowledge and skills

In this section the knowledge and skills of a recovery room assistant are addressed separately.

Recovery room assistant knowledge

Table 7.8 shows agreement was reached on 20 statements of the Delphi Round 1 with '*Handover of patient to the recovery room staff*' viewed as the most important knowledge content to be included in the recovery

room section of the course. The respondents did not reach consensus on two cognitive skills (*'Remove a laryngeal mask airway'* and *'Patient extubation')* which were included in the Round 2 questionnaire. The latter also refers to the removal of an endotracheal tube. Consensus on these two skills was reached in Round 2.

The respondents' comments illustrated their opinion that there was a need for ODAs to assist the anaesthetist and the recovery room RN (Round 1 report, p6 & 12). However, the assistance should be of a supportive nature with the ODA not being allowed to take responsibility for a patient, but assist the RN in the care of the patient (Round 1 report, p12).

Table 7.8: Knowledge needed by an ODA to function as a recovery room assistant

Knowledge required to perform the recovery room assistant functions	*M* (SD)	*N=17*	% agreement
Handover of patient to recovery room staff	3.8 (0.4)	17	94.1
Terminal cleaning and preparation of patient station	3.7 (0.6)	17	94.1
Outlay of recovery room	3.6 (0.5)	17	100
Equipment: check, prepare and handle	3.6 (0.8)	17	94.1
Post-operative care related medical-legal risks	3.6 (0.8)	17	94.1
Legal record-keeping, incl. fluid balance form	3.6 (0.8)	17	94.1
Roles and responsibilities of recovery room staff	3.5 (0.8)	17	94.1
Oxygen therapy: methods, equipment, supplies	3.5 (0.8)	17	94.1
Vital signs, incl. HB, HGT and urine analysis	3.5 (0.9)	17	88.2
Action and adverse effect of medication/drugs	3.4 (0.9)	17	88.2
Airway management	3.4 (1.0)	17	88.2
Potential post-operative complications: definition, pathophysiology, signs and symptoms, management	3.4 (1.1)	17	82.4
Discharge criteria	3.4 (1.1)	17	82.3
Legislation applicable to recovery room practice	3.4 (1.1)	17	82.4
Assessment of patient using ABC guidelines	3.4 (1.2)	17	82.4
Care of patients who had spinal anaesthesia	3.3 (1.0)	17	82.3
Oropharyngeal airway insertion (determining size, technique)	3.2 (1.2)	17	76.4
Care of patients who had general anaesthesia	3.1 (1.0)	17	82.3
Holistic patient care: first 5 minutes after handover (waiting for RN to take over)	3.1 (1.2)	17	76.5
Post-operative care of the patient	3.0 (1.3)	17	70.5
Remove laryngeal mask airway: criteria, procedure	3.2 (1.1)	17	82.3
Patient extubation: criteria, procedure, what to do if removed to early	3.1 (1.2)	17	70.5

It is evident from Table 7.8 that the knowledge listed below was seen as important with an average that varied between 3.5 and 3.8:

- Roles and responsibilities of recovery room staff.
- Outlay of the recovery room.
- Equipment: check, prepare and handle.
- Legal record-keeping, incl. fluid balance form.
- Vital signs, incl. HB, HGT and urine analysis.
- Post-operative care related medical-legal risks.
- Handover of a patient to the recovery room staff.
- Oxygen therapy: methods, equipment and supplies.
- Terminal cleaning and preparation of the patient station.

The next section focuses on the skills needed by ODAs to work in the recovery room.

Recovery room assistant skills

Consensus was reached on 20 statements (cf. Table 7.9) referring to the skills ODAs require to assist the RN in the recovery room.

Table 7.9: Clinical skills needed by an ODA to function as a recovery room assistant

Skills required to perform the recovery room assistant functions	*M* (SD)	*N*=17	% agreement
Decontaminate and prepare patient station	3.8 (0.4)	17	100
Check, prepare and stock recovery room (incl. patient station)	3.8 (0.4)	17	100
Maintain legal record-keeping, incl. fluid balance form	3.8 (0.4)	17	100
Maintain a safe therapeutic environment	3.7 (0.6)	16	93.7
Handover of patient to recovery room staff	3.7 (0.8)	17	94.1
Prepare and utilise equipment according to guidelines	3.6 (0.8)	17	94.1
Assist RN with recovery of patients of all ages for all types of anaesthesia	3.5 (0.9)	17	82.4
Assist RN with recovery of patients for all types of procedures	3.5 (0.9)	17	82.4
Assist RN with recovery of paediatric patients	3.5 (0.9)	17	82.4
Identify and prevent anaesthetic related medical-legal risks	3.4 (1.0)	17	88.2
Prepare patient for discharge	3.4 (1.0)	17	88.2
Assist with oxygen therapy	3.4 (1.1)	17	82.4
Observe, interpret and analyse vital signs (incl. HB, HGT and urine analysis)	3.4 (1.1)	17	82.3
Assess post-operative pain, nausea and vomiting	3.3 (1.1)	17	76.5
Utilise an evidence-based approach to post-anaesthetic care of patient	3.2 (1.2)	17	76.5
Assess patient using ABC headings	3.2 (1.2)	17	76.5
Airway management	3.2 (1.2)	17	76.5
Remove a laryngeal mask airway	3.2 (1.1)	17	82
Monitor and provide holistic care of patient: first 5 minutes after handover	3.1 (1.3)	17	70.6
Insert an oropharyngeal airway	3.1 (1.2)	17	76.5

The following skills were considered important for inclusion in the anaesthetic and recovery room curriculum, with an average that varied between 3.5 and 3.8 (cf. Table 7.9):

- Check, prepare and stock the recovery room (incl. patient station).
- Prepare and utilise equipment according to guidelines.
- Handover of a patient to recovery room staff.
- Assist the RN with the recovery of paediatric patients.
- Assist the RN with the recovery of patients of all ages for all types of anaesthesia.
- Maintain legal record-keeping, incl. fluid balance form.
- Decontaminate and prepare the patient station.
- Maintain a safe therapeutic environment.
- Assist the RN with the recovery of patients for all types of procedures.

Although two statements, '*Extubate a patient'* and the '*Insertion of a laryngeal mask airway*' were included in all three questionnaires, consensus was not reached whether these two clinical skills should be included or excluded from the anaesthetic and recovery room curriculum (cf. Table 7.10). More than half of the participants (58.8%) indicated these two skills should not be included in the anaesthetic and recovery room course which could be an indication of personal preference.

Table 7.10: Two statements which did not reach the 70% level of agreement for clinical skills needed in the recovery room

Skill	*N*=17	Round 1			Round 2			Round 3		
		M	SD	%	*M*	SD	%	*M*	SD	%
Extubate a patient	17	2.7	1.3	58.8	2.9	1.2	58.9	2.4	1.3	41.2
Insert a laryngeal mask airway	17	2.6	1.4	53	2.8	1.3	58.9	2.4	1.3	41.2

7.4.1.5. Emergency management skills

Consensus was reach on all 17 statements during Round 1 (cf. Table 7.11). The participants agreed on the knowledge and skills ODAs require to assist the healthcare professional during emergency situations.

Table 7.11: Knowledge and skills needed by an ODA to manage and assist during emergencies

Knowledge and skills required to assist during emergency situations	*M* (SD)	*N*=17	% agreement
Check and use emergency equipment and supplies (identify use of each item)	3.9 (0.3)	17	100
Perform basic life support (BLS)	3.9 (0.4)	17	100
Describe management of patient with latex allergy	3.8 (0.4)	17	100
Discuss role of team members during BLS	3.8 (0.4)	17	100
Assist with cricoid-thyroidotomy	3.8 (0.4)	17	100
Check emergency trolley and know where all items are	3.8 (0.4)	17	100
Describe safe transfer of patient for treatment or investigation within hospital	3.8 (0.4)	17	94.1
Check and use defibrillator	3.8 (0.6)	17	94.1
Recognise critical or near-miss incidents and follow reporting mechanisms	3.7 (0.5)	17	94.1
Set up and assist with underwater drain for treatment of pneumothorax	3.6 (0.5)	17	94.1
Discuss defibrillation: definition, ECG, principles	3.6 (0.6)	17	94.1
Understand management of: cyanosis, stridor, bronchospasm, cardiac dysrhythmias, pneumothorax	3.6 (0.9)	17	88.2
Implement local protocol for management of sudden life-threatening haemorrhage	3.6 (0.9)	17	88.2
Discuss anaesthetic emergencies according to definition, signs and symptoms, management	3.5 (0.8)	17	94.1
Assist with fibre-optic intubation	3.5 (0.8)	17	94.1
Recognise and respond to adverse anaesthetic conditions or emergencies	3.5 (0.9)	17	82.4
Understand principles to manage shocked patient	3.5 (0.9)	17	88.2

All the emergency management knowledge and skills listed were regarded important for inclusion in the anaesthetic and recovery room course with an average that varied between 3.5 and 3.9.

7.4.1.6. Pharmacology within the operating room practice

The participants agreed on all 16 statements during Round 1 (cf. Table 7.12) specifying the knowledge and skills ODAs need to handle drugs (including scheduled drugs) in the operating department. Many participants of the first interview round, Stage 2 of the current study, stated one of the main/bulk functions of the AA is to verify, handle and transfer drugs. Without the required drug knowledge and skills ODAs cannot be used optimally (cf. Ch. 5, category 2.1).

Table 7.12: Knowledge and skills needed by an ODA to handle drugs

Knowledge and skills required to an ODA to handle drugs	*M*(SD)	*N*=17	% agreement
Demonstrate proficiency in handling scheduled drugs (incl. verifying and co-signing registers)	3.7 (0.6)	16	93.7
Accurately complete appropriate documentation	3.7 (0.8)	17	94.1
Demonstrate knowledge of premedication: categories, generic name, trade name, action, indication, contraindications, effect, adverse effects and dosage	3.6 (0.6)	17	94.1
Demonstrate knowledge of anaesthetic agents: induction, inhalation, analgesics, muscle relaxants, reversal, anticholinesterase	3.6 (0.6)	16	94.1
Discuss emergency drugs: generic name, trade name, action, indication, contraindications, dosage, intervals, effect and adverse effects	3.6 (0.6)	17	94.1
Demonstrate proficiency in drawing drug up in syringe	3.5 (0.6)	17	82.4
Demonstrate comprehensive understanding of pharmacokinetic and pharmacodynamics effects of anaesthetic drugs	3.5 (0.8)	17	94.1
Promote and apply national and local guidelines re. ordering, storage, checking and administration of medication	3.5 (0.9)	17	88.2
Demonstrate knowledge drugs used in recovery room: categories, generic name, trade name, action, indication, dosage, contraindications, effect and adverse effects	3.4 (1.1)	17	82.4
Demonstrate proficiency in preparation of medication	3.3 (0.8)	17	88.2
Demonstrate knowledge of drug administration	3.3 (0.8)	17	88.2
Accurate calculate drug dosages	3.2 (1.0)	17	70.5
Monitor effect of drug on patient and take appropriate action to notify anaesthetists or RN in event of adverse effect	3.2 (1.1)	17	76.4
Demonstrate proficiency in administration of IV drugs into a vaculiter under direct supervision of anaesthetist or registered nurse	3.1 (1.1)	17	76.5
Demonstrate proficiency administration of IV drugs during crisis/emergency under direct supervision of anaesthetist or registered nurse	2.9 (1.1)	17	70.6
Demonstrate proficiency of inserting a suppository	2.9 (1.2)	17	76.5

One respondent commented that including all the above listed skills in the anaesthetic and recovery room course would ensure a specialist is available to assist the anaesthetists. As quoted: "[It] *will ensure a specialist is assisting the anaesthetist."* (Round 1 report, p16)

As illustrated in Table 7.12 eight pharmacology skills were deemed important for an ODA to function as an AA and RRA with an average between 3.5 and 3.7:

- Demonstrate proficiency in handling scheduled drugs (incl. verifying and co-signing registers).
- Accurately complete appropriate documentation.
- Demonstrate knowledge of premedication: categories, generic name, trade name, action, indication, contra-indications, effect, adverse effects and dosage.
- Demonstrate knowledge of anaesthetic agents: induction, inhalation, analgesics, muscle relaxants, reversal and anticholinesterase.
- Discuss emergency drugs: generic name, trade name, action, indication, contraindications, dosage, intervals, effect and adverse effects.
- Demonstrate proficiency in drawing a drug up in a syringe.

- Demonstrate comprehensive understanding of pharmacokinetic and pharmacodynamics effects of anaesthetic drugs.
- Promote and apply national and local guidelines with regards to the ordering, storage, checking and administration of medication.

Although two skills, '*Demonstrate proficiency of administration of IV drugs during crisis/emergency under direct supervision of anaesthetist or registered nurse'* and '*Demonstrate proficiency of inserting a suppository'* were stated during Round 1 interviews as competencies the AA require, it was ranked low in the Delphi exercise. A possible reason could be that these were not competencies performed by an AA on a daily basis, i.e. the insertion of a suppository is usually performed intra-operatively by the scrub practitioner just before the patient is transferred to the recovery room.

7.4.1.7. Affective skills

It could be questioned whether the panel members would disagree that affective skills such as 'honesty' and 'respect for a patient' should be included in a curriculum. The researcher could, however, not take it for granted that this would happen, and thus included the 'affective skills' in the study. Agreement was reached during Round 1 on all statements applicable to the 17 affective skills required by ODAs (cf. Table 7.13).

Table7.13: Values, attitudes, behaviours and beliefs deemed necessary for an ODA to assist the healthcare professional

Affective skills required to perform A/RRA functions	*M* (SD)	*N*=17	% agreement
Personal integrity (honesty)	3.9 (0.3)	17	100
Responsibility	3.9 (0.3)	17	100
Respect for patients and colleagues	3.9 (0.3)	17	100
Proactive thinking and reaction	3.8 (0.4)	17	100
Self-confidence	3.8 (0.4)	17	100
Diligence (carefulness)	3.8 (0.4)	17	100
Good observation skills	3.8 (0.4)	17	100
Alert and quick to response	3.8 (0.4)	17	100
Accountability	3.8 (0.4)	17	100
Professional conduct/boundary setting	3.8 (0.4)	17	100
Cooperative	3.8 (0.4)	17	100
Anticipation	3.8 (0.4)	17	100
Problem-solving	3.8 (0.4)	17	100
Commitment	3.8 (0.4)	17	100
Initiative taking	3.8 (0.4)	17	100
Assertiveness	3.8 (0.4)	17	100
Critical analytical thinking	3.7 (0.5)	17	100

It is evident from the summary above that all the listed skills were seen as important, with average scores of 3.7 and higher.

Although problem-solving and critical analytical thinking were listed as affective skills – as it referred to ODAs using their problem-solving and critical analytical thinking skills – the researcher is aware that it is

actually cognitive skills. Honesty, taking responsibility and respect for colleagues and patients were perceived as the most important affective skills an ODA needs to function as an AA and or RRA.

7.4.1.8. Non-technical skills

Consensus was reached on all five non-technical skills (cf. Table 7.14) during Round 1. All the non-technical skills were perceived important with averages ranging from 3.7 to 3.9.

Table 7.14: Non-technical skills required by ODAs to perform the anaesthetic and recovery room assistant functions

Non-technical skills required to perform A/RRA functions	*M*(SD)	*N*=17	% agreement
Teamwork	3.9 (0.3)	17	100
Decision-making	3.8 (0.4)	17	100
Communication	3.8 (0.4)	17	100
Situation awareness	3.8 (0.4)	17	100
Leadership	3.7 (0.5)	17	100

Teamwork was perceived as the most important non-technical skill which correlates with literature where it is viewed as an important element of the operating department as healthcare professionals cannot work in insolation. They depend on perioperative team members to ensure patient safety (Corbett, 2009:278; Scottish Medical and Scientific Advisory Committee, 2003:1; Weller *et al*., 2009:130). Two participants had the same opinion by stating the utilisation of ODAs with exceptional non-technical skills could be a great value in ensuring the patient's safety. As quoted: "*ODAs with willingness and outstanding non-technical skills will be of great support to the total wellbeing of our patients."* (Round 1 report, p18)

7.5. IMPORTANCE OF KNOWLEDGE, SKILLS, VALUES AND NON-TECHNICAL SKILLS TO BE INCLUDED IN THE COURSE

This was the first study which produced a proposed set of essential knowledge, skills, attitudes and non-technical skills for training of ODAs to assist the anaesthetist and recovery room RN in South Africa. The panellists were invited to judge the listed statements on a 4-point Likert scale according to the importance of each to the AA and RRA functions of the ODA. The findings highlighted the level of consensus and disagreement into what the sample of managers, ODAs and educators perceived as essential skills ODAs require to assist the healthcare professional in the two areas of the operating department. The representation of critical stakeholders involved in the training process, consisting of three interest groups and dispersed over four provinces in SA, offered a basis for a reframing and redesign of the anaesthetic and recovery room course (Mash *et al*., 2006:14e).

The mean and SD of each response was calculated to rank responses in order of importance. Addendum R illustrates the importance of statements linked to the ODAs' knowledge, skills, attitudes and non-technical skills ranked by the mean alongside its level of agreement (Keeney *et al*., 2011:90-91). This is an indication of the level of importance for inclusion of the stated knowledge, skills, attitudes and non-technical skills in the proposed framework for the redesigned anaesthetic and recovery room course.

In Round 3 a modest 70.6% (required consensus level 70%) of the participants indicated the procedure '*Insert a male urinary catheter'* should not be included and two clinical skills, '*Remove an endotracheal airway (extubate a patient)'* and '*Insert a laryngeal mask airway'* did not reach the required 70% consensus level.

7.6. CONCLUSION

The Delphi exercise assisted the researcher to draw meaningful results from expert answers. However, even with the use of the online Delphi, consensus was not obvious in several instances which resulted in repeating the Delphi for three rounds. The type of system to use to offer the anaesthetic and recovery room course as well as the recovery room skills were the most difficult ones to reach consensus on. In Chapter 8 the second round data generation are analysed and discussed.

CHAPTER 8
SECOND ROUND DATA GENERATION: DATA ANALYSIS AND DISCUSSION OF FINDINGS

8.1. INTRODUCTION

A second round of interviews was conducted as Stage 4 of the current study (cf. Table 1.1.). This was deemed necessary as challenges pertaining to the education and training of ODAs and their function as anaesthetic and recovery room assistants needed higher level management – executive managers who are usually involved in policy-making – input. Considering that the primary purpose of this study was to amend or replace the existing anaesthetic and recovery room component of the Diploma in Operating Department Assistance offered by a PHEI in SA – or in educational programmes of health professions elsewhere – by developing a new curriculum framework, it was essential to include the views of higher level management on the challenges pertaining to the education and training of ODAs and their function as anaesthetic and recovery room assistants in the operating department. Therefore, interviews were conducted with the nursing executives of three private hospital groups, a nursing executive (region not mentioned to maintain participant's anonymity) of the Department of Health and an anaesthetist working in a public hospital (name of hospital not mentioned to maintain anonymity) involved in the training of anaesthetic assistants and who is a member of the South African Society for Anaesthetists. The data generated from these interviews was analysed and presented according to the levels of Miles and Huberman's (1994:91) analytical abstraction ladder (cf. Fig. 4.2).

8.2. LEVEL 1: SUMMARISING AND PACKINGING DATA

The same process which applied in the first round of interview data was used to analyse the second round of interview data. The process of analysis is thus described very briefly here.

8.2.1. Transcribing and coding the data

The recorded interview data were transcribed by the same person who transcribed the first round of data (cf. Ch. 5, sect. 5.2.1) after which the five printed transcribed data sheets were coded (cf. Annexure Q). The data were once again read three times to obtain a general sense of the generated data.

8.3. LEVEL 2: REPACKAGING AND GROUPING DATA

As with the first round of interviews, the qualitative data were grouped to identify trends and emphasis.

8.3.1. Identify themes and trends in data

Saldanha's (2013:13) guidelines were again used to relay the data (cf. Ch. 5, sect. 5.3.1). Emergent themes identified as a result of restating key phrases, categorising and reflecting were summarised on Excel

spreadsheets to simplify the analysis process (Miles & Huberman, 1994:87 & 89). Patient safety concerns emerged as the main issue foregrounded in the four themes and almost all categories (cf. Table 8.1). The emergent themes that directly related to the anaesthetic and recovery room module were: (1) current challenges with ODA education and employment; (2) utilisation of ODAs in the operating department; (3) determining whether ODAs require a nursing background and (4) concerns about patient safety.

Table 8.1: Summary of themes, categories and sub-categories from datasets

Themes	Categories	Sub-categories
1. Current challenges with ODA education and employment	1.1. Uncertainty as to who should supervise ODAs in the workplace	
	1.2. Concerns about the ODAs' lack of regulation and registration	1.2.1. There is a need for ODA regulation and registration 1.2.2. The lack of a formalised scope of practice causes uncertainty 1.2.3. There are concerns about the ODAs' limited or lack of a career path 1.2.4. Ethical issues regarding the utilisation of ODAs 1.2.5. Differences in opinions regarding the ODAs' independent and dependent functions 1.2.6. Differences in opinions regarding the ODAs' accountability and responsibility
	1.3. Theatre nurses are antagonistic towards the ODAs	
2. Utilisation of ODAs in the operating department	2.1. The ODAs are effective in the scrub role 2.2. Operating department assistants currently have a limited anaesthetic assistance role 2.3. There is no role for the ODAs in the recovery room	
3. Determining whether ODAs require a nursing background		
4. Concerns about patient safety		

The relevant categories were identified through an inductive analytical approach (Patton, 2015:541). The researcher was constantly alerted to the fact that the data had to be looked at afresh and inductively to identify emerging themes and categories. One category (regulation and registration) was thus further divided into six sub-categories (cf. Table 8.1).

As a Level 2 activity, all datasets were relooked and repackaged after it was summarised and cross-checked with an external researcher with a solid background in analysing qualitative data.

8.3.2. Identified emphasis in the data

Themes emphasised were the challenges experienced with ODA education and training as well as their employment. These two themes constituted clear correspondence with the issues regarding regulation and registration of ODAs and patient safety. Much emphasis was placed on patient safety. For example, the anaesthetist was unsure whether the ODA could handle an emergency situation because, if not, it would without a doubt compromise patient safety (Exc2, p2, L16-22). The anaesthetist was emphatic that ODA education and training must focus on this aspect; in fact, the anaesthetist stated it was crucially important for it to be incorporated in both the theoretical and practical (clinical) component of emergency care assistance. This demand for ODAs to be able to handle emergency situations echoed the words of a participant in the first round of interviews: *"… the thing is during emergencies, doctors* [anaesthetists] *don't worry about who is here or there. Doctors* [anaesthetist] *will grab a person who is fresh and in an emergency situation you must know. So doctor will want adrenaline from anyone.*" (MGTGr1P2, p18, L7-9) (cf. Ch. 5, sub-category 1.1.1).

8.4. LEVEL 3: ANALYSIS OF DATA

The identified themes, categories and sub-categories are introduced in the next sections. The same coding system was used as in Chapter 5 (cf. sect. 5.4.2). The findings from the different participants' datasets:

- Exc2, p1, L3 refers to executive manager; participant 2, page 1, line 3.

8.4.1. Cross-checking tentative findings

In applying the steps of the analytical abstraction ladder the tentative themes, categories and sub-categories were cross-checked to validate the accuracy of the data. Where needed, the necessary changes were made (Miles & Huberman, 1994:92).

In the next few sections the findings from the interview data are discussed according to the identified themes, categories and sub-categories (cf. Table 8.1).

8.4.2. Analysis of data

In this section the themes, categories and sub-categories identified from the data obtained from executive managers are presented and discussed.

THEME 1: CURRENT CHALLENGES WITH ODA EDUCATION AND EMPLOYMENT

The majority of executive managers' concerns were similar to those of the participants interviewed during Stage 2 and related to the supervision of ODAs in the workplace, their (ODAs) career path, the accountability and responsibilities of ODAs and their SOP (cf. Ch. 5). However, one aspect that became very clear from the majority of second round of the current study interview participants (Stage 4) was their concern about the lack of regulation and registration of ODAs which they linked to patient safety (cf. Ch.8, Theme 4). Three categories emerged from Theme 1, namely (1.1) uncertainty as to who should supervise the ODAs in the workplace; (1.2) concerns about the ODAs' lack of regulation and registration (1.3) and theatre nurses are antagonistic towards the ODAs (1.3).

CATEGORY 1.1: UNCERTAINTY AS TO WHO SHOULD SUPERVISE THE ODAs IN THE WORKPLACE

The question as to who must take the responsibility of supervising ODAs in the operating department was much debated. The uncertainty among the executive managers on whose responsibility supervision was stemmed from the fact that ODAs are not registered nurses. Two participants (Exc3, p2, L7-10; Exc2, p6, L7, 9 & 23) agreed they were unsure about whether the doctor or RN should be responsible for the ODAs as this was a new cadre of healthcare workers not registered with any statutory body in SA which leads back to patient safety, accountability and possible litigation (Exc3, p8, L10-15). The following quote serves to illustrate this concern:

"Who supervises who? Is the doctor going to supervise the operating theatre or the nurse … given the fact they are not registered with any professional body?" (Exc3, p2, L7-10)

"It goes back to the patient safety, and it goes back to the regulation, the regulatory body, or the lack thereof, and that they are not registered … accountability, and which then leads back to the litigation, and obviously the patient." (Exc3IV, p9, L.14-17) *"Yes."* (Exc3, p9, L18)

Three participants (Exc1, p7, L10; Exc4, p3, L36; Exc5, p6, L1 & 10) expressed the ODAs should report to the unit manager, a RN, as all non-medical staff and those who are not independent practitioners report to the unit manager. The quotes below illustrate:

"*… in that theatre environment they're still reporting to the RN.*" (Exc5, p6, L1-2)

"*… in our environment they would report in to the unit manager. So anybody who is not medical or an independent practitioner reports to the unit manager.*" (Exc5, p6, L10-12)

"So they must always work under supervision of a professional nurse." (Exc3, p10, L14-15)

Most participants (Exc1, p7, L9-11; Exc3, p10, L15; Exc4, p4, L2-4; Exc5, p6, L1-3) argued it should be the RN – who supervises the operating room in any case – who should also then take the supervisory role for the ODA as a safety precaution:

"That is only as a safety precaution, because they are un-regulated. So at least the RN, who is supervising them, will take some accountability for the work they [ODA] *do."* (Exc4, p4, L2-4)

Conversely, there was the valid concern that if something did go wrong, the RN would then have to defend her-/himself during a SANC disciplinary hearing because the ODA is not a registered nurse (Exc3, p3, L7-9). The dilemma among executive managers as regards uncertainty in terms of who should supervise the ODAs is understandable. At present no distinctness about the ODAs' purpose or role in the operating department exists because they represent a new category of healthcare workers in SA.

CATEGORY 1.2: CONCERNS ABOUT THE ODAs LACK OF REGULATION AND REGISTRATION

Some participants were more worried about the lack of regulation and registration than others. These concerns emerged as six sub-categories (cf. Table 8.1), namely (1.2.1) there is a need for ODA regulation and registration; (1.2.2) the lack of a formalised scope of practice causes uncertainty; (1.2.3) there are concerns about the ODAs' limited or lack of a career path; (1.2.4) ethical issues regarding the utilisation of ODAs; (1.2.5) differences in opinions regarding ODAs' independent and dependent functions and (1.2.6) differences in opinions regarding ODAs' accountability and responsibility.

Sub-category 1.2.1: There is a need for ODA regulation and registration

The lack of registration and regulation were seen as the key constraint to the utilisation of ODAs as anaesthetic and recovery room assistants as it feeds into the question of who supervises the ODAs (Exc3, p3, L4-6). Some credible reasons were given by all the executive managers who unanimously agreed there was an urgent need for ODAs to be regulated and registered by a statutory body for safety sake (Exc1, p4, L1; Exc2, p3, L26-28; Exc3, p3, L23-27; Exc4, p4, L13-14; Exc5, p1, L13-16). This was a concern raised by only a few participants in Stage 2 (first round of interviews) who were worried about the legality of utilising

ODAs (cf. Ch. 5, sub-category 3.1.3). In Stage 4 (second round of interviews), the participants' concerns mainly centred on the high-risk environment in terms of patient safety for ODAs as the quotes verify:

"*… the challenge we* [executive managers] *currently have is that they* [ODAs] *are not regulated by any of the regulatory bodies. So that immediately creates a risk in terms of patient care…*" (Exc4, p1, L26-28)

"*… we* [executive managers] *are managing the risk, and there is a safety net. But that's why the ultimate is to get them regulated, because the environment they work in is high-risk…"* (Exc4, p4, L11-14)

Three participants expressed to get the ODA profession regulated had been a vexatious and drawn-out process hampered by bureaucracy since 2003 (Exc4, p5, L8-11; Exc5, p3 L22-23). Past attempts to get the ODA registered with the Health Professions Council of South Africa (HPCSA), the South African Nursing Council (SANC) and the Allied Health Professions Council had failed (Exc1, p4, Ll8*;* Exc3, p2, L11-12; Exc4, p2, L1-2 & p5, L8-11). By way of illustration:

"*… something we are pursuing from 2003. So we're in this journey for 14 years … since 2003 … number of attempts to get through to National Department to work with the HPCSA … we* [Private Healthcare Groups] *are on another attempt.".* (Exc4, p5, L8-11)

"[The] *HPCSA refuses to register them* [ODAs]*; SANC also is not registering them.*". (Exc3, p2, L11-12)

The registration process, which was started 14 years ago with the National Department of Health, then the HPCSA, the Allied Health Professions Council and the SANC, was recently re-initiated with the HPCSA (Exc1, p4, L21-23; Exc4, p5, L8-11; Exc5, p3, L22-32). Fortunately, as stated by Slabbert (2017:1), the HPCSA confirmed the submission and at the time of study was processing it.

Sub-category 1.2.2: The lack of a formalised scope of practice causes uncertainty

Three executive managers linked the lack of a formalised SOP to the regulation and registration challenges (Exc3, p7, L8 & 26; Exc4, p2, L3-4; Exc5, p1, L13-16 & 33-36). It was their perception that not having a formalised SOP made it difficult to understand and determine what the ODA may or may not do to ensure patient safety (Exc3, p9, L14-18) as signified in the verbatim quotes:

"*… the key constraint at the moment is the fact that there is no regulatory body, so there is not formalised SOP. So it's very difficult to understand what they would be allowed to do and what they wouldn't be allowed to do.*". (Exc5, p1, L13-16)

"*… call it a practice guidelines … it's not really defined in terms of about what they're allowed to do and what they're not allowed to do. But again … the regulatory body needs to be able to be responsible for managing and regulating that.*". (Exc5, p7, L35-36)

"It goes back to the patient safety … the regulatory body … no scope of practice…" (Exc3IV, p9, L14-16) *"Yes.*". (Exc3, p9, L18)

This again has a negative impact on the ODAs' clinical training as a considerable amount of their clinical training takes place in the workplace (Van Zyl, 2012:36-37) by means of mentoring and supervision. To create an optimal learning environment – one of the elements of the Integrated Behavioral Model (cf. Fig. 2.6) – healthcare professionals need to have clear guidelines on the competencies the students need to achieve and what the ODAs' scope of practice entails (Morris & Blaney 2014:97-98). A clear SOP, compiled by a regulatory body, was not the case in the current study. Then again, due to the lack of a statutory body which can generate a clear scope of practice for ODAs, some healthcare groups (represented by participants in the current study) developed their own guidelines which could also be the reason for the limited optimal

utilisation of the ODAs. Currently, two of the healthcare groups' company-specific guidelines seem to limit ODAs to only the operating theatre. In one hospital group's guidelines ODAs are limited to the technical aspects of operating room care such as preparing the theatre and equipment and fulfilling the scrub role while the RN focuses on patient care and legal aspects resulting in ODAs not being utilised in the recovery room (Exc4, p2, L3-4 & p3, L14-31; Exc3, p2, L37-38). By way of illustration:

"*But with the OT it's limited only to theatre, and you cannot use them in the place of nurses in recovery.*". (Exc3, p2, L37-38)

"*For now their scope is limited to very technical aspects.*". (Exc4, p2, L4)

However, the current SAQA registered qualification stipulates the ODA ought to be able to assist the healthcare professionals in all areas of the operating department on completion of training; thus, including the anaesthetists and RNs in the recovery room (SAQA, 2015:1-6). One participant stated in countries elsewhere the ODA's scope of practice is much broader which concurs with literature. For example, in the UK the ODPs may also take care of the patient in the recovery room (Davey & Ince, 2000:6) and in Scotland the AA participates in the post-operative care of the patient (NES, 2011:31-34). According to one participant the ODAs specialise in various aspects of operating room care, i.e. scrub and CSSD (Exc4, p3, L2-4) with some of them moving into the academic field. There are ODAs with PhDs who run ODA education and training programmes while in SA theatre nurses are training ODAs (Exc4, p2, L26-29 & p3, L2-4). These viewpoints of the executive managers correlated with literature (AST, 2008:14; Fuller, 2013:6-8). As one executive explained:

"*But you see, their scope is much broader too. In the UK, I mean, today we've got operating department assistants with PhDs that actually run the programme. So it's an evolution of a new category of worker. Now, in South Africa we are still using registered theatre nurses to train them.*". (Exc4, p2, L26-27)

Participant two stated they needed somebody who could manage schedule 5-7 drugs and even administer it in an emergency situation, as quoted below. In England, Northern Ireland, Wales and Scotland, e.g., the AA is permitted to take responsibility for scheduled drugs (CODP, 2011:1, 31-32; Davey & Ince, 2000:6; NES, 2011:5, 31-32) and administer intravenous drugs if proven competent (NES, 2011:5).

"Yes, so it's somebody that can lock out scheduled drugs, even administer under supervision in an emergency.". (Exc2, p7, L2-3)

Sub-category 1.2.3: There are concerns about the ODAs' limited or lack of a career path

According to some interviewees, the ODAs in South Africa have a very limited or no career path at all (Exc1, p4, L24-29; Exc3, p3, L31; Exc4, p4, L33-35) which correlated with the feeling of some participants in the first interview round (Stage 2 of the current study) who expressed that the ODAs' career path stopped once they graduated (cf. Ch. 5, Theme 7). In the second interview round (Stage 4 of the current study) the executive managers reaffirmed, but they linked the lack of a career path to the lack of registration with a statutory body (Exc1, p4, L24-25; Exc5, p4, L18-20). To quote:

"*… once we start working with the regulatory body, we need to start thinking about what is a career progression for these people* [ODAs].". (Exc4, p4, L30-31)

The overall opinion was that ODAs should have their own career path. The problematic issue was that at the time of study they were borrowing and lending from nursing and other healthcare professions which was unacceptable because the ODAs' knowledge and skills could not be optimally used. But, the interviewees expounded on other options open to ODAs – they could either move into a clinical arena by doing a relevant short course, clinical masters or an advanced diploma to specialise in a specific discipline or choose an academic direction (master's or doctoral degree) to further their career as an educator (Exc1, p4, L24-34; Exc4, p4, L34-36; Exc4, p5, L2-3 & 20; Exc4, p8, L12; Exc5, p4, L18-20 & 36). A further option was to build a career as first physician assistant as this was another need in the healthcare sector due to the shortage of doctors (Exc1, p4, L25-26 & p5, L5-8). The first physician assists the surgeon with operations and is a common practice worldwide, especially in England where ODAs are up-skilled to perform a similar role (Exc1, p4, L7-9) (Deighton, 2007:485). By way of illustration:

"*… anticipating we could have a certificate in operating department assistants, leading … to a diploma, and could there be a degree and so forth … they must have their own career path. At the moment, we are borrowing and lending from nursing and everybody else.*". (Exc4, p4, L31-35)

"*… can get the registration sorted out, the next step … is the career path for the ODA to become an assistant.*". (Exc1, p4, 24-25)

Other options included a managerial career or medical equipment representative:

"*At this stage of the game there isn't anything that creates an opportunity for them to become a unit manager per se, but there is also nothing in legislation that says that the unit manager has to be a RN. They* [ODAs] *then get head hunted by some medical equipment companies to go as reps … their career path takes off from there...*" (Exc5, p7, L15-17 & p9, L30-33)

Sub-category 1.2.4: Ethical issues regarding the utilisation of ODAs

The ethical concerns raised by the executive manager participants were linked to the ODAs' lack of regulation and registration and a nursing background (Exc2, p7, L21; Exc3, p7, L32; Exc5, p5, L21-32) as unregistered staff were utilised for direct patient care (Exc3, p7, L23-24). In this regard, some participants were much troubled by the idea that an unregistered ODA working without a clear SOP might not cope in the operating department. In fact, it is easy to err in particularly emergency situations when the focus of the whole team has to be on delivering safe patient care. A verbatim quote confirms:

"*But if you think of protecting the patient, it becomes ethically wrong to use people who are not so registered…*" (Exc3, p7, L31-32)

On the other hand, the question which had to be dealt with was whether the ODA provides direct patient care or is she/he just assisting the healthcare professional who is, in fact, the one providing direct patient care. The National Health Act 61 of 2003 (RSA, 2003:10-12) stipulates only professionals providing direct patient care need to be registered and regulated whereas the person assisting the healthcare professional in providing direct patient care is viewed as a health worker who does not require regulation and registration. Furthering the debate on ethical issues versus the utilisation of ODAs, another participant's contribution pertained directly to what the patient is entitled to as illustrated:

"*… not fair to a patient to be confronted with somebody that they* [the patient] *… think is a nurse and this person isn't actually…*" (Exc2, p4, L24-25)

The last quote showed similarity with the views of participants in the first interview round (Stage 2 of the current study) (cf. Ch. 5, Theme 6). Two participants in the second round of interviews (Satge 4 of the current study) stated they had no ethical concerns with utilising ODAs provided that they were well trained (Exc1, p6, L25-36; Exc5, p5, L18) as confirmed in the quote below:

"*I don't see any ethical issues whatsoever. I mean, they're trained properly … that's good enough … I don't have any concern.*". (Exc1, p6, L35-36)

Sub-category 1.2.5: Differences in opinions regarding ODAs' independent and dependent functions

There seemed to be confusion regarding the independent and dependent functions of ODAs. Two participants expressed in their opinion the ODAs had no independent functions (Exc1, p7, L6-7; Exc3, p10, L11-14), but had more of a dependent function since they performed under the supervision of RNs (Exc3, p7, L7 & 11-15). Participants four (p7, L29-32) and five (p6, L14-16) voiced ODAs did, in fact, function independently (although limited) in various areas such as cleaning instrumentation, managing the scopes, preparing the operating room for cases, clearing out and checking of instruments (Exc4, p7, L32-33). The quotes signify the aforementioned views:

"*They* [ODAs] *are always dependent … you can't just let them work independently … they must always work under supervision of a professional nurse.*". (Exc3, p10, L11-15)

"*… their independent function is very limited by the mere fact that if they are only at the table next to the surgeon, that's the limit of their function.*". (Exc5, p6, L14-16)

Participant four's (p6, L17-19) stance was that a formalised SOP would inform ODAs' independent and dependent functions; participant five (p6, L32-33) agreed and stated a formalised SOP needed to centre on ensuring patient safety. A short section of the discussion follows:

"*… SOP would obviously then inform their function independent and dependent function; am I right in saying that?*" (Exc4IV, p6, L17-18) "*Yes.*". (Exc4, p6, L19)

"*So at the end of the day your independent or your dependent function is around ensuring patient safety.*". (Exc5, p6, L32-33)

Sub-category 1.2.6: Differences in opinions regarding ODAs' accountability and responsibility

Although some participants linked the ODAs' accountability and responsibility to litigation and the lack of registration, some discrepancies were observed in their opinions about the ODAs' accountability and responsibilities. One participant noted that the supervisor, namely the RN, should take responsibility and accountability in terms of litigation (Exc3, p2, L15-18) whereas another participant was of the opinion that ODAs, as individuals, must take responsibility and be accountable for their own actions:

"The person being in charge of the theatre being the operational manager … should take that responsibility…" (Exc3, p2, L17-18)

"*They're* [ODAs] *accountable for their own actions.*". (Exc1, p7, L10)

Two further participants agreed the supervisor, who is usually the RN, must be accountable, but the ODA must be held responsible for his/her own actions (Exc4, p6, L25-26; Exc5, p10, L7-8). By way of illustration:

"*… there is always a RN that's overseeing. So they* [ODA] *are responsible, she* [RN] *is accountable.*" (Exc4, p6, L25-26)

The difference between accountability and responsibility is that the former entails the expectation that ODAs have to give account of their acts or omissions whereas the latter denotes the ODAs' duty to perform their required functions in a satisfactory way (McQuoid-Mason & Dhai, 2011:62). This statement reflects the opinion of participant four that the RN, as supervisor, is accountable, but that the ODA is responsible. However, McQuoid-Mason and Dhai (2011:62) state the duties of healthcare professionals require them to act responsibly as well as be accountable for their actions. As ODAs are not currently registered with a professional body and are thus not viewed as healthcare practitioners, they are nevertheless assisting the healthcare professional to promote the well-being and interest of patients (McQuoid-Mason & Dhai, 2011:62). Linking this function to the National Health Act 61 of 2003 (RSA, 2003:6) denotes the ODAs to the position of a health worker which could change once the ODA becomes a registered professional. This could probably result in a title change to that of an 'operating department practitioner' (ODP) as was the case in the UK (Davey & Ince, 2000:6). The ODA became an ODP once her/his education and training were adapted to match that of the RN to ensure both categories could perform the same role and functions. Professionalism and accountability thus became key aspects of the ODPs' role and functions (QAAHE, 2004:1).

Category two showed the executive managers asserted there was an urgent need for ODAs to be registered as this would be a turning point in their professional capacity as well as for them personally. Different opinions regarding the accountability and responsibility of the unregistered ODAs emerged. With regard to the ethical concerns raised and the lines of reporting, various viewpoints were offered by the participants. A statement was made that the practice of utilising non-nurses was unethical. Overall, it can be posited that the uncertainty about how a health worker who is not a nurse but is expected to take care and ensure the safety of a patient could be a possible cause for the antagonism shown towards ODAs by registered theatre nurses.

CATEGORY 1.3: THEATRE NURSES ARE ANTAGONISTIC TOWARDS THE ODAs

Another challenge, also mentioned during the first round of interviews (cf. Ch. 5, sub-category 3.1.5), was the antagonism some theatre nurses showed towards the ODAs. The underlying core for this antagonism seemed to be the fear that, if something should go wrong, who else but the RN would be blamed as the doctor did not want to take responsibility and accountability as stated:

"The nurses say no, if we are working with this person in theatre, maybe he has scrubbed and a swab remains in the abdomen … the [SANC] *Council will ask me, who delegated this person* [ODA] *to do this … then I* [as RN] *must take, assume responsibility.".* (Exc3, p3, L7-12)

"*In case of litigation or in case of accountability, who takes that accountability, because doctors are saying no…"* (Exc3, p2, L14-15)

Additionally, some theatre nurses appear to see the ODAs as subservient/inferior to them in terms of skills, knowledge and experience and therefore also a threat to the nursing profession. This resulted in ODAs not

being accepted as part of the theatre team in some of the operating departments (Exc1, p8, L4-7; Exc2, p3, L32-33; Exc5, p8, L31-34). This antagonistic situation appeared to be aggravated by the lack of a regulated SOP for ODAs. By way of illustration:

"*… [I) wish … they* [ODAs] *would be better accepted … there are still some of the old theatre nurses who see them as inferior…*" (Exc1, p7, L3-5)

"It seems to be a little bit of an antagonistic relationship at the moment. Nursing, they don't acknowledge the OTP.". (Exc2, p3, L31-33)

"*… they're not, in my opinion, a competition to nursing…*" (Exc5, p8, L34)

The same antagonism was experienced abroad as the theatre nurses viewed the ODAs as subservient to them (Steevenson, 2006:550) (cf. Ch. 2, sect. 2.4.3). According to Davey and Ince (2000:5-6), the ODAs' education and training as well as scope of practice was adapted in an attempt to resolve such conflict. This resulted in the development of a common training platform for nurses and non-nurses involved in perioperative care as well as core competencies. Thus, perioperative staff – whether a RN or an ODP – receives the same education and training when they enrol in the same perioperative care programme.

THEME 2: UTILISATION OF ODAs IN THE OPERATING DEPARTMENT

All participants were of the opinion that, although currently more technical, there is undoubtedly a current and future role for the ODA in both the private and public hospital sectors due to the shortage of trained theatre nurses (Exc1, p1, p8, L5-6; Exc2, p1, L9; Exc3, p1, L10-11; Exc4, p1, L13-14; Exc5, p5, L6 & 12). This sentiment was shared with the first interview round participants (Stage 2 of the current study) who were of the opinion the ODAs added value and made a significant contribution (cf. Ch. 5, sub-category 4.1.1). Participant 3 (p1, L25-27), however, was uncertain about the ODAs future role. By way of illustration:

"*I see them playing a very important role, more especially because we have a challenge with having trained theatre nurses.*". (Exc3, p1, L10-11)

"So now the question is why bring in the OT [ODA] *instead of hiring a general nurse that you can use also in other areas within theatre…"* (Exc3, p1, L25-27)

According to one participant, the ODAs were highly skilled, well qualified and doing 'a fantastic job' (Exc4, p.1, L24). In fact, it was mentioned a number of public hospitals had also employed ODAs (Exc3, p5, L15; Exc4, p1, L25) as illustrated:

"*… these ODAs are highly skilled, and they are well qualified and they do a fantastic job … a couple of the public state hospitals have now employed some of these people…*" (Exc4, p1, L24-25 & p5, L11-12)

Although all participants agreed there was, and will be in the future, definitely a role for ODAs in the operating department and that they did excellent work, one participant indicated that due to their limited SOP it might be better to train nurses to work in the operating department. According to this participant, nurses were more versatile and could be used in different departments whereas the ODA was restricted to the operating room itself (Exc3, p2, L29-38). This point is illustrated by the quote:

"*So there is now no wisdom of appointing the OT, whereas you can appoint the general nurse. …* [the ODA is] *limited only to theatre, and you cannot use them in the place of nurses in recovery.*". (Exc3, p2, L32-33 & 27-38)

Three categories emerged during the iterative, repetitive process of data analysis, namely (2.1) the ODAs are effective in the scrub role; (2.2) operating department assistants currently have a limited anaesthetic assistance role and (2.3) there is no role for the ODAs in the recovery room.

CATEGORY 2.1: THE ODAs ARE EFFECTIVE IN THE SCRUB ROLE

Stating ODAs did have a role in the operating department, the participants perceived the role as that of scrub practitioners. The ODAs was deemed as effective in this role and some surgeons actually preferred them because they were well skilled (Exc1, p8, L6-7; Exc2, p1, L9; Exc3, p8, L38; Exc4, p1, L24-25) as illustrated:

"*… the surgeons actually prefer them because they* [ODAs] *are so skilled.*". (Exc1, p8, L6-7)

"… these ODAs are highly skilled, and they are well qualified and they do a fantastic job…" (Exc4, p1, L24-26)

By allocating the scrub role to the ODA the RN is available to oversee the caring side of the patient's perioperative journey. Currently, some managers experience RNs are so focused on the technical aspect of the scrub role, such as the instrumentation, that they neglect the human side of patient care (Exc4, p6, L32-33). By employing ODAs to focus on the technical aspects, the RNs could focus on the safety and legal aspects of patient care as indicated in the quote below:

"*… their* [RNs'] *main focus was pleasing the surgeon, making sure everything was in the order … with very little focus on the patient. … now with the ODA they do the technical things, and … the RN is there to check all the other things about the patient.*". (Exc4, p6, L32-33 & p7, L4-6)

However, in the UK this philosophy did not materialise as it worsened the conflict between the RNs and the ODAs. The conflict and tension was only resolved when patient-safety and legal aspects relating to patient care were added to the ODAs' job profile which dictated RNs and ODAs had to undergo similar training and perform the same functions in the operating department (Davey & Ince, 2000:5-7).

One participant noted the employment of ODAs was especially effective in the larger hospitals where they could do 'call' with a RN. Thus, they rotated roles with the RN and were utilised to their full potential in the scrub and the AA role as illustrated:

"*… this category* [ODAs] *works really well in the big hospitals.*".(Exc1, p7, L33-34)

"… on call they might have one RN. The RN, I mean, we are now getting to the scrubbing side, but the RN could either be responsible for the anaesthetics or to scrub, and then the other person could be an ODA. So if you have a scrub practitioner ODA, then the RN is [in] *anaesthetics, but otherwise it's the other way around.*". (Exc1, p7, L24-29)

One participant (Exc3, p4, L4-15) said due to the number of RNs unemployed in one province at the time of study, it was not feasible to train ODAs if a RN could be trained to fulfil the role of a theatre RN.

In conclusion, it appeared that although there were differences of opinion among the five participants, the majority expressed the ODAs were doing an excellent job as scrub practitioners, especially in their technical role and functions. However, one participant was still of the opinion that, although the ODAs added value

and did an excellent job, they should not be trained due to the large number of unemployed RNs in the province.

CATEGORY 2.2: OPERATING DEPARTMENT ASSISTANTS CURRENTLY HAVE A LIMITED ANAESTHETIC ASSISTANCE ROLE

Currently, the ODAs have a limited AA role due to various reasons. This was similar to the view of some of the participants of the first interview round (Stage 2 of the current study) (cf. Ch. 5, sub-category 4.1.2). The reasons stated by the executive managers in the second interview round (Stage 4 of the current study) for not optimally utilising the ODAs in the AA role was the lack of scrub practitioners which forced the use of ODAs in the scrub role. And the fact that the ODAs may not perform all the functions required from an AA. Other reasons mentioned were: (i) there was not a shortage of anaesthetic nurses (Exc4, p1, L22-23); (ii) the need existed to replace the scrub nurse with an ODA to perform the technical functions (Exc4, p1, L13-14; Exc5, p1, L20-22); (iii) there was no ODAs employed but only ORPs who were not assisting the anaesthetist (Exc3, p5, L21-22); (iv) the lack of a formalised SOP (Exc4, p3, L16-18) and (v) the lack of regulation and registration (Exc3, p6, L11-12; Exc4, p1, L26-27; Exc5, p1, L11-16).

Of note is that one participant expressed a different opinion. This participant stated the ODAs performed very well when utilised as AAs and with the correct education and training they would be advantageous to the anaesthetic department. The participant asserted the ODAs were already fulfilling all the functions expected from an AA such as verifying scheduled drugs, signing the drug registers, and preparing for anaesthesia (which includes drugs) to mention but a few (Exc1, p2, L20-22). These functions correlated with the function of the ODP in England (Davey & Ince, 2000:6). The following quote is evidence of this participant's belief that ODAs contributed positively to the anaesthetic department:

"*… they* [ODAs] *are doing a very good job in terms of assisting the anaesthetists with the duties of an AA. … they have definitely got a role there* [anaesthetic department] … and *with the correct training, there's no reason that they can't actually fulfil that function.*". (Exc1, p1, L12-14; p2, L27-28 & p3, L10-13)

The same participant further elaborated that although the ODAs may not and did not administer drugs, they have important functions to fulfil such as preparing for anaesthesia, cleaning the anaesthetic equipment used in the operating theatre and assessing the patient (Exc1, p2, L28-28).

Although they did not have ODAs that fulfilled the AA role, two participants saw taking the role of an AA in future for the ODAs, especially when a shortage of nurses is experienced. One example mentioned was a public hospital where the anaesthetists struggled to get competent assistants (Exc2, p1, l2-22; Exc5, p8, L1-7). At the time of study the anaesthetists were assisted by enrolled nurse auxiliaries and enrolled nurses who were not specifically trained for the role of an anaesthetic assistant. Hence, from an anaesthesiology point of view there seemed to be a need for well-trained and experienced AAs to assist the anaesthetist as 'a right hand' in primary and secondary public hospitals (Exc2, p2, L1-3 & p2, L28-36). It is all about patient safety:

"This is simply the right hand to the anaesthetist.". (Exc2, p6, L35-36)

"So, for this person's [AA] *sake, to be fair, they need to be prepared. In the end it's all about patient safety."*. (Exc2, p2, L29-31)

This led to a discussion among the interviewees as to whether the AA role should be fulfilled by a nurse (Exc2, p2, L2-3; p6, L35-36 & p9, L26-29). By way of illustration:

"I was posed this question a few weeks ago, does this person have to be a nurse?" (Exc2, p2, L2-3)

"*If we can create our AA from the OTP curriculum … that's great …* [we] *need that assistant to know exactly what we need, and to know exactly what to do if we ask them to do something. The need is still there from anaesthesiology's point of view to have an experienced assistant …"* (Exc2, p2, L12-13 & 19-21)

A participant who did not employ ODAs as AAs was unsure about the future use of ODAs as AAs in their company. Currently, the ODAs are employed to fulfil the scrub role due to the shortage of trained theatre nurses. Future utilisation of ODAs as AAs might depend on what the statutory body's formalised SOP expects from them as well as what the anaesthetists expect from them (Exc4, p3, L14-18) as quoted:

"… we don't use them because we have anaesthetic nurses. Going forward, if we feel it works with the anaesthetists and that they would like to have an assistant that's not necessarily a nurse, we will have to explore that.". (Exc4, p3, L14-16)

While there did not seem to be an agreement on the future role of the ODA as an AA, one participant noted it was important to have an anaesthetic component in the ODA programme to give the ODA a more holistic view, understanding and insight into the perioperative care of the patient (Exc5, p2, L32-35) as quoted:

"*… ODA qualification has got an anaesthetic element, which I think is important … it gives that individual a more holistic understanding and insight. But their primary function is not anaesthetics; their primary function is assisting in scrub.*". (Exc5, p2, L32-35)

Although different opinions were raised, the overall perception was that ODAs could fulfil the AA role with the required supervised clinical training.

CATEGORY 2.3: THERE IS NO ROLE FOR THE ODAs IN THE RECOVERY ROOM

Except for a small role (Exc1, p1, L17), all the participants expressed they did not see the ODA taking over the RNs role and functioning fully in the recovery room for various reasons: (i) this space was the domain of the RN for safety sake (Exc1, p1, L15-17; Exc2, p8, L3-4; Exc3, p6, L3-7; Exc4, p1, L22-23; Exc5, p2, L23-24); (ii) there was no need for the ODA in the recovery room (Exc2, p8, L7-8); (iii) there was no shortages of nurses in the recovery room (Exc5, p2, L23-27 & p7, L8-9) and (iv) it posed a risk to allow non-nurses to care for patients in this domain (Exc3, p8, L6-8). One participant stated only RNs should be trained to work in the operating theatre. In the participant's opinion RNs were more flexible and could therefore be utilised in all sections of the operating department, including the recovery room. Importantly, they could even work in the emergency unit when the theatres cases were completed (Exc3, p2, L32-38 & p4, 17-18). By way of illustration quotes from the interviews follow:

*"The ODA shouldn't be there to take over the RN role. For safety sake…" (*Exc2, p8, L3-4)

"*So the recovery nurse would then be responsible to do the recovery, not the ODA?*" (Exc1IV, p2, L10-11) *"Yes…"* (Exc1, p2, L12)

"*… that person* [ODA] *recover the patient. I think to me it would be very risky.*". (Exc3, p8, L7-8)

"*… we didn't use them in the recovery area because it's a nursing role and function…*" (Exc5, p2, L23-24)

The view that ODAs were not utilised in the recovery room was in contrast with the view of participants in the first interview round (Stage 2 of the current study). The latter stated some ODAs were used in the recovery room, especially when there was a shortage of RNs in that area, and also when the ODA assisted the anaesthetist to transfer the patient to the recovery room after surgery (cf. Ch. 5, sub-category 4.1.2). Furthermore, two of the second round (Stage 4 of the current study) interviewees admitted the ODAs did have a small role in the recovery room, i.e. when ODAs transferred the patient to this area after surgery they were responsible for handing over the patient to the RN and to connect the patient to the monitors. However, this was a relatively small role compared to the anaesthetic role and functions (Exc1, p1, L15-17) expected from the ODAs, as one participant said:

"*… take the patient into recovery and connect them to the monitor … then handover to the RN. So that's what the role is in recovery. It's a very small role in recovery, compared with anaesthetics itself.".* (Exc1, p1, L15-18)

Although it is currently not a common practice to employ ODAs in the RRA role, the existing ODA programme does include a recovery room component. But, the ODAs are not trained to recover a patient; they are trained to assist the RN (Van Zyl, 2012:33-35). One participant expressed the future use of ODAs in this area should not to be ruled out completely. Depending on ODAs' formalised regulated SOP, once it becomes a registered profession there will be more insight into their role in the recovery room as quoted:

"*There is a recovery team or staff. If the ODA is one of those people in that team, again, it would depend on what their SOP is and what they're allowed to do and what they're not allowed to do...*" (Exc5, p2, L17-19)

In conclusion, all participants indicated the ODAs should not take over the role of the RN in the recovery room, except for handing the patient over to the RN and attaching the monitors to the patient.

THEME 3: DETERMINING WHETHER ODAs REQUIRE A NURSING BACKGROUND

The issue under discussion was whether ODAs needed a nursing background or not. The conclusion among the executive managers was that a nursing background was not necessary provided the ODA curriculum covers the essential competencies of patient care as well as anatomy, physiology, ethics, professional practice, patient safety and infection prevention and control principles (Exc2, p4, L34-35; Exc4, p5, L15-20; Exc5, p5, L14-16). These opinions are illustrated by the quotes below:

"… they [ODAs] *can start becoming an ODA without having a nursing background."* (Exc5IV, p5, L14-15) "*Yes, I'm perfectly happy with that, because the programme covers enough anatomy and physiology. It covers enough ethos and professional practice. It covers enough of the principles of infection prevention etc.."* (Exc5, p5, L16)

The majority felt the ODA programme should be a 'stand-alone' programme which does not require the students to have a nursing background:

"*Must be pursued as a stand-alone…*" (Exc4, p5, L20)

THEME 4: CONCERNS ABOUT PATIENT SAFETY

Patient safety emerged as the main issue throughout all themes. It was a concern for all executive managers, but from different viewpoints. Two interviewees (Exc3, p9, L13-16; Exc4, p1, L29-31) linked patient safety directly to the lack of registration, regulation and a formalised SOP as the quote confirms:

"*… that immediately creates a risk in terms of patient care, because there is no regulation for them … in many countries regulation is not the ultimate, but … in our South African context with increasing litigation, with the number of patient safety incidents … it is necessary for us to be mindful.*". (Exc4, p1, L28-31)

Admitting ODAs worked in a team where they were supervised by the RN, participants four (p4, L2-4 & 11-14) and five (p6, L1-3 & 18-22) saw this merely as a safety net to manage the risk of unregistered staff working in the operating department. According to participant four, the ultimate goal was to get the ODAs registered, as quoted:

"*… we are managing the risk, and there is a safety net. So they're* [ODAs] *not totally on their own. So I think for now, they are kind of protected. But that's why the ultimate is to get them regulated, because the environment they work in is high-risk.*". (Exc4, p4, L11-14)

Another participant linked patient safety to the National Health Act 61 of 2003 (Exc3, p3, L23-27). Participant two (p8, L3-5) linked overcoming patient risk to the education and training of ODAs. Accordingly, ODAs must be trained thoroughly on patient safety issues to overcome any risk encountered. This entailed being an efficient AA as stated:

"… by having the right thing at the right time in the right place and begin fast and efficient…" (Exc2, p2, L31-33)

The same participant stated the ODA must not take over the role of the RN in the recovery room because of the safety risk it posed, as illustrated in Chapter 8, category 2.3. However, one participant (Exc1, p3, L19-21) took a totally different stance by indicating that ODAs could indeed contribute to patient safety in the operating room, e.g., by participating in the 'surgical pause' steps. In other words, a patient's safety will not be compromised if the ODA fulfils the AA role and then hands the patient over to the recovery room staff after surgery (Exc1, p3, L13-16). By way of illustration:

"*Alright, and you would feel safe as executive manager with that, and you would also feel safe with the ODA then handing over the patient to the recovery nurse?"* (Exc1IV, p3, L13-15) *"Yes."* (Exc1, p3, L16)

Finally, all the executive managers interviewed showed a positive inclination towards utilising ODAs in the operating department, but subjected to certain conditions of which ensuring patient safety was the prime proviso. The precondition to have a formalised SOP was the urgent need for ODAs to be regulated and registered by a statutory body as they worked in a high-risk environment in which patient safety was non-negotiable. Assumedly the registration process was in progress at the time of study (cf. Ch. 3, sect. 3.4.2.5). Registration would have a positive impact on the many challenges faced in the workplace (theatre and recovery room), e.g., the professional health team would know what ODAs are supposed to do and what can be expected of them; ODAs would be empowered to choose a suitable career path; antagonism from colleagues would hopefully be curbed and patient safety could be highlighted more in the theoretical and practice education and training of the ODAs. Furthermore, ethical and legal issues pertaining to safe patient care would become less of an issue with enough trained, competent, skilled and registered professional healthcare teams to meet all operating theatre patients' needs.

8.5. CONCLUSION

From the interview data certain prominent issues and factors emerged, including the current challenges experienced with the education and employment of ODAs, the utilisation of ODAs in the AA and RRA role and patient safety. The interviews with executive managers in Stage 4 of the study assisted to clarify a number of the challenges mentioned by the participants during the interview round in Stage 2 of the study.

Although it was found the ODAs did add value to the operating department, their allocated position was mainly that of a scrub role substituting the RN in areas where there was a shortage of theatre staff. Currently, the ODA, as an AA, is only utilised in one private hospital group mainly due to the lack of regulation and registration and a formal standardised SOP. But, while all the participants indicated they did not see a future role for the ODA in the recovery room other than handing the patient over and connecting the patient to the monitors, there were different opinions about the future role of ODAs as anaesthetic assistants.

The findings from all the datasets, collected during Stages 1 to 4 of the study, were synthesised as Level 3 of the analytical abstraction ladder in Chapter 9. Level 4 of the analytical abstraction ladder, which suggests a framework for a revised anaesthetic and recovery room curriculum, is dealt with in the final chapter, Chapter 10.

CHAPTER 9

SYNTHESIS AND DISCUSSION OF THE FINDINGS

9.1. INTRODUCTION

This chapter was the final stage (Stage 5) in the study process and deals with determining curriculum priorities. In this chapter the empirical findings of the study (which represented the third level of Miles and Huberman's (1994:92) analytical abstraction ladder) are synthesised and discussed. The discussion centres on the interpretation and connection of the findings from the various datasets with the theoretical perspectives provided in Chapter 2. The findings are explored according to the identified themes (cf. Ch. 5, sect. 5.3.1) and Fishbein's Integrated Behavior Model (cf. Ch. 2, sect. 2.9.2) (Fishbein, 2000:275).

9.2. SUMMARY OF FINDINGS FROM THE VARIOUS DATASETS

Firstly, a summary of the findings from the different datasets (Chapters 5-8) are provided to illustrate the interlinking of the various chapters. The datasets are set out in Table 9.1 below.

Table 8.1: Summary of datasets used to obtain empirical data

DATASETS				
Stage 1	**Literature review (Chapters 2 and 3)**			
Stage 2	**Interviews and questionnaire survey (stakeholders) (Chapters 4-6)**			
	Instrument	Participant categories and number of participants	Total number of participants	In-text reference
	i. Interviews: • 23 individual • 2 paired • 10 focus group	Managers (24) Anaesthetists (7) ODAs (7) Students (22) Educators (11)	71	Ch. 4, sub-heading 4.4.2.1
	ii. Questionnaire • Self-administered • Paper-based • 4-point Likert scale	Managers (21) Anaesthetists (5) ODAs (7) Students (20) Educators (11)	62 (2 incomplete questionnaires discarded)	Ch. 6, Table 6.9
Stage 3	**Online Delphi questionnaire (expert inquiry) (Chapter 7)**			
	Instrument	Participant categories and number of participants	Total number of participants	In-text reference
	Online Delphi questionnaire	Managers (7), ODAs (2) & Educators (8)	17	Ch.7, heading 7.2
Stage 4	**Individual interviews (clarification and justification of findings) (Chapter 8)**			
	Instrument	Participant categories and number or participants	Total number of participants	In-text reference
	Individual interviews	Executive nursing managers (5)	5	Ch.8, heading 8.1
Stage 5	**Determining curriculum priorities (Fishbein's Integrated Behavior Model) (Chapter 9)**			

The literature review undertaken by the researcher represented Stage 1 of the first round of data collection.

9.2.1. Interview data: First round

The individual, pair and focus group interviews and the paper-based self-administered questionnaire constituted Stage 2 of the current study. Referring to Table 9.1, a total of 71 stakeholder participants took part in the first round interviews (cf. Ch. 4, sect.4.4.2.1). The participants included 24 managers, seven anaesthetists, seven ODAs, 22 students and 11 educators. Twenty-three individual, two paired and 10 focus group interviews were conducted (cf. Table 4.1). The interviews provided rich data regarding the taught and received curricula related to ODA education and training from the stakeholders' perspectives. In the data analysis, the elements applicable to the IBM (cf. Ch. 2, Fig. 2.6) were kept in mind as it emerged in the form of categories and sub-categories. The data from the interviews thus indicated the taught, received, null and hidden ODA curricula (cf. Ch. 6, sect 6.2).

9.2.2. Paper-based questionnaire

The paper-based self-administered questionnaires rendered a return rate of 64 (cf. Table 9.1). Two were discarded because they were incomplete leaving 62 fully completed questionnaires with accessible workable data (cf. Ch. 6, sect. 6.3.1). The questionnaire data concurred largely with the first round interview data in that the overall perception was that ODAs were not competent to fulfil their A/RRAs role and functions. The content areas suggested for each year of study (cf. Ch. 6, Table 6.13) were used to compile the Delphi questionnaire.

9.2.3. Delphi exercise

The Delphi exercise was Stage 3 of the current study (cf. Table 9.1). The data generated from the extensive literature review undertaken by the researcher (Stage 1), the 35 interviews as well as the 62 fully completed and returned self-administered paper-based questionnaires (Stage 2) (cf. Ch. 6, Table 6.9) were employed to compile an online Delphi questionnaire based on the expressed needs of all stakeholders (cf. Ch. 5, category 4.3). Seventeen participants participated in the online Delphi exercise (cf. Ch. 7, sect. 7.2).

The aim with the Delphi technique was to obtain consensus among panel members on the knowledge, skills, attitudes (behaviour) and non-technical skills ODAs require to not only enter the workforce, but also to enable them to assist the anaesthetists and RNs. It was essential to achieve some consensus among panel members regarding the knowledge, skills and attitudes to be included in the anaesthetic and recovery room curriculum. This represents one of the IBM elements, namely knowledge and skills, which play an important role in developing competence (Fishbein & Yzer, 2003:166; Wee *et al*., 2016:160). The content areas (cf. Annexure R) on which consensus was reached and which could be potentially included in an anaesthetic and recovery room course were compared to the current ODA curriculum material. The list of skills which could be included in a proposed framework for a redesigned anaesthetic and recovery room course is presented in section 9.4.2.

9.2.4. Interview data: Second round

Individual interviews were conducted with five executive nursing managers for clarification and justification of the findings. This was the second round of interviews and Stage 4 (cf. Table 9.1) of the datasets. The themes which emerged from the additional round of interviews conducted to clarify and justify issues/challenges raised by the first cohort of participants (Stage 2) (cf. Table 8.1), emphasised the challenges experienced with ODA education and training and employment. What stood out was a concern about patient safety as well as meaningful regulation of the professional group which would include an SOP and career path that would influence their acceptance, accountability and responsibility in the clinical environment. These views were consistent with Hauxwell's (2002:483) and Timmons and Tanners' (2004:663) findings that the ODA profession is facing many challenges.

The overall view which crystallised from the data was that ODAs appeared to be excellent scrub practitioners and, although their utilisation as A/RRAs is currently limited, the majority of participants saw a future role for the ODAs as AAs, but not as RRAs. The recovery room was viewed as the domain of the RN who was not to be replaced by an ODA. These viewpoints were consistent with the role of the ODA in the UK where they mainly assist the anaesthetists and surgeons and the RN performs the recovery room duties (Steevenson, 2006:551; Timmons & Tanner, 2004:650).

9.2.5. ODA study material

The ODA curriculum material, viewed as the planned curriculum (Harden, 2001:3), was scrutinised for outcomes related to the knowledge, skills, attitudes and non-technical skills applicable to the A/RRA role and functions (cf. Ch. 6, sect. 6.2.1). This formed a platform to compare the identified content areas to determine gaps and propose a possible framework for a redesigned anaesthetic and recovery room curriculum (see sect. 9.4.2 for a more in-depth discussion).

Next, the findings of the interview data of both the first and second rounds as well as the paper-based questionnaire are discussed. Of note is that the sequence does not represent any indication of the importance of the various factors.

9.3. FINDINGS ON FACTORS INFLUENCING ANAESTHETIC AND RECOVERY ROOM ASSISTANT TRAINING AND ACCEPTANCE

The findings which emerged from the data in Stage 2 of the study (cf. Table 9.1) are discussed according to the themes and categories which emerged. Cross-links between themes, categories and sub-categories are indicated.

9.3.1. Theme 1: Emergency care assistance (cf. Ch. 5, Theme 1; Ch. 8, sect. 8.3.2)

The term 'emergency assistance' as used in this study referred to the assistance provided to the healthcare professionals during anaesthetic emergencies. Overall, the perception was that the ODAs should be

competent to assist during emergency situations. This finding concurs with the level of competence expected from AAs in other countries (also see Aggarwal, 2017; NES, 2011:36-37; Pillai, 2013:xiii). However, from the data it was clear ODAs are at present not competent to deal with emergencies as discussed in the next few sections.

9.3.1.1. Operating department assistants' inability in dealing with emergency situations (cf. Ch. 5, sub-category 1.1.1)

The stakeholder representatives in the first round interviews (Stage 2 of the study) were unsure whether ODAs would be able to effectively assist during emergency situations (cf. Ch. 5, sub-category 1.1.1). Tested in the second round of interviews (Stage 4 of the study), one participant shared the same concern (cf. Ch. 8, sect. 8.3.2). The inability to deal with emergencies is contrary to the required competence for AAs as documented in literature (NES, 2011:36-37). Pillai (2013:4) and Weller *et al*. (2009:126) emphasise that well-trained AAs make a significant difference in the management of crises which is congruent to patient safety (cf. Ch. 2, sect. 2.8.4). The National Health Services overseeing healthcare education in Scotland listed it as a required AA competence (NES, 2011:36-37). A challenge referred to in the current study was that the ODAs' non-competence status could impact negatively on patient safety as well as on ODAs' confidence as some of them viewed themselves as a 'hindrance' (cf. ODA2, p20, L26-27). This suppositional stance impacts negatively on their self-image which could impede their intention to assist during emergency situations (Montaño & Kasprzyk, 2015:95; Steyn & Jandu, 2011:11).

The overall perception in this study was that an ODA must most definitely be competent to assist during emergency situations (cf. Ch. 5, sub-category 1.1.1; Ch. 8, sect. 8.3.2). Unfortunately, at present they have a dire lack of the required knowledge and skills which is apparently aggravated by a lack of clinical exposure/experience and a limited scope of practice. The next section focuses on the knowledge, skills and attitudes deemed necessary to equip the ODA to deal with emergencies.

9.3.1.2. Knowledge, skills and attitudes required to deal with emergencies (cf. Ch. 5, sub-category 1.1.2)

The benefits of competent ODAs are well described in literature. For example, ODAs must be suitably skilled to assist the anaesthetist during complex situations to prevent the occurrence of possible medical-legal risks (AST, 2008:7; Fletcher *et al*., 2002:418). The overarching impression in this study was that ODAs needed specific skills to assist during emergency situations (cf. Table 5.2, Annexure S). Moreover, it was clear the main skill required was the ability to manage and administer drugs (cf. Ch. 5, sub-categories 1.1.1 & 1.1.2). The data indicated it poses a risk to patient safety if the ODA can/may not administer drugs and the RN is unavailable to assist. Tested with the executive managers (Stage 4 of the study) the participants were not sure whether an ODA can/may administer drugs if ordered and under direct supervision of an anaesthetist or a RN (Exc4, p3, L8-10). Participant one (p2, L30-31) initially said 'no' because the ODA is not a nurse but later stated she was unsure. Participant two (p7, L2-3) stated although ODAs cannot at this stage administer and order drugs even if under supervision, there is still a definite need for an ODA to be

able to administer drugs in an emergency situation. The literature supports a practice where non-nurse practitioners need the knowledge and skills to transfer and manage drugs (as in Scotland), fill a syringe with a drug (as in Netherlands) and intravenously administer the drug (as in Scotland) (Davey & Ince, 2000:70; NES, 2011:5 & 31-32; Royal College of Anaesthetist, 2015:18; Woodworth *et al.*, 2012:11-12).

9.3.1.3. Suggestions to address the ODAs' lack of knowledge, skills and attitudes (cf. Ch. 5, sub-category 1.1.3)

More in-depth knowledge and clinical exposure to emergency situations, practising the required clinical skills in simulation and enhancing theory-practice integration by means of scenarios and workshops were suggested by the generated data (cf. Ch. 5, sub-category 1.1.3). This finding supports the documented benefits of simulation training as a method to improve communication and reduce staff anxiety in real anaesthetic emergency situations (Hughes, 2013:167). Many researchers assert simulation training promotes learning. Schunk (2014:497 & 504), for instance, indicates students gain knowledge and skills by 'doing' through social forms of learning while Bandura's (1988) social cognitive theory views learning by means of 'observing' a role model (Bandura, 1988:276). Simulation training assists students to transfer their skills to real-life situations as role modelling and practise opportunities in a non-threatening environment are provided (Weller *et al.*, 2009:126; Cumin *et al*., 2010:45). Simulation is a well-known method used in AA training in Australia and New Zealand to enhance, e.g., anaesthetic emergency assistance (Kluger *et al.,* 1999:269-273).

9.3.1.4. Scope of practice limits ODAs' assistance during emergency situations (cf. Ch. 5, sub-category 1.1.4)

The viewpoint that the current scope of practice limited the ODAs role during emergency situations (cf. Ch. 5, sub-category 1.1.4) and appeared to cause an unsafe practice in the operating department (cf. Ch. 5, sub-category 1.1.1) is dealt with in section 9.3.3. Participants (first and second interview rounds) expressed an urgent need for well-trained ODAs to assist during anaesthetic emergencies (cf. Ch. 5, category 1.1; Ch. 8, category 2.2) as is the practice in many countries. In India, e.g., the ODA must be able to assist with cardiopulmonary resuscitation and help with anaesthetic emergencies (Aggarwal, 2017:1; Pillai, 2013:xiii).

9.3.2. Theme 2: Pharmacology (cf. Ch. 5, category 2.1)

In the findings the fact that ODAs 'may not' under any circumstances verify, transfer, manage or administer drugs was directly linked to their dire lack of knowledge about drugs which, in turn, profoundly impacted on their ability to assist during emergency situations and their overall A/RRA role. Many participants ascribed this to the course content not covering all drugs used (cf. Ch. 5, sub-category 2.1.1), a lack of clinical exposure/experience which influenced ODAs' theory-practice integration (cf. Ch. 5, sub-category 2.1.3) and the ODA's restrictive SOP (cf. Ch. 5, sub-categories 2.1.2 & 2.1.4). On the whole, insufficient pharmacology training was seen as a major challenge to the general performance of the ODAs and the main reason why they are currently not assisting anaesthetists (cf. Ch. 5, sub-category 2.1.1). Most ODAs endorsed the need

for a more detailed pharmacology section in the course (cf. Ch. 5, sub-category 2.1.5). Their stance on drug handling mirrored the education and training requirements for AAs in Scotland (NES, 2011:31-32).

The fact that ODAs were not allowed to verify and transfer drugs was problematic as it indeed forms the bulk of an AA's role. This viewpoint was consistent with literature in that one of the AAs' main perioperative responsibilities is the management of drugs which includes conveying, preparation, maintenance and record-keeping of all drugs and fluids (AOTP, 2013:1; Foster & Jepson, 1983:1-20). Administering drugs was not in their work profile, yet some ODAs in this study were asked and allowed to fill a syringe and administer the drug under direct supervision (cf. E5, p15, L14-15). This inveterate habit undoubtedly places the focus on the urgent need for ODAs to be allowed to administer drugs under supervision. Furthermore, an executive manager (Exc2, p7, L2-3) in the second round of interviews (Stage 4 of the study) confirmed the need for a competent ODA who is able to lock out scheduled drugs and even administer it under supervision in an emergency situation.

Literature supports the fact that ODAs do not usually administer drugs. At the same time, some sources in literature mentions ODAs do administer drugs occasionally, but then strictly under direct order and supervision of a healthcare professional, e.g., an anaesthetist (Davey & Ince, 2000:19; Medical Sciences Council of New Zealand, 2014b:11-12). It is, however, stressed by the Medical Sciences Council of New Zealand (2014b:11-12) that if AAs are allowed to prepare and administer drugs, the filling of the syringe remains the responsibility of the anaesthetist.

9.3.3. Theme 3: Company-specific scope of practice (cf. Ch. 5, category 3.1; Ch. 8, sub-category 1.2.2)

The data revealed the ODA's current scope of practice lacked clarity altogether which confused both ODAs and professional operating department staff (cf. Ch. 5, sub-category 3.1.4) because it prevented ODAs to fulfil their A/RRA role. Particularly in emergency situations (cf. Ch. 9, sub-category 9.3.1.4) the existing SOP caused uncertainty as to what ODAs may and may not do which, in turn, limited their learning opportunities (cf. ODA6, p11, L20-23; MGTGr6P3, p3, L26-32). These opinions were found to be consistent with literature sources which confirm restrictive and inconsistent application of the SOP inhibits ODA students and graduates to practise to the full extent of their training (Kunic & Jackson, 2013:236).

Of note is that the ODA's work profile is not seen as a separate factor in the IBM, but as the direct linking factor to the student's perceived norms and the environmental constraints (Wee *et al*., 2016:160-165). It could therefore have an impact on the ODA's performance of the required behaviour. Perceived norms reflect the social pressure students experience to assist the healthcare professional (Wee *et al.,* 2016:161). Environmental constraints, on the other hand, reflect a lack of clear guidelines on what can be expected from ODAs. Hence, ODA students' duties need to be specified in an appropriate job description known to and understood by all staff to ensure learning opportunities are utilised to the fullest (ANZCA, 2016:2; Scottish Medical and Scientific Advisory Committee, 2003:1).

9.3.3.1. Anaesthetic and recovery room assistant functions (cf. Ch. 5, sub-category 3.1.1)

Additional limitations which prevented the ODA to fulfil all the functions expected from an AA emerged from the data generated in the current study. Examples include inserting a suppository and urinary catheter, working with intravenous infusions and observing the patient's vital signs (cf. Ch. 5, sub-category 3.1.1). These are procedures performed by the AA (Ministry of Health and Family Welfare Allied Health Section, 2015:26; NES, 2011:5-38, 45; Pillai, 2013:3-5). In the current study, the aforementioned restrictions caused conflict in ODA and student participants themselves as well as between them and the operating theatre staff. ODAs felt incompetent and also confused if they were given an order and they refused to carry it out because it was not in their SOP. For this reason they were hesitant and preferred not to assist the healthcare professionals. On the other hand, professional staff members interpreted the ODA's reluctance to carry out orders as incompetence – specifically in an emergency situation (cf. Ch. 5, sub-category 3.1.1). Conflict – whether self-conflict or conflict in the team – cannot and could not be tolerated in the operating theatre and recovery room where patient safety is of utmost importance.

In fact, the data showed many of the skills needed to assist in the recovery room which the ODAs supposedly lacked – but which was expected from them – were beyond their SOP. These included skills such as administering drugs, extubating and recovery of a patient. A key theme which emerged from the data was that inadequate clinical exposure and experience was a leading cause of non-competence (cf. Ch. 5, sub-category 5.1.3). Adequate clinical exposure and experience are confirmed in literature as crucial elements to achieve competence (Steinert, 2014:459).

9.3.3.2. Operating department assistants cannot do call independently (cf. Ch. 5, sub-category 3.1.2)

From the first round interview data (Stage 2) it was determined that ODAs were unable to do call independently as they could not perform all the required procedures expected from them (cf. Ch. 5, sub-category 3.1.2). The main procedures referred to include the care of a patient in the recovery room and the management of drugs. Currently ODAs are not taught how to recover a patient. On the contrary, non-nurses in Scotland (NES, 2011:34-37) who graduated from the revised perioperative care programme may recover a patient (Davey & Ince, 2000:6). The ODAs in the current study were, however, taught how to manage drugs (Viszolai, 2016b:50). Literature supports the management of drugs as a required competency to work as an AA (NES, 2011:31).

An executive manager in the second round of interviews (Stage 4) confirmed ODAs could do call, and particularly when they were employed in larger hospitals (Exc1, p7, L24-29 & 33-34). The RN and ODA may rotate roles with the ODA being utilised to his/her full potential in the scrub and AA roles while the RN recovers the patient, as quoted:

"Look, what they do at the moment is on-call they might have one RN. The … RN could either be responsible for the anaesthetics or to scrub, and then the other person could be an ODA. So, if you have a scrub practitioner ODA, then the RN is anaesthetics [assisting the anaesthetist]*, but otherwise it's the other way around."* (Exc1, p7, L24-29)

9.3.3.3. Concerns about the legality of ODAs working in the operating department (cf. Ch. 5, sub-category 3.1.3; Ch. 8, sub-category 1.2.1)

Only a few participants in the first round of interviews (Stage 2) referred to the legality issue of ODAs not registered with any statutory body (cf. Ch. 5, sub-category 3.1.3). The concern was tested in the second round of interviews (Stage 4) and, although for different reasons, all five participants raised the urgency for ODAs to be regulated and registered (cf. Ch. 8, sub-category 1.2.1). Unfortunately, as the data confirmed, resistance was constantly experienced from regulatory bodies to register and regulate ODAs. On the international scene not all countries require the registration of ODAs, e.g., in India and Australia (Aggarwal, 2017:1; Hamlin *et al*., 2016:21) but in the UK (Anderson, 2012:1; Milton, 2005:7) and New Zealand (Medical Sciences Council of New Zealand, 2016b:1) non-nurses performing perioperative care are required to register with a statutory body.

The executive managers in the current study regarded the lack of registration and regulation as a key constraint to the optimal utilisation of ODAs (cf. Ch. 8, sub-category 1.2.1). Their stance on the issue of registration and regulation aligned with that of Kunic and Jackson (2013:236) who state regulatory barriers such as resistance of statutory bodies to support the regulation of ODAs could impede on the latter's education and training.

9.3.3.4. Uncertainty about the ODAs anaesthetic and recovery room functions (cf. Ch.5, sub-category 3.1.4; Ch. 8, sub-category 1.2.2)

Many participants in the first round of interviews signified they were unsure what the ODAs' job specifications entailed (cf. Ch. 5, sub-category 3.1.4). As established in literature, clear guidelines for the ODA's job have to be available (ANZCA, 2016:2). Specific guidelines on what the ODAs may and may not do were mentioned in the data. It further emerged from the data that the healthcare professionals were uncertain about what they could and could not teach the students. Consequently, not all healthcare professionals were willing to teach and mentor students (cf. Ch. 5, sub-category 3.1.5) which, in turn, contradicted the principles of effective clinical teaching and learning mentioned by Botma and Bruce (2017:316-324). With reference to the current study, it was determined that experienced staff was needed to guide and support ODA students to meet their identified learning needs (Botma & Bruce, 2017:323). The same problem was identified internationally which led to the publication of guidelines, competencies and work profiles to clarify the AA's role and functions (Medical Sciences Council of New Zealand, 2014b:11-12; Pillai, 2013:4-5). It is imperative for team members to have knowledge of each other's roles and tasks to prevent uncertainties and ensure optimal team performance (Baker *et al.,* 2006:1578; Weller *et al.,* 2009:129).

9.3.3.5. Tension and frustration in the operating department due to ODAs' limited SOP (cf. Ch. 5, sub-category 3.1.5)

The study data indicated the lack of clear guidelines (cf. Ch. 5, sub-category 3.1.4) and nurses perceiving ODAs as inferior to them (cf. Ch. 8, category 1.3) caused tension, conflict, frustration and territorialism in

the operating department (cf. Ch. 5, sub-category 3.1.5). Tension and friction caused by issues similar to those in the current study were also evident abroad (Hauxwell, 2002:483; Timmons & Tanner, 2004: 655) where antagonistic theatre nurses protected their scrub role and functions (Robinson & Straughan, 2014:352-355; Timmons & Tanner, 2004:645). These disputes were resolved with the role clarification of ODAs. The role classification included the development of core competencies for nurses and non-nurses involved in perioperative contexts (Davey & Ince, 2000:6) as well as making sure ODPs belong to a regulated profession (Anderson, 2012:1; Milton, 2005:7; NAW, 2000:2). A further cause of such tension and frustration raised in the current study, was the fact that the anesthetists assumed a 'second pair of hands and eyes' was allocated to them on which they could rely (cf. Ch. 2, sect. 2.8.6) . However, this was not the case as the ODAs were unable to assist anaesthetists with their needs (cf. Ch. 5, sub-category 4.1.2). This situation was far from ideal since reliable assistance is crucial for effective anaesthetist-assistant relationships and safe patient care (Rutherford *et al*., 2012a:29; Rutherford *et al*., 2012b:21-25). To achieve a positive and fruitful anaesthetist-assistant working relationship, a shared understanding of roles and responsibilities is crucial. Hence, the Medical Sciences Council of New Zealand (2014b:11-12) proposed guidelines to clarify the role of AAs which includes the preparation and administration of drugs – a key catalyst for friction and tension – and to promote professional relationships as well as combat the antagonism between ODAs and nurses (cf. Ch. 2, sect. 2.8.6).

9.3.4. Theme 4: Operating department assistants' contribution (cf. Ch. 5, Theme 4; Ch. 8, Theme 2)

Assistance, in the context of this study, was considered as the ODA's contribution in all the required roles to alleviate the shortage of theatre-trained nurses. Such contribution also related to the ODAs' self-efficacy and stakeholders' needs as discussed next.

9.3.4.1. Operating department assistants' contribution to the operating department (cf. Ch. 5, category 4.1; Ch. 8, category 2.1-2.3)

It was evidenced in the data from interview rounds that the ODAs did indeed add value as scrub practitioners to the operating department (cf. Ch. 5, sub-category 4.1.1; Ch. 8, category 2.1). However, mixed opinions were forthcoming as to the value they added as anaesthetic and recovery room assistants. A few participants from the first round of interviews (Stage 2) perceived the ODA as an asset in the anaesthetic and recovery room domain if he/she was utilised within the boundaries of their SOP, but the majority of interviewees indicated ODAs were not adequately trained and competent to assist the anaesthetist and RN. It was particularly true for occasions where students had to assist the anaesthetists without the proper guidance and mentoring or when they were left alone in the recovery room and had to recover patients (cf. Ch. 5, sub-category 4.1.2).

Humiliation occurred when students were shouted at (Ch. 5, sub-category 2.1.2). One anaesthetist ascribed such unjust treatment of ODAs to the lack of trained anaesthetic and recovery room RNs to supervise ODA students (Ch. 5, sub-category 4.1.1). The anaesthetist's view was confirmed in literature. According to

Botma and Bruce (2017: 316-324) and Wood (2014:327), experienced professional staff are needed to guide and support students. This highlights the impact of mentoring in anaesthetic and recovery room training where students are mentored while rotating through the disciplines to enhance theory-practice integration (Fishbein & Yzer, 2003:181) by means of clear communication with regard to clinical outcomes and operational staff responsibilities (Skeff *et al*., 1997:S56).

On the whole, the perception was that the ODAs did not add value as A/RRAs. Yet, the analyses of the interview data ascertained some ODAs did perform all the AA and RRA functions as taught; particularly in the two departments where the students received supervised clinical accompaniment and mentoring. Giving support to enhance ODAs' performance together with instilling in them the values of punctuality, good communication and solid teamwork (cf. Ch. 6, sect. 6.2.4) highlight the impact of the hidden curriculum (Barnett & Coate, 2005:39; Dent & Harden, 2013:9; Eisner, 1994:88, 95 & 97; Kelly, 2004:7-8; Neary, 2002:46-47; Wear & Skillicorn, 2009:452).

The students felt they were not really utilised according to their abilities and this made them query the value of being properly trained to assist the anaesthetist (cf. Ch. 5, sub-category 4.2.3). Tested with the executive managers (Stage 4 of the current study), four confirmed the possible future use of ODAs as AAs. Currently, the need seems for ODAs to fulfil the scrub role. One participant from the private sector mentioned they were already utilising ODAs as AAs (Exc1, p1, L12-13) and another participant from the public sector emphasised the need for trained ODAs to assist the anaesthetists (Exc2, p9, L26-29). Furthermore, executive managers saw the future role of ODAs in the recovery room as an ancillary one and not as a replacement for the RNs (cf. Ch. 8, category 2.1-2.3). The participants in the first interview round (Stage 2 of the current study), on the other hand, verbalised a need for ODAs to assist with patient care during patient handover to the recovery room staff (cf. Ch. 5, sub-category 4.1.3) which is confirmed in literature as a function of the AA (HSSC, 2013b:11-13; NES, 2011:34; Pillai, 2013:26).

It is therefore vital to recognise producing graduates who are competent to assist the anaesthetists and RNs, a course which encourages as well as empowers them to assist the healthcare professional is the key prerequisite. For this reason, the IBM model was employed in the current study to determine how students learn and how the current ODA course could be changed to develop the required behaviours or attitudes. Only constructs of the IMB model (marked with an asterisk in Fig. 2.6) relevant to the anaesthetic and recovery room course were addressed as indicated in the next section.

9.3.4.2. External variables: self-efficacy, attitude and perceived norms affecting the ODA's intention to contribute (cf. Ch. 5, category 4.2)

Attitude, self-efficacy and perceived norms operating in conjunction with each other are the three factors which determine the students' intention to assist the healthcare professional and build confidence (cf. Ch. 2 sect. 2.9.2). Four additional factors, namely knowledge and skills, salience of behaviour, habit and environmental constraints may transcend intention and are addressed in sect. 9.3.5 of this chapter (IBM, 2013:1; Steyn & Jandu, 2011:11; Wee *et al.*, 2016:159-161). The next four sections focus on the factors

affecting the student's belief in her/his ability to demonstrate anaesthetic and recovery room assistance competence (Akhtar, 2008:1; Bandura, 1994:1; Redmond, 2016:1).

Students unaware the anaesthetic and recovery room education and training forms part of the operating department assistance programme (cf. Ch. 5, sub-category 4.2.1)

Some students and one ODA reported they were not aware on enrolment that the anaesthetic and recovery room course was part of the ODA programme. Neither did they know it would be expected from them to assist the anaesthetists and RNs (cf. Ch. 5, sub-category 4.2.1). Their expectation was that they would only fulfil the scrub role. Some students perceived the A/RAA's role as an 'afterthought' and not their main priority, a notion which could impact negatively on their studies. These preconceived ideas of students concurred with literature studies indicating students' attitude and expectations are major barriers to effective teaching and learning (Shell, 2001:287-288). The lack of emphasis on the AA's role and function could prevent the student from building up a high sense of self-efficacy which could resulted in them not performing the required behaviour (Bong & Skaalvik, 2003:6; Palmer, 2006:337-338; Schunk, 2003:159; Van Dinther *et al*., 2011:96 & 104-105). The students' uncertainty and lack of insight into the course content could become an obstacle since they enrol with the intention to assist the healthcare professional (IBM, 2013:1-2). Intention, influenced by attitude, is seen as the top predictor of behaviour (Montaño & Kasprzyk, 2015:95; Steyn & Jandu, 2011:11).

Operating department assistants feel uneasy, useless, unsafe, unsure and inferior re. their AA and RRA role (cf. Ch. 5, sub-category 4.2.2)

Not much analysed data pointed to ODAs/students exhibiting a strong sense of self-efficacy with regard to assisting the healthcare professional (Ch. 5, sub-category 4.2.2). In fact, the evidence suggested they felt uneasy, unsafe, unsure and inferior with some mentioning 'fear' and 'no confidence' about their A/RRA role. The circumstances under which the students worked made it difficult to assist the healthcare professionals as most were too scared to perform the role and therefore tried to avoid it. By experiencing anxiety, ODAs are unlikely to enhance their self-efficacy; harbouring such negative emotions promotes one's proneness to failure (Ng & Lucianetti, 2016:14). Many ODAs apparently had the mindset and attitude that they were either not emotionally empowered or technically equipped to work in anaesthesia and the recovery room – this uncertainty could *de facto* influence their intention to assist or not assist the healthcare professional (Wee *et al*., 2016:160).

One student simply acknowledged she did not believe in herself until her team members assured her they believed in her capabilities and abilities (Ch. 5, sub-category 4.2.2). The aforementioned serves as an example of how a student's self-efficacy can be positively influenced – its significance lies therein that attitudes and beliefs are central to students' willingness to assist the healthcare professional (Kauffman & Mann, 2014:25). According to literature sources, self-efficacy in the operating department is achieved by various means. These means (presented in no particular order) include informative and corrective feedback after assisting the anaesthetists and/or RN as it has been shown to be a strong factor in building self-efficacy. Also, observing role models performing the skill successfully and guided practice to practise skills which are

sequenced from easy to difficult (Bandura, 1988; 277; Kauffman & Mann, 2014:11; Redmond, 2016:14; Schunk, 2012:121 & 151-152; Schunk, 2014:184; Swanwick, 2005:860). On the contrary, these aspects appeared to be lacking in the majority of operating departments in the current study. Firstly, the students had too little guided experience and exposure (cf. Ch. 5, sub-categories 4.2.2 & 5.1.3) to practise anaesthetic and recovery room assistance due to many environmental constraints. Secondly, not all students had the opportunity to observe role models as they were seen as the workforce and thus left alone to perform assistant functions (Ch. 5, sub-category 5.1.3). Finally, it emerged from the data that ODA students received mediocre assessments while, in some instances, they were not assessed at all (Ch. 5, sub-category 5.1.5).

Still, the data showed one ODA received adequate supervised clinical exposure, e.g., in the recovery room she demonstrated considerable self-efficacy (Ch. 5, sub-category 5.1.3). Schunk (2003:159) and Van Dinther *et al*. (2011:96 & 104) assert personal accomplishment is the best way to build self-efficacy as it provides students with authentic evidence that they can succeed at a task. On the other hand, tension, anxiety and stress are considered as factors which lower students' sense of self-efficacy (Van Dinther *et al*., 2011:98). This was confirmed by some students in this study who shared they felt useless/inadequate (Ch. 5, sub-category 4.2.2).

In summary, the analysed data indicated all three factors enhancing self-efficacy were manifested in the anaesthetic and recovery room course. Opportunities for sufficient clinical exposure were minimal and neither were students given proper guidance to build sufficient self-efficacy. Instead, they felt useless, insecure and feared the disciplines unfamiliar to them. In spite of their misgivings, some still believed they could assist the anaesthetist and RN.

Operating department assistants perceived negativity towards the anaesthetic and recovery room course (cf.Ch. 5, sub-category 4.2.3)

In general, ODA and student participants indicated they found it difficult to practise in the setting they were trained in due to the reasons mentioned in the previous section. In terms of any future intentions the graduates had to assist the healthcare professional, the data indicated this seemed unlikely to happen for various reasons. In the first place, ODAs and students had a negative perception of the A/RRA role and functions (Ch. 5, sub-category 4.2.3). Secondly, they did not regard their function to assist the anaesthetist as their main role (Ch. 5, sub-category 4.2.1). Thirdly, most seemed to be of the opinion that it was pointless to assist the anaesthetist if they may not perform the bulk of the procedures required from an AA (Ch. 5, sub-category 3.1.1) and, in the fourth place, they felt they were not competent enough due to the lack of clinical exposure (Ch. 5, sub-category 4.2.3 & sub-category 5.1.3). Of the four factors mentioned, specifically the first three (negative perception of the A/RRA role and functions; perceiving their function to assist the anaesthetist as not their main role and thinking it was pointless to assist anaesthetists if they may not perform the bulk of the procedures required from an AA) impacted directly on the ODAs 'salience of behaviour' (commitment). For example, because they were not fully informed, they did not understand their role and functions in the recovery room (Ch. 5, sub-category 3.1.4). Even if they had the intention to assist the healthcare professional, the likelihood of it actually happening decreased (also see the IBM, 2013:2).

Mixed perceptions of stakeholders regarding the ODAs' anaesthetic and recovery room assistance role and functions (cf. Ch. 5, sub-category 4.2.4)

It further transpired from the data that the stakeholders had mixed perceptions about the ODAs' anaesthetic and recovery room assistant roles (Ch. 5, sub-category 4.2.4). The executive managers (second interview round) also had mixed perceptions. Participant one (Exc1, p1, L12-14; p2, L27-28 & p3, L10-13) stated ODAs were used as AAs whereas others preferred to use the ODAs in the scrub practitioners' role (Exc2, p1, L9; Exc3, p8, L38; Exc4, p1, L24-25) due to the various reason alluded to (cf. Ch. 8, category 2.2). Participant two expressed the need for well-trained and competent ODAs to assist the anaesthetists (Exc2, p2, L1-3 & p2, L28-36) (Ch. 8, category 2.1-2.2).

The use of ODAs as scrub practitioners rather than AAs (MGTGr1P1, p8, L23-25) directly connected the students' perceptions (perceived norm) and assumptions of their AA role to the their sense or feeling of being unimportant (Ch. 5, sub-category 4.2.1). This was especially the case when management seemed to be unaware of the guidelines regarding the utilisation of ODAs as A/RRAs (Ch. 5, sub-category 4.2.4) and then allocating them to the scrub role. The findings further indicated that stakeholders, including the students, were not aware about the exact nature of the role and functions of an A/RRA because divergent opinions were forthcoming (Ch. 5, category 3.1). This finding was consistent with literature indicating that uncertainty, confusion and disagreement among operational staff impede on effective teaching and learning (DaRosa *et al*., 2011:1; Kunic & Jackson, 2013:236). For example, in some operating departments the ODAs were not allowed to interpret vital signs or verify drugs despite the fact that it was contained in the anaesthetic and recovery room course (cf. Ch. 5, sub-categories 1.1.1 & 2.1.1). Conversely, in the other departments and in other hospitals, it was expected from ODAs and students to have had these learning opportunities and for them to utilise it. It was therefore obvious that all the students across regions did not receive the same curriculum. Another example showed that although ODAs were not allowed to recover a patient, some were expected to do so (Ch. 5, sub-category 4.1.2) which illustrated the impact of the received and hidden curricula.

9.3.4.3. Stakeholder needs for AAs and RRAs (cf. Ch. 5, category 4.3)

The IBM points at ODAs' and students' needs of the required knowledge and skills to achieve the required behaviour. In the context of this study, it was their competence to assist the healthcare professional (Fishbein & Yzer, 2003:166; Wee *et al.,* 2016:160). Based on the scientific curriculum-making theory that implies education ought to adequately prepare the ODA for their A/RRA role and functions (Horn, 2002: 36-37; Scott, 2008:7) the researcher probed into the needed abilities of ODA graduates.

Although anaesthetic assistance is defined consciously (cf. Ch.2, sect. 2.8.1) and the AA is overall responsible for preparing and assisting the anaesthetists, their exact role and function differs from country to country. Thus, in SA a list of the content areas which had to be included in the existing anaesthetic and recovery room course also depended on the specific stakeholder needs in the country. In the same way, for adapting the anaesthetic and recovery room component of the Diploma in Operating Department Assistance

curriculum the expressed needs of all stakeholders had to be taken into consideration. Consequently, it was essential to determine the needs stakeholders required from AAs and RRAs. The data obtained from each interest group indicated various needs existed: (i) interpretation of data, including vital signs; (ii) inserting a urinary catheter; (iii) limited drug administration under direct supervision; (iv) managing of scheduled drugs; (v) holistic patient care; (vi) airway management; (vii) assistance with oxygen administration and (viii) attaching a patient to the monitors (Ch. 5, sub-categories 4.3.1 & 4.3.2). All these training needs corresponded with the competencies required from AAs in other countries (CODP, 2006:8-9; CODP, 2011:3; HSSC, 2013b:11-12; NES, 2011:5, 9, 11, 15, 17-19, 21 & 31) except the skill of extubating a patient. This is not a skill generally associated with the SOP of AAs, but removing a laryngeal mask airway is a skill required routinely by AAs in Scotland. The AA in Scotland also needs to be competent in assisting with patient extubation (NES, 2011:34).

According to the current study data, the most compelling need expressed by stakeholders (cf. Ch. 5, sub-category 4.3.2) was for ODAs to have the skill and knowledge to care for a patient 'hands-on' as they did not need nor wanted a technician who can only work with machines (MGTGr6P3, p4, L2-3). The same need existed in other countries before; consequently, the humanistic element was added to ODAs' education and training (Davey & Ince, 2000:29; Hauxwell, 2002:483; Pillai, 2013:xiii; Montgomery *et al*., 2017:378-379; Timmons & Tanner, 2004: 655; Steevenson, 2006:551). Hence, the ODAs technical role changed to a more holistic patient care role to allow them to rotate between the scrub, circulating and AA role according to the operational needs (Hind *et al*., 2001:82). Interestingly, in the second round of interviews (Stage 4 of the current study) one participant disagreed, stating the need for ODAs to fulfil the technical side of the perioperative role was more urgent (Ch. 8, category 2.2). The need for ODAs to fulfil the scrub role more than the AA role and not the RRA role at all was expressed in the data from the stakeholders. They further preferred the recovery room to remain the domain of the RN which corresponds with the ODAs role internationally. Although the ODAs' training include recovery room science, their main responsibility remains taking up the scrub role and assisting the anaesthetists (Steevenson, 2006:551; Timmons & Tanner, 2004:650).

Furthermore, a number of education and training factors impacted on the anaesthetic and recovery room assistance education and training as highlighted in the next section.

9.3.5. Theme 5: ODA education and training (cf. Ch. 5, Theme 5)

Barnett and Coate (2005:3) point out that curricula ought to focus on the 'knowing', 'acting' and 'being' of students to prepare graduates for the 21st century (cf. Ch. 2, sect. 2.5.1.2). In the context of this study, the students' anaesthetic and recovery room knowledge, skills and inner self seemed to develop through active real-life situations when they were afforded the opportunity to apply their growing knowledge and understanding by performing the skill in the workplace (Barnett & Coate, 2005:61-62). By applying the IBM model, and if the ODA has a strong intention to assist the healthcare professional, four other linked factors are needed to result in behaviour performance (Steyn & Jandu, 2011:11; Wee *et al.*, 2016:159-161). These factors are: (i) having the required knowledge and skills; (ii) few or no environmental constraints; (iii)

behaviour is important to the ODA and (iv) ODAs must have experience to assist the healthcare professional. It is therefore important for the anaesthetic and recovery room course to address these identified constructs (cf. Fig. 3.1) of the IBM model. The emerging data categories related to the overall anaesthetic and recovery room education and training of ODAs are discussed next.

9.3.5.1. Overall anaesthetic and recovery room training (cf. Ch. 5, category 5.1)

Current anaesthetic and recovery room training (cf. Ch. 5, sub-category 5.1.1)

Even if the students have the intention to assist the healthcare professional, the lack of knowledge and skills can prevent them from doing it (IBM, 2013:2). The overall view which the data showed was that the current anaesthetic and recovery room course did not prepare the ODAs to work in the designated areas and they were insecure when they had to perform some of the required skills (Ch. 5, sub-category 5.1.1). One of the reasons provided was the lack of knowledge deemed necessary to build a high self-efficacy and enhance the students' intention to perform the behaviour (also see Bong & Skaalvik, 2003:6; Palmer, 2006:337-338; Schunk, 2003:159; Van Dinther *et al*., 2011:96 & 104-105). Of further concern was the discrepancy found in how ODA educators interpreted the 'planned' curriculum and what was 'taught' to the students. For example, in one region of the private higher education institution the students were taught normal and abnormal vital signs, but in another region they were only taught the normal parameters of vital signs (cf. Ch. 5, sub-categories 1.1.1 & 2.1.1).

Flow of the current anaesthetic and recovery room course (cf. Ch. 5, sub-category 5.1.2)

Although many participants perceived the flow of the theoretical content of the current course logical, they did not experience the same with the clinical component of the anaesthetic and recovery room course (cf. Ch. 5, sub-category 5.1.2). The main reason for this was that the clinical component did not follow on the theoretical component as planned. This was due to various reasons (discussed in more detail in the next few sections) which resulted in students not getting the required clinical exposure/experience but received rather erratic clinical learning. The sequencing of curriculum activities such as clinical rotation which follows on the theoretical block is important as random sequencing of clinical exposure makes for chaotic, inconsistent learning which can obstruct the repetition of clinical experience necessary to enhance skills and theory-practice integration (DaRosa *et al*., 2011:1-2).

Limited clinical exposure (cf. Ch. 5, sub-category 5.1.3)

According to the IBM (Bandura, 1988:276), students need experience to be able to assist the anaesthetist and RN, because even if they intend to do it, the lack of experience could result in a low self-efficacy and prevent the student from actually doing it (DaRosa *et al.,* 2011:3; Fishbein & Yzer, 2003:166; Wee *et al*., 2016:160). According to the social cognitive theory, which underscores the IBM, the clinical environment plays an important role in student training and is directly linked to their achievements, their sense of self-efficacy, guided practice under simulated conditions and extensive practise opportunities to perfect the skill (Bandura, 1988:276-277; Kauffman & Mann, 2014:11). Although clinical exposure is crucial for students to master a skill, remembering to perform the behaviour can be difficult if it does not form part of a daily and consistent

routine (IBM, 2013:2). The data signified the majority of students and a few ODAs in this study did not get sufficient clinical experience which resulted in them feeling incompetent and negative towards anaesthesia. However, according to them, their negative feelings could have changed if they had had more clinical exposure (cf. Ch. 5, sub-category 5.1.3).

The lack of clinical exposure mentioned by most participants compounded the clinical time allocated to the course. The reasons for this (cf. Ch. 5, sub-categories 5.1.3 & 5.1.4) as shared by the participants included the fact that students were not allocated to clinical areas according to their programme planner; being utilised as a workforce forced them to work alone with no time for training; consecutive days of clinical placement were not continuous and they were constantly being taken out of disciplines to fill gaps where there were staff shortages. All the stated reasons concur with the barriers identified in literature (Kauffman & Mann, 2014:11-12). The particular two ODAs who had the required clinical exposure, as planned, had no issue with the clinical allocation time and found it sufficient (cf. Ch. 5, sub-category 5.1.3). It can therefore be posited that the allocated time as such might not be the problem, but rather the inconsistent or lack of clinical placement of students.

One possible way of compensating for a lack of clinical exposure might be the use of simulation training at the learning centre as suggested and already done by universities offering the ODA programme, e.g., the University of Aberdeen in Scotland (2010:5 & 6).

Clinical placement dictated by staff shortage (cf. Ch. 5, sub-category 5.1.4)

A learning-oriented environment plays an important role in students performing an intended behaviour. Bandura (1988:276) aptly states role-modelling and guided practice is essential for students to learn new skills, for monitoring their progress and for building high self-efficacy (Kauffman & Mann, 2014:11; Schunk, 2014:184). Regrettably, in the majority of operating departments in this study the students were seen as a workforce and only allocated to anaesthesia and the recovery room when there was no staff available to cover these areas (cf. Ch. 5, sub-category 5.1.4). This seemed to impact negatively on their studies as their clinical experience and exposure were limited.

Moreover, although the current programme was sequenced to allow students to advance through the various levels of difficulty, it appeared that the majority of students did not get the opportunity to progress from a novice to competent practitioner (cf. Fig. 2.4) (also see McKimm & Barrow, 2009:715). This was mainly due to inconsistent clinical placements which resulted in students not getting the guided practice needed to learn new skills (cf. Ch. 5, sub-category 5.1.4).

Anaesthetic and recovery room clinical assessments do not enhance learning (cf. Ch. 5, sub-category 5.1.5)

Assessment is viewed as an important component of CBE/T to support students to translate competency into their occupation- or job-related outcomes (Saucier *et al*., 2012:707) by progressing over a period of time from a novice into practice (Ebert & Fox, 2014:27). However, many participants were unsatisfied with the clinical assessments (cf. Ch. 5, sub-category 5.1.5). Although assessments are not seen as a separate factor in

the IBM (Archer, 2016:191), it directly links to the 'knowledge' and 'skills' factor which is related to the student's intention to assist the healthcare professional. This has a major influence on student learning as it allows them to develop a positive perception about the tasks to be mastered. Thus, students learn to assist the anaesthetist and RN by means of action and feedback which are crucial to achieve high self-efficacy and competence (Archer, 2016:57; Kauffman & Mann, 2014:11-12). Yet, despite the fact that the importance of assessments is well known (Amin & Eng, 2003:62; Meyer & Van Niekerk, 2008:104; Tyler, 2013:110) in this study many participants, including students, perceived the clinical assessments in some operating departments in a negative light (Ch. 5, sub-category 5.1.5). This could have influenced how they learnt and perceived their A/RRA role (also see Meyer & Van Niekerk, 2008:166).

Another crucial element is setting standards as this determines how students will learn the competency and how they will apply it in the workplace (Amin & Eng, 2003:8). The current anaesthetic and recovery room assessments, done in practice, were regarded as non-existing. In fact, tick sheets to pass the assessment were too easy and not according to practice requirements (cf. Ch. 5, sub-category 5.1.5). This is a clear example of how assessments should not be done and corresponds with the barriers reported in literature which affect teaching and learning negatively (Boursicot *et al*., 2014:295; Coady *et al.,* 2004:49; DaRosa *et al.,* 2011:23).

The aforementioned assessment regime contrasts with the importance of well-structured assessments for the mastering of clinical competencies (ANZA, 2016:2; Ebert & Fox, 2014:27; Scottish Medical and Scientific Advisory Committee, 2003:1). Student assessment is viewed as a powerful learning tool (Meyer & Van Niekerk, 2008:166), yet it seemed the students in this study were not offered the opportunity to assist the anaesthetist independently to apply their knowledge through active engagement (cf. Ch. 5, sub-category 5.1.5). Consequently, it appears the three dimensions of learning, namely 'knowing', 'acting' and 'being' – all important building blocks to produce competent ODAs – were not achieved (Barnett & Coate, 2005:61-65). As a result, students questioned the reason for them being taught to assist the healthcare professional as assessments on anaesthetic and recovery room assistance were performed for passing them and not to achieve in-depth preparation for their future roles (cf. Ch. 5, sub-category 5.1.5). How to conduct assessments in the best way to enhance anaesthetic and recovery room assistance did not emerge clearly from the data.

From the above five sub-categories (Current anaesthetic and recovery room; Flow of the current anaesthetic and recovery room; Limited clinical exposure and Clinical placement dictated by staff shortage) it was evident that the ODA students had to overcome numerous environmental constraints which could have limited their ability to assist the healthcare professionals. These constraints coincided with the barriers identified by Kunic and Jackson (2013:236) as factors impacting on ODA education and training. It could also be one of the reasons why the students/ODAs indicated a lack of competence to assist during emergency situations. They probably first needed to acquire the simple 'building blocks' of assisting the healthcare professional before they could learn the complex principles of emergency assistance (McKimm & Barrow, 2009:715).

Conflicting preference for a longitudinal versus concentrated condensed system (cf. Ch. 5, sub-category 5.1.6)

Parallel with the relevant literature, the current study indicated a mixed response regarding which system to implement in the anaesthetic and recovery room course (Kurth *et al*., 2001:327). One educator, some managers, the majority of ODAs and students as well as most anaesthetists recommended a condensed block system (cf. Ch. 5, sub-category 5.1.6) whereas the majority of educators preferred the longitudinal system which agrees with most of the latest literature (Kamil & Kheder, 2015:117-121; Marinović *et al*., 2009:498 & 501-504; Watts & Green, 2015:197-199). This finding also corresponded with the paper-based questionnaire data (cf. Ch. 6, sect. 6.3.1.1, category 3). Therefore, a choice between these two systems was included in the Delphi questionnaire for expert input and consensus.

9.3.5.2. Theory-practice integration (cf. Ch.5, category 5.2)

Much of ODA teaching and learning occurs in the workplace by means of clinical placement known as experiential learning where the latter is considered as a means to enhance theory-practice integration (Van Zyl, 2012:49; Wood, 2014:326). Three sub-categories emerged related to theory-practice integration, namely clinical theory integration is required; the poor alignment of theory and practice and methods to improve theory-practice integration.

Clinical theory integration is required (cf. Ch. 5, sub-category 5.2.1)

The managers, anaesthetists and educators confirmed the importance of theory-practice integration (cf. Ch. 5, sub-category 5.2.1). This finding agrees with Creemers and Reezigt's (2005:360) view that a curriculum which prepares professionals for their jobs should include active student involvement by means of clinical experience and exposure to enable them to transfer their skills to real-life situations. Some students and ODAs confirmed that the clinical placement helped them link theory and practice (cf. Ch. 5, sub-categories 5.2.1 & 5.2.3). Although the educators agreed with this view, they also highlighted barriers which seemed to impede negatively on theory-practice integration, including obstructive healthcare professionals (cf. Ch.5 sub-category 5.2.1), refusing to teach students as an environmental constraint (also see Kauffman & Mann, 2014:11-12) and poor alignment of theory and practice programme planners (cf. Ch. 5, sub-category 5.2.2).

Poor alignment of theory and practice (cf. Ch. 5, sub-category 5.2.2)

The overall view that emerged from the data was that there was poor alignment of theory and practice (cf. Ch. 5, sub-category 5.2.2). In many instances the sequencing of theory and practice did not form a unit with many limitations such as environmental constraints and curriculum sequencing identified as barriers. One participant linked the theory-practice integration to the alignment of theory and clinical rotation (A6, p2, L28) which corresponds with literature (Meyer & Van Niekerk, 2008:171). DaRosa *et al*. (2011:1-2) also point out that clinical placement can only provide a valuable learning experience to students if the theory and practice form a unit. Random sequencing of theory and clinical exposure makes for inconsistent clinical experience and learning as it obstructs repetition which serves to enhance skills. Hence, many methods to improve theory-practice integration were suggested as discussed in the next section.

Methods to improve theory-practice integration (cf. Ch. 5, sub-category 5.2.3)

A range of student-centred teaching and learning methods were suggested by the study participants (cf. Ch. 5, sub-category 5.2.3). These included simulated training followed by reflection, supervised clinical accompaniment and active student involvement to enhance theory-practice integration. These suggestions correspond with relevant literature on enhancing theory-practice integration (Ker & Bradley, 2014:179; Meyer & Van Niekerk, 2008: 82-84, 88 & 187). Simulated training, in this study, was also considered a requirement to enhance students' exposure to enable them to assist during anaesthetic emergency situations (cf. Ch. 5, sub-category 1.1.3).

Relevant literature also indicates that insufficient clinical exposure and limited utilisation of learning opportunities need to be compensated for by frequent educator accompaniment to guide and support the students from novice to expert (cf. Fig. 2.4). It should be accompanied by continuous allocation to anaesthetists and RNs according to a programme planner while assisting students through role-modelling, mentorship and independent functionality of the required skills (Launer, 2014:116-117). Accordingly, the student's work profile should be known to all personnel. Students should also be allocated to the same healthcare professional (ANZCA, 2016:2; Launer, 2014:116, 117; Scottish Medical and Scientific Advisory Committee, 2003:1). The latter is not always achievable. Launer (2014:116) advocates for a single educational supervisor to be allocated to a student for the duration of the course, but the day-to-day allocation should be to clinicians available to mentor and teach the student (also see Ch. 2, sect. 2.8.10.4).

9.3.5.3. Clinical mentoring (cf. Ch. 5, sub-category 5.3)

Although clinical mentoring was one of the methods suggested to improve theory-practice integration, a lack of mentors to assist and supervise students in practice was pointed out as a hindering factor by current study participants (cf. Ch. 5, sub-category 5.3.2). This was accompanied by other hindering factors such as clinical staff members who were too busy to teach students, inconsistencies in what students were taught and poor communication. In the latter case, for instance, the workforce supervisor and mentors were not aware of the learning outcomes (cf. Ch. 5, sub-categories 5.3.2 & 5.3.3). These constraints were similar to the findings of Coady *et al.* (2004:47-50) who investigated the teaching of medical students' musculoskeletal assessment skills. Without proper guidance, students do not utilise the learning opportunities to the fullest and will probably not attain the relevant outcomes which can have a negative effect on their learning experience (Meyer & Van Niekerk, 2008:84, 88 & 187). Experienced clinical staff and educators need to be actively involved in student clinical accompaniment to enhance theory-practice integration (Botma & Bruce, 2017:326-335). The three sub-categories which emerged as being related to clinical mentoring are discussed next.

Clinical mentoring by operating department staff (cf. Ch. 5, sub-category 5.3.1) is problematic due to environmental constraints (cf. Ch. 5, sub-category 5.3.2)

Supervised clinical mentoring plays an important role in producing competent graduates who can add value to the operating department. ODAs and students need support and guidance from mentors during supervised

clinical support to gain experience and confidence. This assists them to socialise into the ODA profession, develop clinical judgment and skills and experience job satisfaction (Botma & Bruce, 2017:323). In the current study, mixed responses were received from the participants in the first round of interviews (Ch. 5, sub-categories 5.3.1 & 5.3.2). Although there were some positive responses, most participants found the clinical mentoring by the operating department staff problematic (cf. Ch. 5, sub-category 5.3.1). Some managers were pro-training and created a learning environment which included student mentoring. This corresponds with Swanwick's (2005:863) findings that operating department staff members who are positive towards student learning are more likely to create a positive learning environment. In other departments, students received limited or no mentoring due to staff shortages or mentors who were too busy to assist students. The latter situation left ODAs and students to fend for themselves while additionally being utilised as the workforce and not treated as students (cf. Ch. 5, sub-categories 5.3.1 & 5.3.2). Most of these reasons coincide with the barriers reported in relevant literature (Skeff *et al.,* 1997:S56-S57; Kunic & Jackson, 2013:236), but at the same time they contradict the guidelines provided by the ANZCA (2016:2) and the Scottish Medical and Scientific Advisory Committee (2003:1) for effective student clinical placement and learning.

Clinical accompaniment and mentoring by educators (cf. Ch. 5, sub-category 5.3.3)

Although clinical accompaniment of healthcare professionals are vital to enhance students' theory-practice integration (Bandura, 1988:276-277; Botma & Bruce, 2017:317; DaRosa *et al.,* 2011:3; Kauffman & Mann, 2014:11; Schunk, 2012:121 & 151-152), it can only be properly integrated if the educator is actively involved in the students' practical development (Meyer & Van Niekerk, 2008:84). The participants in this study found the clinical accompaniment by the educators ineffective due to limited follow-up and clinical accompaniment and not enough time spent with students (cf. Ch. 5, sub-category 5.3.3). It contradicts the guidelines for rewarding and meaningful teaching and learning as suggested by DaRosa *et al*. (2011:2).

9.3.5.4. Anaesthetic and recovery room specific training (cf. Ch. 5, sub-category 5.4)

Several reports, including the Lewin (1970) and Bevan (1980) reports, were instrumental in the development of ODA curricula to develop multi-skilled graduates with appropriate competences according to stakeholder needs (Hauxwell, 2002:481; Ministry of Health and Family Welfare Allied Health Section, 2015:15; Smith, 2010:2-4; Smith & Wicker, 2007:4). The IBM also posits that students need the relevant knowledge and skills to enable them to perform the required behaviour and effectively assist healthcare professionals (Fishbein & Yzer, 2003:166; Wee *et al*., 2016:160). From the data in this study which were relevant to the current anaesthetic and recovery room training, three prominent sub-categories of findings emerged which are discussed next.

Current anaesthesia and recovery room specific training content (cf. Ch. 5, subcategory 5.4.1)

The study data indicated many recipients of the received curriculum (ODAs and students) and the majority educators (the taught curriculum) judged the theoretical content of the current course, except for the gaps identified, to be sufficient and adding value (cf. Ch. 5, sub-category 5.4.1). It can therefore be deduced that

no theoretical or practical content could be excluded from the current course. While the general opinion was that no content could be excluded, at the same time suggestions for the inclusion of certain content areas emerged from the datasets. These areas are discussed in the next two sections and were also kept in mind with the design of the Delphi questionnaire.

How the anaesthetic component of the course could be changed (cf. Ch. 5, sub-category 5.4.2)

The participant data suggested the following 24 content areas or elements should be added to the current anaesthetic component of the ODA course (cf. Ch. 5, sub-category 5.4.2): (i) in-depth theory of basic drugs used in theatre; (ii) electrocardiogram theory; (iii) holistic patient care and identification of physical changes; (iv) having knowledge of normal and abnormal vital signs to analyse and interpret vital signs data; (v) ethics and loyalty; (vi) knowledge of medical and surgical conditions; (vii) intubation to equip ODAs with the knowledge to know what the procedure entails and how an airway is manipulated; (viii) handling of emergency situations in a team; (ix) the effects of anaesthesia/drugs on the body systems and the impact of spinal anaesthesia on the patient; (x) the handling of scheduled drugs; (xi) intravenous cannulation and change of drips; (xii) the insertion of a urinary catheter; (xiii) loading drugs in syringes; (xiv) preparing and assisting with intubation in all types of situations; (xv) anaesthetic preparation and assistance for all disciplines/procedures, incl. advanced surgery; (xvi) injecting of drugs into a vaculiter on the anaesthetist's orders and under direct supervision; (xvii) care of an unconscious patient; (xviii) management of emergencies; (xix) having knowledge of various types of anaesthesia and equipment; (xx) the influences of diseases on anaesthesia and co-morbidities; (xxi) the positioning of patients for various procedures; (xxii) the identification of abnormalities; (xxiii) the effect of local anaesthesia and how to manage anaphylactic shock and (xxiv) theory-practice integration. These content areas correspond with the responsibilities of AAs in countries such as India and Scotland (HSSC, 2013a:1-93; HSSC, 2013b:2-50; Medical Sciences Council of New Zealand, 2012:24; NES, 2011:5-38, 45; Pillai, 2013:3-5 & 12-29). One particular area pointed out in the data which might not be in the interest of patient safety, was filling a syringe with a drug. According to Pillai (2013:19), expecting or allowing an ODA or student to fill a syringe with an anaesthetic drug depends heavily on his/her training received and, concomitantly, on the trust the anaesthetist has in the AA.

Some participants (cf. Ch. 5, sub-category 5.4.2) preferred the following four changes to the clinical component of the course to enhance students' exposure, confidence and to build competence: (i) supervised clinical exposure; (ii) clinical allocation to follow theory; (iii) simulated training and (iv) the use of videos and scenarios to enhance training. These changes were also suggested in previous sub-categories and are supported by relevant literature sources (Ker & Bradley, 2014:175 & 184; Launer, 2014:111; Morris & Blaney, 2014:104).

How the recovery room component of the course could be changed (cf. Ch. 5, sub-category 5.4.3)

Two major issues the participants had with the recovery room component of the anaesthetic and recovery room course were the students' limited clinical exposure and their lack of a work profile. The majority of educators perceived the content of the recovery room component sufficient. Yet, some managers, ODAs,

students and educators suggested additional content areas to be included in the current recovery room component (cf. Ch. 5, sub-category 5.4.3).

It is important to mention that only the content areas not overlapping with the content areas already mentioned in the previous section are listed here, namely: (i) an in-depth knowledge of premedication and drugs used in the recovery room; (ii) the holistic care of the patient which includes using the ABC headings; (iii) the observation and interpretation of vital signs; (iv) having a work profile for RRAs; (v) indications for extubating the patient and the extubation of a patient; (vi) having knowledge of the documentation of drugs given; (vii) the preparation and administration of drugs under direct supervision, including injections and suppositories; (viii) the handling of prolonged emergence from anaesthesia; (ix) the preparation of the recovery room, including the equipment needed; (x) assisting the RN to recover patients who had different types of anaesthesia; (xi) the management of emergencies to proactively assist the RN; (xii) having basic knowledge and the routine to recover a patient; (xiii) knowing recovery room discharge criteria and discharging patients from the recovery room and (xiv) airway management. These suggested curriculum content areas showed a strong resemblance to the competencies performed by non-nurse practitioners internationally (HSSC, 2013b:11-13, 27 & 31; NES, 2011:5 & 31-37; Pillai, 2013:3 & 26-27). In Scotland, e.g., the intravenous administration of drugs by an AA is dependent on local guidelines for the assessment and training during supervised practice (NES, 2011:5).

The above listed knowledge and skills obtained from the analysed interview, questionnaire and literature data were used to compile the Delphi questionnaire. The findings from the Delphi exercise are discussed in the next section.

9.4. DISCUSSION OF CONSENSUS FINDINGS REGARDING THE ODA ANAESTHETIC AND RECOVERY ROOM COURSE

The aim of the Delphi exercise was to determine the content areas to be included in the anaesthetic and recovery room course of the ODA programme and the relevance of such areas.

9.4.1. Importance of selected knowledge and skills

The ranking of the stated knowledge, skills, attitudes and non-technical skills on which consensus was reached was determined by the level of importance for inclusion in the current ODA course (cf. Ch. 7, sect. 7.4.1.3 – 7.4.1.8). Most of these areas were classified as important (cf. Annexure R) except for those with a score below 3 (cf. Table 9.2).

Although the skills '*Demonstrate proficiency in inserting a suppository'* and '*Demonstrate proficiency in administering of intravenous drugs during crisis/emergency under direct supervision of anaesthetist or RN'* scored a 2.9 (cf. Ch. 7, sect. 7.4.1.6) these are competencies sometimes required from the AA.

Table 8.2: Skills which achieved consensus and ranked as of minimal importance

Knowledge and skills	*M (SD)*	Discipline
Interpret an ECG rhythm and arrhythmias	2.9 (1.0)	Anaesthetic assistance
Demonstrate proficiency in inserting a suppository	2.9 (1,2)	Pharmacology: applicable to both anaesthetic and recovery room assistance
Demonstrate proficiency in administering intravenous drugs during crisis/emergency under direct supervision of anaesthetist or RN	2.9 (1.1)	Anaesthetic and recovery room assistance

Two skills did not achieve a consensus vote with 58.8% (cf. Ch. 7, sect. 7.4.1.4) of respondents indicating that these skills should not be included in the anaesthetic and recovery room course (cf. Table 9.3).

Table 8.3: Skills which did not achieve consensus and ranked of minimal importance

Knowledge and skills	*M (SD)*	Discipline
Remove an endotracheal airway	2.4 (1.3)	Recovery room assistance
Insert a laryngeal mask airway	2.4 (1.3)	Recovery room assistance

9.4.2. Outcomes of Delphi exercise regarding type of system to be used to offer the anaesthetic and recovery room course

Consensus was reached in the Delphi exercise on a longitudinal system, spread over the three years, to be used to offer the anaesthetic and recovery room course (cf. Ch. 7, sect. 7.4.1.2). This distinctly differs with the view various authors hold that health sciences education is usually presented as a block system over a one- to six-month period (Kamil & Kheder, 2015:117; Kurth *et al*., 2001:325; Saravanan & Pels, 2011:S270; Watts & Green, 2015:196). A study done by Kurth *et al*. (2001:327) showed mixed results as both these systems have advantages and disadvantages. The findings showed the block system improved student-patient interaction and clinical skills whereas the longitudinal system reported higher overall faculty satisfaction and interaction (Wisdom *et al*., 1993:S34-36).

The Delphi panel confirmed another set of statements by consensus (cf. Ch. 7, sect. 7.4.1.2), namely that the first year consists of preparation for anaesthesia which includes the foundation elements of anaesthesia and the second year consists of preparing for anaesthesia and assisting the anaesthetist with minor procedures which includes anaesthetic care. The third year entails preparing for anaesthesia and assisting the anaesthetist with major procedures, including regional blocks and preparing the recovery room and assisting the RN in the recovery room which includes principles of patient care. A similar approach and sequencing is used by universities which offer an ODA diploma and/or degree (cf. Table 2.3).

The content areas important for ODA training and practice which emerged during Stages 1 and 2 of the current study and on which Delphi consensus was reached are presented in the next main section (sect. 9.4.3).

9.4.3. Coamparison of the findings from the Delphi exercise to the current anaesthetic and recovery room curriculum

This section represents Stage 5 of the current study (cf. Table 9.1). The current anaesthetic and recovery room curriculum material used by the PHEI was examined to identify gaps in the prescribed course when compared to the findings of the Delphi exercise. It is important to mention that the current curriculum and study material is a combined sustained effort of a small team to provide a comprehensive course and directed at enabling graduate ODAs to assist the anaesthetist and RN in the operating department. However, in the absence of stakeholder needs assessment, as recommended by Kern's six-step approach (Kern, 2009:6), the current curriculum might be heavily biased and probably needed some corrective measures.

The outcomes of the Delphi centred on five themes. As the majority of participants indicated no content should be excluded from the current course, only the content areas which did not appear in the current course are indicated in the five sections below. These areas are related to relevant literature to possibly strengthen an argument for a revision of the current framework for the anaesthetic and recovery room curriculum.

9.4.3.1. Theme 1: Anaesthesia

The listed knowledge and skills – according to literature applicable to ODA education – were indicated on the basis of consensus by the Delphi panel as lacking from the current course (cf. Ch. 7, sect. 7.4.1.3):

- Knowledge: electrocardiogram arrhythmias; risk of deep venous thrombosis; outcome of persistent abnormal vital signs; effect of anaesthesia on lungs, lung functions and vital capacity (AST, 2008:243, 334-339 & 390-391; CODP, 2011:36; NES, 2011:9, 29 & 41; Pillai, 2013:145; University of Hull, s.a.b:9).
- Skills: assist with face-bag mask ventilation; clearing of upper airway block; blood transfusion (cross-checking and record-keeping) and a patient with unstable cervical spine; inserting and taking care of a female urinary catheter; preparing equipment for nebulised drugs; changing intravenous fluids (vaculiters); assisting with insertion of a nasogastric tube and analysing and interpreting vital signs (Bucks New University, s.a.:22; CODP, 2011:18-22, 29-30 & 36; Davey & Ince, 2000:29; NES, 2011:11, 17-19, 25-26, 31-32 & 36; Pillai, 2013:21-24, 214 & 255).

9.4.3.2. Theme 2: Recovery room

Although the data of the first interview round revealed mixed responses to the assistance role of the ODA in the recovery room (cf. Ch. 5, sub-category 4.3.1), a need was established for ODA assistance in the recovery room to take care of the patient until an RN is available to take over (cf. Ch. 5, sub-category 4.1.3). The knowledge and skills selected by the Delphi panel – corresponding with literature – which lacked (cf. Ch. 7, sect. 7.4.1.4) included:

- Knowledge of: role of the RRA; haemoglobin analysis; criteria and procedure to remove a laryngeal mask airway and endotracheal tube (and what to do if removed too early) and insertion of

oropharyngeal mask; terminal cleaning and preparation of the patient station and legislation applicable to the recovery room (Bournemouth University, s.a.:1-2; CODP, 2011:33 & 36; Edge Hill University, s.a.:4; NES, 2011:19, 26 & 34; University of East Anglia, s.a.:22-23; University of Hull, s.a.b:11).

- Skills: utilising equipment; utilising evidence-based approach to post-anaesthetic care of patient; monitoring and providing holistic care to a patient the first five minutes after handover in the recovery room; assisting with oxygen therapy; assessing for post-operative pain and nausea; identifying and preventing anaesthetic-related medical-legal risks; removing a laryngeal mask airway and inserting an oropharyngeal airway; assisting the RN to recover patients of all ages for all types of anaesthesia and procedures; observing, interpreting and analysing vital signs (including blood glucose, haemoglobin and urine analysis); maintaining legal record-keeping, including fluid balance charts; preparing the patient for discharge and decontaminating and preparing the patient station (CODP, 2011:34-35; Edge Hill University, s.a.:3; NES, 2011:9, 31 & 34; University of East Anglia, s.a.:23).

The recovery room skills which lacked coincided with the students' and managers' views pertaining to the fact that students were not assessed on RRA required skills in practice (cf. Ch. 9, sect. 9.3.5.1). This was perceived as a serious shortcoming in the current anaesthetic and recovery room course.

9.4.3.3. Theme 3: Anaesthetic emergency situations

The main theme that emerged from both rounds of interviews was that the ODA must be able to assist the healthcare professional during anaesthesia in emergency situations as there is not always time to call for help (cf. Ch. 5, sub-category 1.1.1). The knowledge and skills – corresponding with literature – lacking from the current course and selected by an acceptable consensus level in the Delphi exercise (cf. Ch. 7, sect. 7.4.1.5) were:

- Knowledge of the following: management of cyanosis, stridor, bronchospasm, cardiac dysrhythmias and pneumothorax (NES, 2011:36).
- The following skills: implementing of local protocols for management of sudden life-threatening haemorrhage; assisting with cricoid-thyroidotomy and fibre-optic intubation and preparing and assisting with a chest drain insertion (CODP, 2011:31; NES, 2011:18-19 & 36-37).

9.4.3.4. Theme 4: Pharmacology

The majority of participants in the first round of interviews (cf. Ch. 5, sub-categories 2.1.4 & 2.1.5) indicated the need for ODAs to verify and manage drugs which included scheduled drugs. This function is primarily performed by an AA (Pillai, 2013:3; NES, 2011:9 & 31). The knowledge and skills which correspond with literature but are lacking from the current course were indicated by an acceptable level of consensus (cf. Ch. 7, sect. 7.4.1.6) and included:

- A deeper knowledge of: specific premedication with regard to categories, generic name, trade name, action, indication, contraindications, effect, adverse effects and dosage as well as linking the anaesthetic drugs to drugs used in the recovery room with regard to categories, generic name, trade

name, action, indication, dosage, contraindications, effect and adverse effects (NES, 2011:9 & 31-32; Pillai, 2013:211).

- Skills: inserting a suppository; administering intravenous drugs during an emergency situation and injecting intravenous drugs into a vaculiter under direct supervision of an anaesthetist or RN (Bucks New University, s.a.:23; CODP, 2011:30 & 33; NES, 2011:5).

9.4.3.5. Theme 5: Attitudes, behaviours, values, beliefs and non-technical skills

Although all the selected affective (cf. Ch. 7, sect. 7.4.1.7) and non-technical skills (cf. Ch. 7, sect. 7.4.1.8) which corresponded with relevant literature as essentials skills for ODAs (AST, 2008:10; Botha, 2015:93; CODP 2011:23-27 & 30; Flin *et al*., 2008:1; Fuller, 2013:9-10, 13-21 & 46-48; NES, 2011:5; Pillai, 2013:21) were not necessarily included in the anaesthetic and recovery room component, most of these skills are incorporated into the current ODA study material. Some skills are not included in the current ODA curriculum per se, but could be incorporated in other outcomes, e.g., respect for colleagues could be dealt with during training via teamwork.

9.5. FINDINGS ON SUGGESTED CAREER PATH FOR THE ODA

Investigating the ODA career path was not incorporated in the original research plan. This theme emerged from the first round of interviews (cf. Ch. 5, Theme 7) as a major obstacle to the future of ODAs in South Africa. The opinion from both rounds of interviews was that ODAs should have the privilege of an own career path since they are at present 'borrowing' from other healthcare professions. The combined findings from the Delphi exercise (cf. Ch. 7, sect, 7.4.1.2 & Table 7.5) and the second round of interviews (cf. Ch. 8, sub-category 1.2.3) are summarised as possible career paths for ODAs – especially once they are registered and regulated as a profession.

- Anaesthesia supervisor after completion of an advanced short course in anaesthesia (also see AST, 2008:14).
- Clinical scrub specialisation in a discipline, i.e. cardio-thoracic or neurosurgery by doing a short course (also see AST, 2008:14; Fuller, 2013:6-7).
- Supervisory role in gastroenterology unit or central sterile supply department (also see Fuller, 2013:7).
- Operating department manager after graduating from a management programme (also see AST, 2008:14; Fuller, 2013:7).
- Academic career path as ODA educator; furthering studies, e.g., an honours, a master's degree and finally a PhD (also see Fuller, 2013:8).
- Moving into the commercial environment as a representative (also see AST, 2008:14; Fuller, 2013:8).
- Becoming a first physician assistant after graduating with an advanced diploma (also see AST, 2008:14; Fuller, 2013:6).

9.6. CONCLUSION

The findings from the study were discussed in detail in Chapters 5 to 8. The discussion in this chapter linked to the theoretical perspectives developed in Chapter 2 in order to synthesise the empirical findings of the study which represented Level 3 of the analytical abstraction ladder. Shortcomings and apparent missing content areas lacking from the current anesthetic and recovery room course and impacting negatively on the anaesthetic and recovery room education and training of ODAs, were identified and discussed. From the participants' viewpoint the role of the ODA in the recovery room is generally seen as an ancillary one.

The final chapter presents the conclusions and implications of the current study and proposes an explanatory ODA curriculum framework to address the main research question of the study.

CHAPTER 10
CONCLUSIONS AND IMPLICATIONS

10.1. INTRODUCTION

It is crucial for ODAs to be equipped with the required cognitive, affective and psychomotor skills to assure their effective functioning in all areas of the operating department. This study focused on teaching and learning shortcomings precipitating the criticism and doubts expressed about the sufficiency and effectiveness of the existing undergraduate anaesthetic and recovery room component of the Diploma in Operating Department Assistance offered at one of South Africa's multi-campus private higher education institutions. The ODAs' perioperative assistance to anaesthetists and RNs was scrutinised since an effective, competent team approach is imperative to ensure safe patient care and combat skills shortages in the theatre and recovery room areas.

Consequently, with the input of the various stakeholders and experts, the existing undergraduate anaesthetic and recovery room component was thoroughly explored from various angles. In the final analysis, a consensus position on a suggested ODA curriculum framework was achieved by employing a contextualised Delphi exercise. The Delphi results were compared to the current ODA curriculum to determine similarities and differences and thus contributed to a better understanding and the improvement of curricula in private healthcare education within a private higher education setting.

The first section of this chapter deals with the factual conclusions drawn from the findings of the study and the second part provides an overview of conceptual conclusions and implications. The final part suggests a number of options for rethinking and planning an undergraduate anaesthetic and recovery room curriculum, mainly based on the study findings and employing the Integrated Behavior Model (IBM).

10.2. SUMMARY OF RESEARCH PURPOSE, RESEARCH PROBLEM AND RESEARCH QUESTIONS

Literature makes it clear that anaesthetists need competent assistance during patients' perioperative care. Many curriculum developers and policymakers would probably agree that the acute shortage of nurses, which is also experienced in the operating department, makes it particularly challenging to provide specially skilled and accomplished assistants to anaesthetists and RNs in the theatre and the recovery areas. The challenge is perhaps realised most fully when considering the said assistance was primarily and historically provided by enrolled and/or registered nurses. In South Africa, the local private health sector also recently employed operating department assistants (ODAs) to assist the anaesthetist and RN in the operating department. However, no research has been conducted at any South African healthcare education institution to determine whether the current ODA curriculum effectively prepares the undergraduate for the 21st century health workforce. This study, conducted as a programmatic case study within a three-year undergraduate ODA programme, sought to answer the following research question:

How, if at all, could an existing undergraduate curriculum in anaesthetic and recovery room practices be re-constructed to fit the needs of a private hospital group in South Africa?

In order to answer this question, five subsidiary questions were posed:

1. *How do stakeholders currently experience operating department assistants (ODAs) in the anaesthetic and recovery room practice?*
2. *Are the current existing cognitive, affective and psychomotor skills of ODAs sufficient to perform their anaesthetic and recovery room duties?*
3. *Is there a hierarchy of importance regarding the sequencing of cognitive, psychomotor and affective skills of ODAs?*
4. *What are the possible gaps in the cognitive, affective and psychomotor skills currently taught to ODAs?*
5. *What would a needs-based curriculum for a curriculum in anaesthetic and recovery room practice in an ODA programme entail?*

Making use of an inductive approach through an interpretivist lens of knowledge production (Mackenzie & Knipe, 2006:5; Polit & Beck, 2012:496) allowed for a multi-staged singular programmatic case study design (Ihuah & Eaton, 2013:935-940; Neale *et al.,* 2006:5-6) to form the basis of this study within a natural context (Ihuah & Eaton, 2013:935-940). For the re-exploration of the anaesthetic and recovery room component of the ODA programme at a PHEI in SA, operating department managers, anaesthetists, ODA graduates, third-year ODA students and educators were considered as information-rich participants. These participants were all stakeholders whose needs were taken into account during the inquiry made to determine whether the current curriculum delivered ODAs competent to assist the registered healthcare professional.

Data were collected from 71 participants by means of 23 semi-structured individual and two paired interviews, 10 focus group interviews as well as a self-administered paper-based questionnaire (n=62) during the first round of interviews (cf. Ch. 4, sect. 4.4.2.2). Five participants, mainly executive managers, participated in the second round of interviews. The collection of data for the needs analysis was done in accordance with Kern's six-step approach (Kern, 2009:12-13). As case study research necessitates data triangulation (Yin, 2014:118-119) several data sources were used. Managers, anaesthetists, ODA graduates and current ODA students from the first round of interviews (Stage 2 of the current study) represented the data sources of the *received* curriculum, while the data from the ODA educators provided a view on the *taught* curriculum. In addition, document analyses which included the current curriculum, study guides and assessment tools were data sources which rendered information on the *intended/planned* curriculum. In the data generation process the *implicit* and *null* curricula content were also identified from the data (cf. Ch. 6, sect. 6.2).

The content analytical process of Miles and Huberman (1994:11) was used for analysing the qualitative data (Creswell, 2009:208). The STATISTICA 13.2 software program was used to analyse the limited quantitative

data. On their own, the stakeholders' needs seemed insufficient to reconstruct the existing curriculum efficiently. Hence, Fishbein's Integrated Behavior Model (IBM) was used to analyse and synthesise the data with the aim to adapt the clinical-oriented anaesthetic and recovery room course according to the stakeholder's needs (Fishbein & Yzer, 2003:181). Theory/practice integration was regarded as a critical need by stakeholders.

A Delphi exercise was finally employed to facilitate consensus on curriculum outcomes and content. Seventeen experts, geographically dispersed across the country, participated via electronic communication means (cf. Ch. 7, sect 7.2 & 7.3). Based on the findings of the study, factual and conceptual conclusions were drawn and implications pointed out.

10.3. FACTUAL CONCLUSIONS AND IMPLICATIONS

Factual conclusions are based on the actual findings from the research as they emerge from the data (Archer, 2016:194). The conclusions drawn are accounted for on the basis of two subsidiary research questions and the IBM. The other subsidiary questions are addressed later in the chapter.

10.3.1. Conclusions on how stakeholders currently experience the operating department assistants in anaesthetic and recovery room practice

Various factors contributed towards the prevailing perception that this category of staff was not a positive asset to the anaesthetic and recovery room practice (cf. Ch. 5, category 4.1). However, the fundamental factor influencing the perception that they added no value was the lack of the required and essential skills.

10.3.2. Conclusions on whether the current cognitive, affective and psychomotor skills of the ODAs are sufficient to perform the anaesthetic and recovery room duties

It was stressed in the interviews (cf. Ch. 5, subcategories 1.1.1; 1.1.2; 2.1.1; 2.1.3; 3.1.2 & 5.1.1) that the ODAs' theory and clinical skills were insufficient to assist anaesthetists and RNs effectively. An all-embracing concern confirmed in the second interview round (cf. Ch. 8, sect. 8.3.2 & category 2.2) related to the ODAs' inability to effectively assist the anaesthetist – especially during anaesthetic emergency situations. Furthermore, a number of skills viewed by the stakeholders as essential to ensure competent graduates – thus ultimately assuring patient safety – were lacking (cf. Ch. 5, sub-categories 1.1.1 & 2.1.1). This was considered a hindrance to the overall performance of the ODAs and the main reason why they were not assisting the healthcare professionals. During the Delphi exercise process a number of skills were clarified for inclusion in a possibly redesigned and new curriculum (cf. Ch. 7, Tables 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13 & 7.14). Although the study identified gaps in the skills currently taught to students, it also found discrepancies between the *planned* and the *taught* curriculum (cf. Ch. 6, sect. 6.2.2 & 6.2.3).

10.3.3. Conclusions related to the ODAs' attitude towards the anaesthetic and recovery room assistant role and functions

From the findings it was concluded that some of the participating students and ODA graduates had negative attitude towards the anaesthetic and recovery room assistant (A/RRA) role and functions (cf. Ch5, sub-category 4.2.3). Some graduates held a strong view that they were not competent to fulfil the A/RRA role upon graduation. Without clear course outcomes/guidelines, resistance from theatre staff and misconceptions about the ODAs' future role seemed to contribute to these negative attitudes and beliefs (cf. Ch. 5, sub-categories 3.1.4, 3.1.5, 4.2.1, 4.2.2, 4.2.3, 5.2.1, 5.2.2 & 5.3.2). The study produced evidence that the students were unaware of the potential value of ODAs assisting healthcare professionals (cf. Ch. 5, sub-category 4.1.1). It is therefore concluded that if the ODA students were aware of their specific role and functions and the value these do indeed add to the operating department, their attitude towards their training might have been quite different. It could also be posited, based on the evidence, timely and effective information to ODAs on their anaesthetic and recover room assistant role and functions could lead to them having a more positive attitude towards performing these roles and functions.

10.3.4. Conclusions related to perceived norms

The study produced evidence that many students were unaware that the anaesthetic and recovery room assistance outcomes formed part of the ODA programme and that it entailed assisting the anaesthetist and RN in the recovery room (cf. Ch. 5, sub-categories 4.2.1, 4.2.3 & 4.2.4). Seemingly, some students were not always motivated to perform the A/RRA functions while learning and working in the operating department. Two possible reasons were given: the lack of clinical exposure and the students' misguided information at enrolment that the main focus of the programme was on the scrub practitioner's role and functions (cf. Ch. 5, sub-categories 4.1.1 & 5.1.3). The conclusion is therefore that, if the students were more aware of and better informed about the programme outcomes, they would have known what required functions they would be expected to perform while rotating through the required disciplines. An important point here is that by promoting the concept of ODAs carrying out the anaesthetic and recovery room assistance functions and emphasising their scope of practice (i.e. what they may and may not do), the students' perceived norms can be targeted for change.

10.3.5. Conclusions related to self-efficacy

Self-efficacy, which is influenced by several important factors, plays an important role in enabling students to master required competencies (Schunk, 2003:159; Van Dinther *et al*., 2011:95-96 & 105). A fitting example is one ODA who shared she had no belief in herself until other team members assured her they believed she could do the job. This team support changed the negative feelings the ODA had about recovery room assistance and empowered her to believe she could do it (cf. Ch. 5, sub-category 4.2.2).

It became clear from the interview data that many ODAs/students did not see themselves competent to assist the anaesthetists and RNs (cf. Ch. 5, sub-categories 4.1.2, 4.2.2 & 4.2.3). The reasons mentioned

contradicted the teaching and learning strategies required to build a strong sense of self-efficacy. It is thus concluded that the current anaesthetic and recovery room component as offered by the particular PHEI lacks many of those components which enhance students' self-efficacy.

The empirical findings also indicated students did not get the required clinical exposure (cf. Ch. 5, sub-categories 1.1.1 & 5.1.3). Moreover, there were no clear guidelines as to what was expected from them in the specific clinical area (cf. Ch. 5, sub-category 3.1.4) and they were sometimes left unsupervised (cf. Ch. 5, sub-category 5.3.1). The findings also pointed to a shortage of well-structured assessment practices as students were not assessed according to the announced assessment principles and standards (cf. Ch. 5, sub-category 5.1.5). Overall, the students experienced feelings of negativity and uneasiness; they felt useless and uncertain, having no self-belief or self-confidence about their A/RRA roles and functions (cf. Ch. 5, sub-categories 4.2.2 & 4.2.3). It seems fair to conclude ODA students did not have the opportunity to develop positive perceptions about their mastery of the required skills (Kauffman & Mann, 2014:11-12). Tension and stress, on the other hand, could be interpreted as a sign of failure and thus a lowered sense of self-efficacy (Van Dinther *et al*., 2011:98). Attention is drawn to the important point made here – ensuring growth in the ODAs' self-efficacy would ultimately spill over to augment their A/RRA role which, in turn, would positively impact teamwork with the patient the ultimate beneficiary of safe and quality care. A further conclusion drawn is that ODA students undoubtedly need to be better informed about exactly what is needed to perform their A/RAA functions.

10.3.6. Conclusions related to knowledge and skills

Acquiring appropriate knowledge and skills is an important factor of the IBM as it enables students to perform a competency (learned behaviour). However, the study findings suggested although the stakeholders found the anaesthetic and recovery room theory vital and useful (cf. Ch. 5, sub-categories 5.1.1 & 5.4.1), the ODAs/students lacked the essential expected skills to assist the anaesthetists and RNs (cf. Ch. 5, sub-category 4.1.2). For example, the bulk of an AA's function is to handle scheduled drugs, but some students were not exposed to such knowledge or situations (cf. Ch. 5, sub-category 2.1.4). This serves as a good example of the discrepancy between the current *planned* and the *taught* anaesthetic and recovery room curriculum (cf. Ch. 6, sect. 6.2.3). The inference made by the finding that skills gaps exist (cf. Ch. 10, sect. 10.5) between the planned curriculum and the needs of stakeholders, is daunting for patient safety. The finding that ODAs/students experienced it as challenging to execute A/RRA functions if they were not equipped with the specific knowledge and skills required was confirmed and reiterated by the findings from the Delphi exercise (cf. Ch. 7). The Delphi exercise findings indicated specific skills which had to be considered for inclusion in a redesigned anaesthetic and recovery room course. A comparison between the current anaesthetic and recovery room curriculum and the study material revealed a list of skills/topics lacking in them, but these skills/topics were considered by the stakeholders as essential for the A/RRA practice (cf. Ch. 9, sect. 9.4.3). Concluding, it can be assumed that by including new topics, more effective learning and teaching of anaesthetic and recovery room assistance may evolve.

10.3.7. Conclusions related to assessment

Student assessments are paramount in curriculum planning (Amin & Eng, 2003:62; Tyler, 2013:110) as it is a powerful mechanism to promote quality learning (Adagale, 2015:604). It provides guidelines and even sometimes determines how students learn (Meyer & Van Niekerk, 2008:104). It also assists them to achieve competencies and learning outcomes (Saucier *et al*., 2012:707). However, inconsistencies in assessment tasks impede negatively on effective teaching and learning (Coady *et al.,* 2004:47-50).

The empirical findings in this study suggested not all required competencies were assessed and, if they were assessed, it was done leniently and not according to assessment principles, standards and outcomes (cf. Ch. 5, sub-category 5.1.5). For instance, during summative assessments ODA students were not assessed as independent practitioners (cf. Ch. 9, sect. 9.3.5.1). Assessments were also not done on a regular basis and when done it happened superficially with some participants questioning the reason for them being taught anaesthesia (cf. Ch. 5, sub-category 5.1.5). This again highlights the negative impact and barrier assessments pose to effective teaching and learning in anaesthetic and recovery room assistance. It can be concluded the negative attitude of some educators towards assessments and the inconsistency in assessments impacted negatively on the anaesthetic and recovery room teaching and learning of ODA students. This suggests workplace-based assessments may be a potential motivator to learn A/RRA skills; but, assessments need to be done on all required A/RRA skills linked to exit-level outcomes, assessment principles and standards.

10.3.8. Conclusions related to salience of behaviour

Commitment is seen as an important factor to enhance competence (Fishbein & Yzer, 2003:181) as it promotes students' ability to behave responsibly and professionally. However, commitment to a task is dependent on a positive perception of the required role/functions to be performed and by seeing the advantages of performing required roles (Kauffman & Mann, 2014:11-12; Quinn & Hughes, 2007:100; Schunk, 2014:184). In the present study it became clear that, without commitment, it seemed unlikely ODAs would be able to effectively assist the anaesthetists and RNs. A lot of ODAs did not seem to understand the reason for them assisting the RNs (in the recovery room) and even expressed their unwillingness to assist an anaesthetist (cf. Ch. 5, sub-categories 2.1.1 & 3.1.4). This could have a negative impact on their commitment to the anaesthetic and recovery room assistant role and functions. Conversely, some findings showed informed operating department managers had insight into the ODAs' new scope of practice and provided a safe learning environment which resulted in confident graduates (cf. Ch. 5, sub-category 3.1.5). In clinical settings where clear guidelines were absent, especially the SOP, conflict and tension emerged and some students refused to assist the healthcare professional (cf. Ch. 5, sub-categories 3.1.1; 3.1.4 & 3.1.5). This confirms the potential value of clear guidelines being available to all stakeholders involved with ODA students' teaching and learning. The conclusion drawn is that guidelines (including the SOP) about the reasons for assisting the anaesthetists and RNs, and which are informative and well communicated to students, may assist to promote their commitment to effectively perform the role and functions of an AA and/or RRA.

10.3.9. Conclusions related to habit

Much of the learning in the clinical environment takes place by means of experiential leaning and habit-forming (Dhital *et al.,* 2015:2) to enable students to transfer skills to real-life situations. But, even if they intend to, a lack of clinical experience can prevent ODA students from actually performing the anaesthetic and recovery room assistant functions (Fishbein, 2000:275; Wee *et al.,* 2016:160). These students may find it difficult to perform the required skills if such learning does not form part of their daily consistent routine (IBM, 2013:2). The current study confirmed more than fifty per cent of ODA students did not get sufficient clinical exposure mainly due to various environmental constraints (cf. Ch. 9, sect. 9.3.5.1-3) and inconsistent clinical placement (cf. Ch. 5, sub-categories 5.1.3 & 5.1.4). Some students were overall negative towards anaesthesia and the post-operative care of patients (cf. Ch. 5, sub-category 4.2.3). They were of the opinion that if they had more supervised exposure to anaesthesia, it could have changed their perceptions (cf. Ch. 5, sub-category 5.1.3). The study findings, on the other hand, indicated graduates who had sufficient clinical work-related experience in accordance with the planned curriculum felt confident and competent to fulfil the A/RRA role and functions. These graduates were also willing to fulfil the A/RRA role (cf. Ch. 5, sub-category 5.1.3). It is therefore concluded for learning and teaching of anaesthetic and recovery room assistance, it is critical for students to receive effective and continuous sheltered clinical exposure according to the timelines indicated in the planned curriculum.

10.3.10. Conclusions related to environmental constraints

Bandura's (1988) social cognitive theory (Bandura, 1988:275; Kauffman & Mann, 2014:11; Schunk, 2014:184) incorporated into the IBM (Archer, 2016:57) implies the environment in which students learn and where they end up working plays a significant role in their learning success (Botma & Bruce, 2017:315; Dhital *et al.,* 2015:2; Meyer & Van Niekerk, 2008:107). In the case of the ODA students, the practical component of the anaesthetic and recovery room course is mainly facilitated in the workplace where their learning is shaped by the environment (Scott, 2008:12). Although it seems fair to conclude the clinical environment could have a strong impact on the teaching and learning of the required anaesthetic and recovery room skills, the findings from the study indicated the majority of students were challenged by various environmental constraints. These included staff shortages; uninformed healthcare professionals (not being aware of students' learning needs); a lack of mentors (which caused a lack of supervised clinical guidance); obstructive healthcare professionals; students being allocated to theatres according to operational needs and not according to their learning needs (cf. Ch. 9, sect. 9.3.5.1) and insufficient clinical accompaniment by educators (Ch. 5. sub-category 5.3.3). Student placement in the workplace was mainly dictated by staff shortages and probably had a negative impact on student learning as the students could not optimally utilise learning opportunities to attain the relevant outcomes. Some findings showed students who were placed in learning-oriented clinical environments, which included sheltered guided practice and role-modelling from a variety of healthcare professionals, had positive learning experiences which enhanced their learning (cf. Ch. 5, sub-category 5.1.3). This confirms the potential value of a positive learning environment to aid students to learn required anaesthetic and recovery room skills. It can therefore be concluded for

effective learning and teaching of A/RRA, students could be placed in operating departments with a positive learning culture. This includes those departments where staff is positive towards teaching ODAs, willing to adhere to curriculum guidelines, eager to support and guide students, and where the staff complement can accommodate students.

10.4. CONCEPTUAL CONCLUSIONS AND IMPLICATIONS

According to Archer (2016:199), conceptual conclusions relate to a better and deeper understanding of the phenomenon under scrutiny. Overall, the current study broadened insights into a variety of issues. These include the overall value and contribution ODAs make to the operating department; stakeholders' overall needs with regard to the ODAs' anaesthetic and recovery room role; gaps between the planned, taught and received curricula as well as barriers to the teaching and learning of anaesthetic and recovery room skills. With such new understandings, rethinking and redesigning the anaesthetic and recovery room curriculum seemed possible. Against the background of health service education literature and practices, the conclusions below emerged.

- Firstly, although the stakeholders currently do not experience the ODAs as adding value to the anaesthetic and recovery room practice (cf. Ch.5, sub-categories 4.1.1 & 4.1.2), there is a dire need for competent multi-skilled ODAs to assist the anaesthetists during the perioperative care of the patient (cf. Ch. 5, sub-category 4.3.1; Ch. 8, category 2.2). This corresponds with the need for non-medical/nursing anaesthetic assistants in the UK (CODP, 2011:8), USA (AST, 2008: 5-10; CAAHEP, 2015:1; Fuller, 2013:6; Kaye *et al.,* 2012:140 & 141), India (Aggarwal, 2017:1; HSSC, 2013a:1; HSSC, 2013b:1-2) and New Zealand (ANZCA, 2016:1) where it is predominantly non-medical/nursing healthcare workers assisting the anaesthetists.

- Secondly, a lack of essential competencies such as handling drugs prevents the operating department managers from utilising the ODA optimally in the anaesthetic assistant role (cf. Ch. 5, sub-categories 3.1.1 & 4.1.2). This provides a fresh perspective on the current use of the ODAs in South Africa where they are mainly used in the scrub role. It corresponds with the use of non-nurses in the UK where the anaesthetic role and functions are mainly performed by the ODAs/ODP. Even when previously they were not registered with a statutory body, these roles were still performed by the OTT/ODA/ODP (CODP, 2011:8; Foster & Jepson, 1968:1; NAW, 2000:2; The history of surgery and anaesthesia from an ODPs perspective, s.a.:3-4). Due to the friction caused by the ODAs not permitted to take responsibility for scheduled drugs (Davey & Ince, 2000:5) core competencies were developed which led to the development of the Operating Department Practitioner (Davey & Ince, 2000:6).

- Thirdly, evaluating the affective skills chosen by the panellists (cf. Table 7.13) and the feedback from participants (cf. Ch. 5, sub-category 4.3.1) there seems to be a need for a humanistic or humane component/element to be included in the ODA course. This provides a fresh perspective on the role and function of the ODA in South Africa. Abroad the ODA role has always been viewed as more technically inclined and uncaring (Robinson & Straughan, 2014:352-354; Steevenson, 2006:550;

Timmons & Tanner, 2004:663). This distorted view of the ODA's role automatically led to the assumption that an ODA is unable to provide holistic perioperative care (Davey & Ince, 2000:29; Hauxwell, 2002:483) and the latter role was mainly perceived as a nurse-oriented skill (Hauxwell, 2002:483; Timmons & Tanner, 2004: 655). However, the affective skills chosen by the Delphi panellists (cf. Table 7.13) corresponds with humanistic elements such as integrity and respect (Schiffman, 2017:246). The needs expressed by the stakeholders in this study corresponded with the trend in the UK where the humane element is also incorporated into the curriculum (QAAHE, 2004:1) to break down barriers (Steevenson, 2006:553) and shift the ODA's role from a technical to a more holistic, patient-centred one (Montgomery *et al*., 2017:378-379; Steevenson, 2006:551). The conclusion is drawn that, by including the humanistic elements in the course, students may be able to demonstrate action and an attitude sensitive to the patient's autonomy, values and cultural/ethnic backgrounds.

- In the fourth place, the overall perception in this study was that the recovery room was the domain of the RNs (cf. Ch. 5, sub-category 4.3.1 & Ch. 8, category 2.3). This view corresponds with the natural divide of the operating department staff in the UK where it is mainly the RN who takes care of the patient in the recovery room and the ODA/ODP who assists the anaesthetist and surgeon (Timmons & Tanner, 2004:650; Steevenson, 2006:551).

- In the fifth place, the study findings suggested students' learning and teaching are currently jeopardised by cultural, environmental and curriculum constraints (cf. Ch. 5, sub-categories 5.1.3, 5.1.4 & 5.3.2) which impacts negatively on the ODAs self-efficacy, attitude, commitment, experience and ultimately intention to assist the healthcare professional (cf. Ch. 5, sub-categories 4.2.2 & 5.1.3). This corresponded with the barriers which Coady *et al*. (2004:47-50), DaRosa *et al.* (2011:1-3), Shell (2001:291) and Skeff *et al.* (1997:S56) identified in their studies and which negatively impacted on anaesthetic and recovery room teaching and learning (cf. Ch. 2, sect. 2.8.10.6). On the positive side, the findings showed one operating department was more conducive and provided supervised guidance and support to the students. These operating department professionals perceived the clinical training of ODA students as their responsibility and part of their professional role (cf. Ch. 5, sub-category 5.2.1). The students were managed correctly, had positive role-modelling and supervised clinical guidance. They were afforded the opportunity to progress from a nervous novice to a confident assistant (cf. Ch. 5, sub-category 5.1.3). This provided a fresh perspective on the barriers impeding on the teaching and learning of anaesthetic and recovery room assistance in this study. The barriers identified corresponded with the barriers identified by the literature study (cf. Ch. 2, sect. 2.8.10.6). It is therefore concluded by providing clear guidelines to all stakeholders and concomitantly placing students in a learner-oriented environment where there is enough staff to provide sheltered support and role-modelling, the perceived anaesthetic and recovery room learning barriers could be eliminated. This may enhance the students' learning experience and allow them to develop the required competence.

- In the sixth place, although assessment is viewed as a valuable educational strategy which compels students to obtain and reproduce competencies (Meyer & Van Niekerk, 2008:166; Schuwirth & Van der Vleuten, 2014:246), the study findings indicated a lack thereof, especially in the recovery room domain (cf. Ch. 5, sub-category 5.1.5). This corresponded with the lack of clinical assessments in the ODA programme – only one anaesthetic-related clinical assessment was incorporated – which led to the development of a common training platform, namely the ODP programme (Davey & Ince, 2000:5). Setting the standard is crucial because it is a well-recognised phenomenon that students rather focus on assessments than learning outcomes (Amin & Eng, 2003:8). It is concluded that by incorporating integrated anaesthetic and recovery room assessments and setting guidelines students may be compelled to obtain and reproduce the necessary anaesthetic and recovery room competencies.
- In the seventh place, the gaps identified in the current cognitive, affective and psychomotor skills of the ODA, e.g., handling scheduled drugs seemed to prevent the ODAs to ultimately function to their full potential as AAs. It also prevented managers from allocating ODAs to the AA role, especially after hours, as the ODAs could not perform all the required tasks and do call independently (cf. Ch. 5, sub-categories 3.1.1 & 3.1.2). This corresponded with the situation in the UK where ODAs were not permitted to handle scheduled drugs. This resulted in an inflexibility that reduced the efficiency of the perioperative team (Davey & Ince, 2000:5). Consequently, a training platform was created based on the requirements of the employer to ensure the ODA, who became the unregistered ODP (compulsory registration was only implemented a few years later in 2004), was equipped with the same skills as the RN to allow them to work in all areas of the operating department (Davey & Ince, 2000:6). Therefore, the learning opportunities created by the ODA programme must be sufficient to prepare the ODA to fulfil the AA and RRA role independently and competently.
- Lastly, legalities linked to the uncertainty about the A/RRA role and functions of the ODA – what they may or may not do – and patient safety seemed to cause tension, conflict and frustration in the operating department (cf. Ch. 5, sub-categories 2.1.4 & 3.1.3-5). This corresponded to similar emotions and conditions in the UK where tension was experienced owing to the lack of professional regulation and registration for the ODP, especially with the intense focus on patient safety and teamwork (NAW, 2000:2). It is concluded that providing clear guidelines on legality concerns, course outcomes and the A/RRA work profile (SOP) could foster a better working relationship than the aforementioned in the UK (Anderson, 2012:1; Milton, 2005:7) with the formalisation of the regulation and registration of ODPs. It may further result in clarity and consistency in non-nurse training and responsibility (Steevenson, 2006:55). In Australia, guidelines (called SOP) to clarify the role of the AA were published to enhance professional relationships (Medical Sciences Council of New Zealand, 2014b:11-12).

The conceptual gaps as identified were used to formulate suggestions towards redesigning the current undergraduate anaesthetic and recovery room curriculum to a student-centred spiral needs-based curriculum.

10.5. TOWARDS A NEEDS-BASED FRAMEWORK FOR UNDERGRADUATE ANAESTHETIC AND RECOVERY ROOM CURRICULUM

In spite of the large interviewee consensus that no change was needed to the flow and sequence of the current course, the participants' opinions differed as to whether it should be offered as a block (a six-month course) or longitudinally (over a three-year period as done currently) (cf. Ch. 5, sub-category 5.1.6). This sort of conflict seems to be typical in health sciences higher education where programmes consist of theoretical and clinical components (see 2.8.10.1). The difference of opinion was tested in the Delphi exercise with the majority of panellists choosing the longitudinal system (cf. Table 7:3) with the anaesthetic and recovery room course spread over three years.

10.5.1. Sequencing of course

According to Dent and Harden (2013:10), sequencing the course outcomes will allow the students to revisit the anaesthetic and recovery room topics at various levels of difficulty as they progress through the programme. It will assist them to progress from a novice to a competent anaesthetic and recovery room assistant. The Delphi panellists signified the overarching competences embedded in the required cognitive, affective and psychomotor skills and experience per study year (see Table 7.4) to be as follows:

- First year: the student is able to prepare for anaesthesia for minor surgery.
- Second year: the student is able to assist the anaesthetist with minor surgery.
- Third year: the student is able to prepare for anaesthesia for major surgery, assist the anaesthetist with regional anaesthesia and assist the RN in the recovery room.

This sequence, betokened by the Delphi panellists, corresponds with the flow of the current anaesthetic and recovery room course (cf. Table 3.6) which many participants (managers, ODAs, students and educators) perceived as a logical flow (cf. Ch. 5, sub-category 5.1.2) - especially the recovery room component offered in the third year of the programme. The empirical findings of this study indicated that the recovery room component should remain in the third year of the programme. This is when the ODA students are taught to assist the RN in the recovery room. It follows a natural progression, which is also the natural progression of the patient's perioperative journey in the operating department (cf. Ch. 5, sub-category 5.1.2). The students should first learn to function as an AA before progressing to the recovery room. Thus, through the natural progression pathway, the student might require the essential knowledge and skills which could be useful in the recovery room.

The majority of ODAs, many of the students and the educators agreed no content could be excluded (cf. Ch. 5, sub-category 5.4.1). Nevertheless, they were all of the opinion the ODAs did lack some crucial knowledge and skills paramount to efficient anaesthetic and recovery room assistant practice. The next section highlights the programme and course outcomes which emerged from the study as well as the gaps identified in the unit outcomes.

10.5.2. Outcomes

Time and again literature highlights the importance of symbiosis between the curricula and healthcare services (Bruce & Mtshali, 2017:228-229; Prideaux, 2003:268) to meet the needs of stakeholders and deliver competent graduates. In practice this means competencies and professional activities/tasks should be as identical as possible (Fauci *et al*., 2015:8 & 11). The overall need expressed by participants was for hands-on ODAs with humane expertise who could assist with patient care. The operating department does not need a technician that can only work with machines; it needs ODAs who can also practice humane virtues like compassion and caring with empathy (cf.Ch. 5, sub-category 4.3.1). The competencies, expressed as the outcomes the students ought to achieve (Bruce & Mtshali, 2017:226-227), are discussed in sections 10.5.2.1 and 10.5.2.2.

It is important to note that the development of the exit level outcomes, core and fundamental outcomes, in line with the SAQA level descriptors and standards, will be addressed in the next round of the curriculum development.

10.5.2.1. Programme and course outcomes

The all-inclusive finding showed ODAs do not need a nursing background, but should be competent to function independently within the team and boundaries of the required SOP. The all-encompassing programme outcomes (gradate competencies) of the operating department assistance curriculum indicates future ODAs must be equipped to prepare and assist the anaesthetists. Although it was made very clear in the study findings that the recovery room remains the domain of the RN whose main responsibility is the care of the anaesthetised patient, it was also evident a special need existed for assistance in the recovery room, especially during the initial 5 minutes after the patient had been admitted to the recovery room. This specific need was confirmed by the Delphi panellists (cf. Table 7.8). In particular, the need is for ODAs to be trained as anaesthetic and recovery room assistants who are able to execute the exit level outcomes listed next.

1. Prepare for anaesthesia and assist the anaesthetist during all phases of the patient's perioperative care and for all types of anaesthesia, including management of drugs and intravenous fluids.
2. Prepare the recovery room and assist the RN to recover patients of all ages for all types of anaesthesia and procedures and take care of the patient for at least 5 minutes after handover.
3. Assist the healthcare professional with anaesthetic emergencies including the safe and effective care and use of all equipment, including emergency equipment.

Apart from the programme outcomes, the next course outcomes materialised from the study.

1. As an anaesthetic assistant the student is able to: (i) perform pre-operative anaesthetic preparation for minor and major surgery for patients of all ages, including paediatric patients and those with special needs, to ensure and maintain a safe therapeutic environment; (ii) send for, receive and care for a patient while awaiting surgery; (iii) assess a patient prior to surgery; (iv) assess the patient's vital signs; (v) assist the anaesthetist during all phases of holistic perioperative patient care for all types of

anaesthesia, including rapid sequenced induction and difficult intubation; (vi) prepare for and assist with local, spinal, epidural and regional anaesthesia, insert a central venous catheter and arterial lines, insert a nasogastric tube, and blood transfusion; (vii) assist with a patient with unstable cervical spine; (viii) insert a female urinary catheter; (ix) safely transfer a patient and assist with the positioning of the patient according to the type of anaesthesia and booked procedure; (x) manage and take care of the anaesthetic and positioning equipment; (xi) maintain the safety, privacy, dignity, well-being, comfort and rights of the anaesthetised patient; (xii) identify critical problems and complications and report to the anaesthetist and (xiii) manage minor troubleshooting.

2. The student is able to assist during anaesthetic emergencies situations.

3. The student demonstrates proficiency in the management of anaesthetic, scheduled and emergency drugs and fluids which includes: (i) ordering, storing, preparing, transferring, handling and controlling the drugs; (ii) preparing, setting up and changing intravenous fluids; (iii) providing accurate documentation and (iv) inserting a suppository, administering an intravenous drug during a crisis/emergency situation and injecting an intravenous drug into a vaculiter under direct supervision.

4. As a recovery room assistant the student is able to: (i) prepare, check and stock the recovery room, including checking and utilising the equipment, defibrillator and emergency trolley; (ii) handover of the patient to recovery room staff; (iii) maintain legal documentation; (iv) maintain a safe therapeutic environment; (v) utilise an evidence-based approach to provide holistic care to a patient under direct supervision; (vi) assist the RN with the recovery of patients of all ages, all types of anaesthesia and all types of procedures until the patient is ready for discharge; (vii) remove a laryngeal mask airway and (viii) insert an oropharyngeal airway.

5. The student is able to work in the perioperative team and apply the applicable affective (cf. Table 7.13) and non-technical skills (cf. Table 7.14).

Although three competencies, '*Interpret an electrocardiogram rhythm and arrhythmias'*; '*Demonstrate proficiency in administering intravenous drugs during crisis/emergency under direct supervision of anaesthetist or RN'*; and '*Insert a suppository'* were mentioned repeatedly during interviews, it was judged by the Delphi panellists as of moderate importance (ratings of 3 and lower – cf. Table 9.2). Two competencies, namely '*Insert a laryngeal mask airway'* and '*Remove an endotracheal airway (extubate a patient)'* identified as stakeholder needs were, however, viewed of minimum importance by the Delphi panellists who proposed for both to be excluded (cf. Table 9.3). Only one competency, namely '*Insert and care for a male catheter'* reached consensus (70.6%) that it is not an essential skill for ODAs and must not be included in the anaesthetic and recovery room course. The stakeholder needs chosen by the Delhi panellists were compared to the outcomes incorporated in the current anaesthetic and recovery room course with the aim of identifying possible gaps in the cognitive, affective and psychomotor skills currently taught to the ODAs (cf. Ch. 9, sect. 9.4.3). Observed differences were used to make suggestions towards a redesigned student-centred needs-based curriculum. This entails the development of a curriculum based on the identified needs of the stakeholders and the incorporation of student active teaching and learning strategies.

10.5.2.2. Unit outcomes

The majority of outcomes in the current course were found to be in agreement with the data provided by stakeholder consultation and the choices of the Delphi panellists. A number of units related to knowledge, skills and attitudes were identified (cf. Ch. 9, sect. 9.4.3) as lacking from the current anaesthetic and recovery room course. Represented as unit outcomes, those which need to be considered for a needs-based anaesthetic and recovery room curriculum are listed under the relevant headings next.

Anaesthesia

1. The student demonstrates an understanding of: (i) electrocardiogram arrhythmias; (ii) the risk of deep venous thrombosis; (iii) the mechanism of action, classification, advantage, disadvantage, dosage and toxic reaction of local anaesthesia; (iv) the outcomes of persistent abnormal vital signs and (v) the effect of anaesthesia on lungs, lung functions and vital capacity.
2. The student demonstrates proficiency in assisting with: (i) face-bag mask ventilation; (ii) clearing an upper airway block; (iii) a patient with unstable cervical spine; (iv) the insertion of a nasogastric tube and (v) blood transfusion.
3. The student demonstrates proficiency in: (i) inserting and taking care of a female urinary catheter; (ii) preparing equipment for nebulised drugs and (iv) interpreting and analysing vital signs.

Recovery room

1. The student understands the: (i) role of the ODA in the recovery room; (ii) criteria and procedure for a haemoglobin test; (iii) legislation applicable to recovery room care and (iv) terminal cleaning and preparation of the patient station.
2. The student understands: (i) the criteria and procedure to assist with the removal of a laryngeal mask airway and endotracheal tube (and what to do if removed too early) and (ii) inserting an oropharyngeal airway.
3. The student demonstrates proficiency in: (i) utilising equipment; (ii) utilising an evidence-based approach to care for a patient; (iii) monitoring and providing holistic care to a patient the first 5 minutes after being transferred to the recovery room; (iv) assisting with oxygen therapy; (v) observing, interpreting and analysing vital signs, including blood glucose, haemoglobin and urine analysis; (vi) assessing post-operative pain and nausea; (vii) identifying and preventing anaesthetic related medical-legal risks; (viii) removing a laryngeal mask; (viii) inserting an oropharyngeal airway; (ix) assisting the RN to recover patients of all ages for all types of anaesthesia and procedures; (x) maintaining legal record-keeping, including fluid balance chart; (xi) preparing the patient for discharge and (xii) decontaminating and preparing the patient station.

Anaesthetic emergency situations

1. The student understands the management of cyanosis, stridor, bronchospasm, cardiac dysrhythmias and pneumothorax.

2. The student demonstrates proficiency in: (i) implementing local protocols for management of sudden life-threatening haemorrhage; (ii) assisting with cricoid-thyroidotomy and fibre-optic intubation and (iii) setting up and assisting with chest drain insertion.

Pharmacology

1. The student demonstrates in-depth knowledge of premedication and drugs used in the recovery room.
2. The student demonstrates proficiency in: (i) changing intravenous fluids; (ii) inserting a suppository; (iii) administering intravenous drugs during a crisis/emergency situation and (iv) injecting an intravenous drug into a vaculiter under direct supervision.

The needed affective and non-technical skills chosen by the panellists to be instilled and enhanced in the current course are: self-confidence, commitment, diligence, observation skills and assertiveness. Although gaps were identified in the cognitive, affective and psychomotor skills taught to the students, the lack of clinical experience and exposure appeared to be a major contributor to the students' lack of competence.

10.5.3. Clinical experience and rotation

It was very clear from the research findings that the students' lack of clinical experience and exposure appeared to be caused by the numerous environmental constrains (cf. Ch. 5, sub-categories 5.1.3 & 5.1.4). The final block in the IBM framework relates to competence (Fishbein & Yzer, 2003:166; Wee *et al.,* 2016:160) which results once the committed student with a strong sense of self-efficacy, a positive attitude and self-belief develops the intention to assist the anaesthetists and RNs. But, to develop this intention, students require clinical experience and exposure which are currently prevented by the numerous environmental constraints identified. Thus, it is critical for students to be placed in learner-oriented clinical environments where operating department staff members, who are informed of the course outcomes and guidelines, adhere to the planned curriculum.

The study also indicated the need for simulated training (cf.Ch.5, sub-categories 5.2.3 & 5.4.2) which is supported by literature related to anaesthetic and recovery room teaching and learning (Cumin *et al*., 2010:45; Sevdalis *et al*., 1012:i6). Simulated training enables students to practise the skills and gain clinical experience before they are required to apply it in the real-world environment. By following this practice ODA students' fears/anxieties may be alleviated (Hughes, 2013:167); teamwork would be enhanced thereby increasing job satisfaction; patient safety errors would be reduced (Hind *et al*., 2001:75 & 81) and students could be assisted by mentors, educators and other healthcare professionals in the operating department to make the transition from a novice nurse to a competent worker (Boyce *et al*., 2009:433). Inter-professional training – an innovative strategy to enhance teamwork when the team consists of more than one discipline – could be combined with simulated training as it would produce practice-ready healthcare professionals (WHO, 2010:12) particularly at this stage when the 21st century workplace requires graduates who are properly prepared to enter the workforce (DaRosa *et al*., 2011:3).

10.6. LIMITATIONS OF THIS STUDY

As with any study, this study had a number of limitations. One limitation was the fact that the study was conducted at only one private higher education institution (although at a number of campuses in three geographical regions). Due to the scope of the study it was not possible to sample hospital and operating department managers, anaesthetists, ODAs, students and educators at public and other private higher education institutions. To the researcher's knowledge, the ODA is offered at only one other higher education institution (cf. Ch. 3, sect. 3.4.3.3) which does not use the same curriculum as the PHEI where the present study was conducted.

A second limitation was the small number of beneficiaries of the course (students and ODAs) who agreed to participate in the Delphi process. Especially the sequencing and flow of the course could be skewed towards a more longitudinal model due to panellists' preferences. It could also be the reason for the moderate importance of three skills *('Insert and take care of a female urinary catheter'*, '*Insert a suppository'* and '*Demonstrate proficiency in administering intravenous drugs during crisis/emergency under direct supervision of an anaesthetist or RN'*) as it was mainly the students who repeatedly mentioned these skills during interviews.

A possible third limitation was the researcher's presence as a key role player in this programme as well as at the institution where the study was conducted. Therefore, the researcher implemented rigorous preventative measures to prevent bias (cf. Ch. 1, sect. 1.7).

A fourth limitation was the fact that the study did not focus on the external variables (first block) of the IBM which could have had an impact on the teaching and learning of anaesthetic and recovery room assistance – particularly because the Diploma in ODA, which includes the anaesthetic and recovery room course, is a novel programme offered within the health education fraternity in South Africa. The latter could have influenced the participants' and staff's lack of background knowledge about the programme.

10.7. SUGGESTIONS FOR FURTHER RESEARCH

The aim of research into health science curricula is to stay true to the needs of the healthcare community and to enhance the symbiosis between a programme and the needs of stakeholders. Further research as a resultant of this study may relate to the ODA practice as a whole which could include their scope of practice and regulatory concerns since the ODA profession is still in the development phase in South Africa. More in-depth research remains critical for ODA curricula and policy developers since the need for ODAs are evolving as their role in the operating department team advances. Their role may expand even more once the ODAs obtain registration status.

Another aspect which may be valuable to explore in future research is the possible career paths for ODAs. This is important as many opinions and concerns were voiced on the future career progression opportunities for ODAs. Several participants in the present study perceived such career options as non-existing. Other research opportunities may arise from the requests for continuous professional development practices for

ODA practitioners in South Africa and their distinguishable identification. It seems important to distinguish the ODA from the medical and nursing professional in the operating department.

Another area of possible research relates to the usability and applicability of the IBM framework to design health sciences contact-based educational programmes – especially relating to external variables and the influence these variables might have on the teaching and learning of anaesthetic and recovery room assistance.

A last area of possible research relates to the education of a 'new' healthcare professional group that encompasses theoretical and clinical training in a complicated arena of diverse sectors. This implicates the overarching issue of blending healthcare in the operating department with higher education and training.

10.8. CONCLUSION

The results of the study provided for new and innovative curriculum opportunities as the researcher was able to address and answer the research questions of this study. It was possible to determine what a needs-based ODA curriculum in anaesthetic and recovery room practice entails and to gain a better understanding of the barriers preventing the teaching and learning of anaesthetic and recovery room assistance. By acquiring a richer and more compelling understanding of this phenomenon, the researcher was able to identify gaps in the current competencies of the ODA allowing her to impartially view and comprehend the criticism directed at the current anaesthetic and recovery room curriculum as discussed in Chapter 1.

It is hoped that the knowledge produced through this inquiry would contribute to the teaching and learning of ODAs with the prospect that they will be able to assist healthcare professionals as respected members of the perioperative team in any situation and, by doing so, may contribute to patient safety.

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ANNEXURE A: INTERVIEW QUESTIONNAIRE

INTERVIEW GUIDE FOR MANAGEMENT FOCUS GROUP INTERVIEWS

Study participants

Nurse Manager and Operating Department Management team at one of the eight M[redacted]hospitals where two or more ODA students and ODAs are employed.

Introduction

Thank you for agreeing to participate in this Focus Group Discussion. Your hospital has been included in this study sample because of two or more Operating Department Assistants being trained (3rd year) or working at your hospital.

Objectives

The aim of this Focus Group Discussion is to establish whether the Operating Department Assistance programme prepares ODAs to assist the anaesthetist and recovery room staff, and meet the operational needs.

Questions

1. Tell me how you experience having ODAs in your operating department.
2. Tell me how you experience the knowledge, skills and attitudes/behaviour of ODAs.
3. Tell me if there is anything we do not teach the ODAs which would be helpful in the operating department.
4. Share with me your experience of the clinical mentoring of the ODA students.
5. If any, how do you think the anaesthetic and recovery room training of ODAs should change to prepare them for practice?

Note

Ask probing questions to clarify issues throughout the Focus Group Discussion.

Probing questions

1. Do ODAs add value or not?
2. Share with me your experience related to anaesthetics and recovery room assistance?
3. Was the anaesthetic and recovery room training (knowledge, skills and attitudes/behaviours) sufficient / insufficient / useful or not?
4. What knowledge, skills and attitudes/behaviours should the ODAs be taught that is not in the current anaesthetic and recovery room units.
5. How do you think the anaesthetic and recovery room training could be changed to follow a logical flow?

Closing

Thank you for your valued participation in this focus group discussion. Your participation has been greatly appreciated.

INTERVIEW GUIDE FOR EDUCATORS INDIVIDUAL INTERVIEWS

Study participants

Nurse educators, employed at [redacted] Private Higher Education Institution learning centre, involved in the training of ODAs.

Introduction

Thank you for agreeing to participate in this Individual Interview. You have been included in this study sample because of your involvement in the Diploma in the Operating Department Assistance programme. Prof Clark, an independent data collector, will collect the data. Thus you and your responses will remain anonymous throughout the process.

Objective

To establish whether the Operating Department Assistance programme prepares ODAs to assist the anaesthetist and recovery room staff

Questions

1. Tell me about your experience facilitating theoretical sessions for ODA students?
2. Share with me your comments regarding the anaesthetic and recovery room training of ODAs?
3. How do you think the training of ODAs should change to prepare them for practice?
4. What is your understanding of the contribution of ODAs in an operating department?
5. Share with me your experience of clinical mentoring of the ODA students?

Note

Ask probing questions to clarify issues throughout the Individual Interview.

Probing questions

1. Establish experience related to anaesthetics and recovery room assistance?
2. Is the anaesthetic and recovery room training (knowledge, skills and attitudes/behaviours) sufficient / insufficient / useful or not?
3. Which components of knowledge, skills and attitudes/behaviours should be taught in the anaesthetic and recovery room units?
4. Which components of knowledge, skills and attitudes/behaviours should not be taught in the anaesthetic and recovery room units?
5. What knowledge, skills and attitudes/behaviours should the ODAs be taught that is not in the current anaesthetic and recovery room units.
6. How do you think the anaesthetic and recovery room training could be changed to follow a logical flow?

Closing

Thank you for your valued participation in this interview. Your participation has been greatly appreciated.

INTERVIEW GUIDE FOR OPERATING DEPARTMENT ASSISTANTS INDIVIDUAL INTERVIEWS

Study participants

The operating department assistants who completed the Diploma in Operating Department Assistance programme at [redacted] Private Higher Education Institution.

Introduction

Thank you for agreeing to participate in this individual interview. You have been included in this study sample because you completed the Diploma in Operating Department Assistance through [redacted]

Prof Clark, an independent data collector will collect the data. Thus you and your responses will remain anonymous throughout the process.

Objective

The aim of this Individual Interview is to establish whether the Operating Department Assistance programme prepares the ODA to assist the anaesthetist and recovery room staff (nothing to do with scrubbing).

Questions

1. Please tell me how your training equipped you to prepare for anaesthesia.
2. Please tell me how your training equipped you to assist the anaesthetist.
3. What contributions, related to preparing and assisting the anaesthetist, do you feel you make in the operating theatre?
4. Please tell me how your training prepared you to assist the recovery room staff.
5. What contributions do you feel you make in the recovery room?
6. If any, how do you think your anaesthetic and recovery room training could be changed to prepare you for practice?
7. How would the anaesthetist and recovery room staff know you are an ODA?

Note

Ask probing questions to clarify issues throughout the Focus Group Discussion.

Probing questions

1. Establish preparation re anaesthetic monitors, equipment, supplies and medicine.
2. Was the training (knowledge, skills and attitudes/behaviours) sufficient / insufficient / useful or not?
3. Which components of knowledge, skills and attitudes/behaviours should be taught in the anaesthetic and recovery room units?
4. Which components of knowledge, skills and attitudes/behaviours should not be taught in the anaesthetic and recovery room units?
5. What knowledge, skills and attitudes/behaviours should the ODAs be taught that is not in the current anaesthetic and recovery room units.

6. How do you think the anaesthetic and recovery room training could be changed to follow a logical flow?

Closing

Thank you for your valued participation in this focus group discussion. Your participation has been greatly appreciated.

INTERVIEW GUIDE FOR OPERATING DEPARTMENT ASSISTANCE STUDENT FOCUS GROUP INTERVIEWS

Study participants

Second or third year operating department assistance (ODA) students registered at [redacted] Private Higher Education Institution.

Introduction

Thank you for agreeing to participate in this Focus Group Discussion. You have been included in this study sample because you are a third year Operating Department Assistance student.

Objective

The aim of this Focus Group Discussion is to establish whether the Operating Department Assistance programme prepares you to assist the anaesthetist and recovery room staff (nothing to do with scrubbing).

Questions

1. Please tell me how your training prepared you to prepare for anaesthesia.
2. Please tell me how your training prepared you to assist the anaesthetist.
3. What contributions, relating to preparing and assisting the anaesthetist, do you feel you make in the operating theatre?
4. Please tell me how your training prepared you to assist the recovery room staff.
5. What contributions do you feel you make in the recovery room?
6. Which elements of your training helped you understand the anaesthetic and recovery room discipline?
7. If any, how do you think your anaesthetic and recovery room training could be changed to prepare you for practice?

Note

Ask probing questions to clarify issues throughout the Focus Group Discussion.

Probing questions

1. Establish preparation re anaesthetic monitors, equipment, supplies and medicine?
2. Establish the anaesthetic & recovery room knowledge and skills the students already have required in their interaction with anaesthetists and recovery room staff?
3. Was the training (knowledge, skills and attitudes/behaviours) sufficient / insufficient / useful or not?
4. Which components of the knowledge, skills and attitudes/behaviours taught in the anaesthetic and recovery room course do you consider useful for your future practice and which not?
5. Which component of the knowledge, skills and attitudes/behaviours should be taught in the anaesthetic and recovery room units?
6. Which component of the knowledge, skills and attitudes/behaviours should not be taught in the anaesthetic and recovery room units?

7. What knowledge, skills and attitudes/behaviours should the ODAs be taught that is not in the current anaesthetic and recovery room units.
8. How do you think the anaesthetic and recovery room training could be changed to follow a logical flow?

Closing

Thank you for your valued participation in this focus group discussion. Your participation has been greatly appreciated.

INTERVIEW GUIDE FOR ANAESTHETIST INDIVIDUAL INTERVIEWS

Study participants

Anaesthetists who are assisted by ODA students or ODAs at a hospital where two or more ODA students or ODAs employed.

Introduction

Thank you for agreeing to participate in this Individual Interview. You have been included in this study sample because you are assisted by Operating Department Assistants being trained or ODAs.

Prof Clark, an independent data collector will collect the data. Thus you and your responses will remain anonymous throughout the process.

Objective

The aim of this Individual Interview is to establish whether the Operating Department Assistants (ODAs) are adequately trained to assist you in the operating theatre and recovery room.

Questions

1. Tell me how you experience having ODAs assisting you in the operating theatre.
2. Tell me how you experience the knowledge, skills and attitudes/behaviours of ODAs.
3. What knowledge, skills and attitudes/behaviours should the ODAs be taught to assist you efficiently?
4. If any, how do you think the anaesthetic training of ODAs should change to prepare them for practice?

Note

Ask probing questions to clarify issues throughout the Individual Interview.

Probing questions

1. Was the anaesthetic and recovery room training (knowledge, skills and attitudes/behaviours) sufficient / insufficient / useful or not?
2. Is there anything we do not teach the ODAs which would be helpful to you?
3. How do you think the anaesthetic and recovery room training could be implemented to follow a logical flow?

Closing

Thank you for your valued participation in this interview. Your participation has been greatly appreciated. Please provide your name and e-mail address to the data collector if you will be willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

ANNEXURE B: SELF-ADMINISTRATIVE QUESTIONNAIRE

MANAGEMENT FGI PARTICIPANT QUESTIONNAIRE PAGE

Date: _____ **Code:**

Indicate with an 'X' your position.

Nursing manager		1	Supervisor: Recovery room		4
Deputy nursing manager: Operating department		2	Mentor / clinical facilitator: Operating department		5
Unit manager: Operating department		3	Other: Please indicate position		6

Please answer the following questions:

1. On the scale one to four indicate how you would score the competency level of the ODAs in your hospital to assist with anaesthesia (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
1st year of programme (Prepare for anaesthesia)					1
2nd year of programme (Assist with general anaesthesia for minor procedures)					2
3rd year of programme (Assist with general anaesthesia and regional block for major procedures)					3
6 month after completion of programme					4

Comments:

_____

_____

2. On the scale one to four indicate how you would score the competency level of the ODAs in your hospital to assist the recovery room staff (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
3rd year of programme					1
6 month after completion of programme					2

Comments:

_____

_____

3. How would you prefer the anaesthetic and recovery room module to be offered? (encircle your response)

5.1. Spread over three years Yes No

5.2. Concentrated in a six month period Yes No

4. If you answered 'yes' in question 3.1, please list the subjects (knowledge, skills and attitudes/behaviours) which must be taught to the ODA students in each year of study.

Year 1	Year 2	Year 3

5. If you answered 'yes' in question 3.2, indicate in which year the anaesthetic and recovery room module must be presented (encircle your response): Year 1 Year 2 Year 3

Please provide your name and e-mail address to the data collector if you will be willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

Thank you for your valued participation.

EDUCATOR PARTICIPANT QUESTIONNAIRE PAGE

Date: _____ **Code:** [ ]

Please answer the following questions:

1. On the scale one to four indicate how you would score the competency level of the ODAs in your hospital to assist with anaesthesia (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
1st year of programme (Prepare for anaesthesia)					1
2nd year of programme (Assist with general anaesthesia for minor procedures)					2
3rd year of programme (Assist with general anaesthesia and regional block for major procedures)					3
On completion of programme					4

Comments:

_____

_____

2. On the scale one to four indicate how you would score the competency level of the ODAs in your hospital to assist the recovery room staff (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
3rd year of programme					1
On completion of programme					2

Comments:

_____

_____

3. How would you prefer the anaesthetic and recovery room module to be offered? (encircle your response)

5.3. Spread over three years Yes No

5.4. Concentrated in a six month period Yes No

4. If you answered 'yes' in question 3.1, please list the subjects (knowledge, skills and attitudes/behaviours) which must be taught to the ODA students in each year of study.

Year 1	Year 2	Year 3

5. If you answered 'yes' in question 3.2, indicate in which year the anaesthetic and recovery room module must be presented (encircle your response): Year 1 Year 2 Year 3

Please provide your name and e-mail address to the data collector if you will be willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

Thank you for your valued participation.

OPERATING DEPARTMENT ASSISTANT PARTICIPANT QUESTIONNAIRE PAGE

Date: _____ **Code:** ☐

Position: _____

Age group (encircle your age group): 18-25 26-35 36+

Please answer the following questions:

1. On the scale one to four indicate how competent do you, at present, feel to prepare for anaesthesia (indicate your response with an 'X').

Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours
1	2	3	4

Comments:

_____

_____

2. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the anaesthetist with general anaesthesia for minor procedures.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviour	Lacking minority (minimal) knowledge, skills and behaviour	Adequate knowledge, skills and behaviour

Comments:

_____

_____

3. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the anaesthetist with general anaesthesia and regional blocks for major surgery.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours

Comments:

_____

_____

4. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the recovery room staff.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours

Comments:

_____

_____

5. How would you prefer the anaesthetic and recovery room module to be offered? (encircle your response)

5.1. Spread over three years Yes No

5.2. Concentrated in a six month period Yes No

6. If you answered 'yes' in question 5.1, please list the subjects (knowledge, skills and attitudes/behaviours) which must be taught to the ODA students in each year of study.

Year 1	Year 2	Year 3

7. If you answered 'yes' in question 5.2, indicate in which year the anaesthetic and recovery room module must be presented (encircle your response): Year 1 Year 2 Year 3

Please provide your name and e-mail address to the data collector if you will be willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

Thank you for your valued participation

OPERATING DEPARTMENT ASSISTANCE STUDENT PARTICIPANT QUESTIONNAIRE

Date: _____ **Code:** ☐

Position: _____

Year of study (encircle your year of study): Year 2 Year 3 Completed

Age group (encircle your age group): 18-25 26-35 36+

Please answer the following questions:

1. On the scale one to four indicate how competent do you, at present, feel to prepare for anaesthesia (indicate your response with an 'X').

Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours
1	2	3	4

Comments:

_____

_____

2. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the anaesthetist with general anaesthesia for minor surgery.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours

Comments:

_____

_____

3. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the anaesthetist with general anaesthesia and regional blocks for major surgery.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours

Comments:

_____

_____

4. On the scale one to four indicate with an 'X' how competent do you, at present, feel to assist the recovery room staff.

1	2	3	4
Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours

Comments:

_____

_____

5. How would you prefer the anaesthetic and recovery room module to be offered? (encircle your response)

3.1. Spread over three years Yes No

3.2. Concentrated in a six month period Yes No

6. If you answered 'yes' in question 5.1, please list the subjects (knowledge, skills and attitudes/behaviours) which must be taught to the ODA students in each year of study.

Year 1	Year 2	Year 3

7. If you answered 'yes' in question 5.2, indicate in which year the anaesthetic and recovery room module must be presented (encircle your response): Year 1 Year 2 Year 3

Please provide your name and e-mail address to the data collector if you are willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

Thank you for your valued participation.

ANAESTHETIST INTERVIEW PARTICIPANT QUESTIONNAIRE PAGE

Date: _____ **Code:** ☐

Please answer the following questions:

1. On the scale one to four indicate how you would score the competency level of the ODAs assisting you (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
Prepare for anaesthesia					1
Assist with general anaesthesia for minor procedures					2
Assist with general anaesthesia and regional block for major procedures					3
6 month after completion of programme					4

Comments:

_____

_____

2. On the scale one to four indicate how you would score the competency level of the ODAs assisting you in the recovery room (indicate your response with an 'X').

	Not competent (unable)	Lacking majority (bulk) of knowledge, skills and behaviours	Lacking minority (minimal) knowledge, skills and behaviours	Adequate knowledge, skills and behaviours	
	1	2	3	4	
3rd year of programme					1
6 month after completion of programme					2

Comments:

_____

_____

3. How would you prefer the anaesthetic and recovery room module to be offered? (encircle your response)

3.1. Spread over three years Yes No

3.2. Concentrated in a six month period Yes No

4. If you answered 'yes' in question 3.1, please list the subjects (knowledge, skills and attitudes/behaviours) which must be taught to the ODA students in each year of study.

Year 1	Year 2	Year 3

5. If you answered 'yes' in question 3.2, indicate in which year the anaesthetic and recovery room module must be presented (encircle your response): Year 1 Year 2 Year 3

Please provide your name and e-mail address to the data collector if you will be willing to participate in another level of this study to confirm that I understood and interpreted what you said correctly. It should not take more than 30 minutes of your time and at most three times.

Thank you for your valued participation.

ANNEXURE C: INTERVIEW CONSENT FORM

EXAMPLE

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

INFORMATION LEAFLET FOR MANAGEMENT

Research title: Re-exploring the anaesthetic and recovery room components of the Diploma in Operating Department Assistance curriculum at a private higher education institution in South Africa

You are asked to participate in a research study conducted by Ann van Zyl who is the Manager of Higher Education and Training at [redacted]. She is responsible for the training of the Operating Department Assistants (ODAs). In this capacity, she wants to ensure that the students are taught the knowledge, skills and attitude necessary to assist the anaesthetists and recovery room staff.

You are asked to participate in a research study conducted by her, a PhD student, from the Department of Curriculum Studies at Stellenbosch University. The results of this study will be contributed to her thesis. You were selected as a possible participant in this study because two or more ODAs are employed in your operating department.

1. PURPOSE OF THE STUDY

The purpose of the study is to determine how, if at all, an existing undergraduate curriculum in anaesthetic and recovery room practices should be re-constructed to fit the needs of a private hospital group in South Africa. Your views on the content of the anaesthetic and recovery room training for ODAs at M[redacted] will be asked.

2. PROCEDURES

If you volunteer to participate in this study, you will be asked to participate in the interview and complete a short questionnaire which will take you 5 – 10 minutes to complete. You will be asked questions relating to the anaesthetic and recovery room module of the Diploma in Operating Department Assistance programme. The interview will approximately take 60 – 90 minutes.

After the session you will be asked whether you would be willing to participate in the second stage of this study to prioritize the knowledge, attitude and skills identified and suggested by you. A modified Delphi-method will be used during this stage of the research. To participate in the second stage of the study, you need to have access to e-mails and the internet.

3. POTENTIAL RISKS, DISCOMFORTS AND BENEFITS TO SUBJECTS

There are no foreseeable risks, discomforts or inconveniences.

The significance of this study entails that the results may provide useful feedback for re-constructing the anaesthetic and recovery room module to maximize the utilisation of ODAs in the operating department. It may also contribute to the current body of research which focuses on higher education curriculum development in health sciences education.

You will not receive any remuneration for participating in this study.

4. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of coding and allocating numbers to each participant. It will be disclosed only with your permission or as required by law. The interview will be audio-taped by an external data collector. Only the external data collector, transcriber and researcher will have access to the data. The tapes will only be used for the thesis and will be erased once the thesis is published on the universities website. If the results of the study are published confidentiality of the participants will be maintained. The names of the participants will not be mentioned in the thesis or any published documents.

5. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

6. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

- Ann van Zyl (Researcher)
    - Phone number: 082 924 8375; Address: Tijgerpark 1, Willie van Schoor Avenue, Bellville
- Prof. Eli Bitzer (Supervisor)
    - Phone number: 021 8082297; Address: Higher Education and Training Department, University of Stellenbosch, Stellenbosch
- Prof. Anita van der Merwe (Co-supervisor)
    - Phone number: 021 938 9036; Address: Nursing Department, Tygerberg Campus, University of Stellenbosch, Parow

7. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

CONSENT OF RESEARCH PARTICIPANT

The information above was described to me, the participant in English and I am in command of this language. I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form. By participating in the interview I confirm that I consent to participate.

Are you willing to participate in the second stage of the study? Yes No

_____ _____ _____

Name Participant Signature of Participant Date

_____ _____ _____

Name witness Signature of Witness Date

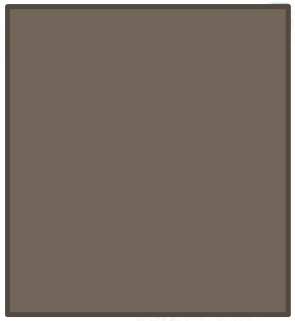
SIGNATURE OF DATA COLLECTOR

I declare that I explained the information given in this document to _____. He/she was encouraged and given ample time to ask me any questions. This conversation was conducted in English and no translator was used.

_____ _____

Signature of Data Collector Date

ANNEXURE D: CONSENT LETTER FROM THE PHEI



1 October 2015

Ethical Committee

University of Stellenbosch

Private Bag x1

Matieland

7602

To Whom it Concerns,

RESEARCH APPROVAL

This letter serves to inform you that [redacted] (Pty) Ltd grants Ann Elizabeth van Zyl (student nr. [redacted]) permission to collect her research data at the [redacted] facilities.

The information will be collected and handled according to the [redacted] Research policy.

You're sincerely

[redacted]

(Training and Development General Manager)

ANNEXURE E: ETHICAL APPROVAL LETTER

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jou kennisvennoot • your knowledge partner

Approval Notice

New Application

27-Jan-2016

Van Zyl, Ann AE

Proposal #: SU-HSD-001626

Title:

Re-exploring the anaesthetic and recovery room components of the Diploma in Operating Department Assistance curriculum at a private higher education institution in South Africa

Dear Mrs Ann Van Zyl,

Your **New Application** received on **16-Dec-2015**, was reviewed

Please note the following information about your approved research proposal:

Proposal Approval Period: **27-Jan-2016 -26-Jan-2017**

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number** (**SU-HSD-001626**) on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical

Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 218089183.

Included Documents:

REC: Humanities New Application

Sincerely,

REC Coordinator

Research Ethics Committee: Human Research (Humanities)

ANNEXURE F: DELPHI INFORMATION – CONSENT LEAFLET

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STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN e-Delphi EXERCISE

Title: *Re-exploring the anaesthetic and recovery room components of the Diploma in Operating Department Assistance curriculum at a private higher education institution in South Africa*

You are asked to participate in a research study conducted by Ann Elizabeth van Zyl, a PhD student in the Department of Curriculum Studies at Stellenbosch University. The results of this study will contribute to a thesis. You were selected as a possible panel member for this e-Delphi exercise because you are involved in the Diploma in ODA programme, have a Diploma in Operating Department Assistance or a Diploma in Operating Room Nursing qualification, and in-depth knowledge of the anaesthetic and recovery room component of the programme.

1. PURPOSE OF THE STUDY

The purpose of the study is to determine how, if at all, an existing undergraduate curriculum in anaesthetic and recovery room practices should be re-constructed to fit the needs of a private hospital group in South Africa.

2. PROCEDURES

If you volunteer to participate in this exercise, you will be requested to do the following: To complete a questionnaire containing closed closed-ended questions / statements regarding the elements of the cognitive, affective and psychomotor skills that need to be included in the ODA anaesthetic and recovery room curriculum. The questionnaire will include data on (1) competencies identified from the interview data, (2) literature review, and (3) competencies highlighted via a study conducted by G Botha in 2015.

It will take you approximately 10 – 15 minutes to complete the electronic questionnaire during each round of the e-Delphi exercise which may be repeated two to three times until a consensus of 70%, for each skill, has been reached. The aim is to reach consensus on each of the skills listed. The questionnaires will be sent two to three weeks apart.

3. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY, RISKS, AND DISCOMFORTS

The significance of this study entails that the results may provide useful feedback for re-constructing the anaesthetic and recovery room curriculum within the Diploma in ODA curriculum to maximize the utilisation

of ODAs in the operating department. The study may also contribute to the current body of research which focuses on higher education curriculum development in health sciences education.

There are no foreseeable risks, discomforts or inconveniences.

4. PAYMENT FOR PARTICIPATION

You will not receive any remuneration for participating in this study.

5. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of coding the questionnaires. Only the researcher will have access to the data which will be stored in secured cupboard in the researcher's office and/or study at home

If the results of the study are published confidentiality of the participants will be maintained. The names of the participants will not be mentioned in the thesis or any published documents.

6. PARTICIPATION AND WITHDRAWAL

You can choose whether to participate in this study or not. If you volunteer to participate, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study.

The investigator may withdraw you from this research if circumstances arise which warrant doing so.

7. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

- Ann van Zyl (Researcher)
  - Phone number: 082 924 8375
  - Address: 3 Gillian Street, Eversdal, Bellville
- Professor Eli Bitzer (Supervisor)
  - Phone number: 021 8082294
  - Address: Higher Education and Training Department, University of Stellenbosch, Stellenbosch
- Professor Anita van der Merwe (Co-supervisor)
  - Phone number: 021 938 9036
  - Address: Nursing Department, Tygerberg Campus, University of Stellenbosch, Parow

8. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development at Stellenbosch University.

CONSENT OF RESEARCH PARTICIPANT

The information above, sent by Ann van Zyl, explains all to me and I am in command of this language. I was given the opportunity to ask questions and these questions were answered to my satisfaction (if applicable).

I hereby consent voluntarily to participate in this study. I have been given a copy of this form. By confirming my willingness, via e-mail, to participate and by completing the electronic e-Delphi questionnaires I confirm that I consented to participate.

ANNEXURE G: DELPHI QUESTIONNAIRE

COPPY OF ELECTRONIC VERSION

ROUND 1

This is a copy of the electronic on-line questionnaire.

EvaSys | PROPOSED ANAESTHETIC AND RECOVERY ROOM CURRICULUM FOR ODAs | Electric Paper

Mark as shown: ☐☒☐☐☐ Please use a ball-point pen or a thin felt tip. This form will be processed automatically.
Correction: ☐■☐☒☐ Please follow the examples shown on the left hand side to help optimize the reading results.

1. BIOLOGICAL DATA

1.1 Indicate your current position

☐ Educator ☐ ODA ☐ Unit Manager Theatre
☐ Deputy Nursing Manager Theatre ☐ Clinical Facilitator/ Mentor Theatre ☐ Nursing Manager
☐ Regional Clinical Manager ☐ other (specify)

1.2 Specify if other was selected in question 1.1

1.3 Do you have a Diploma in Operating Room Nursing Science (post-basic or post-graduate) *or* Diploma in Operating Department Assistance Qualification? ☐ Yes ☐ No

2. ODA CURRICULUM AND CAREER PATH

Please rate your answer on a scale of 1-4

1. Strongly disagree (not important – exclude)
2. Disagree (not important)
3. Agree (important)
4. Strongly agree (of utmost importance)

Anaesthetic and recovery room module spread over 3 years

		1	2	3	4
2.1	**Concentrated** continuous 6 month anaesthetic and recovery room module	☐	☐	☐	☐
2.2	Anaesthetic and recovery room module: 2nd yr OR	☐	☐	☐	☐
2.3	Anaesthetic and Recovery room module: 3rd yr OR	☐	☐	☐	☐
2.4	Anaesthetic and recovery room module: Last 3 months of 2nd yr. and first 3 months of 3rd yr	☐	☐	☐	☐

Career Path / Development

2.5	**Advanced anaesthesia**: After ODA graduation do anaesthetic short course	☐	☐	☐	☐
2.6	*OR* **Advanced anaesthesia**: Complete Diploma in Nursing (by means of credit transfer) and anaesthetic short course	☐	☐	☐	☐

2. ODA CURRICULUM AND CAREER PATH [Continue]

2.7	Work full-time in **recovery room**: Complete Diploma in Nursing (by means of credit transfer) and post-anaesthetic care CPD course	☐	☐	☐	☐
2.8	**Manage** an **operating department**: Complete Diploma in Nursing (by means of credit transfer) and postgraduate management course	☐	☐	☐	☐
2.9	*Participant opinion:*				

3. ANAESTHETIC AND RECOVERY ROOM MODULE

Please indicate the skills which should be included in the anaesthetic and recovery room curriculum.

Please rate your answer on a scale of 1-4

1 - Strongly disagree (skill not important – exclude)
2 - Disagree (skill not important)
3 - Agree (skill important)
4 - Strongly agree (skill of utmost importance)

ANAESTHETIC STUDY UNIT

Knowledge (Cognitive Skills)

Skills *(Student demonstrates knowledge of the following…)*

		1	2	3	4
3.1	Job description: Anaesthetic assistant (AA) & recovery room (RR) assistant	☐	☐	☐	☐
3.2	Role & responsibilities of AA in preparing & assisting dr. during all phases of anaesthesia	☐	☐	☐	☐
3.3	Receive, identify, check patient & interpret findings, incl. informed consent, fasting, possible difficult intubation, obesity, pre-medication	☐	☐	☐	☐
3.4	Evidence-based approach to holistic care of anaesthetised patient	☐	☐	☐	☐
3.5	Assess, plan, implement and evaluate peri-operative care	☐	☐	☐	☐
3.6	Patient with special needs (obesity, diabetic, HIV): Peri-operative considerations	☐	☐	☐	☐
3.7	Paediatric anaesthesia: Peri-operative considerations	☐	☐	☐	☐
3.8	Geriatrics anaesthesia: Peri-operative considerations	☐	☐	☐	☐
3.9	Applied anatomy, physiology & pathophysiology related to anaesthesia & positioning	☐	☐	☐	☐
3.10	Purpose anaesthesia	☐	☐	☐	☐
3.11	Phases of anaesthesia	☐	☐	☐	☐
3.12	Classification of anaesthesia	☐	☐	☐	☐
3.13	Methods of administration of general anaesthesia (incl. motivation for each item)	☐	☐	☐	☐
3.14	Operating table & positioning equipment	☐	☐	☐	☐

3. ANAESTHETIC AND RECOVERY ROOM MODULE [Continue]

3.15	Anaesthetic machine & components (carbon dioxide absorption, gas & vacuum pipelines, gas cylinders) use before, between-cases & after list	☐	☐	☐	☐
3.16	Common breathing systems	☐	☐	☐	☐
3.17	Anaesthetic trolley / cue cart (incl. indication for each item)	☐	☐	☐	☐
3.18	Monitors: Pulse Oximeter, Capnography, ECG, Blood pressure (function, prepare, connect)	☐	☐	☐	☐
3.19	Vital signs: Observation, interpretation, analysing & reporting of abnormalities	☐	☐	☐	☐
3.20	Depth of anaesthesia	☐	☐	☐	☐
3.21	Outcomes of persisting abnormal vital signs	☐	☐	☐	☐
3.22	Electrocardiogram: Interpret ECG rhythm & arrhythmias	☐	☐	☐	☐
3.23	Equipment & supplies for IV fluids: Infusion sets, cannula, infusion pump, syringe pump, blood & infusion warmer, intravenous fluids (crystalloids & colloids)	☐	☐	☐	☐
3.24	IV therapy Management	☐	☐	☐	☐
3.25	Oxygen therapy equipment: Features, role & mode of use	☐	☐	☐	☐

Cognitive Skills *(Student demonstrates knowledge of the following....)*

		1	2	3	4
3.26	Complimentary role of AA in airway establishing & management	☐	☐	☐	☐
3.27	Upper airway block management	☐	☐	☐	☐
3.28	Endotracheal intubation: Set up, tubes: types, sizes, preparing tube, determining size & length , assistance	☐	☐	☐	☐
3.29	Difficult intubation: Set up, procedures for unexpected difficult intubation / failed intubation	☐	☐	☐	☐
3.30	Rapid sequence induction & intubation, incl. cricoid pressure	☐	☐	☐	☐
3.31	Surgical positions: Physiological changes & cautions required for each	☐	☐	☐	☐
3.32	Effect anaesthesia on lungs, lung functions, vital capacity	☐	☐	☐	☐
3.33	Care of anaesthetised patient	☐	☐	☐	☐
3.34	Local anaesthetic agents: Mechanism of action, classification, disadvantages, advantages, dosage, toxic reaction	☐	☐	☐	☐
3.35	Regional anaesthesia techniques: Spinal & lumbar	☐	☐	☐	☐
3.36	Patient positioning for spinal anaesthesia	☐	☐	☐	☐
3.37	Regional anaesthesia: Equipment & supplies	☐	☐	☐	☐
3.38	Anaesthetic emergencies according to definition, signs and symptoms, management	☐	☐	☐	☐
3.39	Blood products, grouping & transfusion: Indication, supplies, checking, cross-matching & hazards	☐	☐	☐	☐
3.40	Principle & practice of autologous transfusion	☐	☐	☐	☐
3.41	Risks of deep venous thrombosis, principles of prophylaxis & equipment involved	☐	☐	☐	☐
3.42	Principles to maintain normo-thermia and fluid balance	☐	☐	☐	☐
3.43	Principles of nerve-stimulation during local anaesthesia	☐	☐	☐	☐
3.44	Standard precautions for known/suspected infection risks e.g. HIV/Hep B/serious or resistant organism infection	☐	☐	☐	☐
3.45	Well-being and rights of patient during all phases, incl. elderly & specific disciplines	☐	☐	☐	☐
3.46	Patient transfer	☐	☐	☐	☐
3.47	Accurate & legal recording	☐	☐	☐	☐
3.48	Legislation applicable to anaesthetic practice	☐	☐	☐	☐

3. ANAESTHETIC AND RECOVERY ROOM MODULE [Continue]

3.49 *Participant opinion:*

4. Psychomotor Skills (Tasks)

Please rate your answer on a scale of 1-4

1 - Strongly disagree (skill not important – exclude)
2 - Disagree (skill not important)
3 - Agree (skill important)
4 - Strongly agree (skill of utmost importance)

Skills *(Student is able to perform the following procedures)*

		1	2	3	4
4.1	Pre-operative check of patient & documentation & interpret findings	☐	☐	☐	☐
4.2	Assess, plan, implement & evaluate peri-operative care	☐	☐	☐	☐
4.3	Utilise evidence-based approach to holistic care for anaesthetised patient	☐	☐	☐	☐
4.4	Prepare, maintain a safe therapeutic environment & prevent anaesthetic related risks	☐	☐	☐	☐
4.5	Check, prepare, clean operating table & positioning equipment	☐	☐	☐	☐
4.6	Check, prepare, clean, handle anaesthetic machine, worktop, monitors & accessories	☐	☐	☐	☐
4.7	Check & fill up anaesthetic / drug trolley / cue cart (incl. medication & drugs)	☐	☐	☐	☐
4.8	Prepare, set-up & change IV fluids	☐	☐	☐	☐
4.9	Prepare & safe / skilled assistance with all types of anaesthesia during induction, intubation, maintenance & reversal	☐	☐	☐	☐
4.10	Participate in rapid sequence induction, incl. cricoid pressure	☐	☐	☐	☐
4.11	Clear upper airway block	☐	☐	☐	☐
4.12	Assist with assist with face mask bag-mask ventilation	☐	☐	☐	☐
4.13	Prepare & assist anaesthetist with basic anaesthesia with all disciplines. excl. neuro, cardiac & thoracic anaesthesia	☐	☐	☐	☐
4.14	Prepare & safe / skilled assistance with patients with special needs	☐	☐	☐	☐
4.15	Prepare & safe / skilled assistance with geriatric anaesthesia	☐	☐	☐	☐
4.16	Prepare & safe / skilled assistance with paediatric anaesthesia	☐	☐	☐	☐
4.17	Set up & assist with difficult intubation	☐	☐	☐	☐
4.18	Assist with patient with unstable cervical spine	☐	☐	☐	☐
4.19	Maintain safety, privacy, dignity & comfort of patient	☐	☐	☐	☐
4.20	Safe transfer & correct positioning of patient according to booked procedure	☐	☐	☐	☐
4.21	Position patient for spinal / epidural anaesthesia	☐	☐	☐	☐
4.22	Observe, interpret & analyse vital signs	☐	☐	☐	☐

4. Psychomotor Skills (Tasks) [Continue]

4.23	Prepare, set-up & assist with establishing invasive monitoring	☐	☐	☐	☐
4.24	Insert & care of urinary catheter: Female	☐	☐	☐	☐
4.25	Insert & care of urinary catheter: Male	☐	☐	☐	☐
4.26	Promote well-being & patient rights during peri-operative journey	☐	☐	☐	☐
4.27	Prepare equipment for nebulised drug, intravenous & epidural infusion & warming of fluid	☐	☐	☐	☐
4.28	Assist to maintain normo-thermia & fluid balance	☐	☐	☐	☐
4.29	Assist with insertion nasogastric tube	☐	☐	☐	☐
4.30	Assist during anaesthetic crisis management	☐	☐	☐	☐
4.31	Identify and prevent anaesthetic related medical-legal risks	☐	☐	☐	☐
4.32	Assist with blood transfusion (cross-checking and recordkeeping)	☐	☐	☐	☐
4.33	Maintain necessary records	☐	☐	☐	☐
4.34	Apply aseptic & sterile technique / principles before, between-cases & after list	☐	☐	☐	☐
4.35	Manage minor trouble-shooting	☐	☐	☐	☐
4.36	Maintain standard & safety measures	☐	☐	☐	☐
4.37	Identify critical problems & complications & report to anaesthetist	☐	☐	☐	☐
4.38	Care of anaesthetic equipment, incl. identifying & managing faulty / broken equipment	☐	☐	☐	☐
4.39	*Participant opinion:*				

5. RECOVERY ROOM (POST-ANAESTHETIC CARE UNIT) STUDY UNIT

Please rate your answer on a scale of 1-4

1 - Strongly disagree (skill not important – exclude)
2 - Disagree (skill not important)
3 - Agree (skill important)
4 - Strongly agree (skill of utmost importance)

Knowledge (Cognitive Skills)

Skills *(Student demonstrates knowledge of ....)*

		1	2	3	4
5.1	Roles & responsibilities of recovery room staff	☐	☐	☐	☐
5.2	Outlay of recovery room	☐	☐	☐	☐
5.3	Equipment: Check, prepare and handle	☐	☐	☐	☐
5.4	Handover of patient to recovery room staff	☐	☐	☐	☐
5.5	Assessment of patient using ABC guidelines	☐	☐	☐	☐
5.6	Post-anaesthetic care of patient	☐	☐	☐	☐
5.7	Holistic care of patient: 1st 5 minutes after hand-over (waiting for RN to take over)	☐	☐	☐	☐
5.8	Airway management	☐	☐	☐	☐

5. RECOVERY ROOM (POST-ANAESTHETIC CARE UNIT) STUDY UNIT [Continue]

5.9 Vital signs, incl. HB, HGT & urine analysis	☐	☐	☐	☐
5.10 Oxygen therapy: Methods, equipment, supplies	☐	☐	☐	☐
5.11 Removal Laryngeal Mask: Criteria, procedure	☐	☐	☐	☐
5.12 Patient extubation: Criteria, procedure, what to do if removed to early	☐	☐	☐	☐
5.13 Oro-pharyngeal airway insertion (determining size, technique)	☐	☐	☐	☐
5.14 Care of patients who had: General anaesthesia	☐	☐	☐	☐
5.15 Care of patients who had: Spinal anaesthesia	☐	☐	☐	☐
5.16 Action and adverse effect of medication / drugs	☐	☐	☐	☐
5.17 Potential post-operative complications: Definition, pathophysiology, signs & symptoms, management	☐	☐	☐	☐
5.18 Post-operative care related medico-legal risks	☐	☐	☐	☐
5.19 Legal recordkeeping, incl. fluid balance form	☐	☐	☐	☐
5.20 Discharge criteria	☐	☐	☐	☐
5.21 Terminal cleaning & preparation of patient station	☐	☐	☐	☐
5.22 Legislation applicable to recovery room practice	☐	☐	☐	☐

5.23 *Participant opinion:*

Psychomotor Skills (Tasks)

Skills *(Student is able to perform the following procedures)*

	1	2	3	4
5.24 Check, prepare & stock recovery room (incl. patient station)	☐	☐	☐	☐
5.25 Maintain a safe therapeutic environment	☐	☐	☐	☐
5.26 Prepare & utilise equipment according to guidelines	☐	☐	☐	☐
5.27 Handover of patient to recover room staff	☐	☐	☐	☐
5.28 Utilise an evidence-based approach to post-anaesthetic care of patient	☐	☐	☐	☐
5.29 Assess patient using ABC headings	☐	☐	☐	☐
5.30 Monitor & provide holistic care of patient: 1st 5 minutes after hand-over	☐	☐	☐	☐
5.31 Airway management	☐	☐	☐	☐
5.32 Assist with oxygen therapy	☐	☐	☐	☐
5.33 Assess post-operative pain, nausea & vomiting	☐	☐	☐	☐
5.34 Identify & prevent anaesthetic related medical-legal risks	☐	☐	☐	☐
5.35 Remove Laryngeal Mask airway	☐	☐	☐	☐
5.36 Remove endotracheal airway	☐	☐	☐	☐
5.37 Insert oro-pharyngeal airway	☐	☐	☐	☐
5.38 Inset Laryngeal Mask airway	☐	☐	☐	☐
5.39 Assist RN with recovery of patients of all ages for all types of anaesthesia	☐	☐	☐	☐
5.40 Assist RN with recovery of patients for all types of procedures	☐	☐	☐	☐
5.41 Assist RN with recovery of paediatric patients	☐	☐	☐	☐
5.42 Observe, interpret & analyse vital signs (incl. HB, HGT & urine analysis)	☐	☐	☐	☐
5.43 Maintain legal recordkeeping, incl. fluid balance form	☐	☐	☐	☐
5.44 Prepare patient for discharge	☐	☐	☐	☐

5. RECOVERY ROOM (POST-ANAESTHETIC CARE UNIT) STUDY UNIT [Continue]

5.45	Decontaminate & prepare patient station	☐	☐	☐	☐
5.46	*Participant opinion:*				

6. ANAESTHETIC AND RECOVERY ROOM ASSISTANT

Please rate your answer on a scale of 1-4

1 - Strongly disagree (skill not important – exclude)
2 - Disagree (skill not important)
3 - Agree (skill important)
4 - Strongly agree (skill of utmost importance)

Emergency management

Skills

		1	2	3	4
6.1	Recognise and respond to adverse anaesthetic conditions or emergencies	☐	☐	☐	☐
6.2	Understand principles to manage shocked patient	☐	☐	☐	☐
6.3	Understand management of: cyanosis, stridor, bronchospasm, cardiac dysrhythmias, pneumothorax	☐	☐	☐	☐
6.4	Implement local protocol for management of sudden life-threatening haemorrhage	☐	☐	☐	☐
6.5	Describe management of patient with latex allergy	☐	☐	☐	☐
6.6	Perform basic life support (BLS)	☐	☐	☐	☐
6.7	Discuss role of team members during BLS	☐	☐	☐	☐
6.8	Check and use emergency equipment and supplies	☐	☐	☐	☐
6.9	Assist with cricoid-thyroidectomy	☐	☐	☐	☐
6.10	Assist with fibre-optic intubation	☐	☐	☐	☐
6.11	Discuss defibrillation: Definition, ECG, principles	☐	☐	☐	☐
6.12	Check and use defibrillator	☐	☐	☐	☐
6.13	Check emergency trolley and knows where all items are	☐	☐	☐	☐
6.14	Discuss anaesthetic emergencies according to definition, signs and symptoms, management	☐	☐	☐	☐
6.15	Set up and assist with underwater drain for treatment of pneumothorax	☐	☐	☐	☐
6.16	Recognize critical or near miss incidents and follow reporting mechanisms	☐	☐	☐	☐
6.17	Describe safe transfer of patient for treatment or investigation within hospital	☐	☐	☐	☐
6.18	*Participant opinion:*				

6. ANAESTHETIC AND RECOVERY ROOM ASSISTANT [Continue]

Pharmacology within operating department practice

Skills

		1	2	3	4
6.19	Promote & apply national and local guidelines re ordering, storage, checking & administration of medication	☐	☐	☐	☐
6.20	Demonstrate comprehensive understanding of pharmacokinetic & pharmacodynamics effects of anaesthetic drugs	☐	☐	☐	☐
6.21	Demonstrate knowledge of **pre-medication**: Categories, generic name, trade name, action, indication, contra-indications, effect, adverse effect & dosage	☐	☐	☐	☐
6.22	Demonstrate knowledge of **anaesthetic agents**: Induction, inhalation, analgesics, muscle relaxants, reversal, anticholinesterase	☐	☐	☐	☐
6.23	Demonstrate knowledge of drugs used in **recovery room**: Categories, generic name, trade name, action, indication, dosage, contra-indications, effect & adverse effect	☐	☐	☐	☐
6.24	Discuss **emergency drugs**: Generic name, trade name, action, indication, contra-indications, dosage, intervals, effect & adverse effect	☐	☐	☐	☐
6.25	Accurate calculate drug dosages	☐	☐	☐	☐
6.26	Demonstrate proficiency in preparation of medication	☐	☐	☐	☐
6.27	Knowledge of drug administration	☐	☐	☐	☐
6.28	Demonstrate proficiency in drawing drug up in syringe	☐	☐	☐	☐
6.29	Demonstrate proficiency in handling scheduled drugs (incl. count, co-sign, registers)	☐	☐	☐	☐
6.30	Demonstrate proficiency in administration of suppository	☐	☐	☐	☐
6.31	Demonstrate proficiency in administration of IV drugs during crisis / emergency under direct supervision of anaesthetist or registered nurse	☐	☐	☐	☐
6.32	Demonstrate proficiency in administration of drugs into IV bag under direct supervision of anaesthetist or registered nurse	☐	☐	☐	☐
6.33	Monitor effect of drug on patient & take appropriate action to notify anaesthetists or RN in event of adverse effect	☐	☐	☐	☐
6.34	Accurately complete appropriate documentation	☐	☐	☐	☐
6.35	*Participant opinion:*				

Affective Skills (Attitude / Values)

Skills *(Student demonstrate the following attitude / values)*

		1	2	3	4
6.36	Pro-active thinking & reaction	☐	☐	☐	☐
6.37	Critical analytical thinking	☐	☐	☐	☐
6.38	Self-confidence	☐	☐	☐	☐
6.39	Personal integrity (honesty)	☐	☐	☐	☐
6.40	Diligence (carefulness)	☐	☐	☐	☐
6.41	Good observation skills	☐	☐	☐	☐

6. ANAESTHETIC AND RECOVERY ROOM ASSISTANT [Continue]

6.42	Alert & quick to response	☐	☐	☐	☐
6.43	Accountability	☐	☐	☐	☐
6.44	Responsibility	☐	☐	☐	☐
6.45	Professional conduct / boundary setting	☐	☐	☐	☐
6.46	Respect for patients and colleagues	☐	☐	☐	☐
6.47	Cooperative	☐	☐	☐	☐
6.48	Anticipation	☐	☐	☐	☐
6.49	Problem-solving	☐	☐	☐	☐
6.50	Commitment	☐	☐	☐	☐
6.51	Initiative taking	☐	☐	☐	☐
6.52	Assertiveness	☐	☐	☐	☐
6.53	*Participant opinion:*				

Non-technical Skills

Skills (Student demonstrate the following non-technical skills)

		1	2	3	4
6.54	Communication	☐	☐	☐	☐
6.55	Teamwork	☐	☐	☐	☐
6.56	Situation-awareness	☐	☐	☐	☐
6.57	Leadership	☐	☐	☐	☐
6.58	Decision-making	☐	☐	☐	☐
6.59	Participant opinion:				

ANNEXURE H: DELPHI-INFORMATION LEAFLET ROUND 1

3 Gillian Street

Bellville

7530

16 March 2017

Dear Participant

DELPHI EXERCISE: FIRST ROUND

Thank you for participating in this electronic Delphi exercise which will consist of two to three rounds, depending on consensus reached.

Based on the analysis of data obtained through the interview process, literature review and as highlighted by G. Botha's study in 2015 a list of skills / topics were compiled. The data sheet includes skills / topics relevant to the anaesthetic and recovery room curriculum, as well as the scaffolding operating department assistance curriculum.

Please rate the importance of these skills / topics on the scale from 1 to 4. One (1) relates to a skill / topic which you strongly disagree that it should be included (is not at all important), 2 is a skill / topic which you disagree with (it is not important), 3 indicates that you agree with the skill / topic (it is important) and by indicating 4 you strongly agree with the skill / topic (it is important and should be included in the curriculum).

The aim is to obtain a 70% consensus for each skill / topic. Thus, it is of utmost importance that you please answer all the questions which will take you approximately 15-30 minutes to complete.

As mentioned in the consent letter, sent two to three weeks ago, anonymity and confidentiality will be maintained. The information will only be known to the researcher.

Thank you that you are willing to participate in this study.

Kind regards

Ann van Zyl

Contact details:

ANNEXURE I: DELPHI-INFORMATION LEAFLET AND ADAPTED QUESTIONNAIRE ROUND 2 AND 3

ROUND 2

3 Gillian Street
Eversdal
Bellville
7530
22 May 2017

Dear Participant

DELPHI EXERCISE: SECOND ROUND

Thank you for participating in the first round of the online Delphi exercise.

The aim of the second round it to reach consensus on the questions, asked in the first round, where consensus were not reached. Consensus is defined as 70% of the participants agree or disagree on a skill which should or should not be included in the curriculum. Your vote counts.

A question where consensus was obtained, in the first round, is not included in the second online questionnaire. Thus, this questionnaire is much shorter than the first one and will take you approximately 5 – 10 minutes to complete.

A question where consensus was not reached will be repeated in the second online questionnaire. You will see the response - of the questions where consensus was not reached - of all participants in the document attached.

Example

(4.24) Insert and care of urinary catheter: female

	Strongly Disagree	Disagree	Agree	Strongly Agree
Participant score	23.5%	17.6%	11.8%	47.1%
Question score	1	2	3	4

Explanation of example: on the right side 47.1% of the participants indicated that they ‘strongly agree’ and 11.8% indicated they ‘agree’ that an ODA may insert and take care of a urinary catheter for a female patient. Hence, the skill should be included in the anaesthetic and recovery room curriculum. On the left side 23.5%

participants indicated that they ‘strongly disagree’ and 17.6% indicated that they ‘disagree’. Your vote is included in one of these scores.

This second Delphi round enables you to change your opinion, it you want to, after you viewed the other participant’s feedback.

Seven new questions, motivated by the participants (your) comments (opinion), were added for consensus. Please answer all the new and repeating questions as the aim is to reach consensus on all the items / skills which should be included in the anaesthetic and recovery room curriculum.

You answers will remain confidential and your identity anonymous.

Thank you once again for participating in this study.

Kind regards

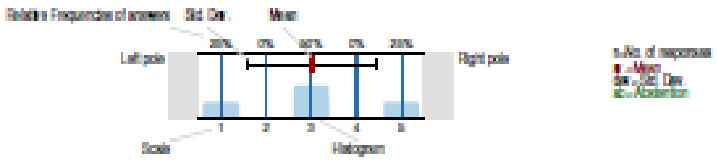
Ann van Zyl

Contact details:

[redacted]

Legend

Question text

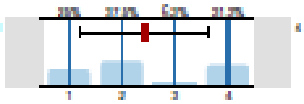


Please rate your answer on a scale of 1-4

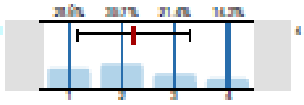
1. Strongly disagree (not important – exclude)
2. Disagree (not important)
3. Agree (important)
4. Strongly agree (of utmost importance)

[redacted]

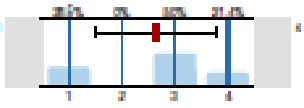
211 Concentrated continuous 6 month anaesthetic and recovery room module



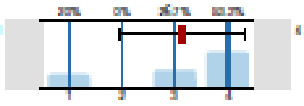
215 Anaesthetic and recovery room module: 2nd yr. *OR*



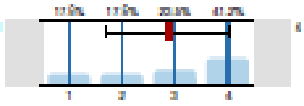
219 Anaesthetic and Recovery room module: 3rd yr. *OR*



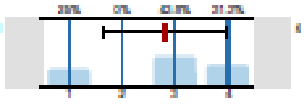
2.6 Anaesthetic and recovery room module: Last 3 months of 2nd yr. and first 3 months of 3rd yr.



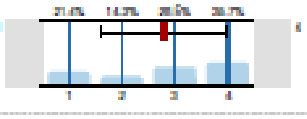
233 Advanced anaesthesia: After ODA graduation do anaesthetic short course



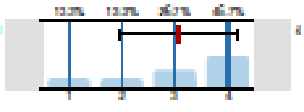
243 *OR*
Advanced anaesthesia: Complete Diploma in Nursing (by means of credit transfer) and anaesthetic short course



271 Work full-time in recovery room: Complete Diploma in Nursing (by means of credit transfer) and post-anaesthetic care CPD course



218 Manage an operating department: Complete Diploma in Nursing (by means of credit transfer) and postgraduate management course

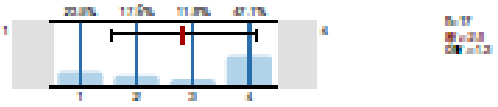


Q.9 *Participant opinion:*

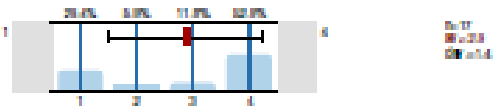
- CDA's more involved in all basic patient care and to support in all
- Agree , as all those points are wonderfully put out. Nursing counts , as some of my current CDA students wish that more nursing had been incorporated in their course
- Anaesthesia and recovery room are both very high risk areas to work in. And I think anybody who works in these areas needs to have in depth knowledge and skills to be able to ensure safe patient care.
- Candidate can manage an operating department with postgraduate management course should they meet the criteria for the course. Diploma in Nursing should not be an requirement.
- I am not sure how we should progress with the Anaesthetic succession pathway. To manage a theatre department, you should have been scrubbing as well - in my opinion -this to understand the various discipline needs.
- I am of opinion that Theatre can function with only CDA specialist. Recovery function with Professional Nurse. Manager can be either CDA or PN.
- I do not thing that due to the complexity of anaesthetics and recovery room that CDA must be allowed to perform anaesthetic and recovery room duties due to the lack of insight of the nursing side.
- In my opinion I feel that there should be more than just short course after CDA graduation. We as CDA's should be given a opportunity to do a bridging course of kind to become a nurse. (Instead of having to start from the beginning.) We study all the relevant anatomy and physiology to be able to be given a fair compensation.
- CDA does not need a Nursing Diploma to be able to manage operation issues in theatre ,He or She can take up the role of SNP but focus on the administration aspect he/she can also mentor/coach staff.
- The CDA's are not always strong enough to manage the department and stand their ground against the Doctors
- career path suggested in 2.6 - 2.8 is of interest and can be beneficial to the CDA graduate.

4. ANAESTHETIC AND RECOVERY ROOM MODULE (PSYCHOMOTOR SKILLS / TASKS)

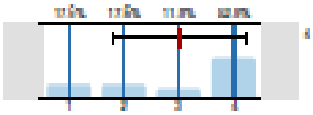
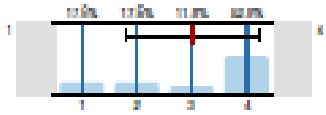
Q.26 Insert & care of urinary catheter: Female



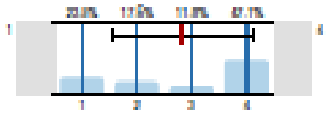
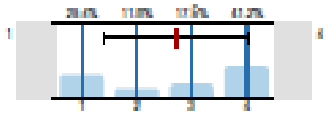
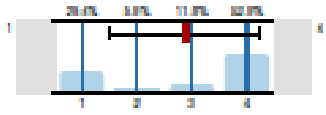
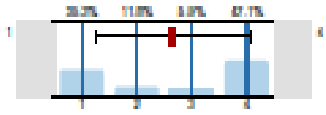
Q.28 Insert & care of urinary catheter: Male



5. RECOVERY ROOM (POST-ANAESTHETIC CARE UNIT)
STUDY UNIT (KNOWLEDGE / COGNITIVE SKILLS)

5.11	Removal Laryngeal Mask: Criteria, procedure	
5.12	Patient extubation: Criteria, procedure, what to do if removed to early	

5. RECOVERY ROOM (POST-ANAESTHETIC CARE UNIT)
(PSYCHOMOTOR SKILLS / TASKS)

5.30	Remove Laryngeal Mask airway	
5.36	Remove endotracheal airway	
5.37	Insert oro-pharyngeal airway	
5.38	Insert Laryngeal Mask airway	

ANNEXURE I: DELPHI-INFORMATION LEAFLET ROUND 3

ROUND 3

8 June 2017

Dear Participant

DELPHI EXERCISE: THIRD ROUND

Thank you for participating in the second round of the online Delphi exercise.

The aim of the third round it to reach consensus on three questions, asked in the second round, where consensus were not reached. Consensus is defined as 70% of the participants agree or disagree on a skill which should or should not be included in the curriculum. Your vote counts.

A question where consensus was obtained, in the second round, is not included in the third online questionnaire. Thus, this questionnaire is much shorter than the second one and should take you approximately 1-2 minutes to complete.

The questions on which consensus were not reached will be repeated in the third online questionnaire. You will see the response - of the questions where consensus was not reached - of all participants below:

(3.2) Insert and take care of a urinary catheter: male

	Strongly Disagree	Disagree	Agree	Strongly Agree
Participant score	23.5 %	17.6%	23.5%	35.3%
Question score	1	2	3	4

(4.5) Remove an endotracheal tube

	Strongly Disagree	Disagree	Agree	Strongly Agree
Participant score	17.6%	23.5%	17.6%	41.2%
Question score	1	2	3	4

(4.7) Insert laryngeal mask airway

	Strongly Disagree	Disagree	Agree	Strongly Agree
Participant score	23.5%	17.6%	17.6%	41.2%
Question score	1	2	3	4

Explanation of question 4.5 feedback: on the right side 41.2% of the participants indicated that they ‘strongly agree’ and 17.6% indicated they ‘agree’ that an ODA may extubate a patient. On the left side 17.6% participants indicated that they ‘strongly disagree’ and 23.5% indicated that they ‘disagree’. Your vote is included in one of these scores.

This third Delphi round enables you to change your opinion, it you want to, after you viewed the other participant’s feedback. Please answer the three repeating questions as the aim is to reach consensus on all the items / skills which should be excluded or included in the anaesthetic and recovery room curriculum.

You answers will remain confidential and your identity anonymous.

Thank you once again for participating in this study.

Kind regards

Ann van Zyl

Contact details:

ANNEXURE J: TRANSCRIBED DOCUMENT

EXAMPLE OF TRANSCRIBED DOCUMENT

2016-08-29 Anaesthetist Individual Interview

A 4

Speaker Key: IV Interviewer; MI Male Interviewee

IV So today is the 29th of August 2016, and we're going to try and have an interview with an anaesthetist at XXX. Good day, and thank you that you agree, although we don't know whether these questions would really be of value. So, the aim of this interview is to establish whether the ODAs are adequately trained to assist you in operating theatre and recovery room. So, the question is, and I'll ask you to tell me how you experience having ODAs assisting you in the operating theatre.

MI Unfortunately we don't have ODAs helping us as anaesthetist assistants or in recovery room, so it's actually impossible for me to give an opinion because we are assisted by nursing staff for anaesthesia at XXX, and we have nursing, or registered nurses helping in the recovery room.

IV Okay, so you don't have any experience of their knowledge in these two areas, the ODAs, as students?

MI Unfortunately not. I have experience of the operating department technicians scrubbing in theatre, but not with anaesthesia at all.

IV Not at all, and not in the recovery room at all?

MI Not in the recovery room at all. In fact, currently they're not allowed to recover our patients because they're not trained yet.

IV Yes. So what I hear you say is they are not working in your theatres. Do you think they need to be trained in these two areas, to assist?

MI Yes, I think there would be very definite value in having them trained in these areas because they are certainly highly competent in the scrub department, and there is no reason why they shouldn't be adequately trained as either anaesthetic assistants or as recovery personnel, provided they went through a formal training programme.

IV What are the key issues that you think that needs to be included in that training programme, if we go to anaesthetic and recovery room?

MI Well, certain from an anaesthetic perspective it's a good understanding of the equipment that's used in anaesthesia, and when it's used. It's an understanding of the different forms of anaesthesia which are used for

different types of procedure, and then the ability to anticipate the requirements of the anaesthetist. A good assistant in anaesthesia is another pair of eyes looking at the patient and looking at the monitor. So they really are like an extra pair of hands for the anaesthetist as well as an extra pair of eyes and ears. But for them to have that, they need to have a full understanding of what anaesthesia involves, and what we try to achieve.

IV Do you think that they can come into that training without having any basic other training, but come directly from school, completed school?

MI I think that some degree of initiation into the theatre environment is important. They couldn't come straight into anaesthesia, but they could come into the theatre environment to start with, much as they do if they know they are starting as a sort of floor assistant, where they gain an understanding of what the workings of theatre are, and once they've achieved that, then they could start in an observation capacity for anaesthesia and recovery. But it is a long learning process, and particularly as far as recovery room persons are concerned, recovery nurses, that's one of the most responsible jobs in the hospital, and also one of the most difficult, and it takes a lot of experience, and there is no short cut to learning how to manage an airway, learning how to manage an emerging patient, learning how to manage all the symptoms that are common in the recovery area. It also requires them to be able to administer drugs, which is not part of the current curriculum, and that would again probably require some sort of further registration.

IV What I hear you say is their anaesthetic support, they can still get to be the extra pair of eyes and hands for the anaesthetist, but the anaesthetist is there and the anaesthetist is trained.

MI That's correct.

IV Whereas in recovery room, the registered nurse is in a highly skilled position there, and they will have to maybe administer drugs, and for which additional registration is required. So, what I seem to hear is that it might be even easier to ease them in, similar to a floor, to observing anaesthetics, and become part of, and become an anaesthetist assistant, but to become a recovery room person, you would need additional registration.

MI I think if one follows that route of going via anaesthesia assistant to recovery, it would also be a natural progression, and a lot of the skills they

would pick up as an anaesthetic assistant would be useful as a recovery room person later on. But going straight into recovery room, I think would be unfair on that particular person. They would be out of their depth, and unless there was very, very good supervision all the time.

It's easier, they would pick up the skills faster, I think, in the operating theatre, and I think that their approach to airway control would be better understood in the theatre because they could see intubatations occurring regularly, they could see positions of laryngeal mask, they can see what the patients are coming from, and they would be able to grow into it. I think starting off in recovery would be the right way to go.

IV And that growing period, what kind of period did you think would be apt to expose them to these two entities in theatre, and become of value to assist?

MI I think it would take at least a year for anaesthesia, and a further room for recovery room. That would be my estimation, because I don't think, unfortunately, or fortunately problems are not that common to deal with. So, to be exposed to an adequate range of issues would require that amount of time.

IV I understand.

MI Obviously there are the possibilities of using simulation or skills lab to develop a lot of the skills, but in the real world they've got to see how it really happens [chuckles].

IV Yes [chuckles]. So, what I hear you say is that you have only been assisted by nursing staff.

MI Correct.

IV And you have only been assisted by registered nurses in the recovery. You've not been exposed to ODAs helping you with your anaesthetics or in the recovery room, but you say that they could be trained in that, taking a year and growing each component, and growing it through, like observing through the anaesthetics to the recovery room, they can grow, be grown to develop and be of value.

MI I think that's a very real possibility. I mean, elsewhere in the world there are technicians running the ventilators in ICU for example, not nurses, and looking after airways. So it's not as though you have to be a nurse to be able to do these things. You can certainly grow in that particular environment.

IV Okay, but it takes time, and it takes time to expose, and you also

mentioned expose them to simulation, so that they can be exposed to when something goes wrong.

MI Absolutely. I think simulation in a non-threatening environment and in which they can pick up other skills, and be comfortable with them when they are needed. Then again, it might look easy to be a decent anaesthetic assistant, but it's not. A lot of anticipation is required, and you can only anticipate if you have been there before, if you've got a good understanding of what is happening, why it's happening and what's happening next, what's going to happen next. So, that's what they are require to have.

IV Do you think an anaesthetic assistant, like an ODA assistant that's non-nursing could almost be trained by, be just comfortable to be assisting certain anaesthetists, you know, that they know that is how you work, to begin with?

MI I think it would probably be easier for them, but it is important that they are able to work with a range of different people in a range of different techniques. I think it must be stressed that a good anaesthetic assistant has enormous value and makes a massive difference to the theatre flow, the theatre efficiency and effectiveness, the safety of anaesthesia. So it's not a position that we regard lightly at all. We are very, very concerned about the standard of anaesthetic assistants that we have, but I do believe that having seen these people work as theatre operators, or theatre technicians, they certainly have the ability to become very good anaesthetic assistants.

IV So what I hear you say is that they should be developed in anaesthetics and recovery room, but then skip the scrubbing. They should not be involved in scrubbing as well. What I hear is that they should rather almost like specialise in those two areas.

MI Certainly I would imagine that someone who is already qualified as a scrub technician would transition much faster into anaesthesia and recovery because they see it happening all the time, and they do have an understanding from that point of view. But there is no reason why one shouldn't just become an anaesthesia technician, and then from then on recovery.

IV But not necessarily be exposed to scrubbing as well?

MI I don't think that's a requirement.

IV Okay, alright. Thank you. Thank you for participating.

MI My pleasure, good luck.

[End of sound file 00:11:40]

ANNEXURE K: OPERATING DEPARTMENT ASSISTANT SCOPE OF PRACTICE

The Scope of Practice of Operating Department Assistants

Definitions

In this document any word or expression to which a meaning has been assigned shall bear such meaning and unless the context otherwise indicates: –

“advocacy” means the process of providing support, referral, liaison and representing and protecting the

interest of individuals and families who may or may not be aware of the need or are unable to coordinate or organize health care for themselves;

“competence” means a level of performance demonstrating the effective application of knowledge, skills, judgment and personal attributes required to practice safely and ethically in a designated role and setting;

"peri-operative" means the phase before, during and after surgery;

“supportive care” means all services which enhance the other elements of care, essential to individualised care including health education, advocacy and counselling;

“scope of practice” means the parameters within which an Operating Department Assistant who has met the prescribed qualifications, may practice.

SCOPE OF OPERATING DEPARTMENT ASSISTANCE

1. Operating Department Assistance is an occupation comprising of a body of scientific knowledge and skills practiced by persons with an applicable qualification.
2. The qualification provides the legal and ethical framework for Operating Department Assistance.
3. The Operating Department Assistance is a dynamic process that provides for safe perioperative outcomes for the patient.
4. Operating Department Assistance is a dynamic process which-

   (1) Promotes and supports the patient’s perioperative experience;

   (2) Requires judgment within a perioperative environment;

   (3) Maintains continuity and coordination of health care;

   (4) Provides and maintains a safe and conducive environment for health care.

TITLE OPERATING DEPARTMENT ASSISTANT

5. The title of Operating Department Assistant may only be used by a person who:

(1) Has met the prescribed education requirements for an Operating Department Assistant (Diploma in Operating Department Assistance).

SCOPE OF PRACTICE OF AN OPERATING DEPARTMENT ASSISTANT

6. It is within the competence of an Operating Department Assistant to assume full responsibility and accountability for:

   (1) The provision of sterile and non-sterile perioperative services;

   (2) Assessing, planning and preparing for the operating theatre list;

   (3) The duties delegated by a professional nurse.

7. The professional and ethical practice of an Operating Department Assistant requires a practitioner to -

   (1) Demonstrate knowledge of laws and regulations relevant to the practice of the Operating Department Assistant;

   (2) Practice as an Operating Department Assistant in accordance with the laws and regulations relevant to health care in South Africa;

   (3) Protect and advocate for the rights of individuals and groups in relation to health care.

   (4) Practice in accordance with the standards and ethical code set by the qualification;

   (5) Understand and accept accountability and responsibility for his/her own actions and omissions within the relevant legal and ethical parameters.

8. The clinical practice of an Operating Department Assistant is to -

   (1) Assist in the provision of an optimum, safe environment for care and treatment of the perioperative patient;

   (2) Prepare and assist in the operating department for anaesthetic, diagnostic and surgical interventions;

   (3) Execute all delegated sterile and non-sterile perioperative activities;

   (4) Perform duties according to set standards;

   (5) Support and assist with the maintenance of continuity in care;

   (6) Maintain an environment that promotes safety, security and respect of the health care user;

   (7) Demonstrate and maintain clinical competence to ensure safe practice as an Operating Department Assistant;

   (8) Function as a part of the multidisciplinary team;

   (9) Maintain continuity of care through reporting and communication to care givers and members of the multidisciplinary team;

(10) Create and maintain an accurate record of intra-operative interventions;

(11) Advocate for the rights of health care users;

(12) Render basic lifesaving interventions in an emergency situation.

9. The quality of practice of an Operating Department Assistant requires the practitioner to-

(1) Participate in the maintenance of set standards to improve the quality of service;

(2) Utilise learning opportunities to improve own practice;

(3) Continuously review own performance against standards of practice.

LIMITATIONS OF PRACTICE OF AN OPERATING DEPARTMENT ASSISTANT

(1) The practice of an Operating Department Assistant must be indirectly supervised by a professional nurse;

(2) The practice of an Operating Department Assistant does not include the role of a surgical assistant;

(3) The practice of the Operating Department Assistant includes the preparation of the post anaesthetic unit but does not include the recovery of a patient after receiving local, regional, general anesthesia or conscious sedation;

(4) The practice of an Operating Department Assistant prohibits the administration of medication of any kind.

ANNEXURE L: SUMMARY OF THE ANAESTHESIA AND RECOVERY ROOM COURSE OUTLAY PER YEAR OF STUDY

FIRST YEAR

INTRODUCTION TO ANAESTHESIA

Specific competencies

The student should be able to: (1) assess the patient's vital signs; (2) identify the patient and check his/her documentation prior to surgery; (3) transfer and assist with positioning of a patient; (4) perform pre-operative anaesthetic preparation; (5) take care of and clean the anaesthetic equipment and (6) check a defibrillator and emergency trolley.

Cardiovascular and respiratory system

The student should have an understanding of: (1) the risk factors and signs and symptoms of hypertension; (2) the definition, etiology, complications, risk factors and treatment of CAD; (3) angina and myocardial infarction with regards to definition, etiology, signs and symptoms and treatment; (4) the definition, etiology, signs and symptoms and treatment of chronic bronchitis, emphysema and asthma; (5) the definition, transmission, signs and symptoms and standard precautions of tuberculosis and (6) the indications for oxygen therapy, as well as the possible dangers of oxygen, basic principles and safety measures with the use of an oxygen cylinder, methods of oxygen therapy and advantages of oxygen therapy.

General anaesthesia

The student should have an understanding of: (1) the definition and types anaesthesia, including general, regional and local anaesthesia; (2) physiological monitoring of the surgical patient; (3) preparation for general anaesthesia with regards to equipment and items required, commencement of an intravenous line, administration of anaesthesia, placement of an endotracheal tube and physiological monitoring of a patient; (4) the anaesthetic machine and its components and (5) various ways to manage the anaesthetised patient's airway.

Regional anaesthesia and conscious sedation

The student should have an understanding of (1) regional anaesthesia with regards to the types, drugs used, patient preparation, physiological monitoring of the patient and possible complications and (2) conscious sedation with regards to definition, indications, drugs used, and physiological monitoring of the patient.

Medications used for anaesthesia

The student should have an understanding of: (1) the various types of devices to measure and administer drugs; (2) the objectives of premedication and the drugs usually prescribed for premedication; (3) drug classification with regards to the trade / generic name and indications of Ketamine hydrochloride

(Brevinase/Ketalar), Sevoflurane (Ultane), Desflorane (Suprane), Nitrous oxide, Midazolam (Dormicum), Morphine sulphate, Fentanyl (Sublimaze), Remifentanyl (Ultiva), Tramal (Tramadol), Succinylcholine (Scoline), Vercuronium (Norcuron), Cisatracurium (Nimbex), Atracurium (Tracrium), Naloxone (Narcan), Bupivicaine (Macaine), Lidacaine (Xylocaine), Ropivacaine (Naropin), Diclofenal (Voltaren), Xefo (Lornoxicam), Toradol (Ketotolac tromethamine), Glycopyrrolate (Robinul), Neostigmine (Prostigmine), Maxalon, Ondansetron (Zofran), Furosemide (Lasix) and Mannitol (Osmitrol); (4) crystalloids and colloids as intravenous fluid replacement and (5) methods to estimate the amount of blood loss and items and equipment required for blood replacement therapy.

Emergency care

The student should have an understanding of: (1) the role of the different team members during a CPR; (2) the items needed on an emergency trolley in the operating department; (3) the emergency drugs (Adrenaline, Atropine, Lignocaine, Amoidarone and Sodium Bicarbonate) and (4) the method to check the defibrillator.

(Source: Roos, 2016b; Roos, 2017).

SECOND YEAR

MINOR GENERAL ANAESTHESIA CARE

Specific competencies

The student should be able to: (1) prepare for general anaesthesia; (2) assist with the insertion of an endo-tracheal tube and (3) assist with general anaesthesia.

Patients with special needs

The student should be able to: (1) discuss the pathophysiology of diabetes mellitus, tuberculosis, hypothermia and hyperthermia, latex sensitivity, HIV / AIDS and hypotension; (2) explain the anaesthetic concerns, special requirements and needs of an obstetric, diabetic patient, hearing and visual impaired, trauma, obese, latex sensitive, geriatric, paediatric and immuno-compromised patient and (3) discuss the prevention of hypothermia.

Anaesthetic assistance

The student should be able to: (1) identify the objectives of anaesthesia; (2) differentiate between different levels of consciousness; (3) discuss the administration techniques for general anaesthesia; (4) identify the various breathing circuits used on the anaesthetic machine; (5) discuss the physiological monitoring of the anesthetised patient with regards to routine parameters to be monitored and required equipment; (6) discuss intravascular fluid balance during surgery; (7) differentiate between the types of blood and blood products used and explain the checks to be performed before blood transfusion; (8) explain the role of the anaesthetic assistant during each sequential phases of anaesthesia; (9) compare regional anaesthesia and regional blocks

with regards to the types of regional anaesthesia and blocks; the anaesthetic assistant's role and possible complications and management thereof; (10) discuss the care of a patient receiving conscious sedation with regards to documentation, possible medical legal risks and the prevention thereof, monitoring of the patient and legal issues; (11) compare induced hypothermia and hypotension; (12) explains the importance of pre-operative fasting; (12) identify the patient who is at risk for aspiration of stomach content and discuss the prevention and management of aspiration of stomach contents during induction of anaesthesia; (13) explain the preparation for and the anaesthetic assistants role during difficult intubation and induction of general anaesthesia; (14) explain the care of the anaesthetised patient with regards to considerations, intraoperative awareness, safety factors, physiological monitoring, transfer and positioning and (15) demonstrate the cleaning of the anaesthetic equipment.

Medication used during anaesthesia

The student should be able to: (1) describe the control of scheduled drugs in the operating department; (2) differentiate between the physiology of depolarising and non-depolarising neuromuscular drugs and contra-indications for each; (3) classify drugs used with regards to the trade name, main action, metabolism and excretion, contra-indications, considerations and adverse reactions of inhalation anaesthetics (Isoflurane, Sevoflurane, Desflorane, Enflurane, Nitrous oxide), neuromuscular blockers (Succinylcholine, Vercuronium, Cisatracurium, Atracurium, Esmeron), analgesics (Morphine sulphate, Pethidine, Fentanyl, Remifentanyl, Tramal, Perfalgan), sedative and hypnotics (Diprivan, Etomidate, Ketamine hydrochloride, Thiopental, Midazolam, Lorazepam, Diazepam), local anaesthesia (Bupivacaine, Lidocaine, Ropivacaine), antagonists (Neostigmine and Naloxone), anti-cholenergics (Glycopyrrolate and Atropine sulphate) and anti-emetics(Stemetil, Maxalon, Kytril, Zofran); (4) differentiate between the different types of anti-coagulants and (5) classify the following drugs with regards to trade name, main action, metabolism and excretion, contra-indications and considerations and adverse reactions (Adrenaline, Furosemide, Rocephin, Kefzol, Mannitol, Metoclopramide, Augmentin, Celestamine, Droperidrol, Insulin, Decadron, Diclofenac).

Physiological emergencies

The student should be able to: (1) discuss the management of regional drug toxicity, allergic response to drugs and anaphylaxis, laryngospasm and bronchospasm, haemorrhage, haemolytic reaction, deep vein thrombosis, and scoline apnoea; (2) discuss the types of shock, pathophysiology and management options for each type and (3) describe Malignant Hyperthermia and the management thereof,

(Source: Roos, 2016c; Roos, 2017)

THIRD YEAR

MAJOR ANAESTHESIA AND RECOVERY ROOM PATIENT CARE

Specific competencies

The student should be able to: (1) prepare and check the recovery room; (2) prepare the theatre for an emergency trauma procedure; (3) prepare and assist with regional anaesthesia, insertion of invasive hemodynamic lines and major anaesthesia; (4) prepare and provide assistance to the anaesthetist during paediatric, vascular, advanced orthopaedic, plastic and reconstructive, maxilla facial, emergency trauma, ophthalmic and neurosurgery and (5) provide assistance to the recovery room registered nurse.

Anaesthetic assistance

The student should be able to: (1) identify the anatomic and physiologic changes that occur during positioning of a patient; (2) explain the patient's rights to safe perioperative care and the maintenance thereof; (3) explain the prevention of medical legal risks related to anaesthesia; (4) discuss the application of standard precautions during all phases of anaesthesia; (5) apply infection prevention and control principles; (6) discuss the pre-operative evaluation of a patient with regards to comorbidity and anaesthesia classification, current medications and allergies, previous history of anaesthesia, airway / musculoskeletal assessment, mental and neurological status, social assessment and pre-operative investigations and (7) clarify the factors influencing the choice of anaesthesia.

Physiological monitoring

The student should be able to: (1) explain the importance of physiological monitoring and the seven routine parameters that should be monitored during major surgery with regards to a description, indication, methods of monitoring and assistance provided to the anaesthetist and (2) explain the use of an oxygen analyser, ventilator pressure monitor, temperature monitoring probe / catheter, bispectral index monitor, central venous and arterial catheter, transesophageal echocardiography, esophageal doppler and esophageal and precordial stethoscope.

Respiratory system

The student should be able to: (1) describe the anaesthetic delivery unit with regards to indications, features, inhalation systems, humidifying filter and breathing circuits (scavenging system and carbon dioxide absorption granules) and (2) discuss arterial blood gases with regards to definition, indications and items used.

Cardiovascular system

The student should be able to: (1) discuss the treatment of hypotension and hypertension, arrhythmias, cardiac arrest, haemorrhage and shock and (2) discuss invasive hemodynamic monitoring with regards to types of lines, indications, complications, preparation of supplies and assistance to the anaesthetist.

Renal and haematological systems

The student should be able to: (1) explain the electrolyte management of a patient as well as monitoring fluid and electrolyte balance and renal function of a patient; (3) discuss urine analysis with regards to normal values as well as abnormal values and possible causes and (4) discuss blood transfusion with regards to blood groups and compatibility, signs and symptoms of an adverse reaction to a blood transfusion and immediate management of an adverse reaction to a blood transfusion.

Endocrine system

The student should be able to: (1) explain perioperative methods to maintain normothermia for all age groups; (2) discuss deliberate hypothermia with regards to indications, methods and complications and (3) discuss the management of thyroid toxicosis.

Nervous system

The student should be able to: (1) determine the level of spinal and epidural anaesthesia; (2) identify the use of a nerve stimulator and (3) perform a neurological assessment using the Glasgow coma scale.

Pharmacology

The student should be able to: (1) justify the use of emergency drugs and (2) classify the medication used for emergency and head trauma surgery with regards to trade name, dosage, implications, contra-indications and side effects: benzodiazepines (Midazolam, Lorazepam), anticonvulsants (Phenytoin), diuretics (Furosemide, Mannitol), barbiturates (Thiopental, Phenobarbitol), neuromuscular blockers (Vecoronium, Cisatracurium) and sedative/hypnotic/amnesic (Propofol).

Postanaesthesia care

The student should be able to: (1) describe the lay-out of an ideal recovery room; (2) check and prepare the recovery room; (3) discuss the initial assessment and care of the patient on arrival in the recovery room; (4) discuss the post-operative care of patients who had general and regional anaesthesia; (5) complete the documentation used in the recovery room accurately; (6) discuss the clinical presentation and immediate interventions for pain, respiratory complications (airway obstruction, laryngospasm, bronchospasm), cardiovascular complications (hypotension, hypertension), haemorrhage, metabolic abnormalities (hypothermia, malignant hyperthermia), nausea and vomiting, and altered consciousness); (7) discuss the management of drugs and (8) discuss the criteria for discharge from the recovery room.

Emergency trauma surgery

The student should be able to: (1) prepare the theatre and specific requirements for emergency surgery; (2) obtain a comprehensive history of the patient from the unit personnel and (4) provide perioperative care and anaesthetic assistance during emergency trauma surgery

(Source: Van Zyl, 2015)

ANNEXURE M: INTERVIEW GUIDE FOR MANAGERS AT EXECUTIVE LEVEL (SECOND ROUND INTERVIEWS)

Study participants

The study participants include managers at executive level in the private and public healthcare sector.

Introduction

Thank you for agreeing to participate in this interview which is conducted as part of the re-exploration of the anaesthetic and recovery room component of the Operating Department Assistance curriculum study.

The operating department assistance, also known as ODAs, are a new cadre of healthcare workers trained to assist the anaesthetist (as anaesthetic assistant), surgeon (as scrub practitioner), and registered nurse (as circulator) in the operating room. The ODAs functions also include providing assistance to the registered nurses in the recovery room (post-anaesthetic care unit).

Up to date interviews and focus group discussions have been conducted with various stakeholders, in the private sector (nursing and operating department managers, anaesthetists, students, ODAs and educators) at hospital and education institution level. It was done to determine the needs with regard to the ODA anaesthetic and recovery room training. This data have been analysed and the specific skills identified was confirmed by means of a Delphi exercise.

Aim

The aim of this interview is to explore the managers' views of ODAs, especially their anaesthetic and recovery room assistant function, at executive level.

Question

Please share with me your views regarding ODAs in the operating department in terms of assisting the anaesthetist and the recovery room registered nurse.

Note

Ask questions to clarify issues throughout the interview.

Probing questions:

1. Share your views of the ODAs assisting the anaesthetist.
2. Share your views of the ODAs assisting the registered nurses in the recovery room.
3. Reflect on the supervision of ODAs in the operating department.
4. Share with me any possible ethical concerns you have.
5. Share your views of the ODAs assisting the anaesthetist and registered nurses in the recovery room.
6. What is your view of the regulatory issues pertaining to ODAs?
7. Share your views about the academic level at which ODAs should graduate?
8. What is your view on career progression for ODAs?

Further probes related to questions above:

a. Registration – if not with the SANC with who then?
b. Scope of practice
c. Independent and dependent functions
d. Accountability and responsibility

Closing

Thank you for your valued participation in this focus group discussion. Your participation has been greatly appreciated.

ANNEXURE N: MANAGERS AT EXECUTIVE LEVEL INTERVIEW CONSENT FORM (SECOND ROUND INTERVIEWS)

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

INFORMATION LEAFLET FOR MANAGERS AT EXECUTIVE LEVEL

Research title: Re-exploring the anaesthetic and recovery room components of the Diploma in Operating Department Assistance curriculum at a private higher education institution in South Africa

You are asked to participate in a research study conducted by Ann van Zyl who is the Manager of Higher Education and Training at [redacted]esponsible for the training of the Operating Department Assistants (ODAs). In this capacity, she wants to ensure that the students are taught the knowledge, skills and attitude necessary to assist the anaesthetists and recovery room staff. You are asked to participate in a research study conducted by her, a PhD student, from the Department of Curriculum Studies at Stellenbosch University. The results of this study will be contributed to her thesis.

1. PURPOSE OF THE STUDY

The purpose of the study is to determine how, if at all, an existing undergraduate curriculum in anaesthetic and recovery room practices should be re-constructed to fit the needs of a private hospital group in South Africa.

2. PROCEDURES

If you agree to participate in this study, you will be asked to take part in the interview which take will approximately take 60 – 90 minutes.

3. POTENTIAL RISKS, DISCOMFORTS AND BENEFITS TO SUBJECTS

There are no foreseeable risks, discomforts or inconveniences. The significance of this study entails that the results may provide useful feedback for re-constructing the anaesthetic and recovery room module to maximize the utilisation of ODAs in the operating department. It may also contribute to the current body of research which focuses on higher education curriculum development in health sciences education.

You will not receive any remuneration for participating in this study.

4. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of coding and allocating numbers to each participant. It will be disclosed only with your permission or as required by law. The interview will be audio-taped by an external data collector. Only the external data collector, transcriber and researcher will have access to the data. The tapes will only be used for the thesis and will be erased once the thesis is published on the universities website. If the results of the study are published confidentiality of the participants will be maintained. The names of the participants will not be mentioned in the thesis or any published documents.

5. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to participate in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer some questions you don't want to answer and still remain in the study.

6. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

- Ann van Zyl (Researcher): Phone number: xxxxxx, Stellenbosch
- Prof. Eli Bitzer (Supervisor): Phone number: xxxxxx: Higher Education and Training!Department, University of Stellenbosch, Stellenbosch
- Prof. Anita van der Merwe (Co-supervisor): Phone number: xxx Address: Nursing!Department, Tygerberg Campus, University of Stellenbosch, Parow

7. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact xxxx at the Division for Research Development.

CONSENT OF RESEARCH PARTICIPANT

The information above was described to me, the participant in English and I am in command of this language. I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form. By participating in the interview I confirm that I consent to participate.

Are you willing to participate in the second stage of the study? Yes No

_____	_____	_____
Name participant	Signature of participant	Date
_____	_____	_____
Name Witness	Signature of witness	Date

SIGNATURE OF DATA COLLECTOR

I declare that I explained the information given in this document to _____. He/she was encouraged and given ample time to ask me any questions. This conversation was conducted in English and no translator was used.

_____	_____
Signature of Data Collector	Date

ANNEXURE O: TRANSCRIBER'S OATH OF CONFIDENTIALITY

CONFIDENTIALITY AGREEMENT

I, the undersigned Leigh Story

1. herewith undertake that all information disclosed or submitted, either orally, in writing or in other tangible or intangible form by Ann van Zyl to me, or made available to me, or details of Ann van Zyl' business or interest of which I may become aware of in respect of transcriptions being done by myself for Ann van Zyl, to keep confidential and not to divulge to anyone for which Ann van Zyl did not give written consent;

2. guarantee that I will apply the information, detail or knowledge in **clause 1** only for the purpose of the intended research;

3. indemnify Ann van Zyl against any claims that may be instituted against Ann van Zyl, amounts that may be claimed or losses that Ann van Zyl may suffer in consequence of a violation by me of any provision included in this agreement.

SIGNED at Cape Town on 10th October 2017

_ _____

ANNEXURE P: ANAESTHETIC ASSISTANT AND RECOVERY ROOM CARE COMPETENCIES

Table 1: Anaesthetic assistant competencies

Competencies
• Perform pre-operative check of patient and interpret findings, including informed consent, fasting, possible difficult intubation, obesity, premedication • Understand the anaesthetic consequences of obesity, premedication, and informed consent • Understand the roles of all operating department staff • Assess, plan, implement and evaluate perioperative patient care • Use an evidence-based approach to provide holistic care to the anaesthetised patient • Maintain the privacy, dignity and comfort of the patient • Prepare and maintain a safe therapeutic environment • Prevent anaesthetic related risks • Promote the well-being of all patients in all disciplines (i.e. obstetrics, ENT, cardiac, thoracic, paediatric and neurosurgery) • Check, prepare, clean and handle the operating table, equipment, anaesthetic machine, and monitors before and between cases and after a list • Identify and prepare common breathing systems • Identify gas cylinders and safely handle, store, connect and disconnect gas supplies • Receive, identify, transfer and position the patient for surgical and diagnostic procedures • Explain the anatomy and physiology relevant to positioning the patient safely • Prepare and use anaesthetic equipment according to guidelines • Provide safe and skilled assistance to the anaesthetist during induction, maintenance and reversal of all types of anaesthesia, including: iv access, invasive monitoring, care of patient under sedation, blood and blood product transfusion (incl. methods to determine blood loss • Perform the following procedures: o Set up iv infusions, including fluid-warming devices, pressure bags, and volumetric pumps o Establish iv access and site a peripheral cannula o Prepare and set-up invasive monitoring supplies and equipment o Prepare for regional anaesthesia • Understand: difference between crystalloids and colloids, various anaesthetic methods, principles and hazards of IV sedation, anatomy and physiology relevant to all types of anaesthesia and principles to assess the extent of regional block • Recognise the complimentary role of AAs in airway establishment which includes: understanding the relevant airway anatomy and physiology; clearing upper airway block; preparing and assisting with routine endotracheal intubation; understanding oxygen therapy equipment; calculating oropharyngeal airway and endotracheal size and lengths; describing the features of a self-inflating bag; setting up and assisting with difficult intubation and know the procedures for unexpected difficult intubation / failed intubation; participating in rapid sequence induction (including cricoid pressure; and assisting with face mask bag-mask ventilation , fibre-optic intubation and cricoid-thyroidotomy • Assist with a patient with unstable cervical spine • Monitor a patient's vital signs (using invasive and non-invasive techniques), as well as depth of anaesthesia • Maintain standard precautions for known/suspected infection risks e.g. HIV, hepatitis B • Understand principles of nerve-stimulation during local anaesthesia • Assist with insertion of nasogastric tube • Understand principles of and assist to maintain normo-thermia and fluid-balance • Understand risks of deep venous thrombosis, the principles of prophylaxis and equipment involved • Handle, store and record anaesthetic and scheduled drugs according to policies • Understand basic pharmacological principles

- Demonstrate knowledge of anaesthetic drugs, including generic, trade names, indications, dosage, effects, contra-indications, adverse-effect
- Set up equipment for nebulized drug and epidural infusion
- Demonstrate accurate and legal record-keeping
- Identify and manage faulty / broken anaesthetic equipment and manage minor troubleshooting

(CODP, 2006:8-9; CODP, 2011:31-37; Ministry of Health and Family Welfare Allied Health Section, 2015:83-84; NES, 2011:7-33 & 39-44; Pillai, 2013:3-5)

Table 2: Competencies required to assist during anaesthetic emergency situation

Competencies
• Recognise and respond to adverse anaesthetic conditions or emergencies • Understand principles to manage shocked patient • Understand management of: cyanosis, stridor, bronchospasm, cardiac dysrhythmias, pneumothorax • Implement local protocol for management of sudden life-threatening haemorrhage • Describe management of patient with latex allergy, malignant hyperpyrexia, • Perform cardiopulmonary resuscitation • Basic emergency and life support skills: o Knowledge of : team members role, defibrillation (definition, types, principles, use), ECG, emergency trolley items, emergency drugs (generic name, trade name, action, indication, dosage, intervals, effect, and adverse effect), vital signs and primary assessment, basis emergency care, ventilations (incl. use of bag-valve-masks), and managing an emergency (incl. moving a patient) • Demonstrate the check and use of a defibrillator • Assist with advanced cardiac life support (ACLS) • Explain anaesthetic emergencies according to definition, signs and symptoms, and management • Set up underwater drain for treatment of pneumothorax • Can recognize critical or near miss incidents and follow reporting mechanisms • Can describe safe transfer of patient for treatment or investigation within hospital • Complete patient documentation accurately

(NES, 2011:34-37; Ministry of Health and Family Welfare Allied Health Section, 2015:44, 83-84)

Table 3: Recovery room competencies

Competencies
• Prepare and maintain a safe therapeutic environment and prevent post-anaesthetic related risks • Prepare and utilise post-anaesthetic equipment according to guidelines • Explain the care of patient in the recovery room • Accepting patients from anaesthetist in recovery room • Utilise an evidence-based approach to the post-anaesthetic care of the patient • Assess patient using ABC headings • Assess, monitor and record vital signs; invasive techniques; fluid balance; and wound drainage • Evaluate and manage patients post-operative pain • Promote the well-being of the patient during the immediate post-anaesthetic phase • Assess post-operative pain and nausea • Apply airway management, incl. insertion of oropharyngeal, nasopharyngeal and laryngeal mask airway • Apply assisted respiration • Perform pharyngeal and endobronchial suctioning • Remove laryncheal mask and assist with removal of endotracheal tube • Assess blood glucose and haemoglobin and know risks associated with low abnormal levels • Manage patient's wounds and drains

• Discuss post-operative complications and management • Recognise and respond to adverse post-anaesthetic conditions or emergencies • Administer drugs • Demonstrate competency in post-anaesthetic care and accurate record-keeping • Understand critical illness assessment • Discharge the patient according to discharge criteria • Complete handover of patient with vital signs recording to other healthcare professionals • Complete patient documentation accurately • Maintenance of universal precautions

(CODP, 2006:8-9; CODP, 2011:31-37; Ministry of Health and Family Welfare Allied Health Section, 2015:74-84; NES, 2011:7-33)

Table 4: Anaesthetic and recovery room assistant values / behaviours / attitudes / beliefs

Values/Attitudes/Behaviours
• Proactive thinking and reaction • Self-confidence • Personal integrity (honesty) • Diligence (carefulness) • Alert and quick to response • Personal and professional accountability and responsibility • Professional conduct / boundary setting • Respect for patients and colleagues • Cooperation and anticipation • Problem-solving • Efficiency

(Fletcher *et al*., 2002: 418; CODP, 2006:8-9; Ministry of Health and Family Welfare Allied Health Section, 2015:84-85; NES, 2011:7-33 & 39-44; Pillai, 2013:3-5; Rutherford *et al*., 2012a:28-29)

ANNEXURE Q: TRANSCRIBED DOCUMENT

EXAMPLE OF TRANSCRIBED DOCUMENT

Ex1

2017-08-23 Executive Manager Interview re ODA

Speaker Key:

IV Interviewer; FI Female Interviewee

IV So, good morning. Thank you for agreeing to be part of this interview. It's the 23rd of August. I'm going to read the question again, so that we can conduct this interview.

FI Thanks Marina.

IV So, the question is then, please share with me your views regarding ODAs in the operating department in terms of assisting the anaesthetist and the recovery room registered nurse. So, would you tell me your experience, and how you as an executive manager see this?

FI Yes Marina, I think, I have obviously never worked with them myself, so my response is based on what I have heard from the people that that are in the theatres, and specifically in the hospitals, where there are many of them, like Kimberley for example. I think they are doing a very good job in terms of assisting the anaesthetist with the duties of an anaesthetic assistant. Recovery, from what I understand, the only thing we ever, we want to train them to do, is to take the patient into recovery and connect them to the monitor, know how to do that, so that they can then handover to the registered nurse. So that's what the role is in recovery. It's a very small role in recovery, compared with in anaesthetics itself.

IV Okay, why don't we first clarify the recovery room assistants, and then we come back to the anaesthetist.

FI That's fine.

IV So, how you see it, and you base it on your interaction with people who have experience on ODA functioning in operating departments, and the recovery room role is rather small.

FI Yes.

IV It is really just taking the patient from theatres. Would that ODA have scrubbed then?

FI No.

IV They would accompany?

FI Well I'm saying no, hang on, I'm saying no, but they might have. They might be, I'm not sure in the theatre environment who takes the patient

out, whether it's the scrub nurse or the anaesthetic nurse. I'm not certain about that.

00:02:26

IV Alright, but the ODA, taking out, whether they have been involved in the scrubbing assistant or in the anaesthetist assistant, they would, your view is that they would have a very small function, taking them to the recovery, and put them, join, couple up the monitors, and handover?

FI Yes, and handover the patient, and just the basics of what surgery they've had, etc, to the recovery nurse.

IV So the recovery nurse would then be responsible to do the recovery, not the ODA?

FI Yes. They're not trained to do that.

IV Yes, and that would be the expectation from your side?

FI Yes.

IV If we go to the anaesthetist assistant, that's a bit more complex. I take it, it takes preparing and preparing the trolley and the meds?

FI Yes.

IV Would they be able to go and take out the meds, because it would be scheduled med?

FI No, they'll have to, no, the registered nurses will have to help them with that. But it would literally, I mean, they can, in my opinion, they can certainly assist the registered nurse with that, but they won't be able to go into the drug cupboards on their own.

Yes, but it would be helping the anaesthetist with all the other functions that the current anaesthetic nurses would do, which would be passing them the equipment, connecting, the oxygen, whatever needs to be done, obviously the preparation, as you mentioned, and then the clean up afterwards. I think they have got, well, they have definitely got a role there.

IV Do you think that their scope of practice would just include passing things? So they wouldn't be able to administer? Could they administer drugs?

FI No, because they're not nurses, I don't think they can. It's very interesting, at the Council, I have just been involved in a discussion about a qualification for anaesthetic nurses, which was actually presented by SASSA. But there actually isn't enough work, or enough new learning material to justify a qualification like that.

You know, a scrub nurse is different, but the anaesthetic, I think a short course

for anaesthetic, I think a short course for anaesthetic nurses is appropriate, the same as for the ODAs. They also have their course, but we felt as a Council that there is actually not enough new work to justify a course for them.

IV Yes, a full qualification.

FI Yes.

00:05:21

IV Okay, alright. So, that assistant, you feel that that person with non-nursing, as you say, the ODA is a non-nurse, they would be able to assist the anaesthetist in theatre fully?

FI Yes, I think so. I think they can pass everything they need. I think with the correct training, there's no reason that they can't actually fulfil that function.

IV Alright, and you would feel safe as executive manager with that, and you would also feel safe with the ODA then handing over the patient to the recovery nurse?

FI Yes.

IV A small function there, but a bigger function of prep during and after cleaning up, as you've said.

FI Yes. I think they would also be part of the check list, when they are checking on all the, that everything has been met, right patient, right limb and so on. I think they also could contribute to that discussion.

IV Would there be a need for ODAs then, do you think, or do you think, because we spoke about it is a non-nurse so she can't do certain things, or he, it can also be male, I know that. But do you think there is a need for the ODAs, rather than having a nurse trained in that function?

FI Definitely. I think they can help us, because we've got such a shortage of nurses. This is a category, I mean, one of the things for example is that when it comes to training the nurses, you've got limited numbers because of the clinical exposure required. Now the ODAs, you also can't take too many, but because you don't have this massive registration process, it's actually an easier solution, if I can put it that way.

IV Okay, alright, and if they're correctly trained?

FI If they're correctly trained, yes.

IV You're talking about registration. Where should they, or should they be registered?

FI I think they definitely should be registered, but when I say

registered, I think more of their sake than for the company. You know, if you look at what happens in the US where some States demand registration and others don't, it's not a must for me. That's why for us, it's been okay to continue with the training in the interim because we know that we're doing the right thing. But I think those individuals would like registration.

IV So where should they register?

FI I think it should be a Health Professions Council registration. It definitely can't be the Nursing Council.

IV Could you clarify that, because there's quite a lot of, it's not clear whether people must register. So you are saying very definitely not Nursing Council, could you just sort of explore and elaborate on that?

00:08:32

FI Yes, Marina, I think for me, the Nursing Council only registers nurses. I mean, we often have the discussions of like the other categories, so they definitely don't belong there. The only other place for me is the HBCSA, which registers the OTs and the physios and everybody else.

IV So it's like an Allied Health Professionals, is that what you're saying?

FI Yes, and I'm really hoping that with the discussions that we're having at the moment with the Department of Health, that we can actually facilitate that process. What is actually happening at the moment is that we are meeting with the Department to discuss a whole lot of different issues, and the ODAs are on that agenda. The reason that they're on that agenda is that I think if we can get the registration sorted out, the next step actually is the career path for the ODA to become an assistant. Now, we are obviously getting into the scrubbing ODA, but we are desperately in need of surgical assistants in this country, if you look at the Caesars and those things. So if we can go the next step and get them upskilled, that's something we want to speak to the Department of Health about.

IV That registration, you are referring to an assistant. What kind of assistant are you referring to?

FI I'm referring to someone who can actually assist the surgeon.

IV Okay, in a flooring capacity?

FI No, an actual doctors' assistant.

IV A theatre assistant?

FI Yes. I think they call it the first physician's assistant, or something like that, because you know what's happening at the moment is they often want the nurses to do that.

IV That's right, yes.

FI And we are not allowed to do that in terms of our scope, other than in an emergency. So if you can train, and I mean we know, we're desperately short of doctors and nurses, if you can train a category like an ODA, upskill them, I mean, that happens in the rest of the world. I have a friend in England who is an assistant, coming from an ODA, so I think that would be, it would really help the Department of Health.

IV So that will be like a career pathway.

FI A career pathway, yes.

IV What sort of level of qualification do you see with that?

00:11:00

FI I think it will probably be, I suspect, at the same level as a registered nurse.

IV Okay, so you talk about a four-year course?

FI Yes. At the moment the ODAs are, it's a three year course, and the equivalent is an enrolled nurse. So I see it as being, look, they would do the ODA course first and then do a year, or two years, depending, I'm not absolutely certain.

IV Right, but the ODA course will be the entrance to that?

FI Yes, it will be a career path for ODA.

IV Okay, and HBCSA. Alright, so the qualification would then be four years, so at the moment it's a diploma. Do you think it should be an advanced diploma, or should it be a degree?

FI I don't know. I think that will be... ja, maybe a degree. I'm really not certain.

IV You're unsure.

FI Yes, I'm unsure about that.

IV Alright, but you would be open to discuss, you mentioned a degree, would you be open to discuss that, but definitely an advanced diploma for that?

FI Yes.

IV At the moment, it's a diploma, but it can go to a degree.

FI Yes.

IV Okay, and obviously it needs the correct components and levels.

FI Yes.
IV Okay, so the regulatory issues about the ODA then, who should regulate them?
FI HBCSA, I would think yes. I think they should have the same standing as the other Allied Health professions. As I said, it's mainly for them, because I think they want some sort of a, they want the recognition. So for us, if we don't get it registered, we need these people, we are using them anyway. But I think for the individuals, it would be meaningful.
IV Yes, and should any of them, the ODAs that have completed their diploma, or within their diploma, perhaps the second or third year, and they desire to go into nursing, do you think that they should get some credit, or not necessarily?
FI At the moment, I don't know how much of a crossover there is in terms of the service.
IV But will you be open, if there is a crossover, that they should be considered?
FI Yes, we could have a look at that, but I'm not sure if the Nursing Council would accept that. We would have to look at that, yes, because I mean, there is RPL, but I don't know. I think the Nursing Council would have to decide on that.
00:13:47
IV Yes, it needs to be reviewed. It can't just happen.
FI Yes. I mean, I think right now we do have ODAs who either go and do nursing or medicine. They use it as an entry, because often what happens at the moment is that they apply for both, and then if they get into nursing they take the nursing. It's the same as young students who apply for nursing and medicine, and sometimes do a year of nursing and then get into medicine. So they use it as a steppingstone.
IV Yes, and you are quite comfortable with that?
FI It's not first prize. You'd like people to go the journey, but I mean, one also needs to think of the individual.
IV Yes. Thank you. Is there any ethical concern you have in terms of an ODA functioning in an operating department assisting the anaesthetist and handing over to the recovery room staff?
FI I don't see any ethical issues whatsoever. I mean, they're trained properly, and I think that's good enough. I mean, I don't have any concerns.

IV Right, and their independent, dependent functions, do they always stay dependent on the anaesthetist, the registered nurse, or do you think they will move into some independent function?

FI I think not in the current environment, but I can see it very easily. Maybe in the years to come, but right now, I can't see that it's going to happen.

IV It's more a dependent function?

FI Yes.

IV Okay, and their accountability and responsibility?

FI They're accountable for their own actions. Look, we can never have a theatre without a registered nurse in the vicinity, but they are accountable for their own actions. There's no doubt about that. I'm not sure, to get back to the ethical issues, I'm not sure if you're aware of the oath that they take?

IV No, I'm not.

FI There is actually, and I will give you a copy of it, there is actually, you know, just as we have the nurse's pledge, we also have an ODA's pledge, which they actually, ja, when they are recognised at the Achiever's Ceremony, they actually have their own pledge.

IV Alright, and that would then come back to this?

FI Yes, I think so.

IV Who should then, you mentioned that there is always, there must always be a registered nurse, so the ODA can't be on-call because the registered nurse has got to be there?

00:16:33

FI Look, what they do at the moment is on-call they might have one registered nurse. The registered nurse, I mean, we are now getting to the scrubbing side, but the registered nurse could either be responsible for the anaesthetics or to scrub, and then the other person could be an ODA. So if you have a scrub practitioner ODA, then the registered nurse is anaesthetics, but otherwise it's the other way around.

IV Alright, okay.

FI So they can do call.

IV They can do call, but there must still be a registered nurse?

FI Yes, and for that reason, this category works really well in the big hospitals. Obviously not in the small hospitals, it's not practical. But in the big hospitals, it's a very good strategy,

IV Is there anything more that you would like to say about ODAs in

practice in your hospitals or in theatres, operating department, in terms of assisting the anaesthetist and or the recovery room registered nurse?

FI I don't think so, Marina. The only thing I really wish for is that they would be better accepted, because there are still some of the old theatre nurses who see them as inferior, and that I find very sad, even though they have definitely got a role. You know, we have got men in hospitals now where the surgeons actually prefer them because they are so skilled.

IV Yes, and they are focus skilled on that specific practice.

FI Yes.

IV So what you are saying is that the registered nurses, may I say older, [chuckles] previously qualified.

FI Yes, absolutely.

IV Actually don't accept them readily.

FI Yes, but the interesting thing that's happen in our company now is that we are busy with a pipeline, nursing pipeline exercise, where we are looking specifically at the future, because the nursing pipeline is going to dry up for a couple of years with the new qualifications. We are now looking, we've had workshops, but we are looking hospital by hospital at solutions for specialist units general wards., What that's now bringing is the introduction of ODAs, because we're saying to those hospitals that you are not training ODAs, so why not?

So we are using this as a way to actually introduce them. If I take one hospital, for example I'm going to mention it by name, Bloemfontein [redacted] for years that's been the land of milk and honey, because they have for example on night duty two teams. So your day staff never have to work night duty, so they love working there, and the staff turnover is nil.

00:19:41

So why should they train ODAs? Why should they take nurses from India? Now that's all changing. You see, the minute you have that ideal environment, then you actually also battle to staff the other hospitals in the vicinity because everybody wants to work there, and then they don't look at the other alternatives to what they've got. But that's also now changing. So we are now talking to them about training ODAs, because that's the ideal place. They get an excellent, they could get excellent training there. So we are helping them spread it that way.

IV Okay, nothing else?

FI Nothing, no.

1. IV Okay, then I thank you.
2. FI Thank you very much.

[End of sound file 00:20:25]

ANNEXURE R: STATEMENTS THAT GAINED CONSENSUS RANKED BY MEAN (LEVEL OF IMPORTANCE)

Table 1: Statements ranked according to level of importance

Statements	*M* (SD)	*N*=17	% response
Knowledge required to perform the anaesthetic assistant functions			
Operating table and positioning equipment	3.8 (0.4)	17	100
Surgical positions: Physiological changes and cautions required for each	3.8 (0.4)	17	100
Patient positioning for spinal anaesthesia	3.8 (0.4)	16	100
Standard precautions for known/suspected infection risks e.g. HIV/Hepatitis B / serious or resistant organism infection	3.8 (0.4)	17	100
Patient transfer	3.8 (0.4)	17	100
Accurate and legal recording	3.8 (0.4)	17	100
Geriatrics anaesthesia: Perioperative considerations	3.6 (0.5)	16	100
Equipment and supplies for IV fluids: Infusion sets, cannula, infusion pump, syringe pump, blood and infusion warmer, intravenous fluids (crystalloids and colloids)	3.6 (0.6)	17	94.1
Risks of deep venous thrombosis, principles of prophylaxis and equipment involved	3.6 (0.6)	17	94.1
Principles to maintain normo-thermia and fluid balance	3.6 (0.6)	17	100
Role and responsibilities of AA in preparing and assisting during all phases of anaesthesia	3.6 (0.8)	17	94.1
Evidence-based approach to holistic care of anaesthetised patient	3.6 (0.8)	17	94.1
Purpose anaesthesia	3.6 (0.8)	17	94.1
Phases of anaesthesia	3.6 (0.8)	17	94.1
Classification of anaesthesia	3.6 (0.8)	17	94.1
Anaesthetic trolley / cue cart (incl. indication for each item)	3.6 (0.8)	17	94.1
Monitors**:** Pulse Oximeter, Capnography, ECG, Blood pressure (function, prepare, connect)	3.6 (0.8)	17	94.1
Oxygen therapy equipment: Features, role and mode of use	3.6 (0.8)	16	93.7
Endotracheal intubation: Set up, tubes: types, sizes, preparing tube, determining size and length, assistance	3.6 (0.8)	17	94.1
Difficult intubation: Set up, procedures for unexpected difficult/failed intubation	3.6 (0.8)	17	94.1
Rapid sequence induction and intubation, incl. cricoid pressure	3.6 (0.8)	16	94.1
Regional anaesthesia: Equipment and supplies	3.6 (0.8)	17	94.1
Well-being and rights of patient during all phases, incl. elderly and specific disciplines	3.6 (0.8)	17	94.1
Legislation applicable to anaesthetic practice	3.6 (0.8)	17	94.1
Receive, identify, check patient and interpret findings, incl. informed consent, fasting, possible difficult intubation, obesity, premedication	3.5 (0.8)	17	94.1
Patient with special needs (obesity, diabetic, HIV): Perioperative considerations	3.5 (0.8)	17	94.1
Paediatric anaesthesia: Perioperative considerations	3.5 (0.8)	17	94.1
Applied anatomy, physiology and pathophysiology related to anaesthesia and positioning	3.5 (0.8)	17	94.1
Methods of administration of general anaesthesia (incl. motivation for each item)	3.5 (0.8)	17	94.1
Anaesthetic machine and components (carbon dioxide absorption, gas and vacuum pipelines, gas cylinders) before, between-cases and after a list	3.5 (0.8)	17	94.1
Intravenous therapy management	3.5 (0.8)	17	94.1
Complimentary role of AA in airway establishing and management	3.5 (0.8)	17	94.1
Effect of anaesthesia on lungs, lung functions and vital capacity	3.5 (0.8)	17	94.1
Care of anaesthetised patient	3.5 (0.8)	17	94.1

Local anaesthetic agents: Mechanism of action, classification, disadvantages, advantages, dosage, toxic reaction	3.5 (0.8)	17	94.1
Regional anaesthesia techniques: Spinal and lumbar	3.5 (0.8)	17	94.1
Anaesthetic emergencies according to definition, signs and symptoms, management	3.5 (0.8)	17	94.1
Common breathing systems	3.5 (0.8)	17	94.1
Blood products, grouping and transfusion: Indication, supplies, checking, cross-matching and hazards	3.5 (0.8)	17	94.1
Principles of nerve-stimulation during local anaesthesia	3.5 (0.8)	17	94.1
Assess, plan, implement and evaluate perioperative care	3.4 (0.9)	17	82.3
Depth of anaesthesia	3.4 (0.9)	17	88.2
Outcomes of persisting abnormal vital signs	3.4 (0.9)	17	88.2
Upper airway block management	3.4 (0.9)	17	88.2
Principle and practice of autologous transfusion	3.4 (1.0)	17	94.1
Vital signs: Observation, interpretation, analysing and reporting of abnormalities	3.3 (0.9)	17	82.3
Job description: Anaesthetic assistant (AA) and recovery room assistant (RRA)	3.3 (1.0)	17	88.2
Electrocardiogram: Interpret ECG rhythm and arrhythmias	2.9 (1.0)	17	76.5
Skills required to perform the anaesthetic assistant functions			
Safe transfer and correct positioning of patient according to booked procedure	3.9 (0.3)	16	100
Position patient for spinal/epidural anaesthesia	3.8 (0.4)	16	100
Check, prepare, clean operating table and positioning equipment	3.8 (0.4)	17	100
Maintain safety, privacy, dignity, well-being and comfort of patient	3.8 (0.4)	16	100
Promote well-being and rights of patient during perioperative journey	3.8 (0.4)	17	100
Apply aseptic and sterile technique / principles before, between-cases and after a list	3.8 (0.4)	17	100
Maintain standard and safety measures	3.8 (0.4)	17	100
Assess, plan, implement and evaluate perioperative care	3.8 (0.4)	17	100
Prepare and safe/skilled assistance with all types of anaesthesia during induction, intubation, maintenance and reversal	3.8 (0.4)	16	100
Assist to maintain normo-thermia and fluid balance	3.7 (0.6)	17	94.1
Maintain necessary records	3.7 (0.6)	17	94.1
Care of anaesthetic equipment, incl. identifying and managing faulty/broken equipment	3.7 (0.8)	16	93.7
Pre-operative check of patient and documentation and interpret findings	3.6 (0.6)	17	94.1
Utilise evidence-based approach to holistic care for anaesthetised patient	3.6 (0.8)	17	94.1
Prepare, maintain a safe therapeutic environment and prevent anaesthetic related risks	3.6 (0.8)	17	94.1
Check, prepare, clean, handle anaesthetic machine, worktop, monitors and accessories	3.6 (0.8)	17	94.1
Check and fill up anaesthetic/drug trolley/cue cart (incl. medication and drugs)	3.6 (0.8)	17	94.1
Prepare, set-up and change IV fluids	3.6 (0.8)	17	94.1
Participate in rapid sequence induction, incl. cricoid pressure	3.6 (0.8)	17	94.1
Assist with face mask bag-mask ventilation	3.6 (0.8)	17	94.1
Prepare and assist anaesthetist with basic anaesthesia for all disciplines, excl. neuro, cardiac and thoracic anaesthesia	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with patients with special needs	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with geriatric anaesthesia	3.6 (0.8)	17	94.1
Prepare and safe/skilled assistance with paediatric anaesthesia	3.6 (0.8)	16	93.7
Set up and assist with difficult intubation	3.6 (0.8)	16	93.7
Assist with patient with unstable cervical spine	3.6 (0.8)	16	93.7
Prepare, set-up and assist with establishing invasive monitoring	3.6 (0.8)	16	93.7
Assist with insertion nasogastric tube	3.6 (0.8)	17	94.1

Assist during anaesthetic crisis management	3.6 (0.8)	17	94.1
Identify and prevent anaesthetic related medical-legal risks	3.6 (0.8)	17	94.1
Assist with blood transfusion (cross-checking and record-keeping)	3.6 (0.8)	17	94.1
Manage minor troubleshooting	3.6 (0.8)	17	94.1
Prepare equipment for nebulized drugs, intravenous and epidural infusion and warming of fluid	3.5 (0.8)	17	94.1
Identify critical problems and complications and report to anaesthetist	3.5 (0.9)	17	88.2
Observe, interpret and analyse vital signs	3.4 (0.9)	17	82.3
Clear upper airway block	3.4 (1.1)	17	82.3
Insert and take care of an urinary catheter: Female	3.2 (1.0)	17	88.3
Insert and take care of an urinary catheter: Male*	2.1 (1.1)	17	70.6%
Knowledge required to perform the recovery room assistant functions			
Handover of patient to recovery room staff	3.8 (0.4)	17	94.1
Terminal cleaning and preparation of patient station	3.7 (0.6)	17	94.1
Outlay of recovery room	3.6 (0.5)	17	100
Equipment: Check, prepare and handle	3.6 (0.8)	17	94.1
Post-operative care related medical-legal risks	3.6 (0.8)	17	94.1
Legal record-keeping, incl. fluid balance form	3.6 (0.8)	17	94.1
Roles and responsibilities of recovery room staff	3.5 (0.8)	17	94.1
Oxygen therapy: Methods, equipment and supplies	3.5 (0.8)	17	94.1
Vital signs, incl. HB, HGT and urine analysis	3.5 (0.9)	17	88.2
Action and adverse effect of medication/drugs	3.4 (0.9)	17	88.2
Airway management	3.4 (1.0)	17	88.2
Potential post-operative complications: Definition, pathophysiology, signs and symptoms and management	3.4 (1.1)	17	82.4
Discharge criteria	3.4 (1.1)	17	82.3
Legislation applicable to recovery room practice	3.4 (1.1)	17	82.4
Assessment of patient using ABC guidelines	3.4 (1.2)	17	82.4
Care of patients who had spinal anaesthesia	3.3 (1.0)	17	82.3
Oro-pharyngeal airway insertion (determining size and technique)	3.2 (1.2)	17	76.4
Care of patients who had general anaesthesia	3.1 (1.0)	17	82.3
Holistic patient care: 1st 5 minutes after handover (waiting for RN to take over)	3.1 (1.2)	17	76.5
Post-operative care of the patient	3.0 (1.3)	17	70.5
Remove laryngeal mask airway: Criteria, procedure	3.2 (1.1)	17	82.3
Patient extubation: Criteria, procedure and what to do if removed to early	3.1 (1.2)	17	70.5
Skills required to perform the recovery room assistant functions			
Decontaminate and prepare patient station	3.8 (0.4)	17	100
Check, prepare and stock recovery room (incl. patient station)	3.8 (0.4)	17	100
Maintain legal record-keeping, incl. fluid balance form	3.8 (0.4)	17	100
Maintain a safe therapeutic environment	3.7 (0.6)	16	93.7
Handover of patient to recover room staff	3.7 (0.8)	17	94.1
Prepare and utilise equipment according to guidelines	3.6 (0.8)	17	94.1
Assist RN with recovery of patients of all ages for all types of anaesthesia	3.5 (0.9)	17	82.4
Assist RN with recovery of patients for all types of procedures	3.5 (0.9)	17	82.4
Assist RN with recovery of paediatric patients	3.5 (0.9)	17	82.4
Identify and prevent anaesthetic related medical-legal risks	3.4 (1.0)	17	88.2

Prepare patient for discharge	3.4 (1.0)	17	88.2
Assist with oxygen therapy	3.4 (1.1)	17	82.4
Observe, interpret and analyse vital signs (incl. HB, HGT and urine analysis)	3.4 (1.1)	17	82.3
Assess post-operative pain, nausea and vomiting	3.3 (1.1)	17	76.5
Utilise an evidence-based approach to post-anaesthetic care of patient	3.2 (1.2)	17	76.5
Assess patient using ABC headings	3.2 (1.2)	17	76.5
Airway management	3.2 (1.2)	17	76.5
Remove a laryngeal mask airway	3.2 (1.1)	17	82
Monitor and provide holistic care of patient: 1st 5 minutes after handover	3.1 (1.3)	17	70.6
Insert oro-pharyngeal airway	3.1 (1.2)	17	76.5
Knowledge and skills required to assist during emergency situations			
Check and use emergency equipment and supplies (identify use of each item)	3.9 (0.3)	17	100
Perform basic life support (BLS)	3.9 (0.4)	17	100
Describe management of patient with latex allergy	3.8 (0.4)	17	100
Discuss role of team members during BLS	3.8 (0.4)	17	100
Assist with cricoid-thyroidotomy	3.8 (0.4)	17	100
Check emergency trolley and knows where all items are	3.8 (0.4)	17	100
Describe safe transfer of patient for treatment or investigation within hospital	3.8 (0.4)	17	94.1
Check and use defibrillator	3.8 (0.6)	17	94.1
Recognise critical or near miss incidents and follow reporting mechanisms	3.7 (0.5)	17	94.1
Set up and assist with underwater drain for treatment of pneumothorax	3.6 (0.5)	17	94.1
Discuss defibrillation: Definition, ECG, principles	3.6 (0.6)	17	94.1
Understand management of: cyanosis, stridor, bronchospasm, cardiac dysrhythmias, pneumothorax	3.6 (0.9)	17	88.2
Implement local protocol for management of sudden life-threatening haemorrhage	3.6 (0.9)	17	88.2
Discuss anaesthetic emergencies according to definition, signs and symptoms, management	3.5 (0.8)	17	94.1
Assist with fibre-optic intubation	3.5 (0.8)	17	94.1
Recognise and respond to adverse anaesthetic conditions or emergencies	3.5 (0.9)	17	82.4
Understand principles to manage shocked patient	3.5 (0.9)	17	88.2
Knowledge and skills required to assist during emergency situations			
Check and use emergency equipment and supplies (identify use of each item)	3.9 (0.3)	17	100
Perform basic life support (BLS)	3.9 (0.4)	17	100
Describe management of patient with latex allergy	3.8 (0.4)	17	100
Discuss role of team members during BLS	3.8 (0.4)	17	100
Assist with cricoid-thyroidotomy	3.8 (0.4)	17	100
Check emergency trolley and knows where all items are	3.8 (0.4)	17	100
Describe safe transfer of patient for treatment or investigation within hospital	3.8 (0.4)	17	94.1
Check and use defibrillator	3.8 (0.6)	17	94.1
Recognise critical or near miss incidents and follow reporting mechanisms	3.7 (0.5)	17	94.1
Set up and assist with underwater drain for treatment of pneumothorax	3.6 (0.5)	17	94.1
Discuss defibrillation: Definition, ECG and principles	3.6 (0.6)	17	94.1
Understand management of: Cyanosis, stridor, bronchospasm, cardiac dysrhythmias and pneumothorax	3.6 (0.9)	17	88.2
Implement local protocol for management of sudden life-threatening haemorrhage	3.6 (0.9)	17	88.2
Discuss anaesthetic emergencies according to definition, signs and symptoms and management	3.5 (0.8)	17	94.1

Assist with fibre-optic intubation	3.5 (0.8)	17	94.1
Recognise and respond to adverse anaesthetic conditions or emergencies	3.5 (0.9)	17	82.4
Understand principles to manage shocked patient	3.5 (0.9)	17	88.2
Affective skills required to perform A/RRA functions			
Personal integrity (honesty)	3.9 (0.3)	17	100
Responsibility	3.9 (0.3)	17	100
Respect for patients and colleagues	3.9 (0.3)	17	100
Proactive thinking and reaction	3.8 (0.4)	17	100
Self-confidence	3.8 (0.4)	17	100
Diligence (carefulness)	3.8 (0.4)	17	100
Good observation skills	3.8 (0.4)	17	100
Alert and quick to response	3.8 (0.4)	17	100
Accountability	3.8 (0.4)	17	100
Professional conduct/boundary setting	3.8 (0.4)	17	100
Cooperative	3.8 (0.4)	17	100
Anticipation	3.8 (0.4)	17	100
Problem-solving	3.8 (0.4)	17	100
Commitment	3.8 (0.4)	17	100
Initiative taking	3.8 (0.4)	17	100
Assertiveness	3.8 (0.4)	17	100
Critical analytical thinking	3.7 (0.5)	17	100
Non-technical skills required to perform A/RRA functions			
Teamwork	3.9 (0.3)	17	100
Decision-making	3.8 (0.4)	17	100
Communication	3.8 (0.4)	17	100
Situation-awareness	3.8 (0.4)	17	100
Leadership	3.7 (0.5)	17	100

** Excluded as an essential skill for ODAs*

'R'1…4 Rating of the importance of the skill

Round 1 consensus reached

Round 2 consensus reached

Round 3 consensus reached

ANNEXURE S: STAKEHOLDER NEEDS RE ANAESTHETIC AND RECOVERY ROOM KNOWLEDGE, SKILLS AND ATTITUDES

Table 5.1: Summary of knowledge, skills and attitudes an ODA needs to assist during an emergency situation

Management	Anaesthetists and educators
• Assist with intubation and cricoid pressure (MGTGr3P1, p9, L34-35) • Anticipation (MGTGr5P1, p3, L2-3) • Knowledge of emergency drugs: dosage, indication for use, generic name and frequency (MGTGr1P4, p18, L24; MGTGr1&2, p18, L1; MGTGr2P1,p7, L9-10; MGTGr2P2, p7, L12) • Knowledge of emergency drug trolley outlay (MGTGr2P3, p6, L15) • Fil syringe with the drug (MGTGr2P3, p6, L15) • Knowledge of equipment and indication for use (MGTGr2P1, p11, L2-3) • Knowledge of emergency situations (MGTGr2P1, p11, L2-3; MGTGr3P1, p10, L2 &12)	• Ability to deal with an emergency in anaesthesia and recovery room (A3, p6, L21 & 27) • Respond promptly, anticipate and take initiative to start the resuscitation process (E3, p25, L7-11) • Knowledge of the type and dosage of drugs used during emergencies (E3, p25, L7-11) • Administer drugs in resuscitation situation (E9, p8, L28-29) • Handle emergency equipment, e.g., defibrillator (E9, p9, L20) • Check, administer and assist with administration of blood in emergency situations (E9, p10, L31-32)

Table 5.2: Summary of drug theory that should be include in the ODAs programme

Management, ODAs/students and educators feedback
• Introduction to pharmacology (MGTGr1,p19, L3) • Drug categories: premedication, scheduled and anaesthetic and reversal drugs (MGTGr1P1, p22, L23-26; MGTGr2P1, p11, L2-3; MGTGr3P1, p 8, L12-15; MGTGr4P3, p6, L11-12) • Observations linked to the type of drug (MGTGr1P1, p23, L2-3) and contra-indications (MGTGr1P1, p23, L2-3) • Drugs used in recovery room: Indication, side effects and desired/undesired effects (MGTGr1P1, p22, L15, 17; MGTGr1P2, p23, L22-23) • Insight into pharmacology and drugs (MGTGr5P1,p2, L8, 10 & 19-20) • Patient's reaction to drugs (MGTGr5P1, p3, L5-6) • Type of drugs: Induction, reversal, general anaesthesia and emergency drugs (ODA2, p3,35, p4, 2-6) • Basic medication used in theatre: Trade names, indication, action, effect on body and side-effects (ODA3, p3,24-25) • Administration of suppositories (ODA3, p6,12) • Checking of scheduled drugs (ODA3, p14, 28-29) • Detail of specific drugs used in theatre (E10, p2, L1-4) • Effects of drugs and what to give when there is a side-effect (E9, p18, L12-14) • Management of drugs, side-effects and identification of problems associated with drugs (E9, p3, L26-33) • Local anaesthesia: Effects and what to give if there is anaphylactic shock (E9, p18, L15-17)

Table 5.3: Summary of AA functions the ODA currently does perform

Anaesthetic assistant functions currently performed
• Debit drugs given (MGTGrP1, p11, L21-28) • Preparation of supplies, equipment and anaesthetic machine (E8, p13, L26; ODA4, p1, L16-19; ODA5, p3, L17) • Prepare and check drugs, needles and syringes (ODA2, p6, L25-27; ODA5, p3, L17) • Prepare for intubation (ODA2, p6, L25-27; ODA5, p3, L17) • Assist with intubation (MGTGrP1, p11, L21-28) • Assist with cricoid pressure (ODA5, p5, L24) • Assist with anaesthesia (StGr1P2 & 3, L20-21; StGr2P1, p6,L8-12; ODA2, p6, L19-20) • Apply monitors and assist with physical monitoring of patient (StGr1P2, p17, L4-5) • Prepare and assist with intravenous cannulation and establishing a secure intravenous line (StGr1P2, p17, L12) • Ensure patient safety (St4GrP3, p8, L18-24) • Verify, handle scheduled drugs and debit drugs (ODA4, p4, L1-2, 16-17) • Assist anaesthetist in the interim until the anaesthetic nurse is available (ODA4, 6, L24-25) • Change drips (under direct supervision) (StGr4P3, p18, L15-17)

Table 5.4: Summary of recovery RRA functions some ODAs currently does perform

Recovery room assistant functions performed
• Receive a patient in the receiving area (MGTGrP1, p3, L16-17; MGTGr3P1, p14, L17) • Check emergency trolley and pull-up drugs for the RN (MGTGr2P3, p6, L12, 15) • Support staff (MGTGr1P2, p21, L14) • Prepare recovery room: **C**heck equipment, damp dust, fill-up trolleys, check that the suction/basics are available, check emergency trolley and intubation equipment (E4, p14, L31-34 & p15, L1, 6, 9-11; E2, p2, L6; E8, p5, L29, 31, 33, 34; E7, p13, L23-24; E7, p14, L1&3; E3, p18, L22-26; ODA5, p10, L7-12; StGr5P2, p8, L19-21 & 27; StGr3P7, p16, L5,9; ODA6, p11, L30-32; StGr5P1, p9, L16-18) • Assist RN to: Receive/care for patient, input/output, making patients' comfortable, paediatric patient care, ensuring an open airway, documentation, suctioning a patient, oxygen administration, IV bags, positioning a patient, handover of the patient to unit staff, recovering and extubating a patient, testing patient's motor strength, preparing/changing the suction tube, documenting a patient care/drugs given and cleaning a patients (ODA3, p5,L1-7; ODA3, p13, L 20-21; ODA4, p8, L4, 5,7, 21-22; StGr5P3, p14, L6,12-13; P2, p15, L2-7; ODA5, p8, L25-27; p9, L18-22; ODA1, p6, L20-22, E4, p3, L19-31; E4, p12, L7; E4, p6, L10-13; E7, p13, L23-24, p14, L1&3; StGr1P2, p18, L20-21) • Recover patient under indirect supervision of the RN (ODA5, p10, L8-10; StGr4P3, p13, L20) • Take a patient over from the scrub sister, observe the patient and ensure an open airway (E3, p18, L22-26; E3, p19, L3) • Send for and receive patients (StGr5P2, p9, L16-18; StGrP1, p9, L18-19) • Apply monitors, observe and record vital signs (E1,p7, L9; StGr1P2, p18, L20-21; P1, p12, L28; StGr1P1, p19, L11; StGr3P1, p12, L31 & p5, L21-22; StGr3P1,p12, L31; StGr2P3, p5, L21-22; StGr3P7, p16, L5,9) • Report complications or physical changes to RN (StGr1P2, p18, L24-25; P1 & 2, p19, L6-7) and assist the RN (StGr1P2, p19, L7) • Assist with patient comfort (StGr3P7, p16, L5,9) • Act a runner (StGr3S7, p16, L19-21; ODA4, p9, L62) • Facilitates patient safety (StGr4P1, p15, L20-26) • Extubate a patient (StGr4PM, p11, L9-11; StGr4IV, p16, L21-25; StGr5P3, p14, L6 & 12-13; StGr5P2, p15, L2-7) • Check urine output and record on fluid balance sheet (StGr4PM, p15, L20-26) and give the patient a bedpan (StGr4P2, p15, L20-26)

Table 5.5: Stakeholder perception of the ODAs anaesthetic assistant knowledge, skills and attitudes lacking

Managers	ODAs, students and educators

• Handling of drugs (MGTGr5P1, p1, L16-18)
• Confidence and insight (MGTGr7P1, p10, L30-32; MGTGr6P1, p1, L23; MGTGr4P2,p1, L19-20)
• Apply a blood pressure cuff, intravenous cannulation and extend a patients neck (MGTGrP1, p4, L1-9)
• Cardiopulmonary resuscitation skills (MGTGr1P3, p24, L6-7; MGTGr1P2, p24, L8)
• Dealing with patients (MGTGr6P3, p4, L10-12)
• Knowledge of:
  ○ Knowledge of emergencies and drugs (MGTGr5P3, p6, L21-22; MGTGr5P3,p6, L25-26)
  ○ Physiology to identify abnormalities (MGTGr4,P2, p1, L20-21)
  ○ Vital signs (MGTGr4P3, p2, L15)
  ○ Physiology of anaesthesia (MGTGr4P2, p2, L22-23)
  ○ Intubation supplies (MGTGr4P3, p12, L14-16)
  ○ Basic patient care (MGTGr6, p16, L333-34)
  ○ Medical terminology (MGTGr6, p16, L333-34)
• Assisting the anaesthetist (MGTGr4P3, p9, L8; MGTGr4P2, p9, L17)
	ODAs and students:
	• Handling of scheduled drugs (StGr3P7, p6, L29-32; ODA3, p7, L9)
	• Administration of drugs (StGrt3P7, p11, L11)
	• Assisting the anaesthetist (ODA1 p4, L12
	• Knowledge of theatre related drugs (ODA3, p2, L14)
	• Knowledge to check monitors (ODA3, p15, L15)
	• Knowledge and skills to prepare for anaesthesia (ODA3, p5, L34; ODA6, p3, L16-18)
	Educators:
	• Assisting with blood transfusion (E9, p10, L28-29)
	• Assisting with intubation (E8, p15, L34)
	• Knowledge to identify difficult airway (E9, p1, L7-9)
	• Interpretation of ECG rhythms and readings on monitors/ abnormal vital signs (E9, p1, L7-9; E9, p1, L20-24; E9, p1, L17; E9, p1, L28)
	• Handling of drips (E9, p2, L28) and drugs (E9, p3, L2-23)
	• Identifying/handling of abnormalities/complications (E9, p2, L17-18; p5, L20-21; E10, p5, L2-4)
	• Knowledge and skills to deal with difficult intubation, low saturation, cricoid pressure (E9, p15, L22-23)
	• Knowledge and skills to deal with specialised anaesthesia (E9, p16, L4-7)
	• Interpretation skills (E10, p6, L17)

Table 5.6: Stakeholder perception of the ODAs recovery room assistance knowledge, skills and attitudes lacking

Managers	ODAs, students and educators
• Administration of drugs (MGTGr7P1, p4, L28) • Troubleshooting and interpretation of data (MGTGr4P2, p2, L29; MGTGr7P2, p4, L30-33) • Recovering a patient (MGTGr3P1, p14, L15-17; MGTGr5P2, p13, L13-15) • Handling scheduled drugs and registers (MGTGr5P4, p9, L31) • Self-confidence (MGTGr6P1, p1, L23) • Knowledge of vital data, care of bleeding patient and management of pain (MGTGr7P1, p1, L15-18) • Identifying and handling abnormalities (MGTGr5P3, p7, L1) • Patient assessment (MGTGr4P3, p2, L5-8; MGTGr4P1, p6, L9)	*ODAs and students:* • Preparing the recovery room (ODA1, p6, L10) • Recovering a patient (StGr3P7, p15, L34; ODA4, p9, L13; ODA6, p18, L14) • Knowledge of drugs (StGr3P7, p16, L11) • Knowledge and skills to deal with emergency situations, pain control and extubation (StGr4P1,2,3, p22, L8-14; ODA5, p11, L8-9) • Observing an intubated patient (StGrt3P7, p18, L26-29) • Extubating a patient (ODA6, p18, L14) *Educators:* • Recovering a patient (E2, p6, L16-17; E7, p13, L23) • Ensuring an open airway (E2, p6, L26) and manual ventilation (E10, p8, L23-24) • Handling complications (E10, p27, L18)

Table 5.7: Knowledge, skills and attitudes essential for an AA from a management perspective

Knowledge	Attitudes, skills and non-technical skills

Knowledge of:
• Drugs (MGTGr3P1, p8, L12-15)
• Anaesthetic trolley content (MGTGr3P1, p8, L7)
• Airways (MGTGr3P1, p9, L34-35)
• Supplies/equipment storage areas, incl. equipment (MGTGr3P1, p10, L24; MGTGrP1, p15, L30-31)
• Taking care of care of equipment (MGTGrP1, p15, L30-31)
• Related complications (MGTGr3P1, p17, L5-6)
• Electrocardiogram (MGTGr5P2, p11, L17)
• Difficult airway, aspirating, malignant hyperthermia and crash induction (MGTGrP4, p16, L20-22)
• All types of emergencies (MGTGr6IV, p19, L34 & p20, L1-2)
• Medical terminology (MGTGr6IV, p16, L32-34 & p17, L1)
• Patient care (MGTGr6IV, p16, L32-34 & p17, L1)
Knowledge to:
• **A**nalyse and relate data to a higher level (MGTGr6P3, p16, L29-30)
• Observe, anticipate and interpret data (MGTGr5IV, p9, L34 &p10, L1; MGTGr4P5, p18, L1; MGTGr6P3, p17, L24)
• Apply critical thinking (MGTGr6IV, p19, L34 & p20, L1-2)
	Values/attitudes/behaviours/beliefs:
	• Self-confidence (MGTGr4IV, p20, L14)
	• Quick/proactive reaction (MGTGr3P1, p10, L24; MGTGr5P1, p3, L2-3)
	Non-technical skills:
	• Teamwork (MGTGr5P3, p6, L23-24)
	• Leadership (MGTGr5P1, p8, L10)
	Skills:
	• Check anaesthetic machine (MGTGr3P1, p8, L12-15)
	• Check, prepare and filling-up an anaesthetic trolley (MGTGr3P1, p8, L12-15)
	• Prepare for anaesthesia according to patient's medical condition and scheduled surgery (MGTGr3P1, p2, L18; MGTGr4P1, p7, L25; MGTGr5P1, p2, L21, 24 & 25; MGTGr6P3, p17, L8-9)
	• Receive and check patient and documents (MGTGr3P1, p8, L12-15)
	• Prepare for airway management and assist with intubation (MGTGr3P1, p8, L7; MGTGr3P1, p9, L34-35)
	• Verify and debit drugs (MGTGr3P1, p11, L26)
	• Assist with:
	  ○ Cardiopulmonary resuscitation (MGTGr5P3, p6, L23-24)
	  ○ Anaesthesia (MGTGr4P1, p4, L12; MGTGr5P1, p2, L21 & 25)
	  ○ Major anaesthesia and abnormalities (MGTGrP4, p16, L25)
	  ○ Conscious sedation (MGTGr4P5, p18, L1)
	  ○ Emergencies, incl. cricoid pressure (MGTGr3P1, p9, L34-35)
	  ○ IV cannulation and securing an IV line (MGTGr3P1, p10, L29)
	• Deal with patients of various ages and conditions, incl. paediatric patients (MGTGr6P3, p17, L28-30; MGTGr3P1, P10, L30)
	• IV cannulation (MGTGr6P1, p2, L14)

Table 5.8: Knowledge, skill and non-technical skills essential for a RRA from a management perspective

Knowledge	Skills and non-technical skills
Knowledge of: • Vitals signs (MGTGr3P1, p12, L25-26) • Drug adverse events (MGTGr4P5, p7, L17) • Patient care (MGTGr4P3, p9, L3) • Observations done when the patient is received in the recovery room (MGTGr7P1, p5, L23) • Observing the entire patient (MGTGr4P1-5, p21, L4 & 7) • Medical terminology (MGTGr6IV, p16, L32-34 & p17, L1) • Handling abnormal vital signs (MGTGr6, P1, p19, L30) Other cognitive skills: • Interpretation of data (MGTGr3P1, p12, L25-26; MGTGr6IV, p19, L34 & p20, L1-2) • Critical thinking (MGTGr6IV, p19, L34 & p20, L1-2)	*Non-technical skills:* • Decision-making (MGTGr6P1, p19, L30) • Teamwork (MGTGr5P2, p8, L26) • Leadership (MGTGr5P1, p8, L10) *Skills:* • Check/prepare the recovery room (MGT3GrP1, p12, L16-18) • Check/handle the defibrillator/emergency trolley (MGT3GrP1, p12, L16-18) • Connect the patient to the monitors (MGTGr3P1, p12, L24-25) • Observe, interpret data and identify abnormalities (MGTGr3P1, p12, L25-26; MGTGr4P5, p7, L10-11) • Observe whole patient when received in recovery room (MGTGr7P1, p5, L23; MGTGr4WG, p21, L4 & 7) • Recover patients until RN is available (MGTGr4P4, p5, L7-8; MGTGr4P3, p9, L3; MGTGr4P1, p8, L23-27) • Identify adverse events linked to medication (MGTGr4P5, p7, L17) • Anticipate/handle abnormalities without administering drugs (MGTGr6,P1, p19, L30) • Holistic patient care (MGTGr6P2, p22, L12)

Table 5.9: Knowledge, skills, attitudes and non-technical skills essential for an AA from an anaesthetist perspective

Knowledge	Attitudes, skills and non-technical skills
Knowledge of: • Warming devices (AGr1P2, p2, L20-21) • Spinal anaesthesia (procedure and equipment) (AGr1P2, p3, L7-8) • Role, functions and responsibility of the AA (AGr1P2, p3, L21, 24 & 25; AGr1P2, p4, L1-2) • Patient safety (AGr1P2, p9, L9-16) • Patient identification and WHO checklist (AGr1P2, p9, L9-16) • Anaesthetic equipment (AGr1, P1, p7, L9-10) • Outcomes of persisting abnormal vital sign (A5, p3, L27-31) • Pharmacology(A3, p6, L17-21) • Anatomy/physiology and role it plays in anaesthesia (A3, p6, L17-21) • Anaesthesia principles (A3. p6, L17-21; A5, p2, L40 • Dealing with emergencies (A3, p6, L17-21) • Anaesthetic equipment (A4, p2, L5-6) • Types/purpose of anaesthesia (A6, p16, L23; A4, p2, L5-6) • Cardiopulmonary resuscitation (A2, p3, L16; A6, p6, L6-8) • Basic concepts of patient care (A5, p2, L4-10) • CVP cannulation and regional anaesthetic block (A5, p2, L4-10) • What anaesthetists needs, how quick he needs it, why he needs it and why he is doing it (A5, p2, L20-22; A5, p3, L7; A6, p2, L22-23) • Outcomes of persisting abnormal vital signs (A5, p3, L27-31) • Anaesthetic effects (A6, p6, L6-8) • Surgical procedure (A6, p14, L14) • Physiological changes with positioning styles (A6, p14, L33) • Knowledge of colloids/crystalloids (A6, p15, L29) *Knowledge to:* • Anticipate (AGr1P1, p12, L22; AGr1P2, p2, L21; A5, p4, L31-32; A4, p2, L1-2; A6, p15, L8-11) • Interpret and analyse data (A5, p3, L27-31; A5, p4, L31-32) • Have insight (A5, p3, L27-31; A6P, p2, L22-23) • Apply critical thinking (A5, p4, L31-32) • Prioritise (A6, p15, L20)	*Values/attitudes/behaviours/beliefs:* • Professional conduct (AGrP1, p8, L10) • Patient advocacy (AGr1P2, p9, L9-16) • Sterile consciousness (A6, p16, L4) • People skills (A6, p17, L7-9) • Self-confidence (A6, p17, L7-9) • Assertiveness (A6P, p17, L7-9) • Etiquette (AGrP2, p7,L8) • Alert, proactive and quick reaction (AGr1P1, p12, L22; AGr1P2; A5, p2, L20-22; A6, p1, L26) • Initiative taking (A5, p4, L1-5) • Accountability (AG1P2, p7, L8) • Patient focused care (A6, p15, L15 & 19) *Non-technical skills:* • Communication (AGr1P2, p7,L8) • Decision-making (A6, p14, L16-19) • Teamwork (A5, p4, L1-5) • Leadership (A5, p4, L1-5) • Situation-awareness (A4, p2, L2-4; A5, p3, L27-31) *Skills:* • Prepare for anaesthesia according to doctor's preference (AGr1P2, p2, L20-21) • Prepare/assist with spinal anaesthesia (AGr1P2, p3, L7) • Ensure patient safety (AGr1P2, p9, L9-16) • Prepare for and assist with a rage of anaesthetics (A4, p4, L14-15p; A5, p1, L21-22) • Test/prepare equipment (AGr1, P1, p7, L9-10) • Interpret abnormal vital signs (A5, p3, L27-31) • Observe/monitors patients' and interpret abnormal vital signs (A4, p2, L2-4; A5, p3, L27-31) and report (A5, p1, L26-2; A5, p2, L1) • Assist with intubation (A6, p1, L24-26) • Assess/prepare for minor/major surgery for patients of all ages, blocks, local anaesthesia and for patients who are admitted to a critical care unit post-operative (A6, p14, L16-19) • Integrate theory and practice (A6, p15, L8-11) • Assist with cardiopulmonary resuscitation (A6, p15, L11-12) • Airway management (A6, p15, L15 & 19) • Ensure patient safety (A6, p15, L15 & 19) • Apply sterile technique (A6, p16, L4)

Table 5.10: Knowledge, skills, attitudes and non-technical skills essential for a RRA from an anaesthetist perspective

Knowledge	Attitudes, skills and non-technical skills
Knowledge of: • Airway management (A5, p5, L22; A6, p5, L7; A4, p2, L18-21) • Care of emerging patient (A4, p2, L18-21) • Management of symptoms (A4, p2, L18-21) • Drug administration (A4, p2, L18-21) • Procedures (A5, p5, L10) • Discharge criteria (A5, p5, L11) • Extubation knowledge: criteria to meet, when to extubate, dangers of removing tube to early and what to do if removed to early (A5, p5, L16-17 & 19-21) • Impact of spinal anaesthesia on hemodynamics (A6, p2, L4-6) • Extubation, its hemodynamic effect and how to manage it (A6, p2, L15-18) • Understand what is done / to know when to call the dr**.** (A6, p2, L31-33) • Routine in recovery room when patient is admitted: what to look at (wound, drain, bleeding, catheter, under-water drainage system) (A6, p6, L9-14) • Effect of under-water drainage on heart and lung physiology (A6, p6, L9-14) • Oxygen therapy (A6, p14, L30-32) • Impact of anaesthesia on healthy, old and sick patient's lungs (A6, p14, L23-82) as correlated with oxygen therapy *Knowledge to:* • Be accurate (AGr1P1, p14, L14) • Anticipate (AGr1P1, p12, L22; A5, p5, L23-24; A6, p5, L9) • Apply critical thinking (A5, p5, L28) • Have insight to know when things are going wrong and what not to do (A6, p2, L36; A5, p3, L27-31)	*Values/attitudes/behaviours/beliefs:* • Work culture (AGr1P1, p14, L14) • Assertiveness (AGr1, P2, p14, L22-29; AGr1P1, p15, L23) • Interpersonal skills (A6, p3, L7; A5, p5, L23-24) • People skills (A6, p5, L10) • Self-assurance (A6, p5, L16-18) • Alert, proactive, immediate reaction (AGr1P1, p12, L22) • Commitment (AGr1P1, p14, L14) *Non-technical skills:* • Good listening skills (AGr1, P2, p14, L22-29; AGr1P1, p15, L23) • Decision-making (A4, p2, L18-21) • Teamwork (A6, p6, L4-5) • Situation-awareness (A6, p6, L9-14; A4, p2, L18-21) *Skills:* • Care of emerging patient (A4P1, p2, L18-21) • Manage symptoms (A4, p2, L18-21) • Administer drug (A4, p2, L18-21) • Assess respiratory rate/ensure open airway (AGr1P1, p11, L13-21; A4, p2, L18-21; A5, p5, L22) • Assess vital signs (AGr1P1, p14, L14-15) • Extubation (A6, p2, L15-18) • Assist with emergency situations (A6, p6, L4-5) • Assess the patients wound, drain, bleeding, catheter, under-water drainage system (A6, p6, L9-14) • Assist with oxygen therapy (A6, p14, L30-32) • Airway management (A4, p2, L18-21)

Table 5.11: Knowledge and skills essential for an AA from an ODA and student perspective

Knowledge	Skills
Knowledge of: • Anaesthetic equipment (StGr2P1, p1, L19-17) • Anaesthetic needs for different age groups (StGr2P1, p1, L19-26) • Abnormal vital signs and management thereof (StGr2P1, p4, L13-14) • Pain pumps (ODA5, p5, L15) • Types of airways and indications for use (ODA5, p5, L29-31)	• Prepare anaesthetic equipment (incl. endotracheal tubes, laryngeal mask airways and warming devices) and supplies according to dr. preference, type of anaesthesia, drugs needed and patient age (StGr2P1, p1, L17-26) • Verify and handle scheduled drugs and registers (StGr2P1, p4,13-14; ODA2, p4, L21-24; ODA5, p5, L15; ODA6, p8, L20-25; ODA4, p4, L1-2; ODA3, p14, L26-29) • Assist with cricoid pressure (ODA5, p5, L24) • Insert a suppository (ODA3, p14, L26-29) • Insert a urinary catheter (ODA3, p14, L26-29; StGr4P3, p24, L1-2) • Draw up drugs under direct supervision (StG3P1, p7, L23-26; StGr3P7, p8, L5) • Inject drugs into IV line on RN/dr. orders (StGr3P2, p9, L32-34; StGr4P3, p22, L1 & 3; ODA2, p2, L35) • Administer drugs in emergency situations (ODA3, p7, L11-14) • Change an intravenous vaculiter/bag (StGr4P1, p18, L14-20)

Table 5.12: Knowledge, skills and non-technical skills essential for a RRA from an ODA and student perspective

Knowledge	Skills and non-technical skills
Knowledge of: • Prevention of complication such as laryngospasm (StGr3P7, p18, L1) • Extubation (StGr1P2, p11, L26 & p12 ,L5; StGr4P3 p11,L10-11; StGr4P3, p16, L14; (ODA3P,p6, L 22 & 26 & p7, L4) • Complications and how it is managed (ODA2, p15, L22) • Administration and handling of drugs (ODA3,p6, L 22 & 26 & p7, L4) • Insertion of urinary catheter (ODA3, p6, L22 & 26 & p7, L4)	*Non-technical skills:* • Teamwork (StGr4P3, p13, L5-8) • Communication (StGr4P3, p19,L17-19) • Situation-awareness (ODA2, p15, L22) • Teamwork (ODA2, p15, L22) *Skills:* • Handle scheduled drugs (StGr3P1, p15, L5-6) • Extubation (StGr1P2, p11, L26 & p12 ,L5; StGr4P3 p11,L10-11; StGr4P3, p16, L14; ODA3, p6, L 22) • Intramuscular injection (StGr1P1, p12, L8) • Handle and administer drugs under direct supervision (StGr4P3, p18, 6-13; ODA3,p6, L 22 & 26 & p7, L4) • Change intravenous vaculiters (StGr4P3, p18, L14-20) • Document drugs given (StGr4P3, p19, L17-19) • Record scheduled drugs and co-sign register (StGr1P1, p15, L5-6) • Assist with emergencies (ODA2, p15, L22) • Insert a urinary catheter (ODA3, p6, L 22 & 26) • Recover a patient (ODA5, p10, L8-10) • Assist the RN (ODAst4PM, p13, L5-8) • Interpret vital signs (ODA2, p11, L19-21) • Patient handover to unit staff on discharge (ODA3, p13, L22-23)

Table 5.13: Knowledge, skills, attitudes and non-technical skills essential for an AA from an educator perspective

Knowledge, attitudes, and non-technical skills	Skills
Knowledge of: • Body systems (E8, p8, L18-20) • Preparation according to theatre list, type of anaesthesia and patient data (E3, p17, L1-17 & 21-23) • Sending/receiving a patient (E3, p17, L1-17 & 21-23) • Administration of drugs (E9, p9, L29-31) *Knowledge to*: • Troubleshoot/solve problems (E5, p6, L22-24) • Anticipate (E5, p6, L22-24) • Analyse data (E1, p14, L21-23, 25, 26 & 29; E8, p8, L18-20; E9, p1, L27) • Interpret data and react accordingly (E1, p14, L21-23, 25, 26 & 29; E8, p8, L18-20; E9, p1, L27) • Identify problems (E1, p14, L11-14) *Values/attitudes/behaviours/beliefs:* • Assertiveness (E10, p25, L16; E1, p14, L11-14) • Trustworthiness (E10, p25, L16) • HelP4ulness (E10, p25, L16) • Quick/slick reactions (E7, p12, L23) • Proactive reaction (E1, p14, L11-14) • Professional boundary setting (E11, p11, L33-34) *Non-technical skills:* • Decision-making (E8, p8, L18-20; E9, p1, L27) • Teamwork (E2, p28, L21-27)	• Prepare according to theatre list, type of anaesthesia, patient data (E3, p17, L1-17 & 21-23; E2, p28, L21-27) • Send/receive patients (E3, p17, L1-17 & 21-23) • Check patient / documentation in reception area of the operating department (E3, p18, L3-5) • Handle scheduled drugs and registers (E2, p10, L14-16) • Start a short drip (E2, p10, L19-20) • Change IV fluids (E2, p11, L1) • Transfer / position patient (E3, p18, L5; E2, p29, L1) • Attach monitors (E3, p18, L6) • Assist with IV access, cricoid pressure, blood administration, reversal / wake-up (E3P, p18, L6-9) • Assist during all phases of anaesthesia (E2, p28, L21-27) • Check, test / clean equipment (E2, p28, L21-27; E2, p29, L10-11) • Assist with emergencies (E8, p8, L25) • Monitor a patient (E8, p8, L18-20; E9, p1, L27) • Insert a suppository (E9, p8, L5 & 7; E10, p13, L24-25) • Insert a urinary catheter (E9, p8, L5 & 7; E10, p13, L24-27) • Administer drugs in emergencies and into a vaculiter (E9, p9, L33-34; E10, p13, L24-31) • Accurate documentation (E2, p28, L21-27) • Draw-up and administer drugs under direct supervision

• Decision-making (E8, p8, L18-20; E9, p1, L27) • Communication (E2, p28, L21-27; E3, p17, L1-17-23) • Situation-awareness (E3, p17, L1-17 & 21-23; E2, p28, L21-27; (E8, p8, L18-20; E9, p1, L27)	(E6, p6, L25-27)

Table 5.14: Knowledge, skills and non-technical skills essential for a RRA from an educator perspective

Knowledge	Non-technical skills and skills
Knowledge of: • Complications to identify it and get help (E1, p15, L1) • Discharge criteria (E5, p9, L20-21) *Knowledge to:* • Interpret data (E5, p10, L5-7) • Interpret vital signs (E1, p15, L10-12, 13) • Analyse data (E1, p15, L10-13; E5, p10, L5-7)	*Non-technical skills:* • Decision-making (E1, p15, L10-13) • Communication (E2, p29, L13-17) • Situation-awareness (E8, p8, L18-20; E9, p1, L27) • Teamwork (E5, p8, L26 & 28) *Skills:* • Prepare recovery room: test equipment / stock supplies (E2, p29, L13-17) • Attach patient to the monitors (E2, p29, L13-17; E6, p6, L25-27; E1, p15, L1-9) • Ensure open airway (E6, p6, L25-27) • Accurate documentation (E2, p29, L13-17) • Draw up drugs for RN (E5, p2, L20-21) and administer it under direct supervision (E5P, p3, L1) • Take care of a patient in the recovery room until a RN can take over (E6, p6, L25-27) • Interpret, analyse vital signs and react appropriately (E1, p15, L10-13) • Discharge patient on dr. request (E5, p9, L20-21)