

KNOWLEDGE AND CLINICAL PRACTICE OF NURSES FOR ADULT POST-OPERATIVE ORTHOPAEDIC PAIN MANAGEMENT

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of the requirements for the degree of
Master of Nursing Science in the Faculty of Health Sciences
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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole owner thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

Pain management is a vital component of post-operative nursing care. Orthopaedic patients in particular experience severe pain following surgical intervention. Since effective pain management is crucial in the post-operative recovery of orthopaedic patients, it was essential to explore the knowledge and clinical practice of nurses in orthopaedic wards. The aim of the study was to establish nurses' knowledge and clinical practice for adult post-operative pain management of orthopaedic patients.

A non-experimental, descriptive self-administered survey using a quantitative approach was applied. The total population of N=97 registered professional and enrolled nurses working in dedicated orthopaedic wards in two central hospitals in the Cape Town Metropole district, South Africa were invited to participate in the study. A structured questionnaire was used to collect the data. Reliability and validity was assured by means of a pilot study and consultation with nursing experts and a statistician.

Ethical approval was obtained from the Health Research Ethics Committee of the University of Stellenbosch. Permission for access to the hospitals was obtained from the hospital and nursing managers. Informed written consent was obtained from the participants.

The data was analysed by the statistician and presented in frequencies, tables and histograms. The variables were compared using either the Pearson chi-square test for differences in nursing category or the Mann-Whitney U-test for differences in years of experience.

The analysis of the results illustrated knowledge deficits, inconsistent clinical practices and limited training in post-operative pain management. The recommendations include training courses, revision of the patient's observation chart and formulation of policies and guidelines for pain management. Appropriate knowledge and clinical skills of nurses are critical to ensure optimal pain management for post-operative orthopaedic patients.

OPSOMMING

Die bestuur van pyn is 'n essensiële component van post-operatiewe verpleegsorg. Ortopediese pasiënte ervaar spesifiek fel pyn na afloop van 'n chirurgiese intervensie. Aangesien effektiewe pynbestuur belangrik in die post-operatiewe herstel van ortopediese pasiënte speel, was dit nodig om die kennis en kliniese praktyke van verpleegpersoneel in ortopediese sale te verken. Die doel van die studie was om verpleegpersoneel se kennis en kliniese ervaring van volwasse post-operatiewe pynbestuur van ortopediese pasiënte vas te stel.

'n Nie-eksperimentele, deskriptiewe, self-toegediende opname is toegepas wat gebruik maak van 'n kwantitatiewe benadering. Die totale populasie van 97 geregistreerde professionele en ingeskrewe verpleegkundiges wat in toegewyde ortopediese sale van twee sentrale hospitale in die Kaapstad Metropol distrik, Suid Afrika werk, is genooi om aan die studie deel te neem. 'n Gestruktureerde vraelys is gebruik om data in te samel. Betroubaarheid en geldigheid is verseker deur middel van 'n voortoets en konsultasie met verpleegkundige kenners en 'n statistikus.

Etiese goedkeuring is verkry van die Gesondheidsnavorsing Etiese Komitee van die Universiteit Stellenbosch. Toestemming om toegang tot die hospitale te kry is verkry van die hospitaal en verpleegbestuurders. Ingeligte, geskrewe toestemming is van die deelnemers verkry.

Die data is geanaliseer deur die statistikus en is aangebied in frekwensietabelle en histogramme. Die veranderlikes is vergelyk deur of die Pearson chi-vierkant toets te doen vir verskille in verpleegkategorieë, of die Mann-Whitney U-toets vir verskille in jare ervaring.

Die analise van die resultate het kennistekorte, teenstrydige kliniese praktyke en beperkte opleiding in post-operatiewe pynbestuur uitgewys. Die aanbevelings sluit opleidingskursusse, hersiening van pasiënte se waarnemingsgrafiek en die formulering van beleid en riglyne vir pynbestuur in. Toepaslike kennis en kliniese vaardighede van verpleegpersoneel is krities om optimale pynbestuur vir post-operatiewe ortopediese pasiënte te verseker.

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DEDICATION

To my geologist father Karl and in loving memory of my mother Joan a pharmacist, both Rhodes graduates, who believed and encouraged me in my pursuit of nursing as a career.

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LIST OF ACRONYMS USED IN THE THESIS

EN	Enrolled Nurse
RPN	Registered Professional Nurse
SANC	South African Nursing Council
SASA	The South African Society of Anaesthesiologists

CHAPTER 1: SCIENTIFIC FOUNDATION OF THE STUDY

1.1 INTRODUCTION

This chapter introduces the scientific foundation of the study. The rationale for the study, problem statement, research aim and objectives are presented. In addition, the research methodology and conceptual framework utilised for this study are outlined.

1.2 RATIONALE

Pain is a subjective and complex phenomenon. It is difficult to define since pain is an individual and personal experience. According to the International Association for the Study of Pain, pain is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage” (Stellenberg & Bruce, 2007:639). As an alternative definition, Margo McCaffery advocates that “pain is whatever the experiencing person says it is, existing whenever he says it does” (Pasero & McCaffery, 2011:21).

Post-operative pain occurs in response to surgical intervention and resolves within a specified period (Robertson, 2007:645). The goal of optimal pain management is viewed as a human right, not a luxury (The South African Society of Anaesthesiologists (SASA), 2009:4). Therefore nurses have a professional and ethical responsibility to ensure effective pain relief for their patients.

In 2005 the researcher became aware of inadequate pain management while working in the Orthopaedic High Care Unit of a tertiary hospital. The researcher observed that the patients appeared to receive optimal pain relief while in the unit, but on returning to the general ward, the patients complained of a lack of consideration of their pain needs.

In the researcher’s clinical practice, it was observed that the patients would have to wait for long periods without pain relief. Instead of using pain scales, the nurses used informal questioning of the patients regarding their pain. It was identified that the nurses did not always believe the patient’s report of pain, instead relying on their own interpretation of the patient’s pain and associated behaviour of the patient (Pasero & McCaffery, 2001:73-74; Schafheutle, Cantrill & Noyce, 2001:732-733; Klopper, Andersson, Minkkinen, Ohlsson & Sjöström, 2006:15-17). Furthermore, the nurses would tend to express derogatory statements when the patients requested pain relief, for example, “the pain is not so severe” or “you are going to get addicted to morphine”. These negative attitudes towards pain management culminated in the provision of inadequate post-operative pain relief.

Orthopaedic surgery, either elective or emergency, involves surgical intervention to the structures of the musculoskeletal system. The structure of the musculoskeletal system consists of bones and associated muscles, ligaments, tendons and cartilage. Therefore, it can be concluded that orthopaedic surgery is not isolated to one component, resulting in severe pain which is further exacerbated by oedema, haematoma and muscle spasms (Smeltzer, Bare, Hinkle & Cheever, 2008:2385). SASA (2009:93-94) acknowledges that orthopaedic surgery can be painful and therefore, effective pain management is essential to promote early mobilisation and prevent complications. Pain management is a critical aspect of the post-operative setting, therefore it is vital that the patient's pain needs are met to optimize and expedite the post-operative recovery process.

1.3 PROBLEM STATEMENT

As described above it appears that the patients who have received orthopaedic surgery are managed inadequately for their pain in the post-operative period. This could be attributed to the knowledge and clinical practice of nurses which appears to be inadequate for adult post-operative orthopaedic pain management.

1.4 RESEARCH QUESTION

The research question represents the concept to be examined and forms the foundation of the research study (Haber, 2010:28). Accordingly, the research question for this study is: What is the current knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management?

1.5 RESEARCH AIM

The aim of this study was to establish nurses' knowledge and clinical practice for adult post-operative pain management of orthopaedic patients in central hospitals in the Cape Town Metropole district.

1.6 RESEARCH OBJECTIVES

The objectives of this study were to:

- determine the knowledge of nurses about post-operative pain management in adult orthopaedic patients
- determine the clinical practices of nurses for post-operative pain management in adult orthopaedic patients

- determine the documentation practices of nurses related to pain assessment and management
- establish the current nurse education and training related to pain management.

1.7 RESEARCH METHODOLOGY

The research methodology applied to this study will be described briefly with further detail appearing in Chapter 3.

1.7.1 Research design

A research design is a blueprint to guide the planning, implementation and control of a research study (Burns & Grove, 2007:237). A non-experimental, descriptive, self-administered survey using a quantitative approach was utilised for this study.

1.7.2 Population and sampling

A population consists of all the types of individuals or elements to be considered for a research project (Burns & Grove, 2009:343). The population of nurses identified for this study, are all registered professional and enrolled nurses working in eight adult orthopaedic wards situated in two central hospitals in the Cape Town Metropole district of South Africa.

A sample represents a selected proportion of the individuals or elements within a population. Sampling is a process involving the selection of a portion of the population to represent the total population (Burns & Grove, 2007:324). Strydom (2005:195) indicated that it is not always possible to select a sample when the total population is very small, in which case it is advisable to use the whole population. Based on the recommendations by Strydom (2005:196), the researcher selected to use, for the purpose of this study, the total population of 53 registered professional nurses and 44 enrolled nurses working in the orthopaedic wards of two central hospitals, which have eight dedicated adult orthopaedic wards.

1.7.2.1 Inclusion criteria

The hospitals included in the research study were classified as central health facilities (Department of Health, 2007:93-96), situated in the Cape Town Metropole district of South Africa with dedicated adult orthopaedic wards.

The participants included registered professional nurses (RPN's) or enrolled nurses (EN's) working in the adult orthopaedic wards in the selected hospitals.

1.7.2.2 *Exclusion criteria*

The categories of nurses excluded from the study were enrolled nurse auxiliaries, nurses in training and community service nurses.

1.7.3 **Instrumentation**

A self-administered questionnaire was designed, based on the literature and the researcher's clinical experience, to collect data relevant to the research objectives. Since the research design is a descriptive survey, the choice of a questionnaire is an acceptable data-collection method. A questionnaire will facilitate the collection of viewpoints on a phenomenon from individuals who are informed on a particular subject (Delpont, 2005:166).

The questionnaire consisted of close-ended questions designed to obtain the demographic and professional data of the respondents. Dichotomous and multiple-response questions with Likert scales were developed to determine knowledge, clinical practices, documentation practices and education and training related to post-operative pain management.

1.7.4 **Pilot study**

A pilot study was conducted to establish the feasibility of the study and to test the questionnaire for clarity and validity of the questions. The pilot study involved the testing of 9% (nine participants) of the chosen population for this study. The data obtained from the pilot study will not be included in the final analysis of the study.

1.7.5 **Reliability and validity**

Reliability means that the measuring instrument will produce consistent results when used in similar circumstances or by different researchers (Delpont, 2005:162-163). Reliability of the content and construction of the questionnaire was tested during the pilot study.

Validity refers to the extent to which the measuring instrument measures the concepts of the research study (Burns & Grove, 2009:43). Content validity represents the adequacy of the variables in the questionnaire (Delpont, 2005:160-161). The development of the questionnaire was influenced by the literature review and the research objectives. The researcher's supervisor assisted in the analysis and review of the drafts of the questionnaire. Content and face validity were ensured.

1.7.6 **Data collection**

The data collection method used in this study was a self-administered questionnaire (see Appendix F).

The data collection occurred over a period of three weeks. Data was collected at the participants' place of employment. Participants were given consent forms to complete, and on completion, they were requested to place the forms in a sealed box marked "consent forms". On completion of the consent form, each participant was provided with a questionnaire and blank opaque self-sealing envelope. Once the questionnaires were completed, the respondents were requested to place the questionnaire in the envelope provided and to seal it. The envelopes were placed in an additional sealed box marked "questionnaires". A register was kept to record the number of consent forms and questionnaires delivered and collected from each hospital.

1.7.7 Data analysis

A qualified statistician from the Centre for Statistical Consultation at Stellenbosch University, Mr. J. Harvey, was consulted with regard to the data analysis. The data was entered onto a Microsoft Excel spreadsheet then submitted to the statistician for analysis using the STATISTICA 9 programme.

Descriptive and inferential analyses were conducted for this study. Descriptive data included means, standard deviations and frequency tables. Inferential analysis compared responses for statistical differences using the Pearson chi-square test for nominal data, the Mann-Whitney U test for ordinal data and the Kruskal-Wallis ANOVA for analysis of variance between three or more variables. A p-value of $p < 0.05$ represented statistical difference between the study variables using 95% confidence levels.

1.7.8 Ethical considerations

Permission to conduct the research study was obtained from the Health Research Ethics Committee of the University of Stellenbosch (reference N10/12/404, see Appendix A). Permission for access to the hospitals was requested from the hospital managers (see Appendices B and C).

All participants signed informed consent forms (see Appendix D) prior to answering the questionnaire. The objectives and nature of the research were explained to all participants with the emphasis on voluntary participation and the right to withdraw from the study at any time without being penalised in any way. Participants took part in the study anonymously; hence no names were affixed to the questionnaires. Anonymity and confidentiality were maintained by means of placement of the signed consent forms and questionnaires into sealed envelopes and separate boxes. The anonymity and privacy of the hospitals were protected by means of a colour-coding process for each hospital after the collection of the

questionnaire boxes. The raw data and results will be stored in a locked cabinet and saved for five years after completion of the study.

1.7.9 Limitations

The research study involved a small sample of two categories of nursing staff working in the orthopaedic wards of two central hospitals. However the findings can be generalised to all wards where orthopaedic pain is managed.

1.8 CONCEPTUAL FRAMEWORK

Patricia Benner's model of nursing practice provides the foundation of this study. The five levels of competency are based on the five stages of skill acquisition as described by the Dreyfus model (Benner, 2001:13). The five levels are novice; advanced beginner; competent; proficient and expert. Nurses develop and improve their nursing skills by exposure to and experience of real situations in the clinical field (Benner, 2001:20-34). The knowledge and clinical skills required for pain management should improve as the nurse transitions through the various competency levels of Benner's model.

1.9 OPERATIONAL DEFINITIONS

Agency nurse: A nurse who is contracted via a nursing agency to work a duty shift at a specific hospital (Manias, Aitken, Peerson, Parker & Wong, 2003:269).

Central hospital: A hospital that provides level 2 and level 3 health care services according to specialised medical expertise (Department of Health, 2007:93-96).

Enrolled nursing auxiliary: A person who has completed a one year certificate course, registered with the South African Nursing Council (SANC) in terms of section 31 of the Nursing Act, 33 of 2005, and renders elementary nursing care under the direct and indirect supervision of a registered professional nurse (Republic of South Africa, 2005:6;25).

Enrolled nurse: A person who completed a two year enrolment certificate course, registered with the SANC in terms of section 16 of the Nursing Act, 50 of 1978, and renders basic nursing care under the direct and indirect supervision of a registered professional nurse (Republic of South Africa, 1978:13).

Formal in-service training: A structured training programme to educate employees during their employment period at an institution (Booyens, 2005:384).

Induction: The initial orientation of a new employee to the work environment (Booyens, 2005:381).

Informal in-service training: In-service training using teachable opportunities in the clinical setting (Mellish, Brink & Paton, 2001:140).

Nurse: According to the SANC definition “nurse” means a person registered in a nursing category under section 31(1) of the Nursing Act, 33 of 2005, in order to practice nursing or midwifery (Republic of South Africa, 2005:6).

Nursing: According to the SANC definition “nursing” means a caring profession practiced by a person registered or enrolled under section 31 of the Nursing Act, 33 of 2005, which supports, cares for and treats a health care user to achieve or maintain health and where this is not possible, cares for a health care user so that he or she lives in comfort and with dignity until death (Republic of South Africa, 2005:6).

Operational manager: A professional registered nurse who is responsible for the operational management of the ward in terms of clinical practice, administration, education and research (Meyer, Naudé, Shangase & Van Niekerk, 2009:6).

Orientation: Orientation refers to the training provided to a new employee regarding work responsibilities in the ward environment (Booyens, 2005:382).

Registered professional nurse: A person who has completed a three or four year diploma or four year degree course in nursing and is registered with the SANC in terms of section 31 of the Nursing Act, 33 of 2005, and practices comprehensive nursing independently and assumes responsibility and accountability for such practice (Republic of South Africa, 2005:6;25).

1.10 DURATION OF THE COLLECTION OF DATA

The duration of data collection extended from 2 June 2011 until 22 June 2011. The pilot study commenced on 2 June 2011 and was completed on 3 June 2011. The main study commenced on 7 June 2011. The sealed questionnaire boxes were collected from both hospitals on 22 June 2011.

1.11 CHAPTER OUTLINE

Chapter 1 outlines the scientific foundation of the study including the rationale for the study, research aim and objectives, brief overview of the research methodology and conceptual framework for the study.

Chapter 2 presents the literature review related to acute post-operative pain; pain assessment and management; nursing documentation and nurse education and training

related to pain management. The conceptual framework selected for this research study is also explained.

Chapter 3 provides a detailed description of the research methodology utilised in this research study.

Chapter 4 presents the data analysis, interpretation and discussion of the results from this research study.

Chapter 5 provides the conclusions and recommendations derived from this research study.

1.12 SUMMARY

Post-operative pain management in orthopaedic patients is complex. Numerous studies and the researcher's own clinical observations have identified that pain management is inappropriately managed in the clinical setting. Effective pain relief is not viewed as a priority. Nurses have a vital role to play in the recovery of post-operative orthopaedic patients.

1.13 CONCLUSION

In Chapter 1, an introduction and rationale to the research study was provided. The aim, objectives, research methodology, ethical considerations and conceptual framework used for the study was outlined. Chapter 2 will discuss the literature related to acute post-operative pain, pain assessment and management, nursing documentation and nurse education and training in pain management.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Quality patient care can be measured in terms of patient satisfaction (Booyens, 2005:612). Recent pain prevalence studies in the United States of America (USA) and Canada have revealed that surgical patients continue to experience moderate to severe pain post-operatively (Apfelbaum, Chen, Mehta & Gan, 2003:537; Sawyer, Haslam, Robinson, Daines & Stilos, 2008:106; Sawyer, Haslam, Daines & Stilos, 2010:47). These results confirm that the management of post-operative pain remains a significant problem in the health care setting.

The American Pain Society has urged health professionals to consider pain as “the fifth vital sign” affording pain the same significance as temperature, pulse, respiration and blood pressure (SASA, 2009:20; Berdine, 2002:156). This has, however, met with resistance from doctors (Kozol & Voytovich, 2007:417), as pain is viewed as a symptom which cannot be measured with an electronic tool. Nevertheless, elevating pain to the status of a vital sign, heightens awareness of the need to monitor pain and provide appropriate pain relief.

2.2 LITERATURE REVIEW

The literature review in a research project is an appraisal and synthesis of “the current theoretical and scientific knowledge” about an identified research problem (Burns & Grove, 2007:135).

The purpose of the literature review in this study was to:

- examine international and South African standards for pain assessment and management in post-operative patients;
- establish best practice guidelines with respect to the management of pain in post-operative orthopaedic patients;
- explore how pain is assessed by nurses in the acute post-operative setting;
- explore how pain is managed by nurses in the acute post-operative setting;
- determine how pain management is documented by nurses;
- establish the current nurse education and training approaches related to pain management.

2.2.1 Acute pain

Acute pain occurs in response to an injury and resolves once the injury has healed. Post-operative pain is an example of acute pain, which occurs in response to surgical intervention and resolves within a specified period (Robertson, 2007:645). The intensity of acute pain can range from mild to severe.

2.2.2 Orthopaedic surgery

Orthopaedic surgery is performed for elective reasons, for example, total joint replacement, and trauma cases, for example, fractures. Surgical intervention to repair or reconstruct muscle or bone tissue results in severe pain for the orthopaedic patient (Pasero & McCaffery, 2007:160). The resultant post-operative pain is further exacerbated by oedema, haematoma and muscle spasms (Smeltzer *et al.*, 2008:2385). In addition, the presence of underlying chronic pain, for example, arthritis, can influence the experience of post-operative pain for the orthopaedic patient (Pasero & McCaffery, 2007:160).

SASA (2009:93-94) acknowledges that orthopaedic surgery can be painful. Therefore, effective pain management is essential to promote early mobilisation and prevent complications (Kehlet & Dahl, 2011:1699; Pasero & McCaffery, 2007:160).

2.2.3 International standards for pain management

2.2.3.1 World Health Organisation (WHO)

In 1996, the World Health Organisation (WHO) designed a three-rung analgesic ladder for the management of patients with cancer-related pain (Higson 2005:16; Mackintosh 2007:52). During 2007, WHO recognised the need for additional guidelines to address all types of pain, including acute pain. Subsequently a Delphi study was conducted to provide a platform for the development of these additional guidelines (WHO, 2007:1-50).

2.2.3.2 Joint Commission on Accreditation of Healthcare Organisations (JCAHO)

The Joint Commission on Accreditation of Healthcare Organisations (JCAHO) in the USA introduced new pain management standards in January 2001, requiring healthcare organisations to implement policies on the assessment and management of pain in all patients (Alcenius, 2004:12; Berry & Dahl, 2000:3).

The pain management standards recognise the patient's right to appropriate pain assessment and management through initial screening and regular follow-up. JCAHO recommends that enhanced pain assessment and management be achieved through policies, orientation of new staff, continuing education, competency of staff, education of patients and quality assurance reviews (Berry & Dahl, 2000:8).

2.2.4 South African standards for pain management

In 2009, the first edition of South African Acute Pain Guidelines was published by SASA (2009:1-120), compiled by a South African consensus group of medical practitioners and benchmarked against international standards. This document highlights pain assessment, a multidisciplinary approach, education of health professionals, pre-operative information for patients and pain management guidelines for all types of surgical interventions.

A literature search for South African studies in post-operative pain management revealed two studies. In the first study, Klopper *et al.* (2006:12-21) conducted a mixed qualitative and quantitative study in an academic hospital. The authors investigated the strategies utilised by South African nurses in the assessment of post-operative pain. A comparison of pain scores obtained from the patients and the nurses using the Visual Analogue Scale showed that the nurses “significantly underestimated the patients’ ratings” (Klopper *et al.*, 2006:19). The qualitative results showed that the nurses assessed pain according to the appearance of the patient; verbal expression of pain and amount of anaesthetic received in theatre. In addition, the nurses utilised their previous clinical experience to assess pain according to the culture of the patient, type of surgery, listening to the patient, overall condition of the patient and decision on pain management (Klopper *et al.*, 2006:15-19). These findings were substantiated by previous studies conducted in Sweden (Sjöström, Dahlgren & Haljamäe, 2000:113-115) and in the USA (Kim, Schwartz-Barcott, Tracy, Fortin & Sjöström, 2005:5-7).

In a second study, Chetty and Ehlers (2009:55-60) explored the perceptions of orthopaedic patients regarding the provision of pre-operative information. The authors found that slightly more than half (58%) of patients indicated that the nurses had provided pre-operative information about pain management (Chetty & Ehlers, 2009:59). A large Swedish study by Idvall and Berg (2008:37) had similar findings in which 55% of patients received information about post-operative analgesia.

The nursing strategy for South Africa, published in 2008, aims to improve the provision of quality patient care (Department of Health, 2008:1-33). Amongst other objectives, nursing practice and education and training have been identified to transform the delivery of nursing care in South Africa.

2.2.5 Nurses’ responsibility and accountability in South Africa

The nursing profession in South Africa is governed by the Nursing Act, 33 of 2005 (Republic of South Africa, 2005) and the Nursing Act, 50 of 1978 (Republic of South Africa, 1978). All nurses have a professional and ethical responsibility to ensure the physical comfort of the patient in terms of assessment, nursing care planning and administration of medication as

prescribed by a registered medical person, according to regulation R.2598, Scope of practice, as amended and promulgated in terms of the Nursing Act, 50 of 1978 (SANC, 1984:2;5). Any acts or omissions pertaining to negligence in nursing care can result in disciplinary action by the South African Nursing Council (SANC), in terms of regulation R.387, Acts and Omissions, as amended (SANC, 1985a:2).

2.2.6 Nursing assessment of post-operative pain

The assessment of pain is a critical nursing activity in post-operative pain management and involves communication between the patient and the nurse.

2.2.6.1 Factors influencing pain assessment

i. Patient perspective

Patients may be reluctant to communicate their pain needs (Pasero & McCaffery, 2011:24, 89; Klopper *et al.* 2006:16). In exploring the reasons for this, McDonald, McNulty, Erickson and Weiskopf (2000:73) found that the reasons included “suffering in pain, waiting for ward rounds, avoiding complaining and interrupting the health care professionals”. As a result, nurses have identified that some patients choose to be brave and tolerate pain rather than admit to being in pain (Schafheutle *et al.*, 2001:734).

ii. Culture and pain

Cultural influences can impact on the expression and tolerance of pain (Narayan, 2010:40; Lovering, 2006:392). Culture refers to the inherited values and beliefs that influence a person’s view, behaviour and relationship with the world and people (Narayan, 2010:40). Davidhizar and Giger (2004:51) found that patients can either be reserved about reporting their pain or verbally complain about their pain, which is supported in studies by Schafheutle *et al.* (2001:734) and Klopper *et al.* (2006:17). In the South African study by Klopper *et al.* (2006:16), nurses explained that local patients from different cultural backgrounds varied in their expression of post-operative pain. Furthermore, spiritual beliefs within certain cultures can contribute to a patient’s view of pain and suffering. Lovering (2006:392) and Davidhizar and Giger (2004:52) identified that different cultures have certain religious beliefs towards the meaning of pain. Specific examples include “the evil eye, witchcraft, the power of ancestors” as identified in the study by Lovering (2006:392).

iii. Placebo administration

The administration of a placebo, for example, sterile saline by injection to test if pain is real is unethical and potentially harmful to the patient (Pasero & McCaffery, 2011:42-43; McCaffery & Arnstein, 2006:62). Zanolin *et al.* (2007:729) found that nurses generally disagree with the administration of placebo injections. In addition, the use of placebo medication constitutes

deception of the patient without their informed consent and should be limited to Institutional Review Board approved clinical trials (McCaffery & Arnstein, 2006:62; Grace, 2006:60).

iv. Sleep and pain

Patients who appear to be sleeping may pose a challenge for nurses in the assessment of pain. Schafheutle *et al.* (2001:733) found that 48.6% of nurses did not ask about pain because the patient was asleep at the time of assessment. Furthermore, in a small study of ten nurses in a surgical unit, the nurses concluded that patients had minimal pain if they were able to sleep (Kim *et al.*, 2005:5-6). Pasero and McCaffery (2011:28) contend that even in the presence of severe pain patients may sleep, therefore resulting in the mistaken conclusion that these patients do not have pain.

v. Distraction and pain

Patients who can be distracted from pain have been perceived by nurses as having less pain (Pasero & McCaffery, 2011:26; Zanolin *et al.*, 2007:729). Distraction is beneficial for patients in pain as it is thought to alter the perception of pain, possibly through stimulation of the descending spinal pathways, thereby reducing the transmission of painful stimuli to the central nervous system (Smeltzer *et al.*, 2008:289). Examples of distraction techniques can include watching television, reading, listening to music, visitors and physical exercise (Smeltzer *et al.*, 2008:289-290; Robertson, 2007:655).

vi. Type of surgery

The type of surgery performed can influence the nurse's pain assessment and subsequent management thereof. Both local and international studies have indicated that nurses associate the severity of post-operative pain with certain operations, amount of anaesthesia or length of time after surgery (Klopper *et al.*, 2006:17; Kim *et al.*, 2005:6; Sjöström *et al.*, 2000:114). Therefore, based on these circumstances, the nurses indicated that their experience of certain operations would guide their pain management decisions (Klopper *et al.*, 2006:19; Kim *et al.*, 2005:7; Sjöström *et al.*, 2000:115). This association of the patient's pain requirements with specific operations does not allow for individualised care based on the fact that each patient will experience different pain intensity depending on the pain stimulus (Pasero & McCaffery, 2011:24; Robertson, 2007:648). Therefore, local guidelines recommend that post-operative pain is managed according to a treatment ladder based on the intensity of pain (SASA, 2009:16).

2.2.6.2 *Post-operative pain assessment*

Pain assessment is the foundation for good pain management and should be routinely conducted for all post-operative patients (SASA, 2009:20; Robertson, 2007:647). The

majority of nurses in the study by Schafheutle *et al.* (2001:735) agreed that regular pain assessment was important to ensure effective pain management.

2.2.6.3 Pain assessment methods

The pain assessment methods available to the nurse are observation, physiological responses, self-report from the patient using pain scales, location and intensity of the pain and assessing pain at rest and during movement (SASA, 2009:16-21; Robertson, 2007:650-652).

The patient's self-report is considered to be the "gold standard" to assess the existence and intensity of pain (McCaffery & Pasero, 2011:21). Nurses agree that the patient is the most accurate judge of their pain intensity (Zanolin *et al.*, 2007:729). However, the patient's report of pain is not always believed by the nurses, who rely on their own judgement about the presence of pain and the associated behaviour of the patient (Zanolin *et al.*, 2007:729; Klopper *et al.*, 2006:15-16; Pasero & McCaffery, 2001:73-74; Schafheutle *et al.*, 2001:732). Although the nurse may not believe the patient's statement of pain, the nurse should accept the statement, assess the patient's pain and provide appropriate management (Pasero & McCaffery, 2001:73-74).

In response to acute pain, the patient may demonstrate physiological and behavioural changes. Physiological changes can include raised blood pressure, pulse and respiration and diaphoresis. Behavioural responses associated with the presence of pain include restlessness, crying, moaning, grimacing or protection of the affected area (Robertson, 2007:645;650).

However, these responses to pain may be transient and are therefore considered unreliable and should not represent the only aspect of pain assessment (Smeltzer *et al.*, 2008:273; Robertson, 2007:650). Pasero and McCaffery (2011:16) point out that a lack of pain expression by the patient does not equate to a lack of pain. However, results of a survey have indicated that nurses responded positively to patients grimacing in pain compared to patients who are smiling (McCaffery, Ferrell & Pasero, 2000:80). Australian nursing research revealed that behavioural pain cues received attention from nurses during the recording of vital signs and on completion of dressings (Manias, Bucknall & Botti, 2004:761; Manias, Botti & Bucknall, 2002:728-729). Regardless of the presence or absence of physiological and behavioural changes, Pasero and McCaffery (2011:21) emphasise that the patient's report of pain remains the most reliable indicator of pain.

The South African Acute Pain Guidelines recommend that pain is assessed when the patient is at rest and during mobilisation (SASA, 2009:16). Ene, Nordberg, Bergh, Johansson and Sjöström (2008:2047) found that nurses seldom or never assessed pain on both occasions. Despite acknowledging that it was important to relieve pain prior to mobilisation, few nurses were observed to reassess the patient's pain before or during mobilisation (Dihle, Bjølseth & Helseth, 2006:474; Manias *et al.*, 2004:25).

2.2.6.4 Pain assessment scales

Pain assessment scales assist patients to "self-report", namely, to communicate the intensity of their pain and provide a guide for pain management (SASA, 2009:16; Smeltzer *et al.*, 2008:273; Robertson, 2007:652). A patient-appropriate pain scale should be selected and explained by the nurse (Robertson, 2007:652-653; Bird, 2003:39). The available pain scales include Visual analogue scale (VAS); Verbal numeric rating scale (VNRS); Verbal rating scale (VRS) and Wong-Baker facial expressions scale for adults with cognitive impairment (SASA, 2009:16-17).

Williamson and Hoggart (2005:802) confirmed the validity and reliability of the three commonly used pain rating scales, thereby reinforcing their essential value in clinical practice. However, international nursing studies have found that some nurses do not use a pain scale (Idvall & Berg, 2008:38; Ene *et al.*, 2008:2047; Dihle *et al.*, 2006:473-474; Manias *et al.*, 2004:760). Nurses have also expressed distrust of the pain rating selected by the patient as a true reflection of the pain level experienced by the patient (Layman Young, Horton & Davidhizar, 2006:417; Schafheutle *et al.*, 2001:732).

Even when pain rating tools are used, nurses have a tendency to underestimate the pain intensity experienced by the patient in comparison to the patient's own pain rating (Sloman, Rosen, Rom & Shir, 2005:128; Klopper *et al.*, 2006:19). However, following a pain management programme, Ene *et al.* (2008:2047) found that the nurses showed slight improvement in their pain assessments in accordance with those of the patients.

2.2.7 Pain management by nurses

2.2.7.1 Goal of pain management

The goal of optimal pain management is viewed as a human right, not a luxury (SASA, 2009:4). SASA (2009:16) proposes that patients have the right to expect total pain relief as the goal of pain management. In European studies, nurses supported this view (Zanolin *et al.*, 2007:729; Schafheutle *et al.*, 2001:731) although Broekmans, Vanderschueren, Morlion, Kumar and Evers (2004:187) found that a few nurses indicated that complete removal of pain was not always possible.

Inadequate pain management can produce adverse consequences for both the patient and the healthcare facility (Hutchinson, 2007:S2). The patient can suffer the physical effects of deep vein thrombosis, pneumonia, lowered resistance and psychological effects of anxiety and depression. The consequences for the health facility include patient dissatisfaction, extended hospitalisation with financial implications and potential readmission of the patient. Furthermore, persistent chronic pain can develop in 1.5% of patients following surgery (SASA, 2009:14; Kehlet, Jensen & Woolf, 2006:1618). Therefore, pain management remains a critical aspect of the post-operative setting and it is vital that the patient's pain needs are met.

2.2.7.2 *Factors influencing pain management*

i. Patient perspective

The reluctance of patients to accept analgesia may impact on the attainment of total pain relief. Patients have raised concerns surrounding the fear of injections, opioid addiction, and side-effects of medication (McDonald *et al.*, 2000:74). The reluctance to accept pain relief is further exacerbated by the belief of some nurses that a patient should experience slight discomfort (Zanolin *et al.*, 2007:729; Schafheutle *et al.*, 2001:731) or wait until the pain is unbearable before accepting pain relief (Broekmans *et al.*, 2004:187). Australian nurses were observed by Manias *et al.* (2004:759) of failing to assess or administer pain relief to the patient prior to the commencement of or during a nursing activity even though the patient appeared to be in pain, leading the researchers to conclude that the nurses did not view pain as a priority. Although patients may be hesitant to accept pain medication for a variety of reasons (Pasero & McCaffery, 2011:89; Klopper *et al.*, 2006:16; Schafheutle *et al.*, 2001:731), nurses should nevertheless provide appropriate assessment and management.

ii. Pre-operative counselling

Pre-operative counselling regarding pain management is an essential component of post-operative pain management. However, Chetty and Ehlers (2009:59) as well as Idvall and Berg (2008:37) found that only half of orthopaedic patients received information regarding pain management prior to elective surgery. Although nurses said that pre-operative pain information was provided routinely, Dihle *et al.* (2006:472-473) observed that this information was only provided on special request from the patient.

Pasero and McCaffery (2004:78) recommend the setting of "comfort-function goals" with the patient pre-operatively for utilisation post-operatively. In the post-operative setting, functional goals refer to the activities essential for full recovery, for example, effective mobilisation of the patient. Therefore, to accomplish the goal of ambulation within acceptable pain limits, the

nurse must guide the patient to select a realistic pain score to serve as a benchmark for pain management intervention (Pasero & McCaffery, 2004:81).

iii. Nursing communication

Communication between nursing staff is essential to ensure the continuity of patient care regarding pain management needs. Pasero and McCaffery (2011:123) advocate regular verbal and written communication between nurses. Idvall and Berg (2008:37) identified limited communication between nurses when one third of orthopaedic patients interviewed expressed that the nurses were knowledgeable about their pain experience and related pain management.

iv. Age

Elderly patients requiring orthopaedic surgery for elective indications, for example, total joint replacement or trauma such as hip fractures, must receive sufficient pain relief after surgery. Opioid analgesia can be safely administered to geriatric patients but their reduced metabolism and less muscle mass would necessitate the administration of a smaller quantity of analgesia to provide pain relief (Smeltzer *et al.*, 2008:268).

2.2.7.3 Policies and guidelines for pain management

Policy documents and guidelines are essential requirements to guide nursing staff and to ensure standards of care and quality assurance (Booyens, 2005:606). A European study by Bardiau, Taviaux, Albert, Boogaerts and Stadler (2003:182) identified that “the absence of nursing guidelines and pain treatment protocols” contributed to inadequate pain assessment and management amongst nurses. Both international standards and local guidelines recommend the availability of policies in hospitals to ensure effective pain assessment and management (SASA, 2009:22; Berry & Dahl, 2000:8).

2.2.7.4 Pharmacological action of opioid analgesia

Opioids are the mainstay for managing post-operative pain (Pasero & McCaffery, 2011:324) and for post-operative orthopaedic patients in particular (SASA, 2009:93). Opioid analgesia provides rapid pain relief depending on the route chosen for the administration thereof. According to the physiology of acute pain, in the modulation process, internal endogenous opioids are released to inhibit painful stimuli (Smeltzer *et al.*, 2008:265). The administration of exogenous opioid analgesia further activates this pain-modulation system by attachment to opioid receptors sites and inhibiting painful stimuli (Pasero & McCaffery, 2011:283-284). Morphine is the most common type of opioid analgesia selected to manage severe post-operative orthopaedic pain (SASA, 2009:93; Pasero & McCaffery, 2007:163).

The onset of action for morphine depends on the dose and route of administration. With intravenous administration of two to five milligrams, the onset is within five to ten minutes and intramuscular dose of 5 to 15 milligrams within 15 to 20 minutes. The duration of the effect of analgesia is approximately three hours (Kneale & Davis, 2005:152). Although the intramuscular route is commonly used, it is not recommended based on variable absorption rates and discomfort of intramuscular injections (Pasero & McCaffery, 2011:396; Kneale & Davis, 2005:152). Furthermore, intermittent intramuscular administration of analgesia, for example, 4-6 hourly as required, counteracts individual requirements and timeous administration of analgesia (Kneale & Davis, 2005:152).

2.2.7.5 Respiratory depression and opioid analgesia

Nurses have expressed concerns about respiratory depression as a side-effect of opioid analgesia (Coulling, 2005:43; Horbury, Henderson & Bromley, 2005:20).

Respiratory depression is a potentially life-threatening side-effect of opioid analgesia. However, Pasero and McCaffery (2011:483) state that it is a less common side-effect. The more common side-effects include constipation, nausea and vomiting, pruritus and sedation (Pasero & McCaffery, 2011:483). In a literature review by Cashman and Dolin (2004:218), a decrease in the respiratory rate of less than 10 breaths per minute was reported in only 1% of cases. Pasero and McCaffery (2002:67) contend that sedation of the patient will precede significant respiratory depression. Therefore, the onset of opioid-related respiratory depression can be prevented by "careful opioid titration and close nurse monitoring of sedation and respiratory status" (Pasero & McCaffery, 2011:515).

2.2.7.6 Addiction and opioid analgesia

Concern about the risk of potential addiction to opioid analgesia and morphine in particular, has been expressed by both patients and nurses (Klopper *et al.*, 2006:16; Coulling, 2005:43; Broekmans *et al.*, 2004:187; Bardiau *et al.*, 2003:182; McDonald *et al.*, 2000:74).

Despite this concern, less than 1% of patients receiving opioid analgesia for acute pain relief become addicted to opioids (McCaffery & Pasero, 2001:77; Acello, 2000:72). Patients requesting additional doses of opioid analgesia have been incorrectly viewed by nurses as being addicted to opioid medication instead of potentially requiring further analgesia (Zanolin *et al.*, 2007:729; McCaffery & Pasero, 2001:78). Furthermore, nurses have demonstrated reluctance to administer opioid medication to patients with a history of substance abuse (Nichols, 2003:87).

2.2.7.7 *Pharmacological management of pain*

A multimodal approach in the management of post-operative orthopaedic pain is recommended (SASA, 2009:93-94; Pasero & McCaffery, 2007:161). This approach involves the concurrent administration of analgesics, for example, opioids, paracetamol and / or anti-inflammatory medication, to relieve pain via different mechanisms and minimise adverse side-effects of opioids (Pasero & McCaffery, 2007:162).

In the immediate post-operative period, it is recommended that pain relief, especially opioids, be administered on a regular schedule instead of "Pro re nata" (PRN "as required") by the patient to ensure effective analgesia (Pasero & McCaffery, 2011:308; SASA, 2009:22). This regular regime of post-operative analgesia allows for a regular blood level of analgesic and prevents breakthrough pain (Robertson, 2007:648). While the majority of nurses preferred a regular schedule (Zanolin *et al.*, 2007:729), Schafheutle *et al.* (2001:733) found that a few nurses preferred the PRN schedule for analgesia. Although a prescription order for PRN opioid analgesia allows for flexibility in meeting the patient's pain needs, McCaffery, Pasero and Ferrell (2007:36) found that nurses tend to administer as little opioid as required. In view of the fact that post-operative orthopaedic pain is continuous, it is recommended that a scheduled analgesia is provided to maintain adequate pain relief (Pasero & McCaffery, 2007:162).

International studies have found that the primary time for the administration of pain relief by nurses coincides with the routine medication round (Manias *et al.*, 2004:759; Schafheutle *et al.*, 2004:14). The application of a specific pain management round was not identified in the literature.

2.2.7.8 *Non-pharmacological management of pain*

In addition to the administration of analgesia, nurses have indicated that they utilise comfort measures to aid in the relief of pain. Although change of position, massage and therapeutic touch were specified as examples, implementation of these measures was rarely observed in the clinical environment (Dihle *et al.*, 2006:474; Manias, Bucknall & Botti, 2005:25). However, Richards and Hubbert (2007:21) identified that expert nurses incorporated additional measures, for example, change of position, humour and distraction, thereby practicing the independent art of nursing in pain management.

2.2.7.9 *Barriers to pain management*

i. Prescription for analgesia

The lack of or inadequate prescription for analgesia were recognised in foreign studies by Van Niekerk and Martin (2003:6) and Schafheutle *et al.* (2001:734). This has resulted in the

need to contact the attending doctor to adjust the patient's prescription, further contributing to a delay in the provision of timely pain relief (Rejeh, Ahmadi, Mohammadi, Anoosheh & Kazemnejad, 2008:472; Manias *et al.*, 2005:23; Manias *et al.*, 2002:730; Schafheutle *et al.*, 2001:734). Furthermore, Manias *et al.* (2002:729) observed that experienced nurses were more willing than less experienced nurses to consult the doctor to request a change in the medication order. Regular evaluation of pain management interventions and close communication with the doctor will result in prompt and appropriate pain relief (SASA, 2009:20).

ii. Time constraints

Time constraints have been reported to impede on the provision of adequate pain assessment and management. In international studies, nurses have reported that increased workload, shortage of staff, interruptions and non-nursing duties impact on their time to attend to the pain needs of the patients (Rejeh, Ahmadi, Mohammadi, Kazemnejad & Anoosheh, 2009:277-278; Manias *et al.*, 2005:27; Schafheutle *et al.*, 2001:733; McDonald *et al.*, 2000:74). In addition, some hospital policies require two nurses to check scheduled medication, thereby further influencing timely administration of analgesia (Carr, 2007:207; Schafheutle *et al.*, 2001:733).

2.2.8 Nursing documentation of pain management

All nurses are legally required to document all activities performed with respect to patient care. According to regulation R.387, Acts and Omissions, as amended and promulgated in terms of the Nursing Act, 50 of 1978 (SANC, 1985:2), negligence in record keeping can result in disciplinary action by the SANC.

2.2.8.1 Nursing documentation of pain assessment

SASA (2009:20) recommends that the pain rating be recorded on the patient's observation chart, which will ensure regular monitoring of the patient's pain intensity and subsequent pain relief. This recommendation is supported by Williamson and Hoggart (2005:801) and Slaughter, Pasero and Manworren (2002:75).

Research findings have revealed inconsistent documentation practices regarding pain assessment in the nursing records. Ene *et al.* (2008:2047-2048) reported that 82% of nurses surveyed in their study documented pain assessment in the nursing records. In a prospective audit of nursing notes of surgical patients in Australia, Manias (2003:91) found that 40% lacked documentation with respect to pain assessment and less than half of the entries contained the patients' verbal statement of pain. In contrast, Idvall and Ehrenberg (2002:737) found that 93% of nursing records contained pain assessment entries, of which

59% had been documented with a pain rating. A retrospective audit conducted in Jordan, of nursing documentation of post-operative pain over a 72 hour post-operative period, revealed inadequate and infrequent daily recordings of pain assessment (Abdalahim, Majali & Bergbom, 2008:79-80).

2.2.8.2 Nursing documentation of pain management

International nursing studies have shown that nursing documentation regarding pain relief measures, medication administered and effects of analgesia varied from regular entries (Ene *et al.*, 2008:2047; Idvall & Ehrenberg, 2002:738) to minimal information (Abdalahim *et al.*, 2008:78; Dihle *et al.*, 2006:475; Manias 2003:90-91).

2.2.8.3 Auditing of nursing documentation

According to Booyens (2005:610) auditing is an “evaluation method for assessing the quality of nursing, as reflected in hospital documents”. Regular audits of clinical practice and pain management practices in particular are essential for quality assurance and continuing education (Tapp & Kropp, 2005:172; Slaughter *et al.*, 2002:75).

2.2.9 Nursing education and training related to pain management

Education and in-service training is essential for appropriate knowledge and clinical skills to manage pain in the clinical setting.

2.2.9.1 Nursing education in pain management

Polomano, Dunwoody, Krenzischek and Rathmell (2008:S8) identified that acute pain management is not a prescribed component of the basic education of health professionals, including nurses, in the USA. Consequently, nurses lack adequate educational preparation to assess and manage pain in the clinical setting. When examining the extent of pain content provided in nursing curricula in England, Twycross (2000:248) found that limited time was allocated to the specific instruction on pain management. In South Africa, the training regulations for RPN's and EN's do not specify pain management as a required subject (SANC, 1993:4; SANC, 1989:3; SANC, 1985b:3).

Nurses recognise that professional knowledge and skills are required to ensure effective decision making and competency in post-operative pain management (Rejeh *et al.*, 2008:472). However, nurses identified a lack of educational preparation regarding pain management, explaining that the primary focus had been on pharmacological intervention (Rejeh *et al.*, 2009:277-278). In the same study, nurses with ten years experience described a lack of instruction regarding pain assessment tools and non-pharmacological measures for

pain relief. Therefore, it can be concluded that both international and local nursing curricula contain limited education in pain management.

2.2.9.2 Training programmes in pain management

According to international pain standards by JCAHO, pain assessment and management should be included in the orientation programme for all new staff to the hospital (Berry & Dahl, 2000:8).

Numerous international studies have shown that nurses demonstrate knowledge deficits and misconceptions related to pain management (Al-Shaer, Hill & Anderson, 2011:9-10; Tapp, 2005:171; Coulling, 2005:46; Puls-McColl, Holden & Buschmann, 2001:185-191). Consequently, the need for improved training in pain management was identified (Coulling, 2005:41-49; Twycross, 2002:705-714). International research has shown that formal training programmes offered in the clinical setting have enhanced the knowledge and attitudes of nurses towards pain management (Abdalahim *et al.*, 2011:253; Simpson, Kautzman & Dodd, 2002:89; Ravaud, Keïta, Porcher, Durand-Stocco, Desmonts & Mantz, 2004:692). Following educational programmes, significant improvements occurred in the use of pain rating scales (Bardiau *et al.*, 2003:182) and pain documentation (Dalton, Carlson, Blau, Lindley, Greer & Youngblood, 2001:59), thereby contributing to enhanced pain management practices. Conversely, follow-up studies have highlighted the need for regular refresher courses to ensure retention of knowledge and change in clinical practice (Guardini, Talamini, Fiorillo, Lirutti & Palese, 2008:285; Michaels, Hubbartt, Carroll & Hudson-Barr, 2007:264). International and local guidelines advocate continuing formal and informal teaching of all health care professionals to improve pain management practices (SASA, 2009:22; Berry & Dahl, 2000:8).

2.3 CONCEPTUAL FRAMEWORK

A conceptual framework provides the theoretical foundation for a research study based on phenomena, assumptions and philosophies (Burns & Grove, 2007:167).

2.3.1 Benner's model of nursing practice

The conceptual framework selected for this study is Patricia Benner's model of nursing practice. Benner has identified five levels of competency based on the five stages of skill development and attainment as described in the Dreyfus model (Benner, 2001:13). The five stages, in ascending order, are novice, advanced beginner, competent, proficient and expert (Figure 2.1).

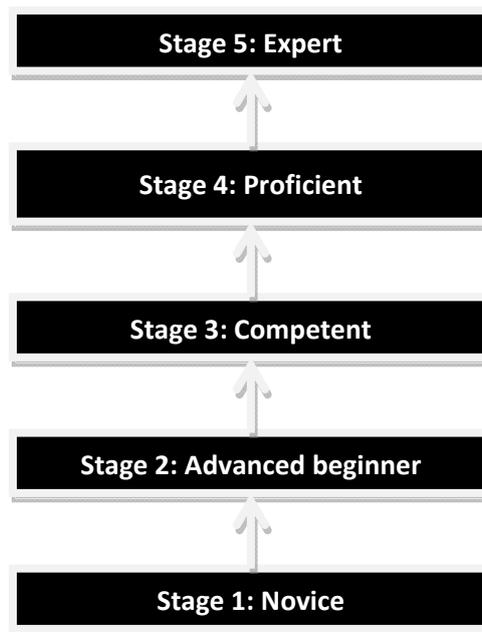


Figure 2.1: Diagramme illustrating Benner's levels of competency in nursing practice

2.3.1.1 Stage 1: Novice

In the first stage, the clinical environment is new and unfamiliar to the novice nurse. Without prior experience of the clinical situation, the nurse relies on rules and principles to guide the completion of duties and tasks (Quinn & Hughes, 2007:371).

2.3.1.2 Stage 2: Advanced beginner

As an advanced beginner, in the second stage, the nurse starts to demonstrate improved skills. Based on additional exposure in the practical situation, the nurse develops and utilises guidelines to produce adequate work performance (Benner, 2001:22).

2.3.1.3 Stage 3: Competent

Within two to three years of working in the same work environment, Benner proposes that the nurse is competent. Competency is reflected in the ability of the nurse to assess, plan and evaluate patient care (Quinn & Hughes, 2007:372).

2.3.1.4 Stage 4: Proficient

Although timelines are not the only benchmark, the nurse can be recognised as proficient after three to five years. The nurse provides holistic nursing care to patients based on constant exposure within the same clinical environment.

2.3.1.5 Stage 5: Expert

In the fifth stage, Benner (2001:31) considers the nurse to be an expert. As an expert nurse, the nurse displays insight and intuition in the recognition of changes in the patient's

condition. This results in the selection of appropriate actions for the delivery of quality nursing care. In a qualitative study, Richards and Hubbert (2007:20-22) explored the pain management practices of three registered nurses with at least five years work experience in a surgical ward. The authors' findings illustrate the holistic approach of expert nurses in pain management incorporating nursing care planning, thereby identifying pain management as a priority in surgical nursing care (Richards & Hubbert, 2007:20-22).

According to Benner (2001:36), nurses develop and improve their nursing skills by exposure to and the experience of real situations in the clinical field. The knowledge and clinical skills of nurses for pain assessment and management should improve as the nurse transitions through the competency levels of Benner's model.

2.4 SUMMARY

The literature review conducted shows that pain is undermanaged in the post-operative setting. Contributing factors include knowledge deficits and inconsistent clinical practices of nurses. International and local guidelines are available to warrant appropriate pain assessment and management. The conceptual framework of Benner's model of nursing practice will be applied to the findings of this study on the knowledge and clinical practice of nurses in adult post-operative orthopaedic pain management.

2.5 CONCLUSION

Chapter 2 summarised an extensive range of literature on pain assessment and management. Pain management is a critical aspect of the post-operative setting, therefore it is vital that the patient's pain needs are met to optimise and expedite the post-operative recovery process. This chapter also included Benner's model of nursing practice as the conceptual framework for the study.

Chapter 3 will explain the research methodology utilised to establish the knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management in two central hospitals in the Cape Town Metropole district, South Africa.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter, the research methodology applied to determine the knowledge and clinical practice of nurses for post-operative pain management in adult orthopaedic patients is described.

3.2 RESEARCH DESIGN

A research design is a blueprint to guide the planning, implementation and control of a research study (Burns & Grove, 2007:237). Brink, Van der Walt and Van Rensburg (2006:92) propose that the research design is directly linked to the research question and purpose of the study.

A non-experimental, descriptive, self-administered survey with a quantitative approach was selected for this study. A non-experimental design differs from an experimental design in that there is no intervention or control of the research setting, allowing the researcher to investigate the phenomena as it occurs in the natural setting (Brink *et al.*, 2006:102). The phenomena explored in this research study were the current knowledge and clinical practices of nurses for post-operative pain management in adult orthopaedic patients.

Within the quantitative approach to research, a descriptive survey is used to provide information about a specific situation (Burns & Grove, 2007:240). This study intended to determine the current knowledge and clinical practices of post-operative pain management provided by nurses working in adult orthopaedic wards.

3.3 POPULATION AND SAMPLING

A population consists of all the types of individuals or elements to be considered for a research project (Burns & Grove, 2009:343). The population of nurses identified for this study consisted of all registered professional and enrolled nurses working in adult orthopaedic wards situated within two central hospitals in the Cape Town Metropole district of South Africa.

A sample represents a selected proportion of the individuals or elements within a population. Sampling is a process involving the selection of a portion of the population to represent the total population (Burns & Grove, 2007:324). According to Strydom (2005:195), when the total population is very small, it is not always possible to select a sample, in which case it is

advisable to target the whole population. Based on the recommendations by Strydom (2005:196), a sample was not selected but instead the researcher selected to use, for the purpose of this study, the total population of 53 registered professional nurses and 44 enrolled nurses working in the orthopaedic wards of two central hospitals, which have eight dedicated adult orthopaedic wards.

Table 3.1 shows the total population of RPN's and EN's working in adult orthopaedic wards in the selected central hospitals in the Cape Town Metropole district.

Figure 3.1: Distribution of RPN's and EN's in orthopaedic wards of two central hospitals

Nursing categories	Hospital 1	Hospital 2	Total N
Registered professional nurses	n=32	n=26	n=58
Enrolled nurses	n=21	n=18	n=39
Total	n=53	n=44	N=97

3.3.1 Inclusion criteria

The inclusion criteria for the participants were:

- Registered professional nurse (RPN) or enrolled nurse (EN)
- working in an adult orthopaedic ward
- within one of the selected hospitals.

The inclusion criteria for the selected hospitals were:

- classification as a central health facility
- with dedicated adult orthopaedic wards
- located in the Cape Town Metropole district of South Africa.

3.3.2 Exclusion criteria

The following categories of nurses were excluded from the study:

- enrolled nursing auxiliaries
- nurses in training
- community service nurses.

3.4 INSTRUMENTATION

The instrumentation utilised for this study was a self-administered questionnaire (see Appendix F). Since the research design is a descriptive survey, the choice of a questionnaire is an acceptable method of data collection. A questionnaire facilitates the collection of viewpoints from individuals who are informed on a particular topic (Delport, 2005:166).

The questionnaire was designed, based on the literature and clinical experience of the researcher, to collect data relevant to the research objectives. Eleven of the statements in Sections C and D were adapted from the “Knowledge and Attitudes Survey Regarding Pain” tool developed by Betty Ferrell and Margo McCaffery (Ferrell & McCaffery, 2008:np). As specified in the publication, full permission to use the whole or part of the survey tool was granted by the authors (see Appendix E).

The questionnaire consisted of the following sections:

- Section A: Demographic profile
- Section B: Professional profile
- Section C: Knowledge of pain management
- Section D: Clinical practice in pain management
- Section E: Nursing care planning
- Section F: Orientation / in-service training and policies.

Sections A and B consisted of close-ended questions designed to obtain the demographic and professional data of the respondents. Sections C to F contained dichotomous and multiple-response statements with Likert scales to determine the knowledge, clinical practices and education and training of nurses with respect to adult orthopaedic post-operative pain management. Ten of the statements were worded negatively to avoid a central tendency in answering by the respondents.

3.5 PILOT STUDY

A pilot study is a “smaller version of a proposed study” performed under similar circumstances (Burns & Grove, 2007:38). The purpose of a pilot study is to establish the feasibility of the study and to test the questionnaire for clarity and validity (Brink *et al.*, 2006:166).

A pilot study was conducted for this research study and involved the testing of participants (n=9/9%) of the chosen population. The nine participants included five nurses from Hospital 1 and four nurses from Hospital 2. The participants indicated that the questionnaire took approximately 20 minutes to complete. They found the instructions and questions unambiguous and easy to complete. The participants did not provide any further suggestions to be included in the questionnaire. However, subsequent analysis of the specific responses in the questionnaire resulted in the implementation of minor adjustments to the wording of

some of the statements. The data obtained from the questionnaires in the pilot study was not included in the final analysis of the study.

3.6 RELIABILITY AND VALIDITY

3.6.1 Reliability

Reliability means that the measuring instrument will produce consistent results when used in similar circumstances or by different researchers (Delpont, 2005:162-163). The “Knowledge and Attitudes Survey Regarding Pain” tool established reliability as ($r > .80$) for test-retest reliability and ($\alpha > .70$) for internal consistency reliability (Ferrell & McCaffery, 2008:np). Reliability of the content and construction of the questionnaire in this study was tested during the pilot study.

3.6.2 Validity

Validity refers to the extent to which the measuring instrument accurately measures the intended concepts of the research study (Burns & Grove, 2009:43). The facets of validity in this research study were content and face validity.

3.6.2.1 Content validity

Content validity represents the adequacy of the variables in the questionnaire (Delpont, 2005:160-161). The content validity for the “Knowledge and Attitudes Survey Regarding Pain” tool was established through “review by pain experts” and “current standards of pain management” (Ferrell & McCaffery, 2008:np). The development of the questionnaire in this study was influenced by the literature review, research objectives and clinical experience of the researcher. The researcher’s supervisor assisted in the analysis and review of the drafts of the questionnaire. The content validity of the questionnaire was ensured through consultation with nursing experts and the pilot study.

3.6.2.2 Face validity

Face validity refers to the superficial appearance of the measuring instrument (Delpont, 2005:161). Although considered the least scientific measure of validity, it is important to the participants and could potentially influence the completion of the questionnaire (Delpont, 2005:161). Face validity of the questionnaire was ensured through consultation with nursing experts and the pilot study.

3.7 DATA COLLECTION

The system of data collection consisted of the pilot study and the main study conducted over a period of three weeks. The data collection period extended from 2 June 2011 to 22 June

2011. Data was collected at the participants' place of employment. Nursing staff working on both day and night duty were approached to participate in the study. Data collection was conducted personally by the researcher at the first hospital and via the nurse manager at the second hospital.

Following a description of the nature and objectives of the research study by the researcher, the participants signed informed consent forms. The completed consent forms were inserted into a self-sealing, opaque envelope and placed in a sealed box, marked "consent forms". Thereafter, each participant was provided with a questionnaire and opaque self-sealing envelope. On completion of the questionnaire in their own time, the respondents were requested to seal the completed questionnaire in the envelope provided and place the sealed envelope in an additional sealed box marked "questionnaires". A register was kept to record the number of consent forms and questionnaires delivered and collected from each hospital.

3.8 DATA ANALYSIS

Data analysis is the method by which raw data is organised and presented to provide meaningful results (Brink *et al.*, 2006:170). A qualified statistician from the Centre for Statistical Consultation at Stellenbosch University, Mr. J. Harvey, was consulted with regard to the planning and implementation of data analysis for this study.

The sealed questionnaire boxes were collected from both hospitals on 22 June 2011. On opening the envelopes, each questionnaire was assigned a number and was colour-coded per hospital. In addition, section B was inspected to confirm that each respondent complied with the inclusion criteria for the study. The data from each questionnaire was entered onto a Microsoft Excel spreadsheet by the researcher then submitted to the statistician for analysis using the STATISTICA 9 programme.

Descriptive and inferential analysis was performed for this quantitative study. The descriptive measures included means and standard deviations for continuous data and counts and frequency distributions for categorical and ordinal data. As a measure of central tendency, the mean is the mathematical average of all the scores in this survey (Brink *et al.*, 2006:177). Standard deviation is a measure of variability and refers to the variation of the scores in relation to the mean score (Brink *et al.*, 2006:178). Descriptive statistics will be presented in the form of tables, histograms and bar graphs.

Inferential statistics are applied to determine statistical differences between groups or relationships between variables (Sullivan-Bolyai & Bova, 2010:324). In this study, the

Pearson chi-square test was used to examine differences between the nursing categories (nominal data) and responses to the knowledge and clinical practice variables. The Mann-Whitney U test compared the years of experience (ordinal data) of the respondents with their responses to the knowledge and clinical practice variables. The Kruskal-Wallis ANOVA was applied to test for associations between years of experience and responses to the nursing care planning and educational training variables. A p-value of $p < 0.05$ represented a statistically significant difference between variables with 95% confidence levels.

3.9 ETHICAL CONSIDERATIONS

Ethical considerations refer to the protection of the human rights of individuals during their participation in a research study (Burns & Grove, 2007:203).

3.9.1 Internal review boards

The researcher submitted the proposal to the Health Research Ethics Committee (HREC) of the Stellenbosch University for approval. Formal permission to conduct the research study was granted by HREC, reference number N10/12/404 (see Appendix A). After obtaining permission for the study, the researcher obtained permission from the respective hospital managers to conduct the study in their hospitals (see Appendices B and C). Thereafter, permission from the respective nurse managers was obtained for access to the participants.

3.9.2 Right to privacy, anonymity and confidentiality

Each participant has the right to privacy with respect to anonymity and confidentiality. Anonymity exists when the individual participants in a research study are not identifiable by name (Brink *et al.*, 2006:34). Anonymous participation in the study was ensured by the omission of names on individual questionnaires. Anonymity was further guaranteed by the placement of the signed consent form in a sealed envelope into a separate box. Hence, the consent forms could not be matched to the questionnaires.

Confidentiality means that the individual responses of the participants will be kept private and not disclosed without authorisation from the participant (Burns & Grove, 2007:212). Confidentiality of the respondents was ensured through the completion of the questionnaires in their own time and placement of each questionnaire in a self-sealing opaque envelope and then posted into a sealed box. The information provided by the respondents was restricted to the researcher, researcher's supervisor, researcher's co-supervisor and statistician. The anonymity and privacy of the hospitals in the study was protected by means of a colour-coding process for each hospital. The raw data and results will be stored in a locked cabinet and will be saved for five years after completion of the study.

3.9.3 Informed consent

Autonomy refers to the right of an individual to choose to voluntarily participate in a research study (Brink *et al.*, 2006:32). Consent is considered informed if the researcher has fully explained the details of the research project to the potential participants and whom, on comprehension of the information, provide consent to participate in the study (Burns & Grove, 2007:216-217). The objectives and nature of the research study were explained to all potential participants prior to the completion of written consent forms. The researcher placed emphasis on voluntary participation and the right to withdraw from the study at any time without being penalised in any way.

3.9.4 Beneficence

The ethical principle of beneficence is “the duty to do or to promote good” (Muller, 2002:67). The data generated from the study would benefit both nursing staff and patients towards improving the quality of post-operative orthopaedic pain management.

3.9.5 Non-maleficence

The principle of non-maleficence is “the duty not to inflict harm” (Muller, 2002:67). In this research study the participants were not coerced to participate and had the right to withdraw from the study at any time without any penalty. Informed written consent was obtained from the participants. Minimal risks were predicted for this research study.

3.10 LIMITATIONS

The first limitation of the study was the availability of the registered professional and enrolled nurses due to duty commitments, annual, maternity or study leave. The second limitation was the operational restriction of access to the participants in one hospital but this did not negatively affect the response rate from that hospital.

3.11 SUMMARY

The research design is a non-experimental, descriptive survey with a quantitative approach. The sample consisted of the total population of registered professional and enrolled nurses working in orthopaedic wards in two central hospitals. A self-administered questionnaire was used to collect the data. Reliability, validity and ethical considerations were ensured. The data was analysed using descriptive and inferential statistics.

3.12 CONCLUSION

In this chapter, the research methodology pertaining to the research design, population and sample, instrumentation, pilot study, reliability and validity was explained. The process of

data collection and analysis was described. The ethical considerations applicable to the study were clarified.

Chapter 4 will explain the process of data analysis and interpretation of the findings in the research study.

CHAPTER 4: DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 INTRODUCTION

The analysis and interpretation of the data collected during the research study is outlined in this chapter. Data analysis is the method by which raw data is organised and presented to provide meaningful results (Brink *et al.*, 2006:170). Quantitative data was analysed in this study.

4.2 DATA ANALYSIS

4.2.1 Data preparation

Each questionnaire was assigned a number to facilitate the capturing process of the raw data on an Excel spreadsheet. The columns of the spreadsheet contained the variables pre-coded on the questionnaire and the rows represented each respondent (Kruger, De Vos, Fouché & Venter, 2005:221). The individual responses from each questionnaire were personally entered by the researcher and checked twice to guarantee accuracy. In the event of missing data, the cell on the spreadsheet was left blank. Although Burns & Grove (2007:403) indicates that incomplete questionnaires should be excluded, the incomplete questionnaires in this study were included since the data obtained was sufficient for analysis.

Following the capturing of the data, the completed spreadsheet was submitted to a qualified statistician, Mr. J. Harvey, for analysis. The data was analysed with the STATISTICA 9 programme. Descriptive and inferential statistical methods were applied to the data.

4.2.2 Descriptive statistics

Descriptive analysis refers to the procedure to describe and summarise the data (Sullivan-Bolyai & Bova, 2010:310). The measures to describe the data included means and standard deviations for continuous data and frequency distributions for categorical and ordinal data. As a measure of central tendency, the mean is the mathematical average of all the scores in this survey (Brink *et al.*, 2006:177). Standard deviation is a measure of variability and refers to the variation of the scores in relation to the mean score (Brink *et al.*, 2006:178). Descriptive statistics will be presented in the form of tables, histograms and bar graphs.

4.2.3 Inferential statistics

Inferential statistics are applied to the data to determine statistical differences between groups or relationships between variables (Sullivan-Bolyai & Bova, 2010:324). These

statistics allowed the researcher to infer that the study's findings can be applied to the general population (Burns & Grove, 2007:408).

The comparison of responses was analysed with contingency tables and likelihood ratio chi-square tests. The chi-square test of independence was used to determine the relationships between groups of nominal data (Sullivan-Bolyai & Bova, 2010:326). In this study, the Pearson chi-square test was used to examine differences between the nursing categories (nominal data) and responses to the knowledge and clinical practice variables.

The Mann-Whitney U test is a non-parametric test used to determine differences between groups of ordinal or continuous data (Burns & Grove, 2007:545). In this study, the Mann-Whitney U test compared the years of experience (ordinal data) of the respondents with their responses to the knowledge and clinical practice variables. Due to the small number of operational managers in this study, their responses were collapsed to be included with those of the registered professional nurses.

Analysis of variance (ANOVA) refers to the test for differences in the responses from two or more groups (Burns & Grove, 2007:430). The Kruskal-Wallis ANOVA was applied in this study to test associations between years of experience and responses to the nursing care planning and educational training variables. No significant statistical associations were identified for these variables.

By convention in medical research, it was agreed that if the p-value is more than 5% ($p > 0.05$) there was an insignificant difference between the variables tested. However, if the p-value is less than 5% ($p \leq 0.05$), there is a statistically significant difference between the variables. In medical research a 95% confidence is usually used (Attia, 2005:78-79). For the purpose of this study therefore, a 95% confidence interval with a significance level of ($p \leq 0.05$) was used to establish statistically significant differences between variables.

4.3 QUESTIONNAIRE RESPONSE RATE

Registered professional nurses and enrolled nurses who worked in eight adult orthopaedic wards situated in two central hospitals in the Cape Town Metropole district of South Africa were surveyed.

The total population of the study consisted of 97 participants (N=97). The pilot study consisted of five participants from Hospital 1 and four participants from Hospital 2. Therefore, the study's population was 88 participants.

The questionnaire response rate is calculated by dividing the number of returned questionnaires by the number of the study population (Brink *et al.*, 2006:177). In this study, the number of returned questionnaires (n=66) was divided by the number of the study population (N=88) to reveal a response rate of 75% (Table 4.1). This response rate is acceptable for a self-administered questionnaire which was enhanced by the personal delivery of the questionnaires as described by Delpont (2005:168).

Table 4.1: The study population and response rate per hospital

Hospital	Study population (N)	Number of questionnaires returned (n)	Response rate (%)
Hospital 1	N=48	n=40	83
Hospital 2	N=40	n=26	65
TOTAL	N=88	n=66	75

4.4 SECTION A: DEMOGRAPHIC PROFILE

Section A of the questionnaire required the respondents to indicate their demographic profile with respect to gender and current age.

4.4.1 Variables 01 and 02: Gender (n=66/100%)

Table 4.2 shows that the majority of respondents (n=63/95%) were females. This finding is consistent with the statistical gender profile of nurses in South Africa according to the SANC (2010:np).

Table 4.2: Gender of respondents

Variable	Gender	n	%
02	Female	63	95
01	Male	3	5
TOTAL		66	100

4.4.2 Variable 03: Current age in years (n=62/100%)

Figure 4.1 illustrates the age distribution of the respondents. The mean age is 44.5 years with a standard deviation of 6.94 years. The majority of the respondents (n=37/60%) are between the ages of 40 to 50 years.

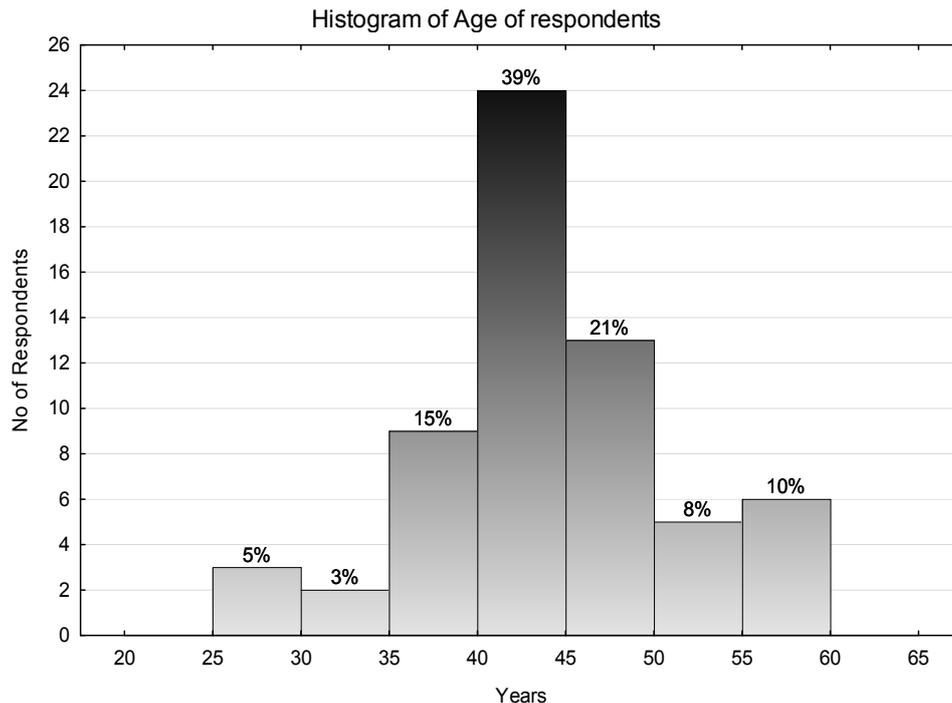


Figure 4.1: Age distribution of respondents

4.5 SECTION B: PROFESSIONAL PROFILE

Section B of the questionnaire required the respondents to indicate their professional profile with respect to nursing category, level of nursing education, post basic nursing qualifications, years of experience after basic nursing qualification, duty shift and type of employment.

4.5.1 Variables 04 – 06: Nursing category (n=66/100%)

Table 4.3 shows a similar distribution of professional (n=32/49%) and enrolled nurses (n=30/45%). The minority of the respondents (n=4/6%) were operational managers.

Table 4.3: Nursing category

Variable	Category	n	%
05	Registered professional nurse	32	49
04	Enrolled nurse	30	45
06	Operational manager	4	6
TOTAL		66	100

4.5.2 Variables 07 – 09: Level of basic nursing education (n=65/100%)

The level of nursing education specified in Table 4.4 illustrates that the majority of RPN's (n=33/51%) obtained a diploma in general nursing and the minority (n=2/3%) a nursing degree. EN's (n=30/46%) indicated that they had obtained an enrolment certificate.

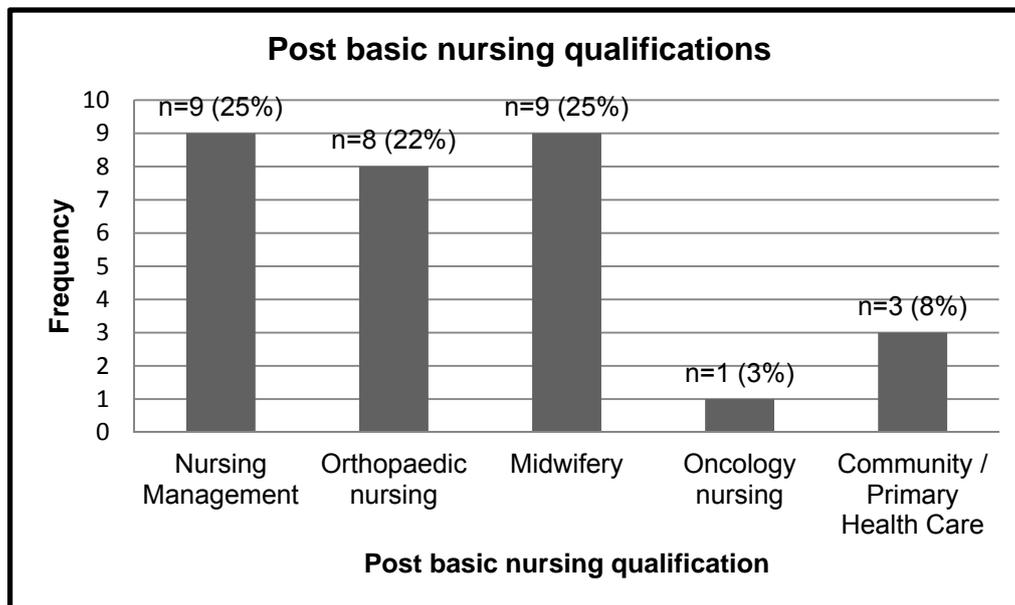
Table 4.4: Level of basic nursing education

Variable	Nursing education	n	%
08	Diploma	33	51
07	Enrolment certificate	30	46
09	Degree	2	3
TOTAL		65	100

4.5.3 Variable 10: Post basic nursing qualifications (n=36/100%)

The attainment of post basic nursing qualifications applied to operational managers and RPN's only. Figure 4.2 highlights the distribution of post basic qualifications of the respondents. A total of twenty two (n=22/61%) respondents indicated that they had post basic qualifications of which six (n=6 /17%) had two or more additional qualifications.

Nursing management and midwifery (n=9/25%) were the most frequently mentioned additional qualifications in the sample. A number (n=8/22%) of the respondents have a post basic qualification in orthopaedic nursing science. This limited number could be explained by the termination of the orthopaedic course after the closure of the Carinus Nursing College in 1999 (Davids, 2011:np).

**Figure 4.2: Post basic nursing qualifications**

4.5.4 Variable 11: Years of experience after basic qualification (n=61/100%)

Figure 4.3 shows the distribution in the years of experience after a basic nursing qualification. The mean years of experience for all categories are 13.7 years with a standard deviation of 10.38 years. The mean number of years of experience for operational managers is 22 years; RPN's is 15 years and EN's is 11 years. The results illustrate that the majority of

the respondents (n=40/66%) have more than five years of experience after their basic qualification.

According to Benner (2001:31), nurses with three to five years of clinical experience within the same work environment can be considered proficient or expert nurses. Therefore, with the level of the respondents' competency it would be expected that the patients are managed competently and skillfully.

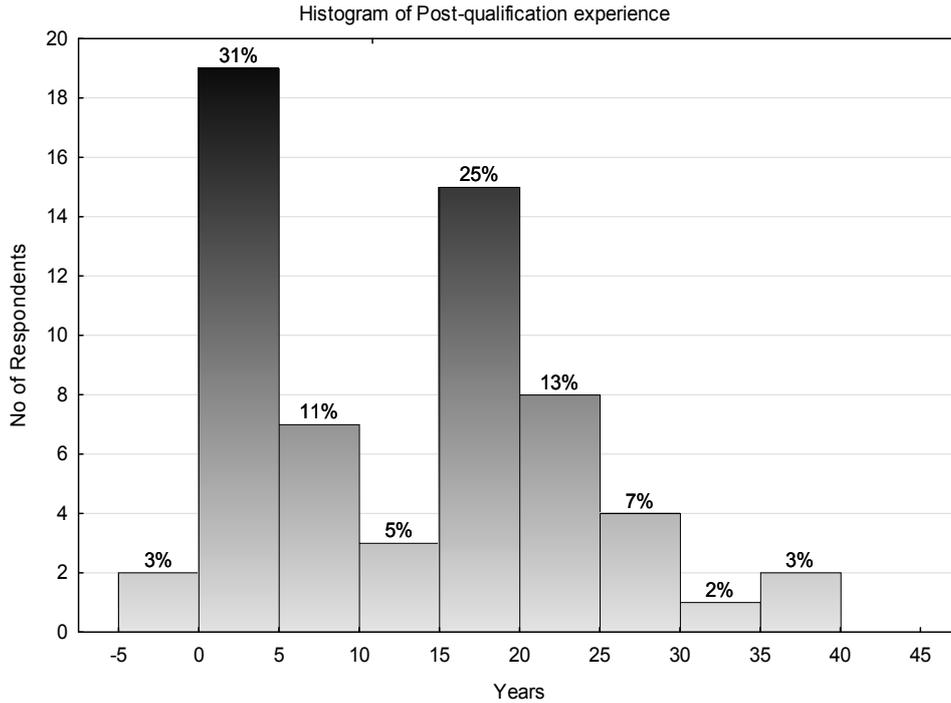


Figure 4.3: Years of experience after basic nursing qualification

4.5.5 Variables 12 and 13: Duty shift (n=65/100%)

Table 4.5 indicates that the majority (n=60/92%) of the respondents worked mostly day duty during the past twelve months and the minority of the respondents (n=5/8%) mostly night duty. This finding can be explained by the rotation system of both day and night duty in provincial hospitals. It is considered that less nursing staff are required on night duty.

Table 4.5: Duty shift

Variable	Duty	n	%
12	Day duty	60	92
13	Night duty	5	8
TOTAL		65	100

4.5.6 Variables 14 and 15: Type of employment (n=65/100%)

Table 4.6 indicates that the majority (n=64/98%) of the respondents are permanently employed at their respective hospitals. The higher proportion of permanent staff indicates a dependable workforce at both hospitals. In addition, the staff should be familiar with orthopaedic nursing care including hospital pain management policy.

Table 4.6: Type of employment

Variable	Employment	n	%
14	Permanent employment at the hospital	64	98
15	Employment by a nursing agency	1	2
TOTAL		65	100

4.6 SECTION C: KNOWLEDGE OF PAIN MANAGEMENT

Section C of the questionnaire required the respondents to answer “true” or “false” to 15 questions related to knowledge of pain management. The responses are discussed according to variables that illustrated knowledge deficit and those with adequate knowledge levels.

Some of the respondents did not answer all of the questions indicating either a potential lack of knowledge or understanding of the questions.

4.6.1 Aspects of knowledge deficit in pain management

The respondents have a knowledge deficit on aspects of pain assessment; use of placebo injections and opioid analgesia. These findings are consistent with international studies by Al-Shaer, Hill and Anderson (2011:9), Coulling (2005:46) and Puls-McColl *et al.* (2001:189-190) in which similar knowledge deficits were identified with respect to pain management.

4.6.1.1 Variables 42 and 43: Administering sterile saline by injection (placebo) is often a useful test to determine if the pain is real (n=62/100%)

Table 4.7 shows that less than half (n=24/39%) of the respondents answered that a placebo injection is an authentic “test” to determine pain. A statistical significant difference was identified between the years of experience and the administration of a placebo injection of sterile saline to establish if the pain is real, using the Mann-Whitney U test ($p=0.05$).

The results show that the respondents with seven or more years of experience were more likely to consider the administration of a sterile saline injection to test if the pain is genuine. The operational managers answered correctly but it was expected that the RPN's and EN's

should also have answered correctly. An incident occurred in 2011 where the researcher observed that a doctor had prescribed a placebo for pain. All nurses should be alerted to this unethical and potentially harmful practice (McCaffery & Arnstein, 2006:62). Without the informed consent of a patient, the use of placebo medication constitutes deception and should be restricted to Institutional Review Board approved clinical trials (McCaffery & Arnstein, 2006:62; Grace, 2006:60).

Table 4.7: Administration of placebo injection

Variable	To my knowledge...	True		False	
		n	%	n	%
42-43	Administering sterile saline by injection (placebo) is often a useful test to determine if the pain is real.	24	39	38	61

4.6.1.2 Variables 32 and 33: Based on spiritual beliefs, a patient may think that pain and suffering is necessary (n=62/100%)

The majority of the respondents (n=37/60%) indicated that a patient may think that pain and suffering is necessary based on their spiritual beliefs (Table 4.8). The chi-square test (p=0.02/df=1) showed a statistically significant difference between nursing category and the patient's spiritual beliefs. This result shows that the most knowledgeable group of nurses were RPN's (n=22/35%) and the least knowledgeable group were EN's (n=16/26%). Lovering (2006:392) and Davidhizar and Giger (2004:52) acknowledges that spiritual beliefs within certain cultures can impact on the patient's opinion of pain.

Table 4.8: Spiritual beliefs and pain of a patient

Variable	To my knowledge...	True		False	
		n	%	n	%
32-33	Based on spiritual beliefs, a patient may think that pain and suffering is necessary.	37	60	25	40

4.6.1.3 Variables 22 and 23: Pain assessment is based on the patient's behaviour and physiological changes only (n=63/100%)

Slightly less than half of the respondents (n=28/44%) indicated that a pain assessment is purely based on the patient's behaviour and physiological changes (Table 4.9). This finding is inconsistent with the response provided in variable 16-17, in which the respondents indicated that the patient was the most accurate judge of pain. Pasero and McCaffery

(2011:21) maintain that the patient's report of pain remains the cornerstone of pain assessment. Since behavioural and physiological responses are unreliable indicators of the presence of pain, these parameters should not be the only considerations during pain assessment (Smeltzer *et al.*, 2008:273; Robertson, 2007:650).

Table 4.9: Pain assessment and patient's behaviour and physiological changes

Variable	To my knowledge...	True		False	
		n	%	n	%
22-23	Pain assessment is based on the patient's behaviour and physiological changes only.	28	44	35	56

4.6.1.4 Variables 34 and 35: Patients with a history of substance abuse should not be given opioids, e.g. morphine, for pain relief (n=65/100%)

Less than half of the respondents (n=30/46%) indicated that patients with a history of substance abuse should not be given opioids for pain relief (Table 4.10). As substantiated by Pasero and McCaffery (2011:527), this is an area of concern as it implies that the respondents may avoid appropriate pain assessment and relief to this group of patients. Nurses should be aware that patients with a history of substance abuse can receive opioid analgesia but due to their higher tolerance, will require higher dosages to provide pain relief.

Table 4.10: History of substance abuse and opioids for pain relief

Variable	To my knowledge...	True		False	
		n	%	n	%
34-35	Patients with a history of substance abuse should not be given opioids, e.g. morphine, for pain relief.	30	46	35	54

4.6.1.5 Variables 26 and 27: Patients who can be distracted from pain usually do not have severe pain (n=62/100%)

Table 4.11 shows that the majority of the respondents (n=42/68%) indicated that patients who can be distracted from pain do not have severe pain. The chi-square test ($p \leq 0.01/df=1$) indicated a statistically significant difference between nursing category and patients who can be distracted from pain. It indicated that the EN's (n=4/6%) were more likely to believe this. Distraction in the form of visitors, watching television or reading can assist patients to cope with pain but may lead nurses to question the severity of the patient's report of pain (Robertson, 2007:655; Pasero & McCaffery, 2001:26).

Table 4.11: Patients distracted from pain usually do not have severe pain

Variable	To my knowledge...	True		False	
		n	%	n	%
26-27	Patients who can be distracted from pain usually do not have severe pain.	42	68	20	32

4.6.1.6 Variables 44 and 45: The most likely reason a patient with pain would request increased doses of opioid analgesia is that the patient's request may be related to addiction (n=63/100%)

The majority of the respondents (n=44/70%) answered that the most likely reason a patient would request increased doses of opioid analgesia is that the patient's request may be related to addiction (Table 4.12). Although no test of significance identified this, it is an area of concern that all categories associate the request for additional opioid analgesia with addiction, instead of potentially requiring additional analgesia (Zanolin *et al.*, 2007:729; McCaffery & Pasero, 2001:78). Despite the concern about addiction, less than 1% of patients using opioid analgesia for acute pain relief become addicted to opioids (Acello, 2000:72; McCaffery & Pasero, 2001:77).

Table 4.12: Request for opioids may be related to addiction

Variable	To my knowledge...	True		False	
		n	%	n	%
44-45	The most likely reason a patient with pain would request increased doses of opioid analgesia is that the patient's request may be related to addiction.	44	70	19	30

4.6.1.7 Variables 28 and 29: Patients may sleep in spite of severe pain (n=65/100%)

Table 4.13 shows that the majority of the respondents (n=59/91%) indicated that patients may sleep in spite of severe pain. A statistically significant difference was identified between nursing category and variables 28 and 29 (Chi-square test p=0.05/df=1). The operational managers are day staff and might not be aware of the quality of sleep of the patients. However, this should be reported by the night staff. This is an area of concern that could be addressed by pain management education and quality assurance monitoring. Pasero and McCaffery (2011:21) assert that despite the presence of severe pain, a patient might not exhibit altered sleep patterns.

Table 4.13: Patients may sleep in spite of severe pain.

Variable	To my knowledge...	True		False	
		n	%	n	%
28-29	Patients may sleep in spite of severe pain.	6	9	59	91

4.6.1.8 Variables 38 and 39: The most common side effect of morphine is respiratory depression (n=65/100%)

Table 4.14 shows the majority of the respondents (n=59/91%) incorrectly identified respiratory depression as the most common side-effect of morphine. Although it is the most life-threatening side-effect of morphine, sedation of the patient will precede significant respiratory complications (Pasero & McCaffery, 2002:67). The implication of the result in this survey is that the respondents may be reluctant to administer morphine for pain for fear of causing respiratory depression. Titration of the morphine dose and frequent monitoring of the sedation level and respiratory status will assist in early detection of respiratory depression (Pasero & McCaffery, 2002:67).

Table 4.14: Most common side-effect of morphine is respiratory depression

Variable	To my knowledge...	True		False	
		n	%	n	%
38-39	The most common side-effect of morphine is respiratory depression.	59	91	6	9

4.6.1.9 Variables 24 and 25: Changes in vital signs and/or behaviour should be relied upon to confirm a patient's statement of pain (n=64/100%)

All of the respondents (n=64/100%) answered that changes in vital signs and/or behaviour should be relied upon to confirm a patient's statement of pain (Table 4.15). Although the patient may demonstrate alterations in vital signs or behaviour, these do not necessarily corroborate the patient's report of pain (Smeltzer *et al.*, 2008:273). The possible reason for the overall negative response could be attributed to the double-barrelled phrasing of the statement.

Table 4.15: Changes in vital signs and/or behaviour to confirm pain

Variable	To my knowledge...	True		False	
		n	%	n	%
24-25	Changes in vital signs and/or behaviour should be relied upon to confirm a patient's statement of pain.	64	100	0	0

4.6.2 Aspects of adequate knowledge in pain management

4.6.2.1. Variables 16 and 17: The most accurate judge of intensity of pain is the patient him/herself (n=64/100%)

All of the respondents (n=64/100%) indicated that the patient is the most accurate judge of their pain intensity (Table 4.16). According to McCaffery and Pasero (2011:16), the patient is considered to be the primary authority to report on the intensity of their pain.

Table 4.16: The most accurate judge of intensity of pain is the patient

Variable	To my knowledge...	True		False	
		n	%	n	%
16-17	The most accurate judge of intensity of pain is the patient him/herself.	64	100	0	0

4.6.2.2. Variables 20 and 21: A patient's pain should be assessed at rest and during mobilisation (n=65/100%)

The majority of respondents (n=60/92%) answered that a patient's pain should be assessed at rest and during mobilisation (Table 4.17). The South African Acute Pain Guidelines recommend that pain is assessed both when the patient is at rest and during mobilisation (SASA, 2009:16). This recommendation reinforces the requirement of a comprehensive nursing assessment involving all aspects of the pain experience.

Table 4.17: Assessment of pain at rest and during mobilisation

Variable	To my knowledge...	True		False	
		n	%	n	%
20-21	A patient's pain should be assessed at rest and during mobilisation.	60	92	5	8

4.6.2.3. *Variables 30 and 31: Pain stimuli in different patients result in differences in pain intensity (n=61/100%)*

Table 4.18 shows that the majority of respondents (n=59/97%) indicated that pain stimuli in different patients can result in differences in pain intensity. In terms of painful stimuli, the threshold of pain will vary for each patient, thereby producing pain of different intensity (Pasero & McCaffery, 2011:24). It is encouraging that the respondents recognised the variation of the pain experience amongst post-operative patients.

Table 4.18: Pain stimuli in different patients

Variable	To my knowledge...	True		False	
		n	%	n	%
30-31	Pain stimuli in different patients result in differences in pain intensity.	59	97	2	3

4.6.2.4. *Variables 36 and 37: The administration of paracetamol or anti-inflammatory medication with opioid analgesia results in effective pain relief (n=61/100%)*

The majority of respondents (n=54/89%) confirmed that the administration of paracetamol or anti-inflammatory medication with opioid analgesia results in effective pain relief (Table 4.19). The concurrent administration of more than one type of analgesic, termed “multimodal approach”, is beneficial in managing post-operative orthopaedic pain (SASA, 2009:93-94; Pasero & McCaffery, 2007:161). In addition, the multimodal approach allows the administration of the lowest effective dose of each medication thereby reducing adverse side-effects (Pasero & McCaffery, 2007:162).

Table 4.19: Administration of additional medication with opioid analgesia

Variable	To my knowledge...	True		False	
		n	%	n	%
36-37	The administration of paracetamol or anti-inflammatory medication with opioid analgesia results in effective pain relief.	54	89	7	11

4.6.2.5. *Variables 18 and 19: A pain rating scale, e.g. 0 – 10, is appropriate for patients to use to rate their pain (n=58/100%)*

Table 4.20 shows that the majority of respondents (n=49/84%) identified that a pain rating scale is appropriate for patients to use to rate their pain. A pain assessment scale will assist

the patient to quantify and communicate the intensity of their pain (SASA, 2009:16; Robertson, 2007:652). Even though the respondents acknowledged the importance of the pain rating scale, it is seldom applied in the clinical setting as indicated in variables 83-85 and 146-148.

Table 4.20: A pain rating scale is appropriate for patients to rate pain

Variable	To my knowledge...	True		False	
		n	%	n	%
18-19	A pain rating scale, e.g. 0 – 10, is appropriate for patients to use to rate their pain.	49	84	9	16

4.6.2.6. Variables 40 and 41: Elderly patients cannot tolerate opioids for pain relief (n=60/100%)

According to twenty (n=20/33 %) respondents, elderly patients cannot tolerate opioids for pain relief. Although there may be concern regarding the safe administration of opioid medication to elderly patients, it can be tolerated in lower doses by geriatric patients (Smeltzer *et al.*, 2008:268). Approximately 50% of the orthopaedic patients in provincial hospitals are elderly patients, which brings into question the degree to which elderly patients could be receiving adequate pain relief.

Table 4.21: Elderly patients cannot tolerate opioids for pain relief

Variable	To my knowledge...	True		False	
		n	%	n	%
40-41	Elderly patients cannot tolerate opioids for pain relief.	20	33	40	67

To conclude this section on the knowledge of pain management, the researcher graded the level of responses according to:

- Good level of knowledge = 15 correct answers (100%)
- Average level of knowledge = 11 – 14 correct answers
- Poor level of knowledge = ≤ 10 correct answers.

Analysis of the responses revealed that none of the respondents achieved a good level of knowledge by answering all 15 questions correctly. A minority of the respondents (n=4/6%) answered 11 to 14 of the 15 questions correctly, indicating an average level of knowledge. The majority of the respondents (n=61/94%) answered 10 or less of the 15 questions

correctly, indicating a poor level of knowledge. These findings are of concern as it is expected of nurses to have a good knowledge of pain management.

Further analysis was performed with regards to the correct answers provided by the respondents for seven identified critical questions (Table 4.22).

Table 4.22: Knowledge responses for critical questions

Variable	To my knowledge...	Correct answer	
		n	%
16-17	The most accurate judge of intensity of pain is the patient him/herself.	64	100
42-43	Administering sterile saline by injection (placebo) is often a useful test to determine if the pain is real.	38	61
22-23	Pain assessment is based on the patient's behaviour and physiological changes only.	35	56
34-35	Patients with a history of substance abuse should not be given opioids, e.g. morphine, for pain relief.	35	54
44-45	The most likely reason a patient with pain would request increased doses of opioid analgesia is that the patient's request may be related to addiction.	19	30
38-39	The most common side effect of morphine is respiratory depression.	6	9
24-25	Changes in vital signs and/or behaviour should be relied upon to confirm a patient's statement of pain.	0	0

4.7 SECTION D: CLINICAL PRACTICE IN PAIN MANAGEMENT

In Section D of the questionnaire, the respondents indicated "agree" or "disagree" to questions related to clinical practice in pain management.

4.7.1 Pain in orthopaedic patients

4.7.1.1 Variables 56 and 57: Orthopaedic patients experience greater pain due to oedema, haematoma and muscle spasms (n=63/100%)

In Figure 4.4, the majority of respondents (n=51/81%) agreed that orthopaedic patients experience increased pain due to oedema, haematoma and muscle spasms. This positive finding indicates a possible awareness amongst the nurses surveyed that post-operative pain experienced by orthopaedic patients requires attentive pain assessment and management.

Surgical intervention to repair or reconstruct bone or muscle tissue can result in severe post-operative pain (Pasero & McCaffery, 2007:160). SASA (2009:93-94) acknowledges that

orthopaedic surgery can be painful. In addition, the presence of underlying chronic pain, for example, arthritis, can impact on the experience of post-operative pain for the orthopaedic patient (Pasero & McCaffery, 2007:160).

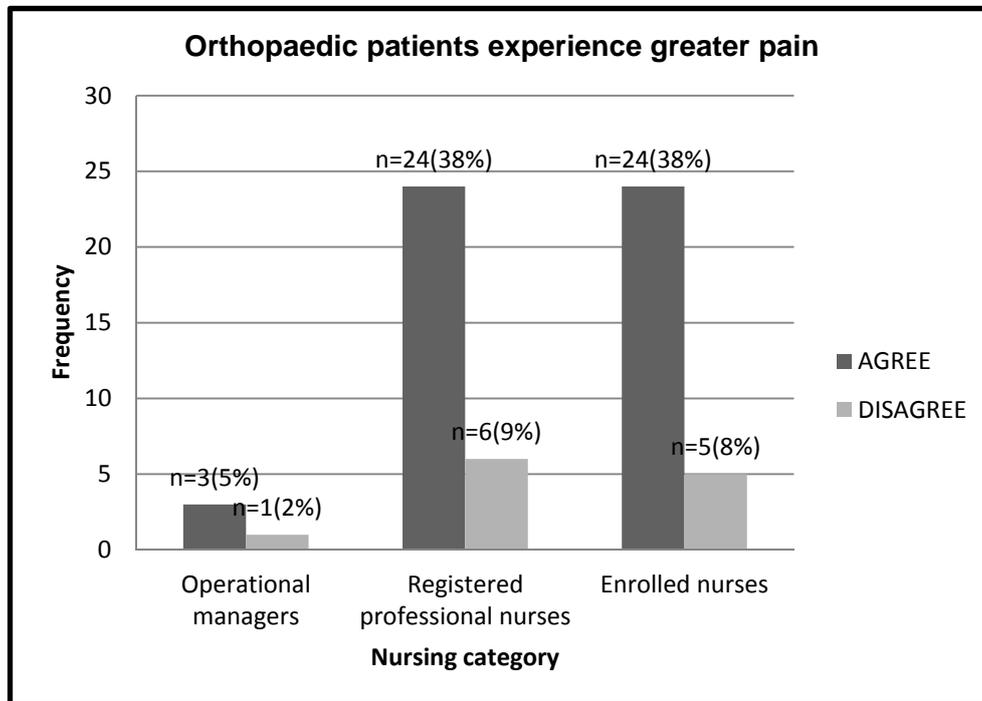


Figure 4.4: Orthopaedic patients experience greater pain

4.7.1.2 Variables 64 and 65: Effective pain management does not promote early mobilisation and prevent complications (n=64/100%)

Although a large proportion of the respondents (n=45/70%) indicated that effective pain management promotes early mobilisation and prevents complications, it is of concern that nineteen respondents (n=19/30%) did not recognise the benefits of pain management (Table 4.23). All nurses working in orthopaedic wards should be aware that effective pain management will expedite ambulation and prevent post-operative complications (Kehlet & Dahl, 2011:1699; SASA, 2009:93-94; Pasero & McCaffery, 2007:160).

Table 4.23: Benefits of pain management

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
64-65	Effective pain management does not promote early mobilisation and prevent complications.	19	30	45	70

4.7.2 Nursing assessment of pain

4.7.2.1 Variables 50 and 51: A patient's report of pain should be believed

(n=66/100%)

Table 4.24 shows that the majority of respondents (n=54/82%) agreed that a patient's report of pain should be believed. This result is encouraging given that numerous studies have revealed that the patient's report of pain is not always believed by nurses, who rely on their own judgement about the presence of pain and associated behaviour of the patient (Zanolin *et al.*, 2007:729; Klopper *et al.*, 2006:16; Pasero & McCaffery, 2001:73-74; Schafheutle *et al.*, 2001:731). Although the nurse may not believe the patient's statement of pain, the nurse should accept the statement, assess the patient's pain and provide appropriate management (Pasero & McCaffery, 2001:73-74).

Table 4.24: A patient's report of pain should be believed

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
50 – 51	A patient's report of pain should be believed.	54	82	12	18

4.7.2.2 Variables 52 and 53: The expression and tolerance of pain varies amongst the different cultures (n=64/100%)

Most of the respondents (n=49/77%) agreed that the expression and tolerance of pain can vary among cultures (see Table 4.25). A statistical difference was identified between nursing category and the perceived variance in the expression and tolerance of pain amongst different cultures (Chi-square test p=0.05/df=1). This result indicates that all categories of nurses are not fully cognizant of multicultural differences in pain expression and tolerance (Narayan, 2010:40-41; Lovering, 2006:392; Davidhizar & Giger, 2004:51-52).

Table 4.25: Expression and tolerance of pain and culture

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
52 – 53	The expression and tolerance of pain varies amongst the different cultures.	49	77	15	23

4.7.2.3 Variables 54 and 55: Estimation of pain by a nurse is a more valid measure of pain than the patient's report of pain (n=66/100%)

Table 4.26 shows that the majority (n=54/82%) of the respondents disagreed with the statement. The Mann-Whitney U test (p=0.04) confirmed a significant difference between the years of experience and the estimation of pain by a nurse. This result shows that the respondents with more than five years of experience were more likely to accept the patient's report of pain. This finding is consistent with Schafheutle *et al.* (2001:731) who reported that 77.5% of nurses disagreed that the nurses' estimation of pain is more valid than the patient's report of pain.

Table 4.26: Estimation of pain by a nurse is a more valid measure of pain

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
54 – 55	Estimation of pain by a nurse is a more valid measure of pain than the patient's report of pain.	12	18	54	82

4.7.2.4 Variables 58 and 59: Pain assessment forms the basis for good pain management (n=66/100%)

A large proportion of the respondents (n=64/97%) acknowledged that pain assessment forms the basis for good pain management (Table 4.27). The majority of nurses in the study by Schafheutle *et al.* (2001:731) agreed that regular pain assessment was important to ensure effective pain management. Pain assessment underpins effective pain management (SASA, 2009:20; Robertson, 2007:647).

Table 4.27: Pain assessment basis for good pain management

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
58 – 59	Pain assessment forms the basis for good pain management.	64	97	2	3

4.7.2.5 Variables 60 and 61: Pain assessment tools are valuable in assessing the pain of a patient (n=63/100%)

Table 4.28 shows that the majority of respondents (n=50/79%) indicated that pain assessment tools are valuable in assessing the pain level of a patient. Pain assessment

scales assist patients to communicate the intensity of their pain. An appropriate pain scale should be selected and explained to the patient by the nurse (Robertson, 2007:652-653; Bird, 2003:39).

Currently the nursing care plans of the hospitals surveyed are not available. A pain scale is essential for the monitoring of accurate pain intensity and pain relief and quality assurance of pain management practices.

Table 4.28: Pain assessment tools are valuable

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
60 – 61	Pain assessment tools are valuable in assessing the pain of a patient.	50	79	13	21

4.7.2.6 Variables 62 and 63: Pain assessment should not be routinely conducted on post-operative orthopaedic patients (n=66/100%)

In Table 4.29 it can be seen that the majority of respondents (n=50/76%) indicated that pain assessment should be routinely conducted on post-operative orthopaedic patients. Pain assessment constitutes the foundation of effective pain management for all post-operative patients (SASA, 2009:20; Robertson, 2007:647).

Table 4.29: Pain assessment for post-operative orthopaedic patients

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
62 – 63	Pain assessment should not be routinely conducted on post-operative orthopaedic patients.	16	24	50	76

4.7.2.7 Variables 74 and 75: If the patient can be distracted from the pain this usually means that he/she does not have severe pain (n=65/100%)

Table 4.30 shows that (n=43/66%) of the respondents would not consider the patient to have severe pain if the patient could be distracted from their pain. A statistically significant difference was identified between nursing category and the variable of distracting of the patient from pain (Chi-square test $p=0.04/df=1$). The result shows that EN's (n=23/35%) were the least informed that distraction does not equate to the patient's level of pain. This

finding is consistent with the response provided for variables 26-27. It is concerning that a patient who appears distracted from the pain may not be appropriately assessed for pain.

Table 4.30: Distraction from pain and severe pain

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
74 – 75	If the patient can be distracted from the pain this usually means that he/she does not have severe pain.	43	66	22	34

4.7.3 Nursing management of pain

4.7.3.1 Variables 48 and 49: Patients have the right to expect total pain relief as the goal of pain management (n=63/100%)

The majority of the respondents (n=56/89%) concur that patients have the right to total pain relief as the goal of pain management (Table 4.31). The Mann-Whitney U-test ($p=0.01$) confirmed a significant difference between the years of experience and the patient's right to expect total pain relief as the goal of pain management. The respondents with five or less years of experience did not agree with this statement. It is concerning that the rights of the patients would not be considered with respect to pain management.

This finding corroborates the results in international studies by Zanolin *et al.* (2007:729) and Schafheutle *at al.* (2001:731), who found that a similar percentage of nurses agreed with this statement. SASA (2009:16) advocates that patients have the right to expect total pain relief as the goal of pain management.

Table 4.31: Right to expect total pain relief

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
48-49	Patients have the right to expect total pain relief as the goal of pain management.	56	89	7	11

4.7.3.2 Variables 66 and 67: A patient should experience slight discomfort before receiving the next dose of pain medication (n=65/100%)

Slightly more than half of the respondents (n=36/55%) disagreed that a patient should experience slight discomfort before receiving the next dose of pain medication (Table 4.32).

It is concerning that (n=29/45%) of the respondents agreed to this statement. However, this finding is similar to the view of nurses in the study by Zanolin *et al.* (2007:729). All categories of nurses should be aware of the need to be proactive in pain management, thereby avoiding unnecessary pain for the patient.

Table 4.32: Slight discomfort experienced before analgesia

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
66-67	Patient should experience slight discomfort before receiving the next dose of pain medication.	29	45	36	55

4.7.3.3 Variables 68 and 69: Patient with pain should be encouraged to endure as much pain as possible before accepting pain relief (n=66/100%)

The majority of the respondents (n=56/85%) disagreed with the statement that a patient with pain should be encouraged to endure as much pain as possible before accepting pain relief (Table 4.33). This result is encouraging as it implies that the respondents would monitor pain frequently and administer analgesia timeously.

Table 4.33: Pain endurance before analgesia

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
68-69	Patients with pain should be encouraged to endure as much pain as possible before accepting pain relief.	10	15	56	85

4.7.3.4 Variables 70 and 71: The type of pain relief selected for the patient should be based on the type of surgery (n=65/100%)

The majority of the respondents (n=55/85%) agreed that the type of pain relief selected for the patient should be based on the type of surgery (Table 4.34). This finding is consistent with the findings in the local study by Klopper *et al.* (2006:16-17) and international studies by Sjöström *et al.* (2000:113-115) and Kim *et al.* (2005:5-7), who found that nurses based their decision for pain relief on the type of operation. The selection of pain relief should be based on the individual pain requirements of patients and not on the type of surgery performed.

Table 4.34: Pain relief selected according to type of surgery

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
70-71	Type of pain relief selected for the patient should be based on the type of surgery.	55	85	10	15

4.7.3.5 Variables 72 and 73: In the immediate post-operative period, pain relief should be administered on a regular basis rather than as needed (PRN) by the patient (n=65/100%)

The majority of the respondents (n=56/86%) agreed with the regular administration of pain relief post-operatively (Table 4.35). However, a statistically significant difference was identified between the years of experience and the administration of regular pain relief in the immediate post-operative period, using the Mann-Whitney U test (p=0.05). It appears that the respondents with less than ten years of experience are more knowledgeable about the benefits of regular pain relief in the immediate post-operative period. Since post-operative orthopaedic pain is continuous, it is recommended that scheduled analgesia is provided to maintain pain relief (SASA, 2009:22; Pasero & McCaffery, 2007:162).

Table 4.35: Pain relief in immediate post-operative period

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
72-73	In the immediate post-operative period, pain relief should be administered on a regular basis rather than as needed (PRN) by the patient.	56	86	9	14

4.7.3.6 Variables 76 and 77: I would provide more effective pain assessment and management, if I had more time at my disposal (n=65/100%)

In Table 4.36 the majority of respondents (n=45/69%) indicated that effective pain assessment and management would be provided if they had more time available. This finding is consistent with research findings by Rejeh *et al.* (2009:277-278); Rejeh *et al.* (2008:471) and Schafheutle *et al.* (2001:733) who found that increased workload, staffing shortages and non-nursing duties contributed to a lack of time to adequately provide for the pain requirements of patients. It is concerning that time constraints were perceived as a

barrier to effective pain assessment and management, further emphasising that pain management is not viewed as a priority.

Table 4.36: Time for pain assessment and management

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
76-77	I would provide more effective pain assessment and management, if I had more time at my disposal.	45	69	20	31

4.7.4 Education and training related to pain management

4.7.4.1 Variables 46 and 47: My nursing training has prepared me for managing post-operative pain (n=66/100%)

A significant number of the respondents (n=60/91%) indicated that their nursing training had prepared them to manage post-operative pain (Table 4.37). This finding is contrary to international research findings by Rejeh *et al.* (2009:277-278); Coulling (2005:44) and Twycross (2000:248), in which nurses indicated a lack of educational preparation regarding post-operative pain management. In South Africa, according to Regulation R.2598, Scope of practice for registered and enrolled nurses, nurses are required to attend to the comfort needs of patients (SANC, 1984:2). However, specific training in pain management is not included in the basic nursing training programmes but is instead integrated within the general nursing modules (SANC, 1993:4; SANC, 1989:3; SANC, 1985b:3).

Table 4.37: Nursing preparation for pain management

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
46-47	My nursing training prepared me for post-operative pain management.	60	91	6	9

4.7.4.2 Variables 78 and 79: I do not need any more training or information regarding pain assessment and management (n=66/100%)

The majority of the respondents (n=53/80%) disagreed that they did not require additional training or information regarding pain assessment and management (Table 4.38). Based on

the evidence in this survey regarding knowledge deficits and inconsistencies in clinical practice and care planning, there is an urgent need for training programmes to address post-operative pain management in orthopaedic patients.

International research has shown that educational programmes offered in the clinical setting have improved knowledge and attitudes to pain management (Abdalahim *et al.*, 2011:253; Ravaud *et al.*, 2004:692; Simpson *et al.*, 2002:89). However, Guardini *et al.* (2008:285) identified the need for regular refresher courses to ensure the retention of knowledge.

Table 4.38: Additional training for pain management

Variable	I believe that...	Agree		Disagree	
		n	%	n	%
78-79	I do not need any more training or information regarding pain assessment and management.	13	20	53	80

4.8 SECTION E: NURSING CARE PLANNING

Section E of the questionnaire required the respondents to indicate “yes”, “sometimes” or “no” to questions based on nursing care planning.

4.8.1 Nursing assessment of pain

4.8.1.1 Variables 83 – 85: I use a pain rating scale to identify the intensity of pain experienced by the patient (n=62/100%)

The minority (n=26/42%) of the respondents did not use a pain rating scale (Table 4.39). The chi-square test (p=0.02/df=2) revealed a statistical difference between nursing category and the utilisation of a pain rating scale. The results identified the RPN's as the least likely to use a pain rating scale. However, there is a contradiction in terms of the respondents' declaration that they use a pain rate scale when no scales are available as indicated in variables 146-148).

Pain rating scales assist patients to communicate the intensity of their pain and guide pain management (SASA, 2009:16; Smeltzer *et al.*, 2008:273; Robertson, 2007:652).

Table 4.39: Pain rating scale to identify pain intensity

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
83-85	I use a pain rating scale to identify the intensity of pain experienced by the patient.	21	34	26	42	15	24

4.8.1.2 Variables 86 – 88: I assess pain when the patient is at rest (n=64/100%)

Less than half of the respondents (n=29/45%) assessed the patient's level of pain at rest, whereas (n=20/31%) did not assess the patient's pain at rest (Table 4.40). This finding is contrary to that of a Swedish study by Ene *et al.* (2008:2047), who found that 59% of nurses assessed pain at rest. In addition, SASA (2009:16) recommends assessment of pain at rest.

Table 4.40: Assessment of pain at rest

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
86-88	I assess pain when the patient is at rest.	29	45	20	31	15	24

4.8.1.3 Variables 89 – 91: I assess pain on movement, e.g. coughing, mobilisation (n=64/100%)

Table 4.41 shows that more than half of the respondents (n=41/64%) assessed the patient's level of pain with movement, whilst (n=16/25%) sometimes assessed pain during movement. This result is encouraging since Dihle *et al.* (2006:474) and Manias *et al.* (2004:25) found that nurses seldom assessed pain before or during mobilisation. SASA (2009:16) recommends assessment of pain on movement. It is crucial that post-operative pain is assessed and managed to expedite ambulation and prevent complications.

Table 4.41: Assessment of pain on movement

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
89-91	I assess pain on movement, e.g. coughing, mobilisation.	41	64	7	11	16	25

4.8.1.4 Variables 113 – 115: Patients are reluctant to report their pain needs
(n=65/100%)

Less than half of the respondents (n=30/46%) indicated that patients are sometimes reluctant to report their pain needs and (n=21/32%) indicated positively that patients are reluctant to report pain requirements (Table 4.42). The reluctance of patients to report pain has been identified in terms of culture and misconceptions related to pain medication (Pasero & McCaffery, 2011:24, 89; Klopper *et al.*, 2006:16; Schafheutle *et al.*, 2001:734). Appropriate patient education is required in the post-operative setting to assist patients in the identification of their pain needs.

Table 4.42: Patients are reluctant to report pain

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
113-115	Patients are reluctant to report their pain needs.	21	32	14	22	30	46

4.8.2 Nursing documentation of pain assessment

4.8.2.1 Variables 92 – 94: I record the pain rating on the patient’s observation chart
(n=64/100%)

Slightly more than half of the respondents (n=35/55%) indicated that the pain rating was not recorded on the patient’s observation chart whereas (n=23/36%) recorded the rating on the chart (Table 4.43). The validity of this is a concern as there is no place on the patient’s observation chart in provincial hospitals. Neither is there a specific pain scale chart available.

SASA (2009:20) has recommended that the pain score be recorded on the patient’s observation chart, thereby elevating pain monitoring to the same level of significance as the other vital signs of the patient. This recommendation is supported by Williamson and Hoggart (2005:801) and Slaughter, Pasero and Manworren (2002:75).

Table 4.43: Pain rating recorded on patient’s observation chart

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
92-94	I record the pain rating on patient’s observation chart.	23	36	35	55	6	9

4.8.2.2 Variables 95 – 97: I record findings of pain assessment in nursing records (n=64/100%)

In Table 4.44 the majority of the respondents (n=51/80%) confirmed that the findings of pain assessment were recorded in the nursing records. These findings were reflected in the Swedish study by Ene *et al.* (2008:2047) who found that 82% of nurses documented pain assessment.

Table 4.44: Pain assessment recorded in nursing records

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
95-97	I record findings of pain assessment in nursing records.	51	80	2	3	11	17

4.8.3 Nursing management of pain

4.8.3.1 Variables 80 – 82: I provide pre-operative counselling to the patients regarding pain management (n=64/100%)

Table 4.45 shows that an equal number of the respondents (n=30/47%) provided or sometimes provided pre-operative counselling regarding pain management. As a vital aspect of post-operative care, pre-operative counselling is essential to alleviate anxiety, explain pain rating scales and discuss pain management options.

A local study by Chetty and Ehlers (2009:59) found that only half of orthopaedic patients received pain management information prior to elective surgery. Pasero and McCaffery (2004:78) recommend the setting of “comfort-function goals” pre-operatively to enhance post-operative pain management.

Table 4.45: Pre-operative counselling for pain management

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
80-82	I provide pre-operative counselling to the patients regarding pain management.	30	47	4	6	30	47

4.8.3.2 Variables 98 – 100: I provide pain relief during medication rounds

(n=64/100%)

The majority of the respondents (n=54/84%) indicated that pain relief was provided during medication rounds (Table 4.46). This finding is consistent with the observations made by Manias *et al.* (2004:759) and Schafheutle *et al.* (2004:14), in which, the routine medication round coincided with the administration of pain medication. This clinical practice limits appropriate pain assessment and management.

Table 4.46: Pain relief during medication rounds

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
98-100	I provide pain relief during medication rounds.	54	84	4	6	6	10

4.8.3.3 Variables 101 – 103: I conduct a specific pain management round

(n=62/100%)

Table 4.47 shows that the minority of the respondents (n=16/26%) conducted a specific pain management round. The chi-square test ($p=0.05/df=2$) identified a statistically significant difference between nursing category and a specific pain management round. This finding indicates that the majority of RPN's (n=25/40%) surveyed were more likely to conduct a specific pain management round.

However, (n=3/75%) of the operational managers who participated in this survey indicated that a specific pain management round is not conducted. It can be concluded that pain management is not considered a priority and is managed with routine medication tasks.

Table 4.47: Specific pain management round

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
101-103	I conduct a specific pain management round.	16	26	22	35	24	39

4.8.3.4 Variables 104 – 106: I use comfort measures, e.g. change of position, massage, to provide pain relief (n=65/100%)

The majority of the respondents (n=49/75%) indicated that comfort measures were utilised to provide pain relief, while (n=14/22%) sometimes utilised comfort methods (Table 4.48). This result is contrary to Dihle *et al.* (2006:474) and Manias *et al.* (2004:25), who found that nurses seldom provided alternative measures for pain management. However, Richards and Hubbert (2007:21) identified that expert nurses incorporated additional measures to provide pain relief, thereby practising the independent art of nursing.

Table 4.48: Comfort measures for pain relief

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
104-106	I use comfort measures, e.g. change of position, massage, to provide pain relief.	49	75	2	3	14	22

4.8.3.5 Variables 116 – 118: Patients are reluctant to take pain relief measures (n=63/100%)

In Table 4.49 a similar number of respondents (n=22/35%) reported that patients are or sometimes are reluctant to take pain relief measures. Although patients may be hesitant to accept pain medication for a variety of reasons (Pasero & McCaffery, 2011:89; Klopper *et al.*, 2006:16; Schafheutle *et al.*, 2001:731), nurses should nevertheless provide appropriate assessment and management.

Table 4.49: Patients reluctant to accept pain relief

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
116-118	Patients are reluctant to take pain relief measures.	22	35	19	30	22	35

4.8.3.6 Variables 119 – 121: I find that morphine is the most common analgesia prescribed for post-operative pain management in my ward (n=64/100%)

The majority of the respondents (n=57/89%) identified morphine as the most common analgesia prescribed for post-operative pain management (Table 4.50). The chi-square test

($p=0.03/df=2$) showed a statistically significant difference in nursing category and the identification of morphine as the most common analgesia. This finding indicates that all categories of nurses are not aware that morphine is the opioid of choice to manage post-operative pain (Pasero & McCaffery, 2011:324) and for post-operative orthopaedic patients in particular (SASA, 2009:93). Morphine is a first-line treatment yet the nurses do not recognise the potential side-effects in variables 38-39 and addiction in variables 44-45 and 122–124.

Table 4.50: Morphine for post-operative pain management

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
119-121	I find that morphine is the most common analgesia prescribed for post-operative pain management in my ward.	57	89	3	5	4	6

4.8.3.7 Variables 122 – 124: I worry that a patient might become addicted to the opioid analgesic, e.g. morphine, which I administer (n=65/100%)

More than half of the respondents (n=42/65%) were concerned that a patient might become addicted to the opioid analgesic and (n=15/23%) were sometimes concerned about addiction (Table 4.51). This finding is consistent with the findings in variable 44-45, where (n=44/67%) of the respondents identified that further requests for analgesia indicated potential addiction.

Table 4.51: Patient addiction to opioid analgesia

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
122-124	I worry that a patient might become addicted to the opioid analgesic, e.g. morphine, which I administer.	42	65	8	12	15	23

4.8.3.8 Variables 125 – 127: I have to contact the doctor to adjust the patient's prescription for analgesia (n=65/100%)

In Table 4.52 the majority of the respondents (n=44/66%) indicated that the doctor has to be contacted to adjust the patient's prescription for analgesia and (n=19/29%) indicated that it

was sometimes necessary to contact the doctor. This is a concern that the prescriptions for analgesia are inadequate and doctors do not follow up on patient pain management. A delay occurs in addressing patient comfort while the responsible doctor is contacted (Manias *et al.*, 2005:23; Manias *et al.*, 2002:730; Schafheutle *et al.*, 2001:734).

Table 4.52: Contact doctor to adjust analgesia prescription

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
125-127	I have to contact the doctor to adjust the patient's prescription for analgesia.	43	66	3	5	19	29

4.8.3.9 Variables 128 – 130: There is no communication amongst the nursing staff with respect to the pain management needs of the patients in the ward (n=64/100%)

The majority (n=43/67%) of the respondents indicated that there was adequate communication amongst the nursing staff with respect to the pain management needs of the patients in the ward (Table 4.53). However, it is concerning that (n=11/17%) of the respondents indicated that there was sometimes a lack of communication. Pasero and McCaffery (2011:123) reinforced regular verbal and written communication between nurses. It is essential that the pain needs of the patients are verbally communicated during the bedside handover between day and night shifts. Adequate nursing documentation regarding pain assessment and management will serve as corresponding written evidence.

Table 4.53: Communication between nursing staff

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
128-130	There is no communication amongst the nursing staff with respect to the pain management needs of the patients in the ward.	10	16	43	67	11	17

4.8.3.10 Variables 131 – 133: I have to check scheduled analgesia with another nurse (n=65/100%)

A significant number of the respondents (n=61/94%) indicated that they had to check scheduled analgesia with a second nurse (Table 4.54). The scheduled drug register in the ward requires a witness to check the administration of scheduled analgesia with the RPN. This protocol could contribute to the delay in the administration of analgesia as reported by Carr (2007:207) and Schafheutle *et al.* (2001:733).

Table 4.54: Checking of scheduled analgesia

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
131-133	I have to check scheduled analgesia with another nurse.	61	94	1	1	3	5

4.8.4 Nursing documentation of pain management

4.8.4.1 Variables 107 – 109: I record the pain relief measures provided to the patient in the nursing records (n= 65/100%)

Table 4.55 shows that the majority of the respondents (n=55/85%) recorded pain relief measures provided to the patient in the nursing records. This finding is contrary to international studies by Abdalrahim *et al.* (2008:78) and Manias (2003:90-91), in which nursing records revealed minimal documentation of both pharmacological and non-pharmacological pain interventions.

Table 4.55: Pain relief recorded in nursing records

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
107-109	I record the pain relief measures provided to the patient in the nursing records.	55	85	3	5	7	10

4.8.4.2 Variables 110 – 112: I evaluate and record the level of pain relief after the administration of analgesia. (n= 65/100%)

The majority of the respondents (n=42/64%) evaluated and recorded the degree of pain relief subsequent to administering analgesia in the patient's nursing notes, whereas (n=18/28%) sometimes evaluated and recorded pain relief (Table 4.56). This finding is

consistent with inconsistent entries regarding the evaluation and documentation of the effect of analgesia (Ene *et al.*, 2008:2047; Idvall & Ehrenberg, 2002:738).

Evaluation and documentation of response to analgesia is necessary for monitoring of pain relief and to facilitate communication between nurses and doctors.

Table 4.56: Evaluate and record after administration of analgesia

Variable	In my daily work...	Yes		No		Sometimes	
		n	%	n	%	n	%
110-112	I evaluate and record the level of pain relief after the administration of analgesia.	42	64	5	8	18	28

4.9 SECTION F: ORIENTATION, IN-SERVICE AND POLICIES

Section F of the questionnaire required the respondents to indicate “yes”, “no” or “unsure” to questions based on work orientation, training and policies in their hospital or ward.

4.9.1 Variables 134 – 136: Post-operative pain assessment and management included in the orientation and induction programme of the ward (n=64/100%)

More than half of the respondents (n=38/59%) responded that post-operative pain assessment and management is included in the orientation programme of the ward (Table 4.57). However, (n=23/36%) reported that these aspects were not included in the programme. Two of the four operational managers who responded to this question concurred that the orientation programme excluded this aspect (n=2/50%). As leaders of the ward, it is expected of the operational managers to ensure that pain assessment and management is incorporated within the orientation programme of the orthopaedic ward.

Pain assessment and management are essential aspects of post-operative care to which all nursing staff should be orientated in the orthopaedic ward. This will result in improved patient satisfaction and post-operative outcomes with fewer complications.

Table 4.57: Post-operative pain management in orientation programme

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
134-136	Post-operative pain assessment and management included in the orientation and induction programme of the ward.	38	59	23	36	3	5

4.9.2 Variables 137 – 139: Formal in-service training (e.g. lecture) regarding pain management has been given, at least once in the past 6 months (n=63/100%)

Table 4.58 shows that the majority of respondents (n=41/65%) indicated that they had not received any formal in-service training regarding pain management in the past six months. Formal training programmes in international studies have shown to improve pain management knowledge and practices (Abdalahim *et al.*, 2011:253; Ravaud *et al.*, 2004:692; Simpson *et al.*, 2002:89). The introduction of a pain rating scale in an intervention study by Bardiau *et al.* (2003:182) demonstrated significant improvement in the use of pain rating scales amongst nursing staff, thereby contributing to improved pain management practices.

The results from this survey question highlights the urgent need for formal education and training to be introduced in the provincial hospitals, in accordance with the Nursing Strategy for South Africa (2008:8).

Table 4.58: Formal in-service training in pain management

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
137-139	Formal in-service training (e.g. lecture) regarding pain management has been given, at least once in the past 6 months.	8	13	41	65	14	22

4.9.3 Variables 140 – 142: There is no policy document available on pain management in the hospital (n=64/100%)

Slightly more than half of the respondents (n=34/53%) were uncertain about the availability of a policy document on pain management in the hospital whereas (n=17/27%) respondents confirmed the lack thereof (Table 4.59). In 2011, the researcher was informed by a medical superintendent that a policy on acute pain management was expected to be formulated in one of the hospitals in the study. The South African Acute Pain Guidelines could provide the foundation for the formulation of policies (SASA, 2009:1-120).

Table 4.59: Policy document on pain management

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
140-142	There is no policy document available on pain management in the hospital.	13	20	17	27	34	53

4.9.4 Variables 143 – 145: There are pain management guidelines/algorithms available in the ward (n=63/100%)

Half of the respondents (n=33/53%) reported the absence of pain management guidelines or algorithms in the ward, whereas (n=21/33%) confirmed the presence thereof (Table 4.60). The respondents need to be informed about the publication of the South African Acute Pain Guidelines (SASA, 2009:1-120).

Standard operating procedures are essential requirements to guide nursing staff and to ensure standards of care and quality assurance (Booyens, 2005:606). Pain management guidelines need to be developed by the multidisciplinary team and communicated to all healthcare professionals.

Table 4.60: Pain management guidelines in ward

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
143-145	There are pain management guidelines/algorithms available in the ward.	21	33	33	53	9	14

4.9.5 Variables 146 – 148: A formal pain rating scale is utilised in the ward (n=62/100%)

In Table 4.61 the majority of respondents (n=42/68%) confirmed that a formal pain rating scale was not utilised in the ward, however (n=14/23%) indicated that a pain rating scale was utilised in the ward. This finding is incongruent with the responses provided for variables 83-85 in which the nurses surveyed indicated that they used pain scales.

Table 4.61: Formal pain rating scale in ward

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
146-148	A formal pain rating scale is utilised in the ward.	14	23	42	68	6	9

4.9.6 Variables 149 – 151: Audits are conducted to evaluate pain management practices in the ward (n=63/100%)

The majority of the respondents (n=42/67%) indicated that no audits had been conducted to evaluate pain management practices in the ward (Table 4.62). Regular audits of clinical practice and pain management practices in particular are essential for quality assurance and continuing education (Booyens, 2005:610; Tapp & Kropp, 2005:172; Slaughter *et al.*, 2002:75).

Table 4.62: Audits conducted for pain management practices

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
149-151	Audits are conducted to evaluate pain management practices in the ward.	16	25	42	67	5	8

4.9.7 Variables 152 – 154: I have not received informal in-service training (e.g. on-the-spot teaching) regarding pain management in the past month (n=65/100%)

Although most of the respondents (n=49/75%) indicated that they had received informal in-service training regarding pain management in the past month, (n=15/23%) of the

respondents reported the lack thereof (Table 4.63). It is required of both the operational managers and RPN's to fulfill their teaching function with respect to quality patient care for post-operative pain management. Quality assurance underpins the informal in-service training programme in the ward environment (Booyens, 2005:384).

Table 4.63: Informal in-service training and pain management

Variable	In my work environment...	Yes		No		Unsure	
		n	%	n	%	n	%
152-154	I have not received informal in-service training (e.g. on-the-spot teaching) regarding pain management in the past month.	15	23	49	75	1	2

4.10 SUMMARY

The findings showed that the respondents have knowledge deficits related to pain and pain management. The majority of the respondents demonstrated misconceptions specifically related to opioid analgesia. They acknowledged the severity of post-operative orthopaedic pain and resultant benefits of effective pain management; however the pain management practices were inconsistent. A pain rating scale, which is essential for pain assessment, was seldom available or applied in the clinical area. They identified barriers to effective pain management and the need for additional education and training regarding the management of post-operative pain.

4.11 CONCLUSION

In this chapter the results and statistical analyses of the data obtained from the questionnaire were presented and discussed. The research question was adequately answered regarding the knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.

The aim and the objectives for the study were met to:

- determine the knowledge of nurses about post-operative pain management in adult orthopaedic patients;
- determine the clinical practices of nurses for post-operative pain management in adult orthopaedic patients;
- determine the documentation practices of nurses related to pain assessment and management;

- establish the current nurse education and training related to pain management.

In Chapter 5, the findings will be concluded according to the objectives of the study. Limitations of the study will also be outlined. Based on the findings from this study, recommendations will be suggested.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The aim of this study was to establish the respondents' knowledge and clinical practice for adult post-operative pain management of orthopaedic patients in central hospitals. In this chapter, conclusions on the results reported in the previous chapter are presented. Recommendations based on the study results and suggestions for future research are proposed. The study limitations are also considered.

5.2 CONCLUSIONS

In this section, the conclusions of the study are outlined and discussed according to the demographic, professional profile and the objectives of the study.

5.2.1 Demographic and professional profile

The majority of respondents were experienced, permanently employed nurses on day duty, with more than five years' experience after their basic qualification. Their years of experience should demonstrate high clinical skills and knowledge of pain management. However, few respondents had obtained the diploma in orthopaedic nursing science which could impact on optimal pain management in orthopaedic wards.

5.2.2 Objectives of the study

The objectives set for this study were to determine the knowledge, clinical practices and documentation practices and to establish nurse education and training related to post-operative pain management in adult orthopaedic patients.

5.2.2.1 *Determining the knowledge of nurses about post-operative pain management in adult orthopaedic patients*

The majority of the respondents had a poor level of knowledge as demonstrated by answering 10 or less of the questions correctly. The percentage of correct responses for seven critical questions varied from 0% to 100% (Table 4.22).

All of the respondents identified the patient as the most accurate judge of their pain intensity (paragraph 4.6.2.1). However, they also indicated that the patient's behaviour and vital signs are the only aspects of pain assessment (paragraph 4.6.1.3) and that changes in these aspects confirm the patient's statement of pain (paragraph 4.6.1.9). Although the patient may exhibit alterations in vital signs or behaviour, these do not necessarily corroborate the

patient's report of pain (Pasero & McCaffery, 2011:16; Smeltzer *et al.*, 2008:273). Pasero and McCaffery (2011:21) maintain that the patient's report of pain remains the "gold standard" of pain assessment.

The respondents demonstrated a marked deficit in knowledge with regard to opioid medication. All categories of the respondents associate the request for additional opioid analgesia with addiction (paragraph 4.6.1.6). In addition, they indicated that patients with a history of substance abuse should not be given opioids for pain relief (paragraph 4.6.1.4). The majority of the respondents incorrectly identified respiratory depression as the most common side-effect of morphine (paragraph 4.6.1.8). Since opioid analgesia is the most commonly prescribed post-operative analgesia, the respondents need to be cognizant of the indications, actions and side-effects of opioid medication.

In response to the administration of a placebo injection of saline to test if the pain is "real" (genuine), both RPN's and EN's consider this practice acceptable. A statistical difference (Mann-Whitney U test $p=0.05$) revealed that with an increase in experience in nursing the more likely placebo administration is considered to determine if the pain is "real". All nurses should be alerted to this unethical and potentially harmful practice (McCaffery & Arnstein, 2006:62).

Additional knowledge deficits identified related to distraction and sleep and the association to severe pain. The majority of the respondents indicated that patients who are distracted, for example, by ward activities, visitors or television, are not in severe pain (paragraph 4.6.1.5). A chi-square test ($p\leq 0.01$) indicated that the RPN's correctly recognised that despite distractions the patients might have severe pain. Furthermore, the majority of the respondents indicated that sleeping patients are not in pain (paragraph 4.6.1.7). A statistically significant difference (Chi-square test $p=0.05$) revealed that the OM and RPN groups were the least knowledgeable about the association between sleep and pain. Both distraction and sleep can assist the patient to cope with their pain and do not equate to the severity of their pain experience (Pasero & McCaffery, 2011:21;26; Smeltzer *et al.*, 2008:289).

In conclusion, the results confirm that the respondents have significant knowledge deficits in the recognition of pain and pain management. In addition, the expected level of knowledge in accordance with the conceptual framework (paragraph 2.3.1), was not achieved by the respondents in this study, as illustrated by the poor knowledge of pain assessment and management.

5.2.2.2 Determining the clinical practices of nurses for post-operative pain management in adult orthopaedic patients

While most of the respondents acknowledged that orthopaedic patients experience severe pain (paragraph 4.7.1.1), not all of the respondents recognised the benefits of effective pain management (paragraph 4.7.1.2). All nurses working in orthopaedic wards should be aware that effective pain management will expedite ambulation and prevent post-operative complications (Kehlet & Dahl, 2011:1699; SASA, 2009:93-94; Pasero & McCaffery, 2007:160).

With regard to pre-operative counselling about pain management, less than half of the respondents indicated they do not always provide this information to the patients (paragraph 4.8.3.1). Both international and local guidelines emphasise the importance of patient education with respect to pain management (SASA, 2009:22; Berry & Dahl, 2000:8).

With reference to pain assessment, most of the respondents acknowledged that a pain rating scale is both appropriate (paragraph 4.6.2.5) and valuable in assessing pain (paragraph 4.7.2.5), but it is seldom applied in the ward environment (paragraph 4.8.1.1). This inconsistent practice is contrary to recommendations in international and local guidelines (SASA, 2009:16-18; Berry & Dahl, 2000:8). The Mann-Whitney U test ($p=0.04$) revealed that with an increase in experience the more likely the patient's self-report is accepted. Furthermore, more of the respondents assess pain on movement (paragraph 4.8.1.3) than at rest (paragraph 4.8.1.2). It is recommended in local guidelines that pain should be assessed both at rest and during movement (SASA, 2009:20).

With regard to the goal of pain management, most of the respondents agreed that patients have the right to expect total pain relief (paragraph 4.7.3.1). However, the Mann-Whitney U test ($p=0.01$) showed that the respondents with less than five years of experience did not agree.

In the immediate post-operative period, the majority of the respondents indicated that they prefer to administer pain relief on a regular regime compared to the patient's requirements (paragraph 4.7.3.5). The Mann-Whitney U test ($p=0.05$) indicated that the respondents with less than ten years of experience are more cognizant of the benefits of regular pain relief in the immediate post-operative period, however the reasons were not explored in this study. The administration of pain medication coincides with the routine medication round (paragraph 4.8.3.2), but a specific pain management round is seldom conducted in the wards (paragraph 4.8.3.3).

Morphine was identified as the most common analgesia prescribed for post-operative pain management in the ward setting (paragraph 4.8.3.6). Opioids are the mainstay for managing post-operative pain (Pasero & McCaffery, 2011:324) and post-operative orthopaedic patients in particular (SASA, 2009:93). Even though morphine is a first-line treatment, most of the respondents indicated that a patient might become addicted to the opioid analgesia (paragraph 4.8.3.7).

With regard to potential barriers impacting on effective pain management, the respondents mentioned time constraints (paragraph 4.7.3.6), contacting the doctor to adjust the prescription (paragraph 4.8.3.8) and the scheduled drug register requirements of a witness for checking scheduled analgesia (paragraph 4.8.3.10).

In reference to the availability of pain management policies (paragraph 4.9.3) and guidelines (paragraph 4.9.4), half of the respondents indicated they were uncertain whether a policy or guideline exists and the other half indicated that none are available. Policies and guidelines are essential for accountability and quality assurance (SASA, 2009:22; Booyens, 2005:606).

In conclusion, the research results indicate that the clinical management of pain is not fully compliant with international and local guidelines. However, effective pain management is impeded by the absence of pain scales, organisational barriers and non-availability of policies and guidelines. According to the conceptual framework (paragraph 2.3.1), the clinical skills of the nurses in this study are reflective of the proficient and expert stages with regards to acceptance of the self-report from the patient; patient expectation of total pain relief and the benefits of regular pain relief.

5.2.2.3 Determining the documentation practices of nurses related to pain assessment and management

The pain rating score is recorded on the patient's observation chart by a minority of respondents (paragraph 4.8.2.1), in accordance with local guidelines (SASA, 2009:20). However, the validity of this is in question as there is no place to write the pain rating score on the observation chart in provincial hospitals of the Western Cape.

The majority of the respondents confirmed that audits to evaluate pain management practices are not conducted in the wards (paragraph 4.9.6). Regular audits of clinical practice and pain management practices in particular are essential for quality assurance and continuing education (Tapp & Kropp, 2005:172; Slaughter *et al.*, 2002:75).

In conclusion, the results reveal that the respondents adhered to acceptable documentation practices with respect to recording pain assessment; pain management and pain relief

following administration of analgesia in the nursing records. Since the nursing records were not examined in this study, it is assumed that the responses are a true reflection of the documentation practices in the wards.

5.2.2.4 Establishing the current nurse education and training related to pain management

While the majority of the respondents indicated adequate basic nursing preparation to manage post-operative pain (paragraph 4.7.4.1), the provision of continuous formal training sessions was limited (paragraph 4.9.2). Although informal training was conducted in the wards (paragraph 4.9.7), additional training in pain assessment and management was requested by the respondents (paragraph 4.7.4.2). Both formal and informal in-service training is necessary to ensure knowledgeable and competent nursing staff (SASA, 2009:22; Berry & Dahl, 2000:8).

Furthermore, the survey results show that post-operative pain assessment and management is not always included in the orientation and induction programme of the ward (paragraph 4.9.1). This inconsistent practice is contrary to international and local recommendations which advocate the inclusion of "pain assessment and management in the orientation of all new staff" (Berry & Dahl, 2000:8) including informal teaching opportunities (SASA, 2009:22).

In conclusion, the results show that there is limited formal training in post-operative pain management in the hospitals. In addition, pain assessment and management is not a compulsory inclusion in the orientation and induction programme in the orthopaedic ward.

5.3 RECOMMENDATIONS

Based on the research study results, the researcher suggests the following strategies to improve the knowledge and clinical practices for post-operative pain management of adult orthopaedic patients. Recommendations for future research are made.

5.3.1 Training courses in pain management

The researcher recommends that training courses in pain assessment and management, both formal and informal should urgently be introduced to address the identified poor level of knowledge of nurses about pain management. Since orthopaedic patients experience severe pain post-operatively, it is essential that nurses are knowledgeable and competent to provide effective and culturally sensitive post-operative pain assessment and management. The researcher also recommends that the SANC address the inclusion of a post-operative pain management module in the nursing curricula for all categories of nursing staff.

Training and education should include the use of pain rating scales to quantify the patient's pain and basic principles of pharmacological management of pain. Furthermore, the introduction of continuous professional development (CPD), soon to be promulgated in terms of the Nursing Act, 33 of 2005 (Republic of South Africa, 2005:32), will compel nurses to achieve evidence-based and current professional knowledge and skills, including pain management for nurses caring for orthopaedic patients.

5.3.2 Revision of patient's observation chart

It is recommended that the patient's observation chart in provincial hospitals in the Western Cape be revised to incorporate the pain rating of the patient. Until such time as this can be achieved, the researcher recommends a separate document be developed.

In accordance with the local and international view that pain should be considered the 5th vital sign, the pain rating of the patient should be readily accessible and visible. This high visibility can be achieved by the recording of the pain rating on the patient's observation chart at the bedside.

5.3.3 Specific pain management round

In the opinion of the researcher, a specific pain management round should be introduced into the holistic care regime of adult post-operative orthopaedic patients. A dedicated pain round would encourage the participation of the patients and nurses to view pain management as a priority in the post-operative setting. The inclusion of pain management with the routine medication round diminishes the importance of patient comfort as the patient often requires analgesia at irregular times.

5.3.4 Pain management policies and guidelines

Based on the significant lack of pain management policies and guidelines identified in this study conducted in two central hospitals, the researcher recommends that the National Department of Health, South Africa, urgently formulates and implements post-operative pain management policies and guidelines.

5.3.5 Recommendations for future research

This research study has created baseline data related to the current knowledge and clinical practices of the respondents for adult post-operative orthopaedic pain management. The researcher recommends the following research opportunities:

- conducting an audit of nursing records to establish the accuracy of the implementation of pain rating scales and pain management protocol practices
- investigating the perceptions of adult post-operative orthopaedic patients, which could provide additional insight into post-operative pain management practices
- conducting a follow-up intervention study after the implementation of a pain management training programme. The purpose of this study would be to determine if there had been any significant change in the respondents' knowledge and clinical practices after training
- conducting an investigation of nursing post-operative pain management practices within other surgical disciplines in order to optimise patient comfort.

5.4 LIMITATIONS OF THE STUDY

The limitations of a research study refer to the components of the study that may possibly impact on the generalisability of the results (Burns & Grove, 2007:37).

The population was limited to nurses working in dedicated orthopaedic wards in central hospitals. The total population was small with 97 respondents. Following exclusion of the nine pilot study participants, the available population was reduced to 88 respondents. The response rate of 75%, according to Strydom (2005:196), was acceptable for this study.

The research setting for the study was limited to two central hospitals with four adult orthopaedic wards in each hospital. Central hospitals were selected because of the allocation of dedicated orthopaedic wards. The patients nursed in the wards would have orthopaedic conditions requiring surgery. Therefore, the respondents would be nursing a specific group of patients. The results of the study are pertinent to the nursing care of adult post-operative orthopaedic patients but are justifiably appropriate to all disciplines where patients require and are entitled to effective analgesia.

5.5 CONCLUSION

In this chapter the results of the study were discussed according to the objectives of the study. The aim of the study was to establish the knowledge and clinical practice of nurses for adult post-operative pain management of orthopaedic patients. It can be concluded that the knowledge and clinical practices of the respondents working in the orthopaedic wards of the central hospitals in the Cape Town Metropole district, are inadequate in managing orthopaedic post-operative pain.

The results of the study were partially supported by Benner's model of nursing practice. Since the majority of the respondents have more than five years of experience after qualification, it was expected that the pain needs of the orthopaedic patients would be managed competently and skillfully. Poor levels of knowledge and inconsistent pain management practices were identified in this study.

Further research is recommended to urgently address the knowledge gaps and clinical practices related to orthopaedic post-operative pain management.

REFERENCES

- Abdalahim, M.S., Majali, S.A., Stomberg, M.W. & Bergbom, I. 2011. The effect of postoperative pain management program on improving nurses' knowledge and attitudes toward pain. *Nurse Education in Practice*, 11(4):250-255.
- Abdalahim, M.S., Majali, S.A. & Bergbom, I. 2008. Documentation of post-operative pain by nurses in surgical wards. *Acute Pain*, 10(2):73-81.
- Acello, B. 2000. Facing fears about opioid addiction. *Nursing*, 30(5):72.
- Alcenius, M. 2004. Successfully meet pain assessment standards. *Nursing Management*, 35(3):12.
- Al-Shaer, D., Hill, P.D. & Anderson, M.A. 2011. Nurses' knowledge and attitudes regarding pain assessment and intervention. *MEDSURG Nursing*, 20(1):7-11.
- Apfelbaum, J.L., Chen, C., Mehta, S.S. & Gan, T.J. 2003. Postoperative pain experience: Results from a national survey suggest postoperative pain continues to be undermanaged. *Anesthesia & Analgesia*, 97(2):534-540.
- Attia, A. 2005. Why Should Researchers Report the Confidence Interval in Modern Research? *Middle East Fertility Society Journal* 10(1): 78-81. [Online]. Available: <http://www.bioline.org.br/pdf?mf05015>. [2011, November 23].
- Bardiau, F.M., Taviaux, N.F., Albert, A., Boogaerts, J.G. & Stadler, M. 2003. An intervention study to enhance postoperative pain management. *Anesthesia & Analgesia*, 96(1):179-185.
- Benner, P. 2001. *From novice to expert. Excellence and power in clinical nursing practice*. Commemorative edition. New Jersey: Prentice Hall.
- Berry, P.H. & Dahl, J.L. 2000. The new JCAHO pain standards: Implications for pain management nurses. *Pain Management Nursing*, 1(1):3-12.
- Bird, J. 2003. Selection of pain measurement tools. *Nursing Standard*, 18(13):33-39.
- Booyens, S.W. (ed). 2005. *Dimensions of Nursing Management*. 2nd Edition. Cape Town: Juta.

- Brink, H., Van der Walt, C. & Van Rensburg, G. 2006. *Fundamentals of Research Methodology for Health Care Professionals*. 2nd Edition. Cape Town: Juta.
- Broekmans, S., Vanderschueren, S., Morlion, B., Kumar, A. & Evers, G. 2004. Nurses' attitudes toward pain treatment with opioids: a survey in a Belgian university hospital. *International Journal of Nursing Studies*, 41(2):183-189.
- Burns, N. & Grove, S.K. 2007. *Understanding nursing research: Building an evidence-based practice*. 4th Edition. St. Louis: Saunders Elsevier.
- Burns, N. & Grove, S.K. 2009. *The practice of nursing research: Appraisal, synthesis, and generation of evidence*. 6th Edition. St. Louis: Saunders Elsevier.
- Carr, E. 2007. Barriers to effective pain management. *Journal of Perioperative Practice*, 17(5):200-208.
- Cashman, J.N. & Dolin, S.J. 2004. Respiratory and haemodynamic effects of acute postoperative pain management: evidence from published data. *British Journal of Anaesthesia*, 93(2):212-223.
- Chetty, C. & Ehlers, V.J. 2009. Orthopaedic patients' perceptions about their pre-operative information. *Curationis*, 32(4):55-60.
- Coulling, S. 2005. Nurses' and doctors' knowledge of pain after surgery. *Nursing Standard*, 19(34):41-49.
- Dalton, J.A., Carlson, J., Blau, W., Lindley, C., Greer, S.M. & Youngblood, R. 2001. Documentation of pain assessment and treatment: How are we doing? *Pain Management Nursing*, 2(2):54-64.
- Davidhizar, R. & Giger, J.N. 2004. A review of the literature on care of clients in pain who are culturally diverse. *International Nursing Review*, 51(1):47-55.
- Davids, J.M. 2011. Head of Post basic Nursing Department, Western Cape College of Nursing, Western Cape: Personal Interview. 16 November, Cape Town.
- Delpont, C.S.L. 2005. Quantitative data-collection methods. In De Vos, A.S., Strydom, H., Fouché, & Delpont, C.S.L. 2005. *Research at grass roots for the social sciences and human service professionals*. 3rd Edition. Pretoria: Van Schaik.

- Department of Health. 2008. Nursing strategy for South Africa 2008. [Online]. Available: http://www.doh.gov.za/docs/nursing_strategy-f.html. [2010, March 3].
- Department of Health. 2007. Comprehensive service plan for the implementation of healthcare 2010. [Online]. Available: <http://www.capegateway.gov.za/eng/pubs/guides/C/158987>. [2010, November 10].
- De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 2005. *Research at grass roots for the social sciences and human service professionals*. 3rd Edition. Pretoria: Van Schaik.
- Dihle, A., Bjølseth, G. & Helseth, S. 2006. The gap between saying and doing in postoperative pain management. *Journal of Clinical Nursing*, 15(4):469-479.
- Ene, K.W., Nordberg, G., Bergh, I., Johansson, F.G. & Sjöström, B. 2008. Postoperative pain management – the influence of surgical ward nurses. *Journal of Clinical Nursing*, 17(15):2042-2050.
- Ferrell, B. & McCaffery, M. 2008. Knowledge and Attitudes Survey Regarding Pain. [Online]. Available: <http://prc.coh.org>. [2010, April 19].
- Grace, P.J. 2006. The clinical use of placebos. *American Journal of Nursing*, 106(2):58-61.
- Guardini, I., Talamini, R., Fiorillo, F., Lirutti, M. & Palese, A. 2008. The effectiveness of continuing education in post-operative pain management: Results from a follow-up study. *The Journal of Continuing Education in Nursing*, 39(6):281-288.
- Haber, J. 2010. Research questions, hypotheses, and clinical questions. In LoBiondo-Wood, G. & Haber, J. 2010. *Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice*. 7th Edition. St. Louis: Mosby Elsevier.
- Higson, N. 2005. PAIN. *Practice Nurse*, 30(5):15-20.
- Horbury, C., Henderson, A. & Bromley, B. 2005. Influences of patient behavior on clinical nurses' pain assessment: Implications for continuing education. *The Journal of Continuing Education in Nursing*, 36(1):18-24.
- Hutchinson, R.W. 2007. Challenges in acute post-operative pain management. *American Journal of Health-System Pharmacy*, 64(Supplement 4):S2-S5.

- Idvall, E. & Berg, A. 2008. Patient assessment of postoperative pain management – Orthopaedic patients compared to other surgical patients. *Journal of Orthopaedic Nursing*, 12(1):35-40.
- Idvall, E. & Ehrenberg, A. 2002. Nursing documentation of post-operative pain management. *Journal of Clinical Nursing*, 11(6):734-742.
- Kim, H.S., Schwartz-Barcott, D., Tracy, S.M., Fortin, J.D. & Sjöström, B. 2005. Strategies of pain assessment used by nurses on surgical units. *Pain Management Nursing*, 6(1):3-9.
- Klopper, H., Andersson, H., Minkinen, M., Ohlsson, C. & Sjöström, B. 2006. Strategies in assessing post-operative pain – A South African study. *Intensive and Critical Care Nursing*, 22(1):12-21.
- Kehlet, H. & Dahl, J.B. 2011. Commentary: Assessment of postoperative pain – need for action! *PAIN@*, 152(8):1699-1700.
- Kehlet, H., Jensen, T.S. & Woolf, C.J. 2006. Persistent postsurgical pain: Risk factors and prevention. *Lancet*, 367(9522):1618-1625.
- Kneale, J. & Davis, P. (eds). 2005. *Orthopaedic and Trauma Nursing*. 2nd Edition. Edinburgh: Churchill Livingstone.
- Kozol, R.A. & Voytovich, A. 2007. Commentary: Misinterpretation of the fifth vital sign. *Archives of Surgery*, 142(5):417-419.
- Kruger, D.J., De Vos, A.S., Fouché, C.B. & Venter, L. 2005. Quantitative data analysis and interpretation. In De Vos, A.S., Strydom, H., Fouché C.B. & Delport. C.S.L. 2005. *Research at grass roots for the social sciences and human service professionals*. 3rd Edition. Pretoria: Van Schaik.
- Layman Young, J., Horton, F.M. & Davidhizar, R. 2006. Nursing attitudes and beliefs in pain assessment and management. *Journal of Advanced Nursing*, 53(4):412-421.
- LoBiondo-Wood, G. & Haber, J. 2010. *Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice*. 7th Edition. St. Louis: Mosby Elsevier.
- Lovering, S. 2006. Cultural attitudes and beliefs about pain. *Journal of Transcultural Nursing*, 17(4):389-395.

- Mackintosh, C. 2007. Assessment and management of patients with post-operative pain. *Nursing Standard*, 22(5):49-55.
- Manias, E. 2003. Medication trends and documentation of pain management following surgery. *Nursing and Health Sciences*, 5(1):85-94.
- Manias, E., Botti, M. & Bucknall, T. 2002. Observation of pain assessment and management – the complexities of clinical practice. *Journal of Clinical Nursing*, 11(6):724-733.
- Manias, E., Aitken, R., Peerson, A., Parker, J. & Wong, K. 2003. Agency-nursing work: perceptions and experiences of agency nurses. *International Journal of Nursing Studies*, 40(3):269-279.
- Manias, E., Bucknall, T. & Botti, M. 2004. Assessment of patient pain in the post-operative context. *Western Journal of Nursing Research*, 26(7):751-769.
- Manias, E., Bucknall, T. & Botti, M. 2005. Nurses' strategies for managing pain in the postoperative setting. *Pain Management Nursing*, 6(1):18-29.
- McCaffery, M. & Arnstein, P. 2006. The debate over placebos in pain management. *American Journal of Nursing*, 106(2):62-65.
- McCaffery, M., Ferrell, B.R. & Pasero, C. 2000. Nurses' personal opinions about patients' pain and their effect on recorded assessments and titration of opioid doses. *Pain Management Nursing*, 1(3):79-87.
- McCaffery, M., Pasero, C. & Ferrell, B.R. 2007. Nurses' decisions about opioid dose. *American Journal of Nursing*, 107(12):35-39.
- McCaffery, M. & Pasero, C. 2001. Stigmatizing patients as addicts. *American Journal of Nursing*, 101(5):77-79.
- McDonald, D.D., McNulty, J., Erickson, K. & Weiskopf, C. 2000. Communicating pain and pain management needs after surgery. *Applied Nursing Research*, 13(2):70-75.
- Mellish, J.M., Brink, H.I.L. & Paton, F. 2001. *Teaching and learning the practice of nursing*. 4th Edition. Johannesburg: Heinemann.
- Meyer, S.M., Naudé, M., Shangase, N.C. & Van Niekerk, S.E. 2009. *The Nursing Unit Manager: A comprehensive guide*. 3rd Edition. Johannesburg: Heinemann.

- Michaels, T.K., Hubbart, E., Carroll, S.A. & Hudson-Barr, D. 2007. Evaluating an educational approach to improve pain assessment in hospitalized patients. *Journal of Nursing Care Quality*, 22(3):260-265.
- Muller, M. 2002. *Nursing Dynamics*. 3rd Edition. Johannesburg: Heinemann.
- Narayan, M.C. 2010. Culture's effects on pain assessment and management. *American Journal of Nursing*, 110(4):38-47.
- Nichols, R. 2003. Pain management in patients with addictive disease. *American Journal of Nursing*, 103(3):87-90.
- Pasero, C. & McCaffery, M. 2001. The patient's report of pain. *American Journal of Nursing*, 101(12):73-74.
- Pasero, C. & McCaffery, M. 2002. Monitoring sedation. *American Journal of Nursing*, 102(2):67-69.
- Pasero, C. & McCaffery, M. 2004. Comfort-function goals. *American Journal of Nursing*, 104(9):77-81.
- Pasero, C. & McCaffery, M. 2007. Orthopaedic postoperative pain management. *Journal of PeriAnesthesia Nursing*, 22(3):160-174.
- Pasero, C. & McCaffery, M. 2011. *Pain assessment and pharmacologic management*. St. Louis: Mosby Elsevier.
- Polomano, R.C., Dunwoody, C.J., Krenzischek, D.A. & Rathmell, J.P. 2008. Perspective on pain management in the 21st century. *Pain Management Nursing*, 9(1):S3-S10.
- Puls-McColl, P.J., Holden, J.E. & Buschmann, M.T. 2001. Pain management: An assessment of surgical nurses' knowledge. *MedSurg Nursing*, 10(4):185-191.
- Quinn, F.M. & Hughes, S.J. 2007. *Quinn's Principles and Practice of Nurse Education*. 5th Edition. Cheltenham: Nelson Thornes.
- Ravaud, P., Keïta, H., Porcher, R., Durand-Stocco, C., Desmonts, J.M. & Mantz, J. 2004. Randomized clinical trial to assess the effect of an educational programme designed to improve nurses' assessment and recording of post-operative pain. *British Journal of Surgery*, 91(6):692-698.

- Rejeh, N., Ahmadi, F., Mohammadi, E., Kazemnejad, A. & Anoosheh, M. 2009. Nurses' experiences and perceptions of influencing barriers to post-operative pain management. *Scandinavian Journal of Caring Sciences*, 23(2):274-281.
- Rejeh, N., Ahmadi, F., Mohammadi, E., Anoosheh, M. & Kazemnejad, A. 2008. Barriers to, and facilitators of post-operative pain management in Iranian nursing: a qualitative research study. *International Nursing Review*, 55(4):468-475.
- Republic of South Africa. 1978. The Nursing Act, no. 50, 1978. Pretoria: Government printer.
- Republic of South Africa. 2005. The Nursing Act, no. 33, 2005. Pretoria: Government printer.
- Richards, J. & Hubbert, A.O. 2007. Experiences of expert nurses in caring for patients with postoperative pain. *Pain Management Nursing*, 8(1):17-24.
- Robertson, S. 2007. Pain. In Stellenberg E.L. & Bruce J.C. (eds). 2007. *Nursing Practice - Medical-Surgical Nursing for Hospital and Community*. African Edition. Edinburgh: Churchill Livingstone.
- Sawyer, J., Haslam, L., Robinson, S., Daines, P. & Stilos, K. 2008. Pain prevalence study in a large Canadian teaching hospital. *Pain Management Nursing*, 9(3):104-112.
- Sawyer, J., Haslam, L., Daines, P. & Stilos, K. 2010. Pain prevalence study in a large Canadian teaching hospital. Round 2: Lessons learned? *Pain Management Nursing*, 11(1):45-55.
- Schafheutle, E.I., Cantrill, J.A. & Noyce, P.R. 2001. Why is pain management suboptimal on surgical wards? *Journal of Advanced Nursing*, 33(6):728-737.
- Schafheutle, E.I., Cantrill, J.A. & Noyce, P.R. 2004. The nature of informal pain questioning by nurses – a barrier to post-operative pain management? *Pharmacy World & Science*, 23(1):12-17.
- Simpson, K., Kautzman, L. & Dodd, S. 2002. The effects of a pain management education program on the knowledge level and attitudes of clinical staff. *Pain Management Nursing*, 3(3):87-93.
- Sjöström, B., Dahlgren, L.O. & Haljamäe, H. 2000. Strategies used in post-operative pain assessment and their clinical accuracy. *Journal of Clinical Nursing*, 9(1):111-118.

- Slaughter, A., Pasero, C. & Manworren, R. 2002. Unacceptable pain levels. *American Journal of Nursing*, 102(5):75-76.
- Sloman, R., Rosen, G., Rom, M. & Shir, Y. 2005. Nurses' assessment of pain in surgical patients. *Journal of Advanced Nursing*, 52(2):125-132.
- Smeltzer, S.C., Bare, B.G., Hinkle, J.L. & Cheever, K.H. 2008. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*. 11th Edition. Philadelphia: Lippincott, Williams & Wilkins.
- South African Nursing Council. 1984. Regulations relating to the scope of practice of persons who are registered or enrolled under the Nursing Act, 1987. Regulation R.2598, in terms of the Nursing Act, 1978. (Act 50, 1978 as amended). [Online]. Available: <http://www.sanc.co.za/publications.htm>. [2011, December 3].
- South African Nursing Council. 1985a. Rules setting out the acts or omissions in respect of which the Council may take disciplinary steps. Regulation R.387, in terms of the Nursing Act, 1978. (Act 50, 1978 as amended). [Online]. Available: <http://www.sanc.co.za/publications.htm>. [2011, December 3].
- South African Nursing Council. 1985b. Regulations relating to the approval of and the minimum requirements for the education and training of a Nurse (General, Psychiatric and Community) and Midwife leading to registration. Regulation R.425, in terms of the Nursing Act, 1978. (Act 50, 1978 as amended). [Online]. Available: <http://www.sanc.co.za/publications.htm>. [2011, December 3].
- South African Nursing Council. 1989. Regulations relating to the minimum requirements for a bridging course for Enrolled Nurses leading to registration as a General Nurse or a Psychiatric Nurse. Regulation R.683, in terms of the Nursing Act, 1978. (Act 50, 1978 as amended). [Online]. Available: <http://www.sanc.co.za/publications.htm>. [2011, December 3].
- South African Nursing Council. 1993. Regulations relating to the course leading to enrolment as a Nurse. Regulation R.2175, in terms of the Nursing Act, 1978. (Act 50, 1978 as amended). [Online]. Available: <http://www.sanc.co.za/publications.htm>. [2011, December 3].
- South African Nursing Council. 2010. SANC Geographical Distribution 2010. [Online]. Available: <http://www.sanc.co.za/stats.htm>. [2011, July 29].

- Stellenberg, E.L. & Bruce, J.C. (eds). 2007. *Nursing Practice: Medical-Surgical Nursing for Hospital and Community*. African Edition. Edinburgh: Churchill Livingstone.
- Strydom, H. 2005. Sampling and sampling methods. In De Vos, A.S., Strydom, H., Fouché C.B. & Delport. C.S.L. 2005. *Research at grass roots for the social sciences and human service professionals*. 3rd Edition. Pretoria: Van Schaik.
- Sullivan-Bolyai, S. & Bova, C. 2010. Data analysis: Descriptive and inferential statistics. In LoBiondo-Wood, G. & Haber, J. 2010. *Nursing Research. Methods and Critical Appraisal for Evidence-Based Practice*. 7th Edition. St. Louis: Mosby Elsevier.
- The South African Society of Anaesthesiologists. 2009. South African Acute Pain Guidelines. *Southern African Journal of Anaesthesia and Analgesia*, 15(6):1-120.
- Tapp, J & Kropp, D. 2005. Evaluating pain management delivered by direct care nurses. *Journal of Nursing Care Quality*, 20(2):167-173.
- Twycross, A. 2000. Education about pain: a neglected area? *Nurse Education Today*, 20(3):244-253.
- Twycross, A. 2002. Educating nurses about pain management: the way forward. *Journal of Clinical Nursing*, 11(6):705-714.
- Van Niekerk, L.M. & Martin, F. 2003. The impact of the nurse-physician relationship on barriers encountered by nurses during pain management. *Pain Management Nursing*, 4(1):3-10.
- Williamson, A. & Hoggart, B. 2005. Pain: a review of three commonly used pain rating scales. *Journal of Clinical Nursing*, 14(7):798-804.
- World Health Organisation. 2007. *WHO Normative Guidelines on Pain Management*. [Online]. Available: http://www.who.int/medicines/areas/quality_safety/delphi_study_pain_guidelines.pdf. [2010, March 14].
- Zanolin, M.E., Visentin, M., Trentin, L., Saiani, L., Brugnolli, A. & Grassi, M. 2007. A questionnaire to evaluate the knowledge and attitudes of health care providers on pain. *Journal of Pain and Symptom Management*, 33(6):727-736.

APPENDICES

APPENDIX A: ETHICAL COMMITTEE APPROVAL LETTER



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvenoot • your knowledge partner

24 February 2011

MAILED

Mrs T Wulff
Department of Nursing
2nd Floor
Teaching Block

Dear Mrs Wulff

Knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.

ETHICS REFERENCE NO: N10/12/404

RE: APPROVAL

It is a pleasure to inform you that a review panel of the Health Research Ethics Committee has approved the above-mentioned project on 24 February 2011, including the ethical aspects involved, for a period of one year from this date.

This project is therefore now registered and you can proceed with the work. Please quote the above-mentioned project number in ALL future correspondence. You may start with the project. Notwithstanding this approval, the Committee can request that work on this project be halted temporarily in anticipation of more information that they might deem necessary.

Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly and subjected to an external audit.

Translations of the consent document in the languages applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Please note that for research at primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Hélène Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

Approval Date: 24 February 2011

Expiry Date: 24 February 2012

24 February 2011 13:16

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Afdeling Navorsingsontwikkeling en -steun · Division of Research Development and Support
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Yours faithfully

MS CARLI SAGER

RESEARCH DEVELOPMENT AND SUPPORT

Tel: +27 21 938 9140 / E-mail: carlis@sun.ac.za

Fax: +27 21 931 3352

24 February 2011 13:16

Page 2 of 2



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APPENDIX B: PERMISSION FOR ACCESS TO HOSPITAL – GROOTE SCHUUR HOSPITAL



DEPARTMENT
of HEALTH

Provincial Government of the Western Cape

GROOTE SCHUUR HOSPITAL

Bpatel@pgwc.gov.za
Tel.: 021-404-6288 Fax: 021-404-6125
Private Bag, Observatory, 7935
www.capegateway.gov.za

REFERENCE: Research:- Miss T. Wulff
ENQUIRIES: Dr Bhava Patel

Miss T. Wulff
G46 Clinical Facilitator
Nursing Department
Old Main Building

Dear Ms Wulff

RESEARCH: Knowledge and Clinical Practice of Nurses for Adult Post-Operative Orthopaedic Pain Management

Your recent letter to the hospital refers.

You are hereby granted permission to proceed with your research.

Please note the following:

- a) Your research may not interfere with normal patient care
- b) Hospital staff may not be asked to assist with the research.
- c) No hospital consumables and stationary may be used
- d) Please introduce yourself to the person in charge of an area before commencing.

I would like to wish you every success with the project.

Yours sincerely

Dr Bhavna Patel
SENIOR MANAGER: MEDICAL SERVICES

Date: 9th March 2011



Groote Schuur Hospital
Private Bag,
Observatory, 7935
Telephone : 021 404-9111

APPENDIX C: PERMISSION FOR ACCESS TO HOSPITAL – TYGERBERG HOSPITAL



DEPARTMENT
of HEALTH

Provincial Government of the Western Cape

**Tygerberg Academic Hospital and
Mitchells Plain & Tygerberg Oral Health Centres**

lbinde@pgwc.gov.za
tel: +27 21 938-5752 / fax: +27 21 938-6698
Private Bag X3, Tygerberg, 7505
www.capegateway.gov.za

**REFERENCE : Research Projects
ENQUIRIES : Dr M A Mukosi**

Date: 01 APR 11

ETHICS NO: N10/12/404

Mrs T Wulff
Dept of Nursing
2nd Floor
Teaching Block
University of Stellenbosch

Dear Mrs T Wulff

Ref: Knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.

PERMISSION TO CONDUCT YOUR RESEARCH AT TYGERBERG HOSPITAL

In accordance with the Provincial Research Policy and Tygerberg Hospital Notice No 40/2009, permission is hereby granted for you to conduct the above-mentioned research here at Tygerberg Hospital.

DR D ERASMUS
CHIEF DIRECTOR: TYGERBERG HOSPITAL
23/03/2011

APPENDIX D: PARTICIPANT CONSENT FORM

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT: Knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.

REFERENCE NUMBER: N10/12/404

PRINCIPAL INVESTIGATOR: Theresa Wulff

ADDRESS: 5 Buckingham Mews, Mocke Road, Diep River, 7800

CONTACT NUMBER: 0726215590

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Committee for Human Research at Stellenbosch University and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

- *Orthopaedic surgery is acknowledged as being very painful.*
- *This research study aims to evaluate registered professional and staff nurses' knowledge and clinical management of pain in adult post-operative orthopaedic patients. By conducting this study, data will be collected to show how nurses manage post-operative pain.*
- *The study will be conducted in the two central hospitals located in the Cape Town Metropole district. The hospitals are Groote Schuur Hospital and Tygerberg Hospital. Only registered professional and staff nurses working in the orthopaedic wards will take part in the study. The study will include both day and night nursing staff.*
- *You will be given a consent form to complete before your participation in the research project. Participation is entirely voluntary and anonymous. On completion of consent form you will place the consent form in a sealed envelope and slot it into a special box provided by the researcher. Once the consent form has been completed,*

you will be given a questionnaire with 65 questions. No names or hospital names are attached to this questionnaire; the answers are in the form of numbers or multiple response tick off columns. The questionnaire will take approximately 20 minutes to complete. Once the questionnaire has been completed, it will be placed in a sealed envelope and placed into a second box marked questionnaires also provided by the researcher. All questionnaires will be completed in the ward where you are working. The researcher will deliver and collect all the consent forms and questionnaires in person.

Why have you been invited to participate?

- *As a registered professional or staff nurse currently working in an adult orthopaedic ward, your input is valuable to determine the current knowledge, clinical practice, in-service training and policies for post-operative pain management.*

What will your responsibilities be?

- *You will be requested to complete a consent form and place it in a sealed envelope into a box marked "Consent forms". After completion of consent, you will be given a questionnaire to be completed and placed in a sealed envelope into a box marked "Questionnaires". There will be no names affixed to the questionnaire; therefore the study will be done anonymously. There is no way the researcher will be able to identify the participants by either hospital or individual names.*

Will you benefit from taking part in this research?

- *The data generated through your participation in this research project will benefit both staff and patients as it might lead to an adaptation in the way in which pain management is currently managed. In-service training programmes in pain management will be developed to improve the quality of pain management provided to adult orthopaedic patients.*

Are there any risks involved in your taking part in this research?

- *No risks have been identified by means of your participation in this project.*

If you do not agree to take part, what alternatives do you have?

- *Your participation in this research project is entirely voluntary and if you select not to participate, you will not be penalised in any way.*

Will you be paid to take part in this study and are there any costs involved?

- *No, you will not be paid to take part in the study. There will be no costs involved for you, if you do take part.*

Is there anything else that you should know or do?

- *You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by the researcher.*

Declaration by participant

By signing below, I agree to take part in a research study entitled **Knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.**

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

Signed at (*place*) on (*date*)..... 2011.

.....
Signature of participant

.....
Signature of witness

Declaration by investigator

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.

Signed at (*place*) on (*date*) 2011.

.....
Signature of investigator

.....
Signature of witness

APPENDIX E: PERMISSION TO USE SURVEY TOOL



April 2008

Dear Colleague:

The "Knowledge and Attitudes Survey Regarding Pain" tool can be used to assess nurses and other professionals in your setting and as a pre and post test evaluation measure for educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool was revised and is now being tested in pain education courses to conduct psychometric analysis on this updated version. There have been minor edits in April 2008.

Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the Agency for Health Care Policy and Research. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r > .80$) by repeat testing in a continuing education class of staff nurses ($N=60$). Internal consistency reliability was established (alpha $r > .70$) with items reflecting both knowledge and attitude domains.

Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge and attitude about addiction. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below.

We also acknowledge the assistance of several of our pain colleagues including Pam Kedziera, Judy Paice, Deb Gordon, June Dahl, Hob Osterlund, Chris Pasero, Pat Coyne and Nessa Coyle in the current revisions. If using or publishing the tool results please cite the reference as "Knowledge and Attitudes Survey Regarding Pain" developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (<http://prc.coh.org>), revised 2008.

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting.

Sincerely,

Handwritten signature of Betty R. Ferrell in black ink.

Betty R. Ferrell, RN, PhD, FAAN
Research Scientist

Handwritten signature of Margo McCaffery in black ink.

Margo McCaffery, RN, MS, FAAN
Lecturer and Consultant

APPENDIX F: DATA COLLECTION QUESTIONNAIRE

Knowledge and clinical practice of nurses for adult post-operative orthopaedic pain management.

Questionnaire

INSTRUCTIONS:

- Please answer all the questions by marking your choice with a tick (√), e.g.:
Are you a nurse?

Yes	√
No	

- This questionnaire consists of 5 pages and will take approximately 20 minutes to complete.
- Place the completed questionnaire in the self-sealing envelope provided. Post it in the sealed “questionnaires” box.

SECTION A: DEMOGRAPHIC PROFILE					
NO.	DEMOGRAPHIC INFORMATION				
01-02	Indicate your gender <table border="1"> <tr> <td>Male</td> <td></td> </tr> <tr> <td>Female</td> <td></td> </tr> </table>	Male		Female	
Male					
Female					
03	Indicate your current age Years: <table border="1"> <tr> <td style="width: 50px; height: 30px;"></td> </tr> </table>				

SECTION B: PROFESSIONAL PROFILE							
NO.	PROFESSIONAL INFORMATION						
04-06	Indicate your nursing category <table border="1"> <tr> <td>Staff nurse</td> <td></td> </tr> <tr> <td>Professional nurse</td> <td></td> </tr> <tr> <td>Operational manager</td> <td></td> </tr> </table>	Staff nurse		Professional nurse		Operational manager	
Staff nurse							
Professional nurse							
Operational manager							
07-09	Indicate your level of nursing education <table border="1"> <tr> <td>Enrolment certificate</td> <td></td> </tr> <tr> <td>Diploma</td> <td></td> </tr> <tr> <td>Degree</td> <td></td> </tr> </table>	Enrolment certificate		Diploma		Degree	
Enrolment certificate							
Diploma							
Degree							
10	Do you have any post basic nursing qualifications? Specify:						

11	How many years of experience (after qualification) do you have? Years: <input type="text"/>				
12-13	In the past 12 months, did you work mostly day or night duty? <table border="1"> <tr> <td>Day duty</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Night duty</td> <td><input type="checkbox"/></td> </tr> </table>	Day duty	<input type="checkbox"/>	Night duty	<input type="checkbox"/>
Day duty	<input type="checkbox"/>				
Night duty	<input type="checkbox"/>				
14-15	Today I am ... <table border="1"> <tr> <td>Permanently employed at the hospital</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Employed by a Nursing Agency to work at the hospital</td> <td><input type="checkbox"/></td> </tr> </table>	Permanently employed at the hospital	<input type="checkbox"/>	Employed by a Nursing Agency to work at the hospital	<input type="checkbox"/>
Permanently employed at the hospital	<input type="checkbox"/>				
Employed by a Nursing Agency to work at the hospital	<input type="checkbox"/>				

SECTION C: PAIN MANAGEMENT – KNOWLEDGE

In this section, please indicate whether you believe the statement to be “true” or “false”.
Choose only one option per statement by marking the appropriate column with a tick (✓).

NO.	To my knowledge...	True	False
16-17	The most accurate judge of intensity of pain is the patient him / herself.	<input type="checkbox"/>	<input type="checkbox"/>
18-19	A pain rating scale, e.g. 0 – 10, is appropriate for patients to use to rate their pain.	<input type="checkbox"/>	<input type="checkbox"/>
20-21	A patient's pain should be assessed at rest and during mobilisation.	<input type="checkbox"/>	<input type="checkbox"/>
22-23	Pain assessment is based on the patient's behaviour and physiological changes only.	<input type="checkbox"/>	<input type="checkbox"/>
24-25	Changes in vital signs and / or behaviour should be relied upon to confirm a patient's statement of pain.	<input type="checkbox"/>	<input type="checkbox"/>
26-27	Patients who can be distracted from pain usually do not have severe pain.	<input type="checkbox"/>	<input type="checkbox"/>
28-29	Patients may sleep in spite of severe pain.	<input type="checkbox"/>	<input type="checkbox"/>
30-31	Pain stimuli in different patients result in differences in pain intensity.	<input type="checkbox"/>	<input type="checkbox"/>
32-33	Based on spiritual beliefs, a patient may think that pain and suffering is necessary.	<input type="checkbox"/>	<input type="checkbox"/>
34-35	Patients with a history of substance abuse should not be given opioids, e.g. morphine, for pain relief.	<input type="checkbox"/>	<input type="checkbox"/>
36-37	The administration of paracetamol or anti-inflammatory medication with opioid analgesia results in effective pain relief.	<input type="checkbox"/>	<input type="checkbox"/>
38-39	The most common side effect of morphine is respiratory depression.	<input type="checkbox"/>	<input type="checkbox"/>
40-41	Elderly patients cannot tolerate opioids for pain relief.	<input type="checkbox"/>	<input type="checkbox"/>
42-43	Administering sterile saline by injection (placebo) is often a useful test to determine if the pain is real.	<input type="checkbox"/>	<input type="checkbox"/>
44-45	The most likely reason a patient with pain would request increased doses of opioid analgesia is that the patient's request may be related to addiction.	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: PAIN MANAGEMENT – CLINICAL PRACTICE

In this section, please indicate whether you “agree” or “disagree” with the statement.
Choose only one option per statement by marking the appropriate column with a tick (✓).

NO.	I believe that...	Agree	Disagree
46-47	My nursing training has prepared me for managing post-operative pain.	<input type="checkbox"/>	<input type="checkbox"/>
48-49	Patients have the right to expect total pain relief as the goal of pain management.	<input type="checkbox"/>	<input type="checkbox"/>

50-51	A patient's report of pain should be believed.		
52-53	The expression and tolerance of pain varies amongst the different cultures.		
54-55	Estimation of pain by a nurse is a more valid measure of pain than the patient's report of pain.		
56-57	Orthopaedic patients experience greater pain due to oedema, haematoma and muscle spasms.		
58-59	Pain assessment forms the basis for good pain management.		
60-61	Pain assessment tools are valuable in assessing the pain of a patient.		
62-63	Pain assessment should not be routinely conducted on post-operative orthopaedic patients.		
64-65	Effective pain management does not promote early mobilisation and prevent complications.		
66-67	A patient should experience slight discomfort before receiving the next dose of pain medication.		
68-69	The patient with pain should be encouraged to endure as much pain as possible before accepting pain relief.		
70-71	The type of pain relief selected for the patient should be based on the type of surgery.		
72-73	In the immediate post-operative period, pain relief should be administered on a regular basis rather than as needed (PRN) by the patient.		
74-75	If the patient can be distracted from the pain this usually means that he / she does not have severe pain.		
76-77	I would provide more effective pain assessment and management, if I had more time at my disposal.		
78-79	I do not need any more training or information regarding pain assessment and management.		

SECTION E: NURSING CARE PLANNING

In this section, please choose whether the given statement is typical of what you do in the ward, by indicating "yes", "sometimes" or "no".

Choose only one option per statement by marking the appropriate column with a tick (✓).

NO.	In my daily work...	Yes	Sometimes	No
80-82	I provide pre- operative counselling to the patients regarding pain management.			
83-85	I use a pain rating scale to identify the intensity of pain experienced by the patient.			
86-88	I assess pain when the patient is at rest.			
89-91	I assess pain on movement, e.g. coughing, mobilisation.			
92-94	I record the pain rating on the patient's observation chart.			
95-97	I record my findings of pain assessment in the nursing records.			
98-100	I provide pain relief during medication rounds.			
101-103	I conduct a specific pain management round.			
104-106	I use comfort measures, e.g. change of position; massage, to provide pain relief.			
107-109	I record the pain relief measures provided to the patient in the nursing records.			
110-112	I evaluate and record the level of pain relief after the administration of analgesia.			
113-115	Patients are reluctant to report their pain needs.			
116-118	Patients are reluctant to take pain relief measures.			

119-121	I find that morphine is the most common analgesia prescribed for post-operative pain management in my ward.			
122-124	I worry that a patient might become addicted to the opioid analgesic, e.g. morphine, which I administer.			
125-127	I have to contact the doctor to adjust the patient's prescription for analgesia.			
128-130	There is no communication amongst the nursing staff with respect to the pain management needs of the patients in the ward.			
131-133	I have to check scheduled analgesia with another nurse.			

SECTION F: ORIENTATION / IN-SERVICE TRAINING & POLICIES

In this section, please choose whether the given statement is typical of what you have experienced, by indicating "yes", "no" or "unsure".

Choose only one option per statement by marking the appropriate column with a tick (✓).

NO.	In my work environment...	Yes	No	Unsure
134-136	Post-operative pain assessment and management is included in the orientation and induction programme of the ward.			
137-139	Formal in-service training (e.g. lecture) regarding pain management has been given, at least once in the past 6 months.			
140-142	There is no policy document available on pain management in the hospital			
143-145	There are pain management guidelines / algorithms available in the ward.			
146-148	A formal pain rating scale is utilised in the ward.			
149-151	Audits are conducted to evaluate pain management practices in the ward.			
152-154	I have not received informal in-service training (e.g. on-the-spot teaching) regarding pain management in the past month.			

Thank you for your willingness to participate in this research study. Place the completed questionnaire in the self-sealing envelope provided. Post it in the sealed "questionnaires" box.

APPENDIX G: LANGUAGE EDITING



To whom it may concern

This letter serves as confirmation that I, Lize Vorster, have performed the language editing and technical formatting of T Wulff's thesis which entails ensuring its compliance with the Stellenbosch University's technical requirements.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Lize Vorster', is written over a simple line drawing of a pen nib.

Lize Vorster