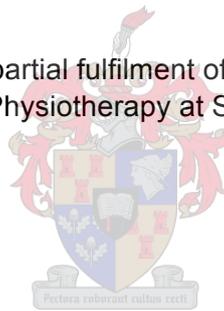


Perception of physiotherapy care in a surgical ICU: The patients' perspectives

by
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Thesis presented in partial fulfilment of the requirements for the degree Master of Physiotherapy at Stellenbosch University



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March 2016

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 author 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.

Michelle van Nes

March 2016

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ABSTRACT

INTRODUCTION: Physiotherapy practice in the intensive care unit (ICU) is changing. Early mobilisation programmes are included and prioritised. Methods and measures to assess physiotherapy effectiveness in the ICU have often been geared to physiological data. It is unclear if the patients' perspectives and satisfaction regarding care in the ICU have been investigated, specifically with regard to physiotherapy.

METHODS: A scoping review was undertaken with the aim of determining how patient perception and satisfaction regarding critical care is measured. Seven databases were searched using various combinations of selected keywords for the process of identification. The review results informed the planning of the primary study. A primary qualitative study was conducted to describe patients' perceptions and satisfaction with regard to physiotherapy care received during their surgical ICU stay. Patients were included via purposive sampling into the primary study. Audiotaped, semi-structured interviews of 25-60 minutes each were completed with the included patients. Data was transcribed and then analysed via inductive and interpretive content analysis. Trustworthiness of results was ensured through reflexivity, checking of transcriptions, peer review and member checking.

RESULTS: A total of 1 631 hits were reduced to 28 studies, which were included into the scoping review. Only two studies were conducted in Africa compared with ten in Europe and seven in Northern America. Ten of the included studies investigated a particular service such as nursing care, emergency care and physiotherapy with regard to patient perception and satisfaction. Only one article, published in 2008, investigated patient satisfaction in physiotherapy. Various outcome measures that measure perception and/or satisfaction were identified; however, there is currently no validated and reliable instrument to assess patient satisfaction with care in the ICU. Eighteen patients, of which ten patients were male, were purposefully selected for the primary study. The median patient age was 44 years and the median ICU length of stay was six days. Twelve themes arose from the data analysis, including: 1) patient expectations and understanding; 2) physiotherapy activities and the implication of mobilisation; 3) physiotherapy benefits and

progression; 4) physiotherapy value; 5) interdisciplinary team; 6) the physiotherapist; 7) safety; 8) tangibilities; 9) continuity of care; 10) satisfaction; 11) communication; and 12) patient perception and experience. These themes as well as key messages, future research and contributions to literature were discussed. Barriers and facilitators for the relevant themes were also discussed.

CONCLUSION: While there is no gold standard for measuring patient perception and satisfaction regarding ICU care, it can and should be measured. With current and on-going changes to both physiotherapy and ICU care practices, patients can share their experiences of the ICU with greater ease. This thesis demonstrated that patients' perception of ICU physiotherapy is influenced by many factors. While patients perceived ICU physiotherapy both positively and negatively, the majority of patients were satisfied with the care they received. Patient perception and satisfaction in the ICU can be evaluated and used to ensure quality of care and ultimately provide a component to the development of evidence-based physiotherapy practice in the ICU.

Words: 469

OPSOMMING

INLEIDING: Fisioterapiepraktyk in die intensiewesorgeenheid (ISE) is aan die verander. Programme vir vroeë mobilisasie word ingesluit en geprioritiseer. Uitkomst om die doeltreffendheid van fisioterapie in die ISE te bepaal, is dikwels op fisiologiese data gegrond. Dit is onduidelik of pasiënte se sienings oor en tevredenheid met fisioterapeutiese ISE-sorg, al ondersoek is.

METODES: 'n Onderzoekende literatuur oorsig is onderneem ten einde te bepaal hoe pasiënte se opvattinge en tevredenheid met betrekking tot kritieke sorg gemeet word. Ter identifikasie is sewe databasisse met verskillende kombinasies gekose trefwoorde deursoek. Die oorsig resultate het die beplanning van die primêre studie gerig. 'n Primêre kwalitatiewe studie het pasiënte se opvattinge oor en tevredenheid met fisioterapeutiese sorg, gedurende chirurgiese ISE verblyf bepaal. Pasiënte is deur middel van doelbewuste steekproefneming by die primêre studie ingesluit. Semigestruktureerde onderhoude, 25-60 minute elk, is met pasiënte gevoer en op band geneem. Data is getranskribeer en daarna deur middel van inductiewe en vertolkende inhoudsanalise ontleed. Nadenke, die nagaan van transkripsies, portuurbeoordeling en ledekontrole het betroubaarheid van die resultate verseker.

RESULTATE: Die soektog het 1 631 trefslae opgelewer. Hierdie trefslae is tot 28 studies verminder wat by die onderzoekende literatuur oorsig ingesluit is. Hiervan was slegs twee studies van Afrika, vergeleke met tien van Europa en sewe van Noord-Amerika. Tien van die ingeslote studies het pasiënte se opvattinge en tevredenheid insake 'n bepaalde diens soos verpleegsorg, nood sorg en fisioterapie ondersoek. Slegs een van die tien artikels het pasiënttevredenheid met fisioterapie bestudeer. Verskillende uitkomstmetings wat opvattinge en/of tevredenheid meet, is uitgewys. Ten spyte hiervan is daar tans geen gestaafe en betroubare instrument om pasiënttevredenheid met ISE-sorg te beoordeel nie.

Agtien pasiënte, waarvan tien mans, is doelbewus vir die primêre studie gekies. Pasiënte was gemiddeld 44 jaar oud en het gemiddeld vir ses dae in die ISE gebly. Die dataontleding het 12 temas na vore gebring, naamlik 1) pasiënte se verwagtinge en begrip; 2) fisioterapieaktiwiteite en

die implikasie van mobilisasie; 3) fisioterapievoordele en -vordering; 4) die waarde van fisioterapie; 5) die interdisiplinêre span; 6) die fisioterapeut; 7) veiligheid; 8) konkrete voordele/resultate; 9) sorgkontinuiteit; 10) tevredenheid; 11) kommunikasie; en 12) pasiënte se opvattinge en ervarings. Hierdie temas sowel as kernboodskappe, toekomstige navorsing en bydraes tot die literatuur word bespreek. Versperrings en fasiliteerders vir die tersaaklike temas word ook uitgewys.

GEVOLGTREKKING: Hoewel daar geen goue standaard vir die meting van pasiënte se opvattinge oor en tevredenheid met ISE-sorg bestaan nie, kan en behoort dit gemeet te word. Met huidige en voortdurende verandering in sowel fisioterapie- as ISE-sorgpraktyke kan pasiënte hulle ervarings van die ISE makliker weergee. Hierdie tesis toon dat pasiënte se opvattinge oor fisioterapie in die ISE deur verskeie faktore beïnvloed word. Hoewel pasiënte fisioterapie in die ISE positief sowel as negatief ervaar het, was die meeste pasiënte tevrede met die sorg wat hulle ontvang het. Pasiënte se opvattinge en tevredenheid met betrekking tot die ISE kan beoordeel en gebruik word om gehalte sorg te verseker. Hierdie pasient perspektief is 'n noodsaaklike komponent wat bydra tot die ontwikkeling van bewysgebaseerde fisioterapiepraktyk in die ISE.

Woorde: 499

DEDICATION

To my family who always believed I could

To Giesela, an inspirational woman and mentor

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LIST OF ABBREVIATIONS

EBM: Evidence-based medicine

GCS: Glasgow Coma Scale

ICU: Intensive care unit

LOS: Length of stay

MV: Mechanical ventilation

PI: Primary investigator

SQ5: Adequacy score

GLOSSARY

Care: Providing that which is needed to maintain health and safety (1)

Experience: Observations and events that make an impression on a person; the process of personally perceiving occurrences (2)

Mobilisation: Hierarchically accepted ICU mobilisation exercises, including bed exercises, sitting over the edge of the bed, standing, transfers and walking in one place (3)

Patient perception: “The way you think about or understand someone or something, the ability to understand or notice something easily or the way that you notice or understand something using one of your senses” (4)

Patient satisfaction: Fulfilling patient needs, desires and expectations (5)

Quality care: Health services that provide services coherent with the current available knowledge, increasing the probability of desired health results (6)

Tangibilities (also referred to as tangibles): Aspects such as environment, equipment, appearance (7) and timing of treatment

CHAPTER 1: INTRODUCTION AND STUDY CONTEXT

1.1 INTRODUCTION AND BACKGROUND

The World Health Organization (WHO) recognises the importance of patient opinion, perception and satisfaction level in providing a quality healthcare service. (8) Over the past few decades and specifically in the 1990s, the healthcare system has evolved and is now considered to be patient centred. (8) The primary element for the assessment of service quality is the consumer of the health service, the patient. The resultant patient satisfaction level can indicate the quality of care. (8)

The concept of satisfaction is not new to healthcare. Initially, professionals would decide the elements of satisfaction more so than the users of the service and as a result, the patient's opinion and perception of his/her satisfaction with the service offered was not known. (8) This may be because patients were previously thought to be unable to judge the technical components of care quality adequately. But as demonstrated by Shannon et al., (9) patient perceptions can differ from those of the staff. The use of staff perceptions in place of patient perceptions can result in incorrect assumptions. (9)

Patient perception is the manner in which the patient understands and interprets an experience. Romero-García et al. (8) reported that "it [is] important to glance through the eyes of the patient" since no one can better understand the perceptions of patients than the patients themselves. (8) According to So et al., (10) individuals' perceptions of the surroundings differ depending on the individual's life experience, current situation, family upbringing (10) and culture. (10,11) All of these factors will influence the way in which the situation is assessed and the consequent reaction. (10)

One of the components of patient perception is satisfaction. (5) Patient satisfaction is the collection of the patient's experiences in hospital. (12) Patient satisfaction stems from the patient's evaluation of the care providers' abilities to meet his or her physical, emotional and personal needs. (12) Patient satisfaction can be further explained as the patient's reaction to the various aspects of the service provided and the subjective experience of that service. (12,13) Patient demographics,

health status, culture and perceived interactions with medical staff and technical care are all factors that can influence patient satisfaction with care. (12,13)

Patient satisfaction is fast becoming an essential notion for the improvement of care quality (14,15) in healthcare centres and hospitals (13,15) and has been linked to increased compliance with treatment plans, better patient safety and improved clinical outcomes. (16,17) The move towards understanding and investigating patient perception and satisfaction with regard to the healthcare that patients receive is ever growing. Documenting the elements that are important to patients when evaluating their healthcare is vital in assessing and improving quality of care. (18)

1.2 MOTIVATION

According to Brownson, (19) evidence-based medicine (EBM) is integrating current best knowledge with patient preferences to provide individualised patient care. (19,20) (See Figure 1.1) Patient preferences, opinions and thus perceptions are, therefore, important in the development of evidence-based practice. Although EBM refers to individualised care, it can also be considered on a wider scale to facilitate and inform general decision-making in practice and in multiple settings such as critical care.

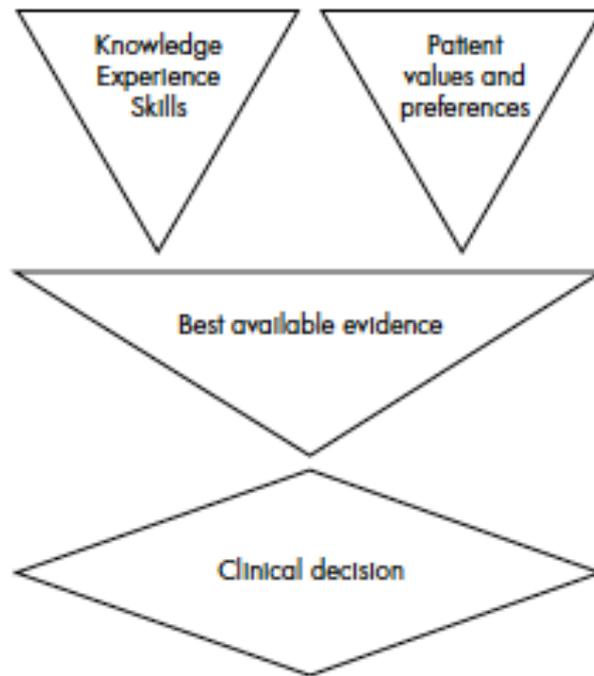


Figure 1.1: Evidence-based medicine diagram (19,20)

Similarly, the Institute of Medicine has stated that in order to achieve quality care, there is a need to customise patient care based on the patient's needs and values. (5) They further stated that the control source of the interactions within the healthcare system is the patient. (5) Several studies have reported that the patients' experiences and opinions regarding an event are considered valuable feedback for healthcare providers and for the assessment of quality of care. (21-25) Regarding the patients' experiences, there is much that can be learnt from knowing what the patients expect, find helpful during their recovery and consider valuable. (26) Due to the current trend in patient-centred healthcare, patient satisfaction with care is an indicator of care quality and a means by which health authorities can identify service delivery areas needing improvement. (15)

Within the service of physiotherapy specifically, the drive to have treatments and interventions rooted in evidence-based practices is growing. (27) However, as stated by Stiller and Wiles, (27) patient satisfaction has been investigated for select subgroups, but is still under-utilised within the intensive care unit (ICU) setting. (27) Much of ICU-based research is focused on improving critical care management to increase survival and to reduce the long-term effects of ICU stay. (28) Both ICU and physiotherapy practices are changing, with daily interruption of sedation and prioritising

early mobilisation. (29-32) Under these circumstances, it may be possible that patients will have clearer recall regarding their ICU experience. This may ultimately enable and assure quality of care within the ICU and the critical care setting. Since the physiotherapist is one of the multidisciplinary team members involved in treating these ICU patients and striving for evidence-based interventions, it is important to continue research in this field.

As indicated by the EBM diagram (Figure 1.1), patient perception is considered an important aspect of healthcare. However, it is unclear as to how patient perception is measured in the critical care setting and with regard to physiotherapy in particular. Similarly, there is little information available regarding patients' perceptions of physiotherapy in the ICU. This served as a primary motivation for this thesis, the aims of which include:

- To identify how patient perception and satisfaction in the critical care setting is measured
- To investigate and describe how patients perceive physiotherapy in the critical care setting

1.3 STUDY CONTEXT

This study addresses one objective of an umbrella project – The implementation and evaluation of a validated, evidence-based, physiotherapy protocol in a surgical ICU: A controlled before and after experimental trial (Ethics Approval Number: S13/09/170). The umbrella project consists of three phases. Phase one involved the description of current physiotherapy practices through a survey. Phase 2 was a systematic review to identify the most effective implementation strategies. The final phase (Phase 3) involves the implementation of an evidence-based and validated physiotherapy protocol (33,34) within a surgical ICU, in addition to the evaluation of the implementation process. The physiotherapy protocol consists of five algorithms, (33,34) developed to assist physiotherapists in making clinical decisions based on evidence. (35) The algorithms encourage the involvement of both evidence-based rehabilitation (including early physiotherapy mobilisation) and respiratory management when treating ICU patients. (35,36) The use of evidence-based treatments and protocols may contribute to improving ICU care quality because they would be “consistent with current professional knowledge” (34) for which patient perception may provide valuable information.

1.4 THESIS OVERVIEW

This thesis is written in article format and consists of four chapters (Figure 1.2). Chapter 1 comprises the thesis introduction, study context and motivation. Chapter 2 is a scoping review, mapping out the current available literature on how patient perception and satisfaction in the critical care setting is measured. Chapter 2 is formulated for journal submission following the author publication guidelines for the *American Journal of Critical Care* (Appendix L) under the title: Measuring patient perceptions and satisfaction in critical care: A scoping review. The preliminary results were presented in poster format at the Critical Care Society of Southern Africa (CCSSA) Congress under the title: Patient perceptions of ICU care: A scoping review (Appendix H). The scoping review abstract was also published in the *Southern African Journal of Critical Care (SAJCC)* under the title: Patient perceptions of ICU care: A scoping review. (37) (See Appendix I)

Chapter 3 is presented as a research manuscript for journal submission under the title: “They play a big role ...” Patient perceptions of physiotherapy in the ICU: A qualitative study. It was formulated following the author publication guidelines for the *BMC Critical Care* journal (Appendix M) and presents the methodology, results and conclusions of the primary study conducted for the thesis. Finally, Chapter 4 provides a platform for general discussion regarding the thesis, in addition to literature contributions, thesis limitations, strengths, recommendations for future research and final conclusions drawn. One complete reference list is presented for the entire thesis for ease of reading. Upon submission to the relevant journals, individual reference lists will be prepared and included with the appropriate articles.

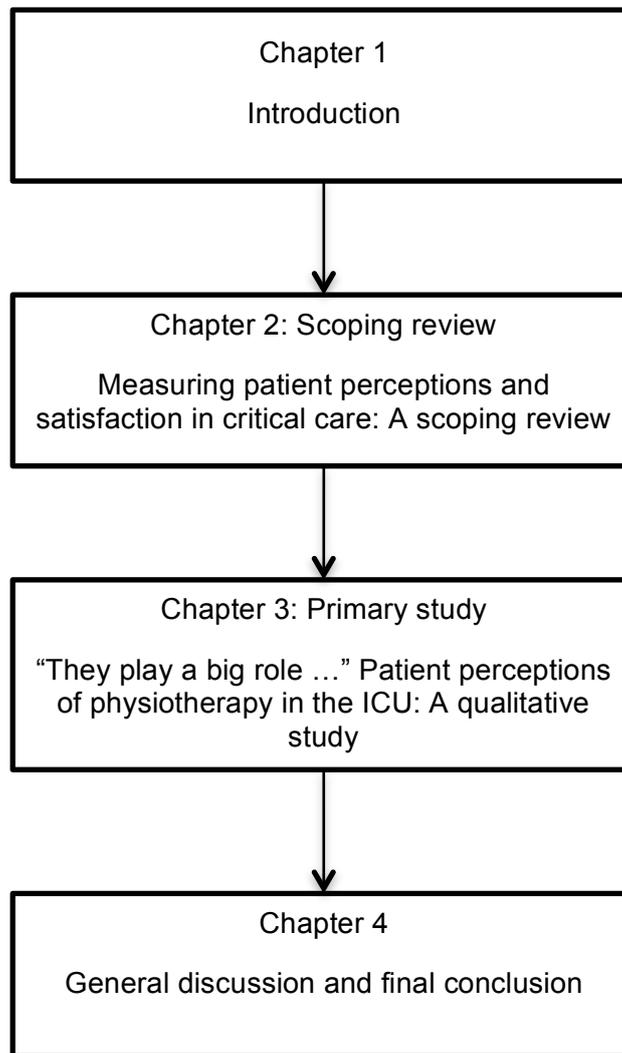


Figure 1.2: Chapter flowchart for thesis

CHAPTER 2: LITERATURE REVIEW

MEASURING PATIENT PERCEPTIONS AND SATISFACTION IN CRITICAL CARE: A SCOPING REVIEW

2.1 INTRODUCTION

Quality care continues to be a chief focus for healthcare providers and research. (38) Since certain aspects of care such as the quality of relationships with personnel and the quality of service can only be reliably evaluated by assessing patient satisfaction, (12) patient satisfaction is becoming a central concept for improving the quality of care. (14,15) Healthcare has undergone a change and is considered patient-centred. (8) The World Health Organization (WHO) recognises the importance of patient opinion, perception and satisfaction in meeting the patient's needs, expectations and priorities. Thus, patients are the primary component to evaluate service quality, which can then result in a satisfaction level as an indicator of quality of care. (8,22)

Patient satisfaction and perception are at times used interchangeably, which can result in confusion. Satisfaction is subjective and merely one example of perception. Patient satisfaction is determined by the difference between the patients' experiences with care and their expectations and needs. (5)

Despite patient satisfaction becoming increasingly important for both patients (39) and healthcare institutions, (13) it is rarely measured within the critical care setting. (39,40) This may be because ICU patients are often given large dosages of sedatives that may affect their recall ability. However, Stein-Parbury and McKinley (41) determined that 30–100% of patients recalled their ICU stay partially or completely. The ICU interdisciplinary team practices are shifting towards early mobilisation, (32) rehabilitation programme prioritisation (27,29,30) and daily sedative disruption. (31) This poses the question: Is it likely that patients will be better able to communicate and recall their ICU experiences and if so, how is patient perception and/or satisfaction with regard to critical care measured?

A scoping review was undertaken with the aim of determining how a patient's perception and satisfaction with critical care is measured. The objectives of the scoping review were to describe the investigated components of care and services, the geographical distribution of the literature and populations as well as identify measurements currently used to measure patient perception and/or satisfaction in critical care.

2.2 METHOD

According to Arksey, (42) a scoping review is a rapid mapping out of the current research area. It can be used to identify a potential literature gap and summarise literature findings. The five-step framework as outlined by Arksey (42) was followed, whereby a research question was established, relevant studies were identified and selected, the results were charted and finally summarised and reported.

2.2.1 Search strategy

Between 6 February 2015 and 20 February 2015, a total of seven electronic databases, namely MEDLINE, CINAHL, Science Direct, Pubmed, Web of Science, Scopus and Google Scholar were searched by the primary investigator (PI). Search terms included *physiotherapy or physical therapy, patient satisfaction, perception or patient perception, patient experience, intensive care unit or ICU, critical care, hospitalised adult population, hospital, measurements, measuring, outcome measure*. Databases were searched from inception until the last date of the searches. The following limitations were set for the databases, namely: 1) adult populations only; 2) English and Spanish articles only; and 3) human studies only.

2.2.2 Article selection

The inclusion and exclusion criteria provided in Table 2.1 were applied to the papers to retrieve the most relevant studies for inclusion in this scoping review (Figure 2.1).

Table 2.1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Hospitalised environments • ICU/Critical care • Primary papers • Patient perception or satisfaction regarding care • Measurements of perception or satisfaction regarding care 	<ul style="list-style-type: none"> • Studies investigating: Palliative care / cancer, end-of-life care, chronic conditions, outpatients • Perceptions of persons other than patients (Family/nurse/physician) • Primary healthcare • Only quality-of-life investigations • Studies investigating pregnancy/delivery • Behavioural changes • Imaging studies • Theoretical / conceptual studies

2.2.3 Article review

Papers were independently and systematically included or excluded according to the above criteria at title, abstract and full-text level by the PI and a secondary investigator. In the event of disagreements, both investigators would discuss and reach consensus. If consensus could not be reached, a tertiary independent investigator was consulted. Through discussion and joint agreement, the articles were included or excluded.

2.3 RESULTS

The total number of search hits from the included databases was 1 631. Following the review process, 28 studies were included (Figure 2.1). The majority of the studies (89,3%; n=25) were published in English. Three Spanish papers were also included. A further eight papers could not be included because the languages of publication were French, Portuguese and Italian.

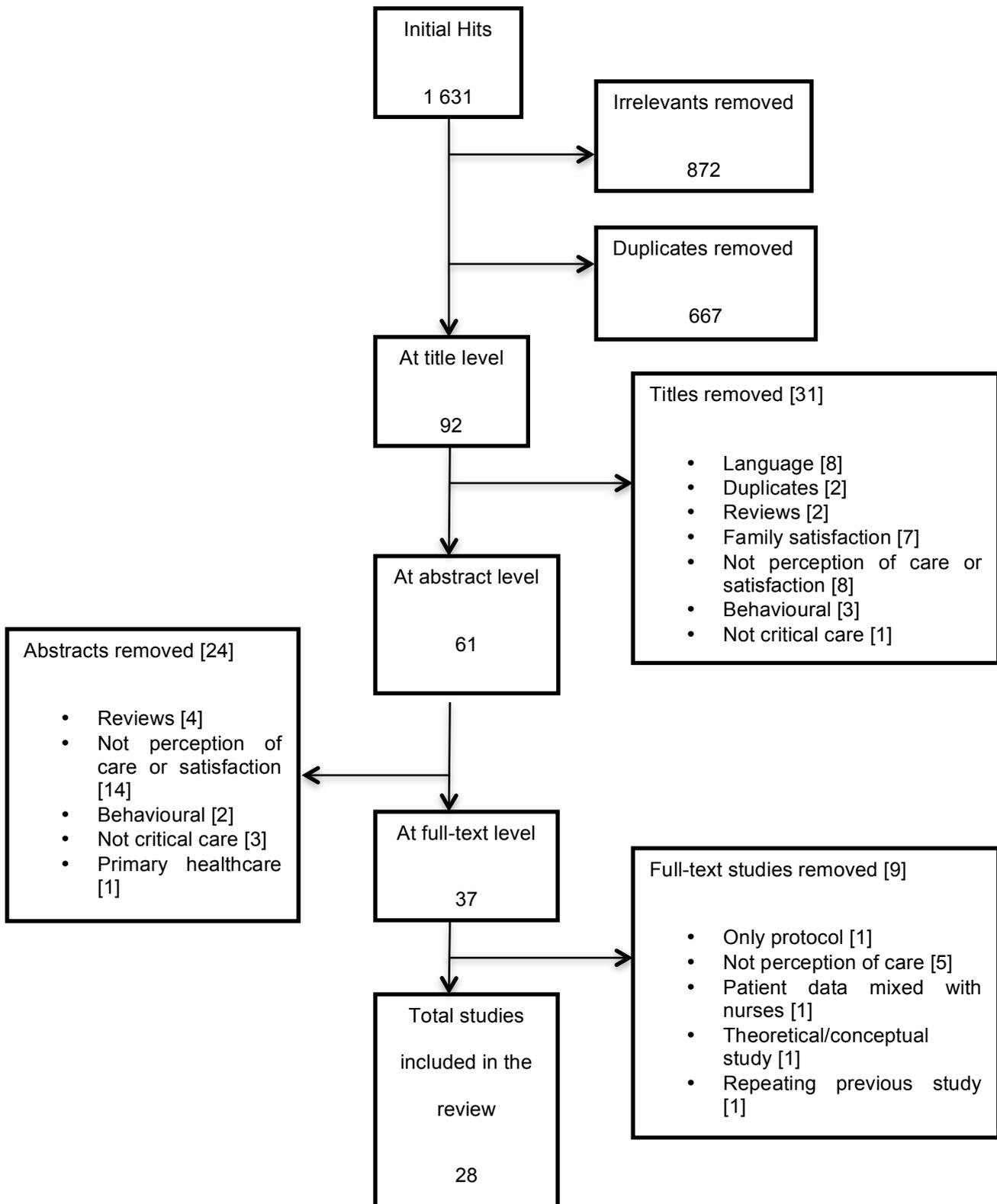


Figure 2.1: Selection process flow diagram

2.3.1 Study populations

Population

Various countries of publication for the studies were noted (Figure 2.2). Most studies (n=10) were conducted in Europe, with only two conducted in Africa.

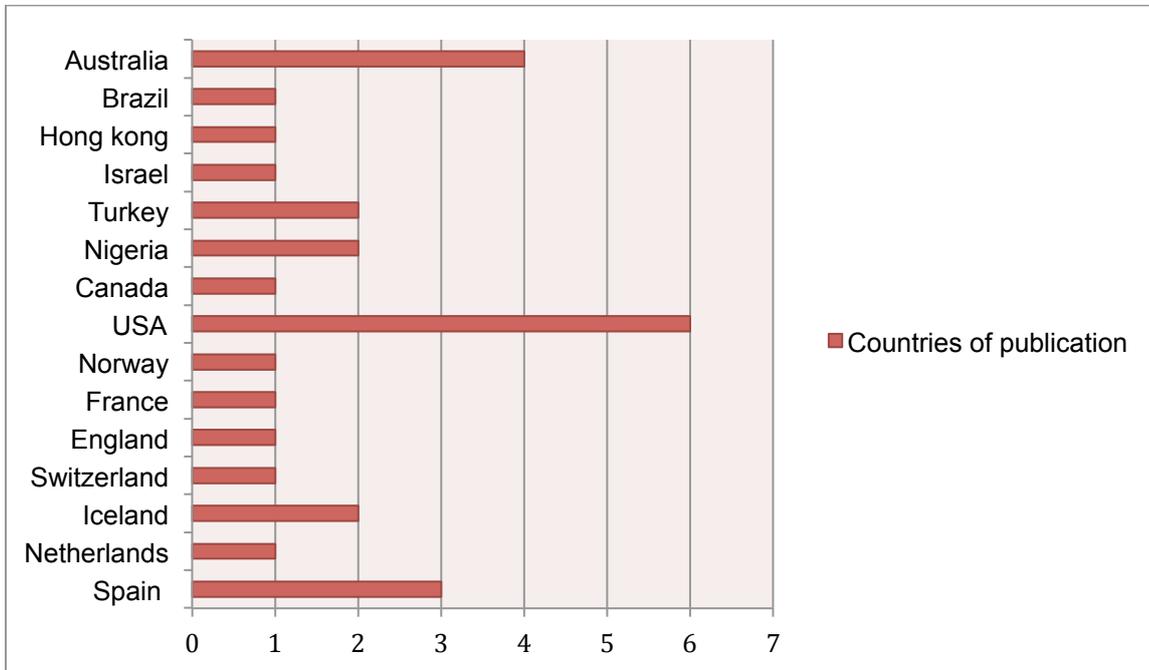


Figure 2.2: Countries of publication for the included studies

All the studies included adult-only populations but with considerable variety in the participant numbers. Participant numbers ranged from six (24) to 662 665 participants. (43) (Table 2.2 to Table 2.5) Seven of the included studies provided no description of the sample demographics such as average age, average length of stay (LOS) and gender allocation. (9,39,43-47)

Thirteen studies (8,10,21,25-27,48-54) specified average age, average LOS and gender allocation of the sample participants. The lowest average age reported was 35,3 years, and the highest average age was 64,5 years. The lowest average LOS reported was 2,4 days, while the highest was 54,5 days. Some studies (13,23,43,52-54) highlighted that gender, age and LOS may influence participant satisfaction. There was also much variety in the average LOS and the average age in the studies, thus allowing for various patient opinions to be generated.

Consciousness level

Multiple studies (53,6%) specified that included patients needed to be orientated, (8,24,26,48,50) conscious, (21,25,27,40,55) without mental disability or altered mental state (10,12,13,46) and without cognitive impairments. (48) Only one study (8) documented specific tools to assess patient cognition and consciousness, namely the Confusion Assessment Method for ICU (CAM-ICU) and the Glasgow Coma Scale (GCS). A further three studies (8,48,50) documented that patients should be orientated to time, person and place, and one study (27) reported that the therapists would determine patient consciousness through verbal and non-verbal communication (Table 2.2 to Table 2.5).

2.3.2 Study investigation categories

The studies included were grouped (Figure 2.3) into studies that 1) investigated the ICU experience (Table 2.2); 2) investigated a particular service (Table 2.3); 3) investigated a component of care (Table 2.4); and 4) investigated ICU satisfaction or care quality (Table 2.5).

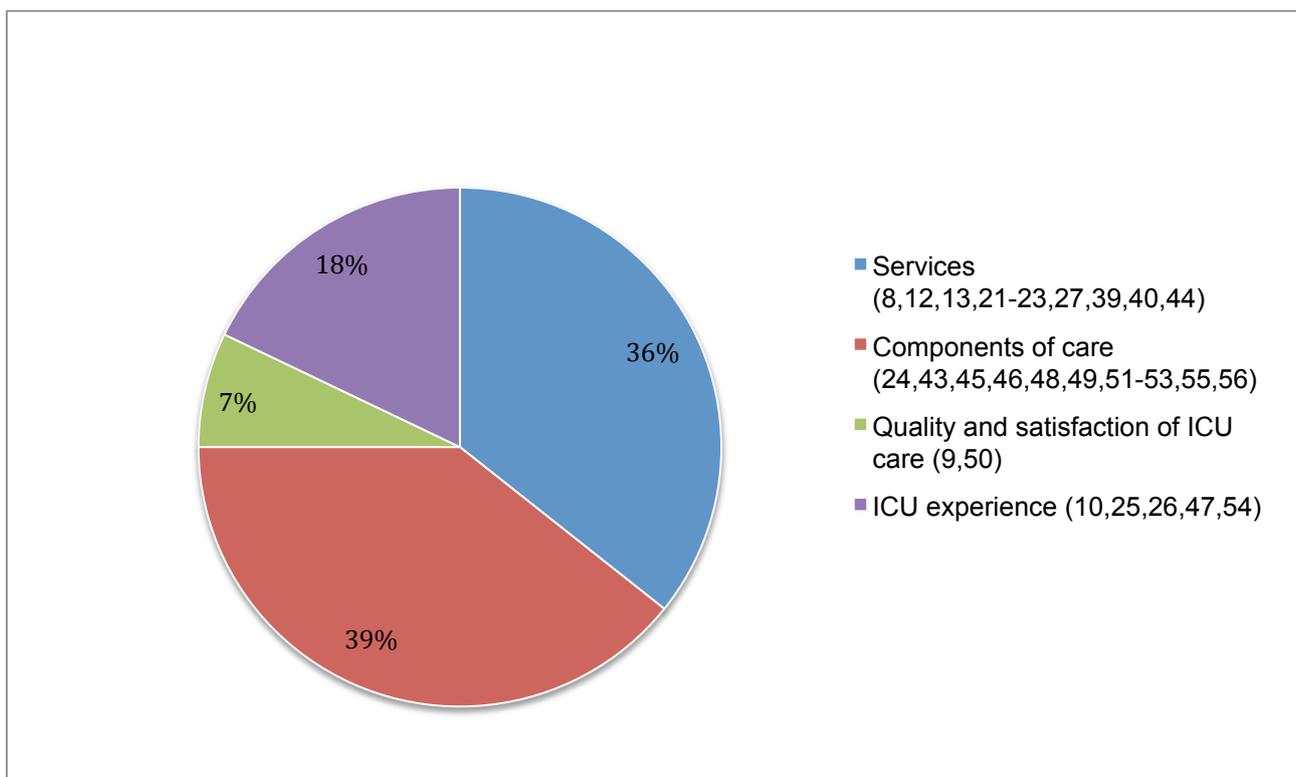


Figure 2.3: Investigation groupings of included studies

ICU experience

For the purpose of this review, the ICU experience was considered as the events and observations that made an impression on the patient while in the ICU. Five studies investigated the ICU experience, (10,25,26,47,54) but direct comparison was difficult due to the heterogeneous nature of the aspects investigated and reported regarding the ICU experience (Table 2.2).

In general, facets negatively influencing the ICU experience were related to noise, (25,26,47) pain, (26,47,54) fear, (26,47) poor communication (47) and LOS.(54) Demir et al. (54) investigated the effect of multiple factors such as LOS, pain and mechanical ventilation on ICU experience. The study results showed that female patients had a more positive ICU experience, while a longer ICU stay and pain negatively influenced the ICU experience. (54) However, Russell (47) investigated the ICU experience in general and reported that patients highlighted poor communication, noise, fear, poor protection of privacy and pain as upsetting experiences in the ICU.

Martínez et al. (25) also reported that noise was an issue noted by the patients. The study ultimately reported on patients' perceptions of the care quality, and they determined that patient perceptions were surpassed by their expectations and thus, the patients were satisfied with the ICU care. (25)

Two of the five studies made reference to stressors in the ICU. (10,26) It was determined that "being tied down by tubes", "not being in control of yourself" and "not being able to sleep" were the most stressful patient-reported ICU stressors. (10) Patients reportedly coped better with the stresses in ICU when cared for by friendly and compassionate nurses. (26) Patient satisfaction increased when attended to by nurses with caring behaviours and characteristics. (26)

Table 2.2: Studies investigating the ICU experience

Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Holland et al. (26)	USA	n=21 <ul style="list-style-type: none"> • 10 male • Mean age of 54 years • Mean LOS of 3,6 days 	24 hours after ICU discharge	Inclusion: <ul style="list-style-type: none"> • English-speaking patients • Orientated patients with stable vitals at the time of the interview and with no psychiatric history
Russell (47)	Australia	n=370 <ul style="list-style-type: none"> • <i>No participant demographics reported on (mean age, LOS or gender)</i> 	6 months after ICU discharge	<i>No description of patients included/excluded.</i>
Demir et al. (54)	Turkey	n=158 <ul style="list-style-type: none"> • 67 male • Mean age of 54,48 years • LOS: <ul style="list-style-type: none"> ○ 39 participants spent 1–7 days in ICU ○ 100 participants spent 8–15 days in ICU ○ 19 participants spent 16 days or more in ICU 	When patients were transferred to the wards <i>(No specifics on date/time)</i>	<i>No clear inclusion or exclusion</i> The patients spent at least 48 hours in the ICU
So et al. (10)	China	n=50 <ul style="list-style-type: none"> • 36 male • Mean age of 59,4 years • Mean LOS of 2,8 days 	48 hours after ICU discharge	Inclusion: <ul style="list-style-type: none"> • Admission into the ICU for at least 24 hours • Patients able to communicate in Chinese • Patients willing to participate Exclusion: <ul style="list-style-type: none"> • Patients with psychosis or with neurological impairments • Previous critical care admission
Martínez et al. (25)	Spain	n=86 <ul style="list-style-type: none"> • 51 male • Mean age of 58,83 years • Mean LOS of 3,08 days. 	24 hours after ICU discharge	Inclusion: <ul style="list-style-type: none"> • Spanish-speaking patients • Orientated and conscious ICU patients

Intensive care unit (ICU); Length of stay (LOS)

Services

A total of 10 studies (8,12,13,21-23,27,39,40,44) assessed patient satisfaction and/or perception with regard to a service, namely nursing care, emergency care or physiotherapy (Table 2.3 and Appendix A).

Four studies (12,13,21,22) investigated patient satisfaction or dissatisfaction with emergency care services. Overall patient satisfaction with emergency care was considered high. (12,21,22) However, Ariba et al. (21) determined that 38,8% of patients perceived emergency care quality as suboptimal.

The studies that investigated emergency care documented multiple areas for suggested improvements by patients. Poor interaction with the healthcare providers was identified (12,21,22) as a common area requiring improvement. Sun et al. (13) documented that interaction between patients and healthcare staff was more crucial to satisfaction compared with environmental factors such as cleanliness, parking and food. Sun et al. (13) also reported that patient satisfaction was influenced by health status and demographic characteristics such as age and race. Education level and language were also associated with different levels of satisfaction. (22) Furthermore, patient satisfaction decreased in patients with less urgent triage statuses compared with urgent triage statuses, and more treatment sessions resulted in increased satisfaction. (13) Goldwag (22) documented that patients' perception regarding doctors' conduct, the resolution of the medical problem, the patient's ethnic group and the patient's self-rated health were the main dissatisfaction predictors for emergency department care. Ariba et al. (21) revealed that waiting time was a strong indicator of patient satisfaction.

Five studies investigated nursing care. (8,23,39,40,44) It was established that age, education level and gender can influence patient satisfaction (23,40) and in general, most patients were satisfied with nursing care. (39,40) Boev (39) determined that overall nursing-care quality scored highest of all items in the administered satisfaction survey, and this was followed by patient satisfaction with pain management and friendliness of the nursing staff. Hunt (44) demonstrated that pre-operative patients have clear expectations regarding nursing care and for the most part, these expectations

were met post-operatively. (44) Romero-García et al. (8) revealed the importance of caring nursing behaviour and reported that critical patients need nurses to react quickly to problems and to address the variety of patient needs. The subjective experience between patient and carer will determine whether the care is perceived as holistic or not. (8) They also reported that the physical aspects of satisfactory care are centred on mobilisation, hygiene and comfort, medical administration, pain control, sleep quality and nursing treatments. (8)

Only one study investigated patient satisfaction with the physiotherapy service in ICU. (27) It was a quality assurance study in which the results revealed an overall high level of patient satisfaction with the physiotherapy service. (27) The authors stated that 94% of the patients reported that they were informed, and 97% reported that dignity and privacy were respected. (27) Patients provided dislikes/likes with regard to the service. (27) The positive comments regarding the physiotherapy comprised the physiotherapists' caring attitudes, friendliness, punctuality and professional approach, as well as communication and individualised care. The negatives comments were "being pushed too hard" and limited service over weekends. (27)

Table 2.3: Studies investigating a service

Emergency care				
Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Ariba et al. (21)	Nigeria	n=129 <ul style="list-style-type: none"> • 81 male • Mean age of 35,3 years • Mean LOS at the Accident and Emergency Unit of 2,4 days 	No description of timing of data collection	Inclusion: <ul style="list-style-type: none"> • Adults requiring emergency care during 2004 who were later discharged (9 wards were determined to be exit points from the unit.) Exclusion: <ul style="list-style-type: none"> • Unconscious and uncommunicative patients up to 3 days after discharge
Goldwag et al. (22)	Israel	n=2 543 <ul style="list-style-type: none"> • 1 168 male • Age ranged between 18 and 65 years • <i>No LOS description</i> 	1–3 months after Emergency Department discharge	Inclusion: <ul style="list-style-type: none"> • Adult Israeli citizens who were discharged in November 1999 from the emergency units in 32 public hospitals and 17 emergency departments • Random sampling of 194 of the population from each hospital
Oluwadiya et al. (12)	Nigeria	n=250 <ul style="list-style-type: none"> • 147 male • <i>No age descriptions</i> • Median LOS in the Accident and Emergency Unit of 1 hour–6 days 	Once transfer from ICU to the ward was decided	Inclusion: <ul style="list-style-type: none"> • Adults of 18 years and older • Attendance at the emergency facility in the study time period. Exclusion: <ul style="list-style-type: none"> • Patients with an altered state of mind
Sun et al. (13)	USA	n=2 899 <ul style="list-style-type: none"> • 983 male • Age ranged from <19 years to >90 years • <i>No LOS description</i> 	7–12 days after the patient's visit to the Emergency Department	Inclusion: <ul style="list-style-type: none"> • Adult patients presenting at the 5 selected teaching hospital emergency departments with selected problems Exclusion: <ul style="list-style-type: none"> • Confused or intoxicated patients • Patients who left the study without being seen by the doctor • Previous participation in the study • Disabled patients due to mental illness • Non-pregnant minors

Continued

Nursing care

Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Boev (39)	USA	n=15 (Family member completed survey if the patient could not. A total of 50,6% of the surveys were completed by the patients.) <i>No participant demographics reported (mean age, LOS or gender)</i>	After ICU discharge <i>No clear time when collected</i>	Inclusion: <ul style="list-style-type: none"> All patients admitted into the ICUs during the 5-year study period were approached to participate
Hunt (44)	Australia	n=12 <i>No participant demographics reported (mean age, LOS or gender)</i>	Organised a convenient time with the patient	Inclusion: <ul style="list-style-type: none"> Adult, English-speaking patients willing to participate in the study Admission for elective coronary bypass surgery
Jonsdottir and Baldursdottir (23)	Iceland	n=182 <ul style="list-style-type: none"> 78 male <i>No ages/ LOS documented</i> 	2 weeks after ICU discharge	Inclusion: <ul style="list-style-type: none"> Adult patients who acquired service at the Emergency Department of the study hospital during the 1-month study period and were discharged without other hospital unit admittance
Johannesen et al. (40)	Norway	n=150 <ul style="list-style-type: none"> 114 male Mean age of 60,3 years No LOS description 	3 days after ICU transfer to the ward	Inclusion: <ul style="list-style-type: none"> Conscious adults who were able to answer questions and who did not need mechanical ventilation during their ICU stay
Romero-García et al. (8)	Spain	n=19 <ul style="list-style-type: none"> 13 male Mean age of 51,42 years Mean LOS of 13,58 days 	A convenient time and place was discussed with the patient	Inclusion: <ul style="list-style-type: none"> More than 48 hours in the ICU Adults who were able to read, speak and write in 2 official languages Patients who were capable of explaining their experience Patients needed to be orientated to time, place and person and have a GCS of 15/15 Tools: Confusion Assessment Method for ICU (CAM-ICU) and GCS

Continued

Physiotherapy				
Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Stiller and Wiles (27)	Australia	n=35 <ul style="list-style-type: none"> • 16 male • Mean age of 56,1 years • Mean LOS of 54,5 days 	A few days after the ICU to ward transfer	Inclusion: <ul style="list-style-type: none"> • Patients with a 2-week minimum stay in the ICU • Patients who the physiotherapists regarded as being conscious for the time period (2 weeks) Exclusion: <ul style="list-style-type: none"> • Patients showing poor/no recollection of the ICU according to the questionnaire

Glasgow Coma Scale (GCS); intensive care unit (ICU); length of stay (LOS)

Components of care

Eleven studies (24,43,45,46,48,49,51-53,55,56) investigated a component of care (Table 2.4, Figure 2.4 and Appendix A).

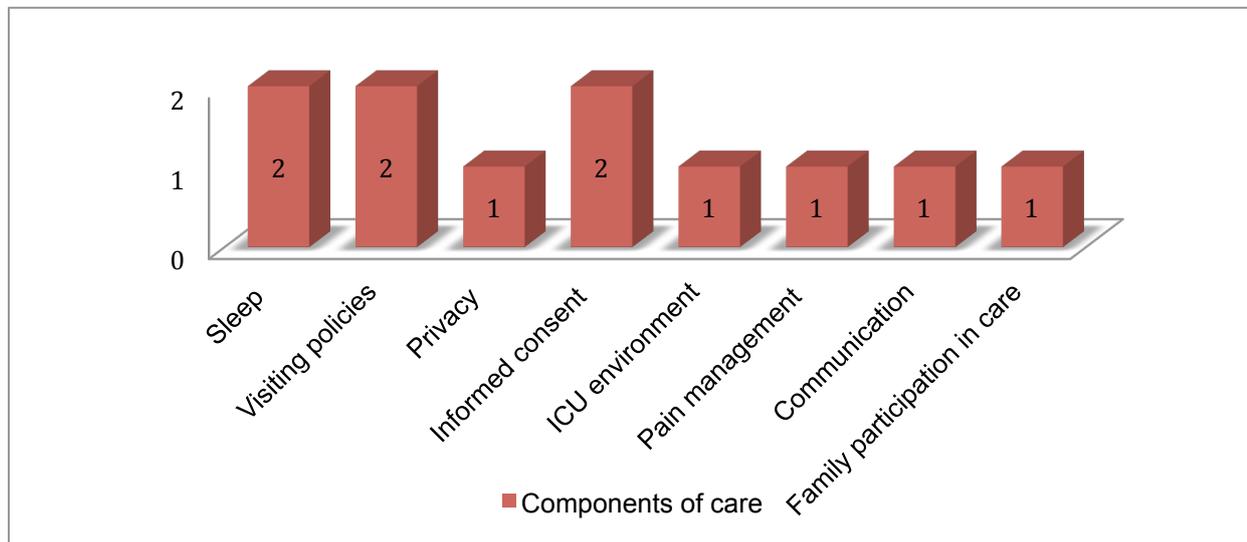


Figure 2.4: Components of care investigated by review studies

There was diversity among the investigated components of care, as demonstrated in Figure 2.4. Two studies (48,55) reported on factors affecting patient sleep, stating nursing interventions, (48) pain and worrying about pain (55) affected patient sleep. In addition, patients experienced negative emotions that included emotional pain, feelings of torture, problems with communication and feelings of suffocation while receiving respirator treatment. (46) However, Topolovec et al. (51) reported that patients were satisfied with the nurses' and physicians' responses regarding their reports of pain and believed that the ICU staff did all they could to manage the pain.

A further two studies (45,49) investigated visiting policies as an aspect of care. It was noted that patients were satisfied with flexible visiting policies that accommodated the needs of the patients and the visitors. (45,49) Garrouste-Orgeas et al.(53) ascertained that 77,2% of patients responded positively to family participation in ICU care. The remaining patients (n=10) reacted negatively to family participation in ICU care due to image preservation, safety concerns and embarrassment. (53) Patient satisfaction with the overall ICU experience increased with a single-room ICU compared with a ward-like ICU environment. (52) Individual space was also reported to be of

importance for patient privacy. (52) In addition, patients' past experiences, cultures, beliefs, ages and gender influenced the patients' perceptions of privacy in the ICU. (24)

Two studies investigated informed consent. (43,56) Modra (56) investigated the patients' preferred methods for receiving information and giving consent. The majority of patients (60%) preferred giving consent in written format, and 61% of patients preferred receiving information verbally.(56) Clark (43) reported that ICU patients' evaluation of informed consent correlated positively with patient satisfaction and thus, effective informed consent was important to patients. There was little difference for patient age, gender and language, and no considerable difference for patient ethnicity with regard to the evaluation of the informed consent process. (43)

There was a wide variety in the investigative foci of the included studies. Across both the services and care-component categories, multiple studies (8,12,13,21,22,39,43,45,46,56) (n=10) reported that communication, including explanations and informed consent as well as interaction with staff, was either a positive issue or a recommendation for improvement of care.

Table 2.4: Studies investigating components of care

Component of care	Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Care factors affecting sleep	Jones et al. (55)	England	n=100 <ul style="list-style-type: none"> • 65 male • Mean LOS of 39,6 hours • <i>No age description</i> 	Within 3 to 7 days of ICU discharge to the ward	Exclusion <ul style="list-style-type: none"> • Death, unconsciousness or too ill to partake in the survey • Inadequate English language skills to complete the questionnaire • Patients discharged home or transferred to another hospital • Patients too young, resulting in an inability to understand or complete the survey • Less than 7 hour LOS in ICU
Disturbances to sleep	Uğraş and Oztekin (48)	Turkey	n=84 <ul style="list-style-type: none"> • 45 male • Mean age of 46,57 years • Mean LOS of 2,83 days 	On the day of transfer from the ICU to the ward	Inclusion: <ul style="list-style-type: none"> • Treatment in the neurosurgical ward for a minimum of 24 hours • Routine non-opioid analgesics • 18-65 years of age • Patients who were conscious and orientated to place and time Exclusion: <ul style="list-style-type: none"> • Use of sedative medication • Patients too tired to complete the questionnaire, with a sleep disorder history or suffering from sleep-related respiratory insufficiency • Patients requiring endotracheal intubation during ICU stay
Visiting preferences	Gonzalez et al. (49)	USA	n=62 ICU (n=31): <ul style="list-style-type: none"> • 22 male • Mean age of 62,3 years • Mean LOS of 5,8 days CCMU (n=31): <ul style="list-style-type: none"> • 14 male • Mean age of 59,2 years • Mean LOS of 6,9 days 	While patients were in ICU or CCMU	Inclusion: <ul style="list-style-type: none"> • English, adult, non-intubated patients with no history of psychiatric illness

Continued

Component of care	Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Visiting policies	Novaes et al. (45)	Brazil	n=86 (Patients and relatives) <i>No clear description of the number of the patients were included. No participant demographics reported (mean age, LOS or gender)</i>	No description of timing of data collection	<i>No description of patients included/excluded</i>
Privacy	Cerdá et al. (24)	Spain	n=6 <ul style="list-style-type: none"> • 4 male • Ages ranged from 23 to 75 • <i>No LOS documented</i> 	No description of timing of data collection	Inclusion: <ul style="list-style-type: none"> • Voluntary adults who spent 48 hours or more in the ICU and were orientated and able to partake personally in interviews
Informed consent	Clark (43)	USA	n= 662 665 <i>No participant demographics reported (mean age, LOS or gender)</i>	3 to 15 days after ICU discharge	Inclusion: <ul style="list-style-type: none"> • Patients who had an overnight stay at one of the participating hospitals
Informed consent	Modra et al. (56)	Australia	n=51 <ul style="list-style-type: none"> • 29 male • Mean age of 58 years • <i>No LOS documented</i> 	24 hours after ICU admission	Inclusion: <ul style="list-style-type: none"> • English-speaking patients • More than a 24-hour ICU stay or unplanned admission to the ICU Exclusion: <ul style="list-style-type: none"> • Patients who were unable to give consent

Continued

Component of care	Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
ICU environment	Jongerden et al. (52)	Netherlands	n=274 Ward-like ICU (n=146): <ul style="list-style-type: none"> • 101 male • Median age of 64 years • Median LOS of 2 days Single-room ICU (n=128) <ul style="list-style-type: none"> • 84 male • Median age of 62 years • Median LOS of 2 days 	10 weeks after ICU discharge	Inclusion: <ul style="list-style-type: none"> • All patients from the ICU who were discharged during the study period Exclusion: <ul style="list-style-type: none"> • Patients who were admitted and discharged on the same day • Patients who died within 48 hours • Patients re-admitted into the ICU after the period of study or if they were cross-over from the original ICU to the updated ICU
Pain management	Topolovec-Vranic et al. (51)	Canada	n=52 Prior implementation (n=20): <ul style="list-style-type: none"> • 14 male • Mean age of 44,4 years • Mean LOS of 10,2 days After implementation (n=32): <ul style="list-style-type: none"> • 16 male • Mean age of 43,8 years • Mean LOS of 5,4 days 	Within 24 to 48 hours of transfer from the ICU to the ward	Inclusion: <ul style="list-style-type: none"> • Patients admitted during the research time period • Patients who could recall their ICU experience

Continued

Component of care	Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Communication while on a respirator	Hafstein-dóttir (46)	Iceland	n=8 <i>No patient demographics reported (mean age, LOS or gender)</i>	Organised a convenient time with the patient	Inclusion: <ul style="list-style-type: none"> • Patients were chosen according to the needs of the study to ensure a wide range of experiences Exclusion: <ul style="list-style-type: none"> • Patients younger than 16 years of age • Psychiatric patients or patients with communication impairments • Patients intubated less than 72 hours
Family participation in care	Garrouste-Orgeas et al. (53)	France	n=101 <ul style="list-style-type: none"> • 66 male • Mean age of 64,5 years • Mean LOS of 21,3 days 	After ICU discharge	Inclusion: <ol style="list-style-type: none"> 1. Patients admitted in the study time period (1 March 2006 to 17 July 2006; 1 Sep 2006 to 31 December 2006) 2. Patients remaining in the ICU for 3 days or more

Intensive care unit (ICU); length of stay (LOS)

2.3.3 Patient perception and satisfaction measurements

Romero-García et al. (8) identified and listed four instruments that have been developed to measure patient satisfaction. They reported the lack of an accepted general definition for satisfaction due to the subjective nature of the concept. (8) It was further explained that the tools listed were not ICU-patient specific and lacked the multidimensional concepts of satisfaction that are relevant to patients that have experienced intensive care treatment or care. (8)

In addition, Boev (39) identified a survey to evaluate patient satisfaction, namely the Hospital Consumer Assessments of Healthcare Providers and Systems (HCAHPS) but commented that the HCAHPS required more psychometric testing to be considered useful in measuring care delivery. Stricker (50) noted that many instruments have already been developed to measure satisfaction with care. However, during the validation of many of these instruments the patients' opinions were not included. (50) It was also stated that "no validated instrument exists to assess patient satisfaction with care in the ICU". (50)

Two studies investigated the use of proxies when measuring patient satisfaction. (9,50) Stricker (50) reported that ICU patients' next of kin could serve as patient proxies and that both the patients and next of kin were generally satisfied with the ICU care. Shannon et al. (9) reported that in general, physicians tend to rate quality of care higher than do patients and nurses (Table 2.5).

Table 2.5: Studies investigating quality and satisfaction of ICU care

Investigation	Authors	Country	Patient description (n=number of participants)	Time of data collection	Study inclusion/exclusion criteria
Quality of care	Shannon et al. (9)	USA	n=489 <i>No patient demographics reported (mean age, LOS or gender)</i>	Within 2 days of transfer from the ICU to the ward	Inclusion: <ul style="list-style-type: none"> • Patients who were available during the study time (December 1991 to May 1993) • Patients who agreed to participate
Satisfaction with care	Stricker et al. (50)	Switzerland	n=235 <ul style="list-style-type: none"> • 160 male • Median age of 68 years • Median LOS of 4 days 	On the day of ICU discharge	Inclusion: <ul style="list-style-type: none"> • Adult patients • Patients having more than 2 days LOS in the ICU • Patients with mental competency (Orientated to time/person/place on day of ICU discharge)

Intensive care unit (ICU); length of stay (LOS)

2.3.4 Measures used in included studies

Of the 28 studies included in the review, 14 (9,13,22,39,40,43,45,48-52,54,55) used quantitative data collection methods, nine (10,12,21,23,25,27,47,53,56) used open-ended questions in addition to a questionnaire, and five (8,24,26,44,46) used purely qualitative methods to measure patient perception and/or satisfaction within the ICU. Of the 23 studies using questionnaires, 11 (9,10,23,25,39,40,43,49,51,52,54) documented specific questionnaires, and 12 studies (12,13,21,22,27,45,47,48,50,53,55,56) used non-specified questionnaires (Table 2.6).

2.3.5 Reliability and validity of the measures identified

Eleven of the included studies (12,21,22,24,27,45,48,51,54-56) did not document reliability or validity testing for the instruments and data-collection methods. Nine studies (10,13,23,25,39,40,43,49,52) used internal consistency for reliability testing of the questionnaires (Table 2.6).

Table 2.6: Method of data collection, reliability and validity testing of included studies

Study quantitative methods	Methods of data collection				Reliability and validity testing				
	Unspecified/ self-developed tool	Specified Tool	Included open-ended questions	Interviews	Internal consistency (Chronbach's alpha)	Content validity	Face validity	Other	None reported
Ariba et al. (21)	✓		✓						✓
Boev (39)		✓ Intensive Care Unit Patient Satisfaction Survey	✗		✓				
Clark (43)		✓ Press Ganey Inpatient Satisfaction Survey	✗		✓			✓	
Demir et al. (54)		✓ Intensive Care Experience Scale (ICES)	✗						✓
Uğraş and Oztekin (48)	✓		✗						✓
Garrouste-Orgeas et al. (53)	✓		✓					✓	
Goldwag et al. (22)	✓		✗						✓
Gonzalez et al. (49)		✓ Patient perception of visiting in the Hospital Questionnaire	✗		✓	✓			
So et al. (10)		✓ Chinese Intensive Care Unit Environmental Stressors Scale questionnaire (ICUESS)	✓		✓	✓		✓	
Johannessen et al. (40)		✓ Nursing Care Quality instrument	✗		✓				
Jongerden et al. (52)		✓ PS-ICU 19 survey	✗		✓	✓	✓	✓	
Jonsdottir and Baldursdottir (23)		✓ Caring Behaviour Assessment (CBA)	✓		✓	✓	✓		
Stiller and Wiles (27)	✓		✓					✓	✓
Modra et al. (56)	✓		✓						✓
Novaes et al. (45)	✓		✗						✓
Oluwadiya et al. (12)	✓		✓						✓
Martínez et al. (25)		✓ SERVQUAL	✓		✓			✓	
Shannon et al. (9)		✓ Medicus "view-point"	✗					✓	
Stricker et al. (50)	✓		✗					✓	<i>Continued</i>

Study quantitative methods	Methods of data collection				Reliability and validity testing				
	Unspecified/ self-developed tool	Specified Tool	Included open-ended questions	Interviews	Internal consistency (Chronbach's alpha)	Content validity	Face validity	Other	None reported
Sun et al. (13)	✓		✗		✓				
Topolovec-Vranic et al. (51)		✓ The Patient Pain Management questionnaire	✗						✓
Jones et al. (55)	✓		✗						✓
Hafsteindóttir (46)			✓	✓				✓	
Cerdá et al. (24)			✓	✓					✓
Holland et al. (26)			✓	✓				✓	
Hunt (44)			✓	✓				✓	
Romero-García et al. (8)			✓	✓				✓	
Russell (47)	✓		✓	✓				✓	

Yes ✓; No ✗

2.4 DISCUSSION

While patient perception and satisfaction in the critical care setting has been a topic of study since 1979, this review determined that 1) only 28 studies have been published regarding the topic; 2) multiple measures but no specific gold standards exist; and 3) the majority of the studies were conducted in developed countries in Europe and Northern America, as well as in Australia. It cannot be assumed that ICU care and practice, or similar patient demographics and conditions in the ICU are alike in all countries. As documented by several studies, patient perception and/or satisfaction with care is influenced by gender, (43) age, (13,23,53), culture and language. (22) For this reason, patients' perceptions and satisfaction regarding care could differ greatly depending on the country and patient population. The results of the studies conducted in the developed countries cannot necessarily be translated into a developing country setting and, therefore, additional studies explaining patient perception in developing countries are needed.

Furthermore, the results of this review demonstrated that multiple measures exist to measure patient perception and satisfaction in the ICU or critical setting, but there is no consensus as to how patient satisfaction should be measured. In addition, the reliability and validity of the measures available and used in the included studies remain unclear. Due to the complexity of satisfaction, most research has accepted the use of questionnaires with domains of various weightings. (12,13) However, 50% of the review studies used purely quantitative methods, while 50% used qualitative data collection methods through interviews and/or open-ended questions in their questionnaires. The sizeable proportion of qualitative or combined data collection methods may demonstrate a means to understand the patient's opinion and perspective (8) rather than attempting only to quantify the context of what is being said.

Qualitative data collection methods such as patient interviews provide "richer data and [give] a more complete impression of the experiences of the patients". (46) Information gained from patients in reports of their experiences may aid the evaluation, planning and provision of care. (46) Russell (47) reports her favoured data collection method to be interviews since doubt exists regarding the usefulness of "attitudinal data" collected via questionnaires.

2.5 STUDY LIMITATIONS

Eight studies were excluded in this review due to language. This is a limitation because there may have been information in these articles that could have contributed to the results of this review. Although a number of databases were searched, they were Northern Hemisphere indexing, and no hand searching was included due to its unreliability.

2.6 CONCLUSION

With the change in multidisciplinary practice in the ICU setting, additional studies investigating patient satisfaction and perception within this environment are needed. To improve the quality of care within critical care, more studies should be conducted in developing countries because not only is the ICU standard of care likely to be different but also, the patient's perception and satisfaction has been shown to be influenced by multiple factors. (10,13,23,43,52-54)

While there is currently no golden standard available to quantify patient perception of ICU care, qualitative data could assist healthcare professionals to understand the impact their services have on a patient's perception of care received. Going forward, healthcare professionals offering a service in the ICU should 'harness' this valuable information to improve the quality of the service and ultimately the patients' outcomes.

CHAPTER 3: RESEARCH MANUSCRIPT

“THEY PLAY A BIG ROLE ...” PATIENT PERCEPTIONS OF PHYSIOTHERAPY IN THE ICU: A QUALITATIVE STUDY

3.1 INTRODUCTION

The intensive care unit (ICU) environment has been described as a stressful and overwhelming setting for the patients (10) and their families. According to Cutler, (57) a critical illness and consequent admission into an ICU is a substantial event in a patient's life. Patients admitted into an ICU usually require extensive monitoring and continuous management. (48)

Physiotherapists form part of the multidisciplinary team that is involved in the management of ICU patients. (58) Physiotherapy in the ICU includes management of airway secretions, mobilisation and muscle training, which aims to reduce ventilator dependency and weaning difficulties, as well as mobilisation impairment and limitations among others. (59) Physical and respiratory recovery, prevention of the side-effects associated with prolonged bed rest, reduction and termination of mechanical ventilation along with increased health state, are clinical results associated with physiotherapy in the surgical and medical sectors. (59)

Hanekom, Louw and Coetzee (34) reported that it is the obligation of the physiotherapy profession not only to find methods to measure the value of the physiotherapy service in the ICU environment but also to describe the quality of this service. (34) While multiple measures exist to measure patient perception or satisfaction in the critical care setting, there is no consensus on the gold standard of measurement.

The outcome measures available for assessing physiotherapy effectiveness within the ICU specifically, have often been geared to physiological data and have not taken the patient's perspective into account. (27) The lack of patient perspective may be due to ICU patients routinely receiving heavy sedation, and this is thought to reduce patient recall regarding their ICU experience. (39) However, as ICU practices change, including daily sedative interruption (31,60,61) and the prioritisation of rehabilitation in the ICU, (30,61) particularly with physiotherapy

early mobilisation, (29) this may no longer be true.

The changes in both physiotherapy and ICU practices can improve patient functions, decrease delirium duration, decrease ventilator time, shorten ICU length of stay (31) and could facilitate the opportunity to access the patients' perceptions of the ICU experience and the services involved. As documented by Stiller and Wiles, (27) "subjective outcomes" such as patient satisfaction and perception are as important to critically ill patients as the physiological outcomes. Understanding and investigating patient perception and satisfaction with regard to healthcare is vital in both the assessment and improvement of quality of care. (18) Thus, a primary qualitative study was conducted to describe patient perceptions and satisfaction regarding the physiotherapy care received during their surgical ICU stay.

3.2 MATERIALS AND METHODS

3.2.1 Study design

An interpretive and descriptive qualitative design was used. The aims of interpretive research are to create meaning through explanation, description and exploration. (44)

3.2.2 Research setting and context

The research was conducted in a level 1, (62) 14-bed surgical ICU at a tertiary institution in the Western Cape. In this unit, the physiotherapy responsibility is rotated every three months, and one physiotherapist is responsible at a time. This physiotherapist is not exclusively allocated because they also cover ward duties. As per the weekend policy, weekend physiotherapy is provided to four patients selected by the doctor on call. In addition, two Western Cape universities currently make use of this unit as an academic platform for clinical rotations of final-year physiotherapy students. (36, Bester A, Daries H 2015, personal communication, October 21)

This primary study addressed one objective of a larger umbrella project namely: The implementation and evaluation of a validated, evidence-based, physiotherapy protocol in a surgical ICU: A controlled before and after experimental trial (Ethics Approval Number: S13/09/170). This umbrella project consisted of three phases. The final phase (Phase 3) involved the implementation

of an evidence-based and validated physiotherapy protocol within a surgical ICU as well as an evaluation of the protocol implementation. The physiotherapy protocol consists of five algorithms. (33,34) These were developed to aid physiotherapists in making “evidence-based clinical decisions” (35) involving both rehabilitation strategies (including early physiotherapy mobilisation) and respiratory management when treating ICU patients. (35,36) The use of evidence-based treatments and protocols may contribute to improving ICU care quality. (34)

Due to the implementation of the evidence-based and validated physiotherapy protocol, the ICU research unit was considered to be in transition. Patients included in the primary study were also involved in the umbrella study and, therefore, they received a combination of usual hospital physiotherapy care as well as the protocol care.

3.2.3 Population

All adult patients discharged from the surgical ICU of the institution during the data collection time period (6 August 2015 to 4 September 2015) were eligible for inclusion in the study.

3.2.4 Sampling methods

A purposive sampling method was used for this study. Patients were excluded from the study if they were 1) under the age of 18 years old; 2) unable to communicate in English, Xhosa or Afrikaans; 3) un-cooperative; 4) had no memory of the ICU or physiotherapy; or 5) presented with cognitive impairments. Co-operation and consciousness (58) were determined and aided by the use of the Glasgow Coma Scale (GCS) and Adequacy score (SQ5). (30,58,63) Patients scoring below the maximum total for each score were excluded from the study.

3.2.5 Ethical considerations

Ethics approval was obtained from the Human Research and Ethical Committee (HREC) (S15/04/094) (Appendix B). Institutional approval to conduct the research was also provided (Appendix C). All patients provided their written consent, and patients were informed and assured that their involvement would be anonymous. All patient interviews and patient-related data were coded alphabetically to ensure confidentiality and privacy. Collected data was stored on a password-protected computer to ensure the investigator had exclusive access.

3.2.6 Recruitment method

The primary investigator (PI) visited the ICU daily to compile lists of patients discharged from the unit. The patients were followed up in the wards and assessed for inclusion into the study. Patients available for inclusion were purposefully selected for the study according to predetermined characteristics. The predetermined characteristics included patient demographics (age, gender), pre-admission status (education, employment), admission status (Apache Score II (severity of illness) and diagnosis) and ICU management (mechanical ventilation and ICU length of stay (LOS)).

Patients who passed the GCS and SQ5 criteria were informed of the study objectives, aims and methodological aspects by the PI. On receipt of their written consent, an interview date and time was arranged with the patient. Patients were individually interviewed by the PI within 3 to 5 days of being discharged from the ICU, while still in a general ward or in a High Care Unit of the tertiary institution.

3.2.7 Data collection and management

The PI conducted 18 individual, semi-structured interviews of varying length (25–60 minutes) using a discussion schedule (Appendix E). Interview length depended largely on the quality of the interview and the patient's ability to participate. All interviews were audiotaped, which allowed for the data to be transcribed and used for analysis.

A Xhosa translator was present for four of the interviews and when possible, an observer was present to document observations during the interviews. Throughout the data collection process, the PI confirmed and summarised the data obtained during the interviews to verify the PI's understanding. The PI also kept a field journal during the data collection process for reflection, documentation of research decisions and bias identification. Both the Adequacy score (Appendix F) and the discussion schedule (Appendix E) were piloted prior to use to ensure saliency (Appendix G).

3.2.8 Data analysis

All audiotapes were transcribed verbatim. The PI cleared and checked the transcription against the audiotapes for accuracy. Thereafter, the data was analysed inductively according to interpretive content analysis principles. Content analysis involves using a systematic process to summarise and categorise the communicated message. (64) This requires considering data from various angles and identifying important aspects in the text to assist in the understanding and interpretation of the raw data. (64) During data analysis, the data was coded and categorised into groups until themes were drawn (Appendix J).

3.2.9 Quality criteria

The PI established credibility and truth-value through checking the audiotaped data with that of the originally transcribed interviews. After the data collection and analysis phases, all the patients were contacted telephonically and invited to participate in the member-checking contact session to ensure credibility and trustworthiness of the data collected. Fourteen patients (78%) were willing to participate in the member checking, of which six were completed telephonically. Truth-value was ensured because the PI immersed herself completely in the data during the collection and analysis phases.

Dependability and credibility were further safeguarded through triangulation of the collected data, namely, the audiotaped interviews, the transcriptions and available observer notes as well as the PI's field journal. Furthermore, the transcriptions and analysis of the interviews were peer reviewed by a third party. In order to ensure confirmability, the transcriptions and analysis were available for audit, and the field journal as well as reflection of the study process facilitated the recognition of bias.

3.3 RESULTS AND DISCUSSION

Eighteen patients were included in the study (Figure 3.1), of which ten were male. During the initial sampling process, an additional male patient was recruited because he met the criteria for the SQ5 and GCS scores. However, during the interview, his testimony became unreliable and inconsistent and as a result, this patient's testimony was excluded.

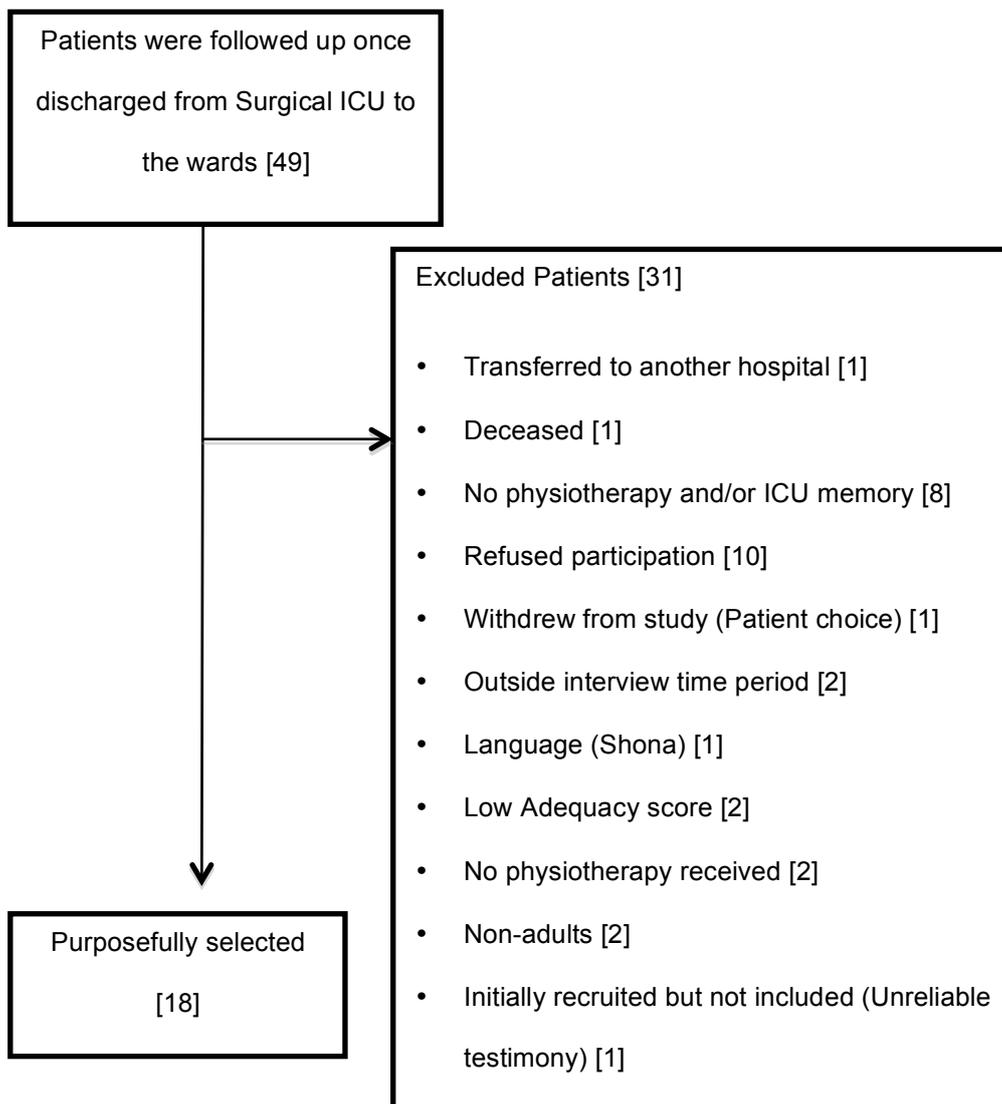


Figure 3.1: Flow diagram depicting patient selection

The overall median age of the patients was 44 years and the median LOS was 6 days. Table 3.1 demonstrates the diversity among the patients for each selected characteristic.

Table 3.1: Patient characteristics

Characteristic	n
Age (years)	
18–30	2
30–45	7
45–60	6
60–70	2
>70	1
Home language	
English	5
Afrikaans	7
Xhosa	6
Education level	
Tertiary education	5
Secondary education	11
Primary education	2
Employment status	
Employed	8
Unemployed	7
Pensioner	2
Disability grant	1
Severity of Illness (APACHE score)	
≤5	5
6–10	4
11–15	3
16–20	3
>20	-
Not Provided	3
Diagnosis	
Elective	5
Emergency	9
Trauma	4
ICU LOS (Days)	
≤5	8
6–10	7
11–15	-
16–20	1
>20	2
MV	
Y	14
N	4

Yes (Y); no (N); length of stay (LOS); mechanical ventilation (MV); none (-)

3.3.1 Themes

A total of 12 themes emerged. These included: 1) patient expectations and understanding; 2) physiotherapy activities and the implication of mobilisation; 2) physiotherapy benefits and

progression; 4) physiotherapy value; 5) interdisciplinary team; 6) the physiotherapist; 7) safety; 8) tangibilities; 9) continuity of care; 10) satisfaction; 11) communication; and 12) patient perception and experience. Verbatim quotes have been used to support the study findings. All non-English quotes have been translated into English. The PI also made enquiries regarding barriers, facilitators and challenges to the physiotherapy care received. These are discussed under the relevant themes.

3.3.1.1 Expectations and understanding: *“I have a better understanding...”*

There was wide-spread diversity in the patients' expectations and understanding of physiotherapy in the ICU. Many patients understood physiotherapy to be predominantly outpatient based and not usually practised within a hospital, even less so in the ICU. Physiotherapy was also reportedly understood to be more for musculoskeletal injuries, gait re-education, returning to previous functional level and not necessarily for treatment of the lungs.

MM5 (p. 14): *The purpose of all of this [physiotherapy] is to get me out and back on my feet ... so that I can be the same person that I was.*

VNA11 (p. 9): *I thought they were just exercising your limbs. [Laughs] Now I understand it's not just your limbs. It's everything. Ja.*

KC18 (p. 8): *And then I actually, uh, understood, uh, understood what it actually was. It is actually about my lungs that were perhaps weakened, or something of that nature, because it needs to be strengthened.*

SF3 (p. 15): *And of course, once the op is finished ... You need physiotherapy to be able to get the muscles going again ... You see? It's got to be going. Otherwise ... It's like a-a, a battery. Car battery. If it's flat or if it's down ... You can't use it. You have to send it somewhere to be recharged. Am I right?... You can compare that with physiotherapy ... Your body needs to go somewhere to be recharged.*

Patients who had previous physiotherapy experiences had a better understanding of what physiotherapy entailed, and their expectations were more in line with the care they received. Thus,

having had a previous physiotherapy experience was a facilitator in the understanding of the physiotherapy care received. In contrast, most patients who had never experienced physiotherapy prior to their ICU admission did not know what to expect in the session. For some of these patients, the first experience of physiotherapy was described as strange and even shocking. Expectations of physiotherapy treatment was also influenced by the patient's condition and expectations of the ICU environment.

BA1 (p. 6): Noo. In ICU I was expecting to sle-, lie on the bed, totally. So I can wakeup when I go. Not to ... step out and sit on the chair. It was like, I was expecting to sleep ... the whole day ... So ... I thought I would lie, all the day. So, when they, put me in the chair I thought that they were not doing their job because I feel sick. But they took me in the chair. How can a sick person can be able to sit? It was like that.

VWJ2 (p. 3): It was pretty alright because I have done a lot of [physiotherapy] previously... Its not like it was a strange feeling like the first time ... the first time of physio, that was bad for me. It was ... with the very first operation, seven years ago. I hadn't an idea of physio or what would happen. It was quite bad for me.

Patient expectations were further influenced by the patient's understanding and communication. Both communication and understanding acted as bridging factors to link the patient's expectations and the comprehension of physiotherapy.

KT16 (p. 12): ...once I understood what the physio is gonna do for me ... it was just positive from there.

KC18 (p. 22): ...I would say again, yes. Because like she, like she explained to me, what the next step was ... Then I just thought to myself this is now, it's about this now, yes. Understand? ... So I understood it more, like how she explained each step for step to me.

Through the ICU experience of physiotherapy and being placed in the patient role, some patients' understanding of physiotherapy changed. One patient, a healthcare worker, reported:

KT16 (p. 4): *I have a better understanding [of physiotherapy] because, okay, once they, uh, gave me physio, I noticed everybody else got-gets physio too.*

KT16 (p. 21): *Number one, physio is for everybody. Every sick person. Especially like I said, I saw in ICU, we all had different injuries and they were catering to every person's need ... From-from being sick and laying in the bed. I know what it is now ... When I treat somebody this time round, I think it-it will definitely impact on my work that I do.*

3.3.1.2 Physiotherapy activities and implications of mobilisation: *“The goal is to get to the chair.”*

Patients described multiple activities completed during physiotherapy in the ICU. Activities included chest physiotherapy, breathing exercises, limb movement and activity as well as mobilisation. Most patients also described using a ‘PEEP bottle’ and breathing exercises that some felt assisted their breathing and rib pain.

DS23 (p. 2): *They make me blow that bottle so they say I must blow that bottle so ... Ever since now they learn me how to blow that bottle now. I s-, there's no pain anymore in my ribs.*

GS7 (p. 12): *They also taught me how to cough ... to cough as well. Yes ... How to cough that all the phlegm can always ... -the phlegm. Can come out.*

MM5 (p. 5): *A water-bottle pipe. The uh ... physio lady came on the following day. With the bottle. Then we done some few exercise, whereby I was sitting in the chair again ... She will say to me I must breathe in ... And then I must breathe ... ah ... uh ... out. And then I must do one, three times. Then after that we will take the bottle, with the pipe, and then I must breathe in deep. And then after that, when I'm blow ... when I'm breathing out, I must breathe on that bottle.*

MJS20 (p. 8): *Ja ... Normally because my, my problem is about breathing. It's about breaths. And it's about standing. Because I injured my, my spinal cord. I injured my ribs ... So ... It feel the people tried to put my ribs back. By giving me the blowing, you know, one of these [indicates] ... Ja, the PEEP bottle.*

JR24 (p. 1-2): *Uh. They helped me out of the bed ... And let me sit upright. Cushion behind my back, like ... a stiff cushion ... Lifted arms. Deep breathing ... Moving legs ... Feet ... That's that.*

Those patients who mobilised did so in bed, relocated to the chair or progressed into standing or walking in the ICU, largely with the assistance of the physiotherapists. Some patients described mobilisation as a difficult component of the care, mainly due to pain, tiredness and dizziness.

PB6 (p. 3): *They made in sit on chair for four bloody hours ... I, I dunno. I ... can know that you allowed to sit in pain, 'cause I was in pain.*

BA1 (p. 18): *I hate to sit in the chair ... Because I was very tired and everything.*

BA1 (p. 13): *Sometimes I would refuse. They say why? I'm tired, I can't sit. Sometimes say I'm dizzy. I can't sit on the chair. They would say okay. It's fine. We'll put you two hours. And then we'll come back and then we'll put you back. And then I said thank you. Yes, they do understand. Saying, okay. Maybe, in the morning we will put you two or one hour. Then we'll come later...*

Yet most patients found mobilisation to be a positive experience and the beginning of their recovery. The majority of patients described the experience of mobilisation positively as follows:

WM14 (p. 6): *It was an experience, you know? ... Because you're still weak from the, uh, the things of yours. They sit you in a chair ... and you sit there now. And your still in a condition that you do not care to read magazines or to look, you know? ... Or to listen. So you sit and die.*

WM14 (p. 7): *It was also nice ... Because, it was when I felt here it begins. The recovery ... Yes, it made me feel, you know, I begin.*

KC18 (p. 9): *It was almost to say a big joy. It's almost like a relief ... compared to lying in the bed. It's that moment that I came into the chair, that I felt I was almost like a person that now*

... could move ... because I sat upright. Do you understand? It is a, it was more of a relief, than just lying in the bed.

KT16 (p. 3): *[Sitting in the chair] you felt like you could see what they were talking about, you could finally do what they said you could do.*

VNA11 (p. 17): *Ja. I was just glad to get out. [Laughs] Ja. I wanted to get away from all the tubes and [laughs] get up and go.*

Barriers to mobilisation and activities of physiotherapy received were dizziness, pain, tiredness and weakness during mobilisation. These barriers arose largely due to medications and prolonged lying in bed, resulting in patients being tired and experiencing a general lack of energy for specific tasks. The effects of the medication also affected some of the patients' memories and their post-operative state of mind and thus, their co-operation with physiotherapy as well.

SF3 (p. 10): *Little bit wobbly, yes ... Head spinning ... Uhm ... I sta- still have ... drugs in me that needs to come out. You understand?*

SF3 (p. 6): *...they give you some kind of ... uh ... painkillers, morphine and all that stuff. Right? Now, this stuff, plays havoc with your mind.*

One patient mentioned rules specific to the ICU that did not allow for mobilisation outside the unit. A general barrier was the multitude of external lines and drains, which also limited the patients' abilities to mobilise. Specifically during mobilisation, the preparation of the area and the physiotherapists carrying the lines and drips were facilitators of physiotherapy.

One patient commented:

PB6 (p. 21): *No I was on quite a lot [of lines] ... So couldn't actually move around really.*

While another patient stated:

VNA11 (p. 3): *As soon as the tubes were off I was up.*

Physiotherapy practice in the ICU is changing. (29) Early progressive mobilisation has been included and has demonstrated shorter ICU stay and improvement in functional mobility among other benefits. It has been shown to be safe and realistic, (29,32) and it is evident from the primary study results that the majority of patients responded favourably to early mobilisation even though barriers were identified. Patients were able to identify the barriers and the impact they have. In addition, they were able to realise that mobilisation was effective in the improvement of their condition. Furthermore, the mobilisation barriers identified in the study, including pain, tiredness, dizziness, external lines and drains, also correspond with the patient-related mobilisation barriers discussed in Dafoe et al. (32)

Although not all the patients included in the study participated in mobilisation out of the bed, those who did reported predominantly positive experiences. Mobilisation resulted in empowering and encouraging independence, thus better equipping patients for when they moved into the wards where they were required to do more independently. This is consistent with the findings of Stiller (29) who reported that early mobilisation positively influences the patient's "functional ability", mobility and independence. Thus, both current literature as well as patient feedback supports the inclusion of mobilisation in addition to other physiotherapy activities during physiotherapy ICU treatment. This further solidifies the inclusion of early mobilisation in ICU physiotherapy practice as evidence-based practice. Furthermore, with the development of physiotherapy evidence-based ICU protocols, specialised and non-specialised physiotherapists alike will be aided in their clinical decision-making, increasing the possibility that rehabilitation and early mobilisation be incorporated into treatment when appropriate. (35,36)

3.3.1.3 Benefits and progression: *"...so I feel I am a bit more ahead ..."*

Almost all the patients commented on the benefits of participation in physiotherapy, which was verified by physical improvements and progression in their abilities. Among the improvements were 'feeling stronger and better', particularly regarding mobilisation, and returning to 'normal', as well as improved coughing ability and decreased pain. Although most improvements discussed were physical, two patients also described the psychological benefits that occurred in the sessions. They reported that the physiotherapists 'built them up' and encouraged them. One patient described a

mind shift that occurred once she had mobilised out of the bed. She described it as being able to see what she was capable of and what the physiotherapist had been explaining to her.

KT16 (p. 3): *...when [I] was physically upright, sitting in the chair for the first time. That made a huge difference. [It] takes you from the bed, everything you've learned mentally, and bring it now into the chair ... [It's a] different mindset. [It's] a different scenario in terms of how you have pictured it. Because, you can actually do the things now, and you understand more, as to what they were talking about. Once you sitting in there and you can physically do the things that you can do.*

In addition to both the psychological and physical improvements, patients also described being taught exercises and receiving information regarding those exercises. This encouraged patient empowerment and independence because some patients continued with these exercises independently. Three patients stated:

KT16 (p. 18): *There's nothing that I can say that I've learned that, that is useless. Right now I'm still doing this stuff that she told me to do in the, in the ICU, I still get to do it in the bed. And so I feel I am a bit more ahead than the rest of the people because they lay everyday - I don't lay in the bed anymore, I sit up. I do my own thing.*

VNA11 (p. 16): *... she's doing something to help me, you know? She's ... gonna help me, help myself, you know? And so. [She] showed me how to do things a diff-, a little bit different, make it a bit easier.*

MM5 (p. 16): *So it helped me a lot as a person as well, not just to rely on the physio. To try do the exercises on my own...*

3.3.1.4 Physiotherapy value: “They play a big role ...”

In light of the benefits and improvements felt by the majority of the patients that promoted independence, many of them described the value and importance of physiotherapy. Physiotherapists were additional support to them while in the ICU, bearing the same goal of returning them home.

KT16 (p. 16): *...it's always good to know, there-there's other people besides the doctors and the nurses that are caring for you. It's really good to know, okay, physio is here, 'cause the physio is here to see that you get home. Physio is here to see that you also get home. Just, just not the doctors, just not the nurses. There's somebody else that's actually also here, that's here to see you get home.*

Furthermore, physiotherapy was illustrated as a contributing factor for the patient's survival and recovery in the ICU. It was described as a precious and much-needed service, without which some patients felt they may not have survived or recovered as quickly.

MM5 (p. 9): *If it wasn't for them ... maybe I couldn't make it...*

DS23 (p. 7): *I feel very good, because while they were, uh, helping me, they did, I-I did know how to walk now I can at least get out of bed do something's I didn't know. Because if they didn't help me, they didn't do nothing in physio, I wouldn't even be here, maybe walk.*

MSJ20 (p. 14): *So ... I really need them. Through every day, it was a dream for me to see them.*

Patients perceived physiotherapy in the ICU as both worthwhile, making them 'feel better and stronger'. It is a service that patients felt should 'never' be removed from the hospital since physiotherapists have a role to play in helping others.

MM5 (p. 24): *They play a big role to each and everyone of those patients here.*

WM14 (p. 23): *You know, I'll tell you one thing, but its something they should never ever take away ... from the ICU ... Because those people's work is precious ... because that's how I felt. I am through it.*

3.3.1.5 Interdisciplinary team: " ... they were working together"

Although not a dominant theme by comparison, the patients did discuss the presence of the interdisciplinary team. It was reported that the nurses and doctors helped the patients to mobilise if the physiotherapist needed assistance. This assistance, together with a referral from the doctor,

influenced the patients' co-operation with treatment in physiotherapy. The presence of teamwork between the disciplines and among the physiotherapists themselves helped to confirm the presence of knowledge and communication.

PB6 (p. 21): *... they were very helpful for the sisters of ... for the ... uh ... application if they needed a pipe, or this or that ... But the doctors did assist them ... They knew this is an important thing that the physio's are doing, so ... [g]ive them a hand where it's needed ... They did help her as well, to take me out of my bed and into the chair also.*

DS23(p. 16): *It was because they were working together. Because there were two or three, they were working as a team, so one will say do this, and then other one will agree. And then they will help each other with, uh, lifting [me] and then exercise with [me]. So. That's why [I] said they do have the knowledge of what they were doing.*

3.3.1.6 The physiotherapist: "They know what they doing"

This theme was centred on the physiotherapist. It comprises subcategories of behaviour exhibited by the physiotherapists, patient-reported characteristics and physiotherapy competence. Patients felt the physiotherapists were knowledgeable and competent in their abilities, knowing that they had studied to become a physiotherapist and had drawn knowledge from their work and work experience. They reported that the physiotherapists were prepared, worked well and skillfully and in a sufficient and quick manner. Although multiple patients commented that their physiotherapists were students, most of them stated:

MM5 (p. 14): *They know what they doing.*

Two patients were surprised by the physiotherapists' ability to read the monitors and surprised that they worked closely with the "more technical side of the nursing side". (DS13: p. 20-21)

KT16 (p. 14): *The knowledge was-was was quite good. 'Cause I-I was surprised to see that she could read my monitor ... Ja. Because I'm in the medical field, so I could read the monitor, I could read the monitor. I knew exactly what it said. I just didn't tell her that I can read the monitor.*

However, the physiotherapists' interaction and communication with the patients, as well as their interaction as observed by others, was most commonly reported to have given the impression of the physiotherapists being knowledgeable and competent. The explanations and relative communication that was associated with the activities during the sessions also displayed knowledge.

ES8 (p. 6): *They are very well trained ... because the manner how they speak to you and how they say the things that you must do it. Not too fast. Just on my own pace.*

JL12 (p. 10): *I felt that they had knowledge with their work ... It's the way, it's the way, they work with you.*

The physiotherapists were described as friendly, well-mannered professionals who exhibited traits of patience, kindness, helpfulness and the ability to work well with others in a pleasant but firm manner. They were also reportedly understanding and sympathetic to patients' current abilities in the ICU setting. As was commonly reported, acting professionally allowed patients to trust the physiotherapists. The physiotherapist's behaviour, attitude and manner in which physiotherapy care was completed in the treatment sessions influenced the patient's perception of the care in general. One patient reported:

VWJ2 (p. 8): *No because, with the first time she helped me to pull up the bed upright, so, you felt like ... um ... she did not go and pull up the bed or whatever ... She did it with feeling. So ... You realise quickly when, when someone, I almost said, wishes to hurt you ...*

Another patient reported:

PA4 (p. 23): *And you can see one her face she gets upset ... The way she talks ... Her voice kind of like going a bit up. She's raising her voice ... And stuff like that. Complaining to the doctor. And the doctor would come and like forcing as well.*

These results are consistent with the findings of Stiller and Wiles. (27). Stiller and Wiles, (27) an Australian quality assurance study conducted in 2008, investigated physiotherapy satisfaction in the ICU. They reported on the patient "likes" of physiotherapy, including the physiotherapists'

professionalism, friendliness, helpfulness and caring attitude. (27) While the results of this South African study corroborate the findings of Stiller and Wiles, (27) it reports on additional aspects and characteristics regarding the physiotherapist in the ICU as described by the patients, thus contributing to the limited body of literature available for physiotherapy within the ICU.

These results also indicate that while there may be variations in physiotherapy practice across countries and ICU settings, (35,36) patients still report on characteristics and behaviours of the physiotherapist as part of their care. Thus, emphasizing that physiotherapy is and will continue to be an interactive and people-based service.

3.3.1.7 Safety: “...don't worry it's gonna be fine, we here to help you...”

Patients felt safe during the physiotherapy sessions. This was primarily due to the physiotherapists' professionalism, reassurance and communication. Communication reassured the patients and aided them in knowing what to expect during physiotherapy activities and sessions. This reassurance and communication also assisted in making the patients feel comfortable, thus building a trustworthy relationship with the physiotherapists. The presence of the physiotherapists, the physical assistance of more than one physiotherapist, standing close to the patients and mobilising together reassured them that they were safe and would not fall. Falling was a repeated concern for some patients, and many patients specifically reported not falling due to assistance and support. Providing a calm and comfortable situation is essential to make patients feel safe during physiotherapy. Three patients reported:

KT16 (p. 16): *Just by the exercise and by speaking to me every day. Ya-you know, it's just that that reassurance, don't worry it's gonna be fine, we here to help you, we're here to ensure your safety, we're here to-, we not gonna do anything to harm you or anything like that, you know?*

ES8 (p. 12): *Because ... they held you ... and didn't let you fall ... I can say, I didn't have any fears ... was very good ... very safe. Very.*

WM14 (p. 20-21): *Because I had trust in them ... It let me feel, you know, that I would get over the bridge, it was then like that ... Look your relationship with them ... Because I felt my relationship with them is, is good.*

Although general consensus was reached regarding the feeling of safety during physiotherapy, one patient clearly described the importance of ensuring the feeling of safety, explaining that fear and pain were directly linked. He continued to say that pain would be less exaggerated or reduced to a certain extent if fear were managed.

SF3 (p. 13): *Now did you know, that, uh ... if you look at ... fear and pain. Fear one side, pain the other side ... If you ... have fear in your heart. It makes the pain worse. Am I right?*

According to the above quote, fear and the anxiety of pain can negatively influence a patient's experience of physical pain. As previously discussed, one of the barriers to physiotherapy is pain. Therefore, it could be conceived that by ensuring that patients feel safe during physiotherapy while in the ICU, one could control pain to some degree and thus limit its impact as a barrier to physiotherapy activities and mobilisation. Consequently, through reassurances, clear communication and physical support, patient co-operation with physiotherapy treatments could be encouraged.

3.3.1.8 Tangibilities: “... they looked like professionals.”

Tangibilities refers to the physical aspects included in physiotherapy care. They relate to the environment, equipment, appearance of the physiotherapists and the timing of the therapy. The ICU environment was described as a busy environment by many patients, but there were mixed reports regarding the space being too small and whether it was sufficient or not. It was, however, explained that the physiotherapists adapted the working environment depending on the task at hand, thus accommodating the patient in most instances. At times, due to the busy environment, physiotherapy sessions were shifted around other ICU pertinent care, which presented as a barrier to physiotherapy care in the ICU. This was confirmed in the following statement:

DS13 (p. 38): *I think they are not given enough time to do their side of the job ... They got a sort of, they've got a sort of fit in ... Like I was supposed to go on for a, go on Friday for a ... a CT scan today ... Been laying here at the hospital for two and a half days waiting for the CT scan. And it never happened. And, uhm, so the physios, if, if they had to come fetch me for example, just assuming that when I come here at eight-ten o'clock or ten thirty in the morning*

... And suddenly there's the CT scan department decided they got a booking from me, that would have been, that's, that would have been the end of that session ... That's up to me, that's a slight problem...

In general, the physiotherapists in the ICU reportedly used minimal equipment: the chairs, water bottles, breathing machines and the physiotherapists' hands. Another barrier, which was identified by only one patient, was the limited availability of chairs in the ICU.

KT16 (p. 7): *They set it up in the, in the area, in the environment that I was in, that suited me best, that was comfortable for me. Even though it was the bed, it was the most comfortable.*

GS7 (p. 18): *The ICU was too busy.*

DS13 (p. 11): *And then I sat on the bed for a while. 'Cause there was only one chair in the ward and [it] was being used by someone else.*

In the busy environment, the physiotherapy sessions predominantly occurred in the mornings. If the patients were unable to participate at this time, the physiotherapists would return in the afternoon. For most patients, there was no preference for the timing of the therapy, stating that:

GS7 (p. 14): *I waited for them anytime ... I didn't worry.*

A few of the patients, however, reported that morning physiotherapy was better for them. This was because in the mornings, the patients were awake, washed and fed by the time the physiotherapists arrived whereas in the afternoons, they were often tired. This is demonstrated in the following quote:

JL12 (p. 2-3): *They came every morning ... In the mornings it was better ... because I was already washed and ... in the afternoon, I was a bit drowsy.*

The patients recognised the physiotherapists largely due to their uniform and the use of nametags, as well as introductions. The use of uniforms allowed patients to make the distinction between physiotherapists, student physiotherapists and personnel of other disciplines. Physiotherapists

were neatly and appropriately dressed for their occupation. Their appearance was important for first impressions and the expectations of the patients.

MS21 (p. 15): *You can point them even, when there are lots of people from them, because they neat and then you can see ... the way they were dressing they are, they were professionals.*

KC18 (p. 13): *Like I'll say, the physio was, was dressed properly. Like-like a person that works at a hospital or clinic.*

JR24 (p. 11): *Looked neat, yes ... That is important for me ... You must look neat. You can't go untidy to someone ... I mean take myself, I can't go to some one if I, look untidy. How will it the first, uhm ... First impression? First impressions.*

3.3.1.9 Continuity of care: *"...I just hope that I stay continue with the girl..."*

Continuity of care through the use of the same physiotherapist further enabled patients to identify the physiotherapists. In addition, it empowered and fostered continued use of the exercises once transferred out of the ICU. It appears that through continuity of care, a relationship and a manner of communication is developed between physiotherapist and patient, which is best emphasised in this quote:

MSJ 20 (p. 3): *And I just hope that I stay continue with the girl ... [with] their group.*

One patient specifically reported the change in physiotherapist to be upsetting, and it made him uncomfortable. He stated:

PA4 (p. 5): *They change now, then they change after that, they cha-, they do some-, they did something that [I] was not, like, comfortable to do, like to sit on the bed.*

PA4 (p. 19): *I think that second one, [I] wa-is, it was the one that [we] were not communicating well.*

Furthermore, most patients were seen daily and for some, physiotherapy continued after their discharge from the ICU into the ward. This additionally emphasises continuity of care and is

consistent with the findings of Stiller and Wiles. (27) Continuity of care and session constancy were also positive factors documented by the patients in the study of Stiller and Wiles, (27). Therefore, demonstrating that patients recognise and are favourable towards physiotherapy continuity of care both within the ICU setting and following ICU discharge.

3.3.1.10 Satisfaction: *“Attitude determines your altitude...”*

While all patients had different definitions for satisfaction, most equated it to completed and well-handled work, physiotherapy without pain and a goal-orientated service.

KT16 (p. 18): *...somebody provides a service to you, are you generally happy with the service that you were given [?] So you either satisfied or you're unsatisfied. One of the two. Can't be in-between really. So. If you asking me, was the service satisf[actory], I would say it was more than satisfactory...*

KC18 (p. 28): *I was very satisfied with their co-operation, and what they, what they actually did. Uh. Because I think there is a reason for everything ... There is work for everything. And what they did, I feel one hundred percent satisfied with everything they did for me.*

KT16 (p. 19): *Because I learned a lot and-and-and and the bottom-line is, the goal was reached, the service that I got was excellent. But more-most importantly the goal was reached. The goal was for me to get, was to be mobilised from that bed to the chair.*

Patients also commented that satisfaction is influenced by the manner in which they were treated and their happiness with the treatment outcomes. The majority of the patients were satisfied with the physiotherapy care they received while in the ICU. Patients stated that their reasons for being satisfied were largely due to the communication and interaction with the physiotherapists. They reported that the understanding and listening skills of the physiotherapists, as well as their professionalism and attitude towards both the patients and their work, were reasons for satisfaction.

VNA11 (p. 22): *Just her attitude, you know? Ja, her attitude towards me, to-towards the patients. The way she handled ... me. You know? ... Physically. Uhm. Talking to me, all of that.*

VNA11 (p. 23): *Attitude determines your altitude ... How far, how you get things done ... Depends on yourself.*

DS23 (p. 18): *The way they were holding [me], communicate with [me], make [me] do exercise. That's why [I've said I am] satisfied with them.*

MS21 (p. 22): *They were working like everyone else. Like, uh, the understanding, the communication the handling of, uh, physio, like exercise. [I] will say that [I] was satisfied, yes, with them.*

The patients commented on characteristics the physiotherapists displayed that were additional reasons for satisfaction, namely: the preparation for the session; the setting and reaching of goals; patience and time spent with patients; and the demonstration of competence and attitude in connection with their approach to the patients. Patients described trust, reassurance, physical assistance and support during sessions, as well as the building of relationships as assisting in their satisfaction level. These reasons affected their willingness to participate in the therapy sessions. One patient who was dissatisfied with his physiotherapy care reportedly refused all therapy treatment after an incident of poor communication and trust. He was left sitting over the edge of his bed for an extended period of time without explanation or a way to return to his bed. This incident resulted in dissatisfaction with the service and his overall experience, illustrating that when patients feel dissatisfied with the care they receive, it can and will negatively influence their compliance with treatment plans. The same concept but on the opposite spectrum was reported by Prakash (16) and Price (17) who stated that patient satisfaction and positive experiences are related to increased compliance. Ultimately, overall satisfaction and perception regarding a service or care can be influenced negatively or positively by only one incident.

Factors that would have decreased satisfaction with the physiotherapy care received were predominantly linked to pain and ultimately poor communication. Authorative or poor attitude, poor

presentation and untidiness, the possibility of falling during mobilisation, no assistance and no support during activities and failure to meet established goals were all aspects described by patients as factors that could have decreased satisfaction.

KT16 (p. 20): *So if you look untidy and you don't look the part or your hair's untidy, or you swearing what, it's not gonna work by me. You work, you-you working in a hospital environment, the sisters are neatly dressed, the doctors are neatly dressed, I expect the same from the physio.*

VNA11 (p. 23): *I think if, if, uh, if her attitude was, uh, not so ... you know, cheerful or, uhm, nice ... If she was a bit, maybe had a bad day or something then that wouldn't have made it so great.*

The study findings relating to decreased satisfaction are consistent with the negative issues highlighted by other studies in the critical care setting, namely, unfriendly staff, (21) fear, (46) pain (48,55) and poor communication. (13) These studies, however, investigated patient perceptions of critical care components such as sleep (48) and communication, (46) patient perceptions of emergency care (21) and patient satisfaction with emergency care (13) as opposed to investigating aspects specific to physiotherapy in a critical care setting.

Alternatively, patients reported factors that would have increased satisfaction. These included the adaption of exercises to the bed and increased variation in exercises given. The previously mentioned patient, who was not satisfied with the physiotherapy care he received, reported that good communication would have improved his experience and his satisfaction. One patient found that her time in the ICU was too short and that an increased ICU time would have been better because she felt that she was improving in the ICU. The patient suggesting an increased ICU LOS for increasing satisfaction was unexpected since patients are usually eager to move out of the ICU as soon as possible. In addition, this is contrary to management in the ICU where intensive care staff aim for early discharge and reduced LOS. (31) However, at the time of the interview, this patient had not received physiotherapy since her ICU discharge to the ward. Thus, her perception

and suggested ICU LOS increase may have differed if she had continued with physiotherapy while in the ward.

All patients were asked to suggest changes or improvements to physiotherapy care in the ICU. Some were reluctant to comment on aspects requiring change because they felt underqualified to give such suggestions. Others commented that no improvements were needed. Two patients reported that physiotherapy should occur once the patients are at their 'full senses' due to the effects of the medication and/or the busyness of the environment.

SF3 (p. 6): *...that is also something that I would suggest, you know? Give the patient time to come by their fullest, full senses. It's not use giving them physiotherapy and the poor guy is zonked out [on] pain and tablets, he doesn't even know what's going on around him.*

One patient suggested a physiotherapy-specific room for all patients, not only those in the ICU. Another patient reported that setting time periods for physiotherapy would reduce the time wasted due to colliding care from multiple disciplines. This is depicted in the following quote:

KC18 (p. 18): *To just put a time period and to say we are there at that time.*

The current research findings also align with the results of two other studies (8,39) that investigated the nursing care service in the critical care setting. They reported that staff friendliness, (39) professionalism, communication and continuity of care (8) were associated with improved satisfaction.

With regard to physiotherapy care in the ICU, this study demonstrated that multiple aspects of the physiotherapy experience ultimately culminated in the patient's satisfaction level. Thus, patient satisfaction is multifactorial and encompasses the patient's perception of the entire experience. Overall, most of the patients were satisfied with the physiotherapy care they received, and this is consistent with the high satisfaction levels reported by Stiller and Wiles. (27)

3.3.1.11 Communication: *"...we communicate like friends..."*

This theme comprised multiple categories and codes including interactions, explanations and miscommunications. Communication was the most common theme in all of the interviews. It was

noted to be central to the way in which patients understood and interpreted the experience and ultimately, it influenced their satisfaction with the service (Figure 3.2). Effective communication encouraged patient understanding, assisted in reducing fear and prompted co-operation. Generally, patients felt the communication to be good, commenting that the interactions between patient and physiotherapist were encouraging and motivational.

KT16 (p. 2): *...then they send somebody over and then she spoke to me, and she introduced herself. She said to me the importance of physio and I said, okay, no, Okay I will give it a try.*

MSJ20 (p. 11): *In a way you're not sure of yourself ... In a way you think that you won't make it ... You know. They always try to put words on you. But you will lift your spirit up.*

MSJ20 (p. 27): *So it was so painful ... And I wanted to give up ... I wanted to tell the doctor; No. If you cannot put me asleep and do me this, I won't do this anymore ... But she keep on correcting me ... Telling me that others have gone through this.*

Communication was generally friendly and filled with jokes and laughing, enabling the development of a relationship, a friendship, and thus influencing how the patients felt in the sessions.

DS13 (p. 28): *Excellent. Nothing, no, no, uhm, no lack of communication or problem ... No lack of communication or poor communication between the physios and myself ... Or the other lady opposite ... The other patient.*

MSJ20 (p. 28): *...We speak like friends ... we communicate like friends ... we take each other like friends. We take each other that, we can handle each other about this.*

But communication was not always easy. One patient in particular experienced difficulties due to being intubated and ventilated. Another had difficulties with breathing and was thus distracted, which led to a lack of understanding when the physiotherapist spoke to her.

KT16 (p. 11): *Oh, it was difficult... and then after a while the pipes came out. And I could ... speak to her, one on one ... Look, there was no other way for me to communicate with her. And she knew that, therefore she knew, she brought the book and pen everyday so that I could in case, like, before we started she'd ask me if I would like to ask a couple of questions*

or if I wanna write something down, is there something that I wanna know about yesterday? So she would give me that opportunity ... So before we started, for me to do it ... Well, that was terrible. Communication for me was ... I hated it. But at that point it was the best way of communication. But the thing is the message got across, the point got across, and I could understand whatever ...

WM14 (p. 18): *Many times I did not understand properly, because then, you know if your short of breath and you ... can't get a good breath in, then it was as if I misunderstood her ... And then she would say Aunty, come lets start from the beginning again.*

Explanations and repeated instructions helped patients to understand what was expected of them. Instructions and communication delivered in a language and tone the patients could understand further facilitated co-operation.

KT16 (p. 14): *'Cause, you know, she didn't force me to do anything. She came down to my level, and she spoke to me in the tone that I could understand.*

KC18 (p. 6): *... I was not really prepared for it, but as the physio explained to me, what is, what the reasons are and why she does it. And then I gave my body to work with, uh, to go with the physio.*

KC18 (p. 24): *Because she spoke in my, in my mother tongue, I understood very, very well.*

In contrast, when communication was not clear, it resulted in a miscommunication that caused a loss of trust and a refusal of further treatment, as described by a patient in the statement below:

PA4 (p. 7): *Then ... she came back, like the next day ... wanted to do physio again. And I refuse. And the others coming, try. I refuse ... I was so sick and tired.*

PA4 (p. 8-9): *The thing was the because she left [me] unattended. This is the only thing. Not ... because [I] standing because [I] was trying to stand but she left [me] ... and [I] couldn't climb back in the bed ... She did explain what she's gonna do. But she didn't ex... she didn't tell [me] that she's gonna leave. This is the only thing.*

As illustrated in Figure 3.2, communication integrates and influences multiple aspects of physiotherapy care. Communication affected how the patients understood the care they received and how they felt during mobilisation. Among other aspects, communication also empowered patients through education and shared knowledge, and influenced satisfaction. The PI found this discovery to be enlightening. Communication is a component of care that can easily be overlooked and/or rushed in a busy environment such as the ICU and where most patients have previously been sedated. As is evident in this study, communication has a substantial impact on the patient's perception and ultimately, their satisfaction. Ashworth (11) reported that communication and information are vital for human beings to feel comfortable, especially for people in a strange environment. Effective communication in the ICU, an arguably strange environment, will comfort patients and influence their overall perception of care.

Several studies conducted in the critical care setting have reported positively on communication as a component of care with regard to informed consent, (43,45,56) verbal information, (56) explanations prior to treatment and the use of alternative methods of communication. (46) Physiotherapists should be mindful of the impact that communication can have on the physiotherapy management of ICU patients and the patients' co-operation with treatments. Continuing to communicate with patients effectively may aid in ensuring understanding and potentially reduce episodes of miscommunication. It will also assist in the physiotherapist-patient relationship, patient education and treatment co-operation, thus increasing trust and patient satisfaction with care.

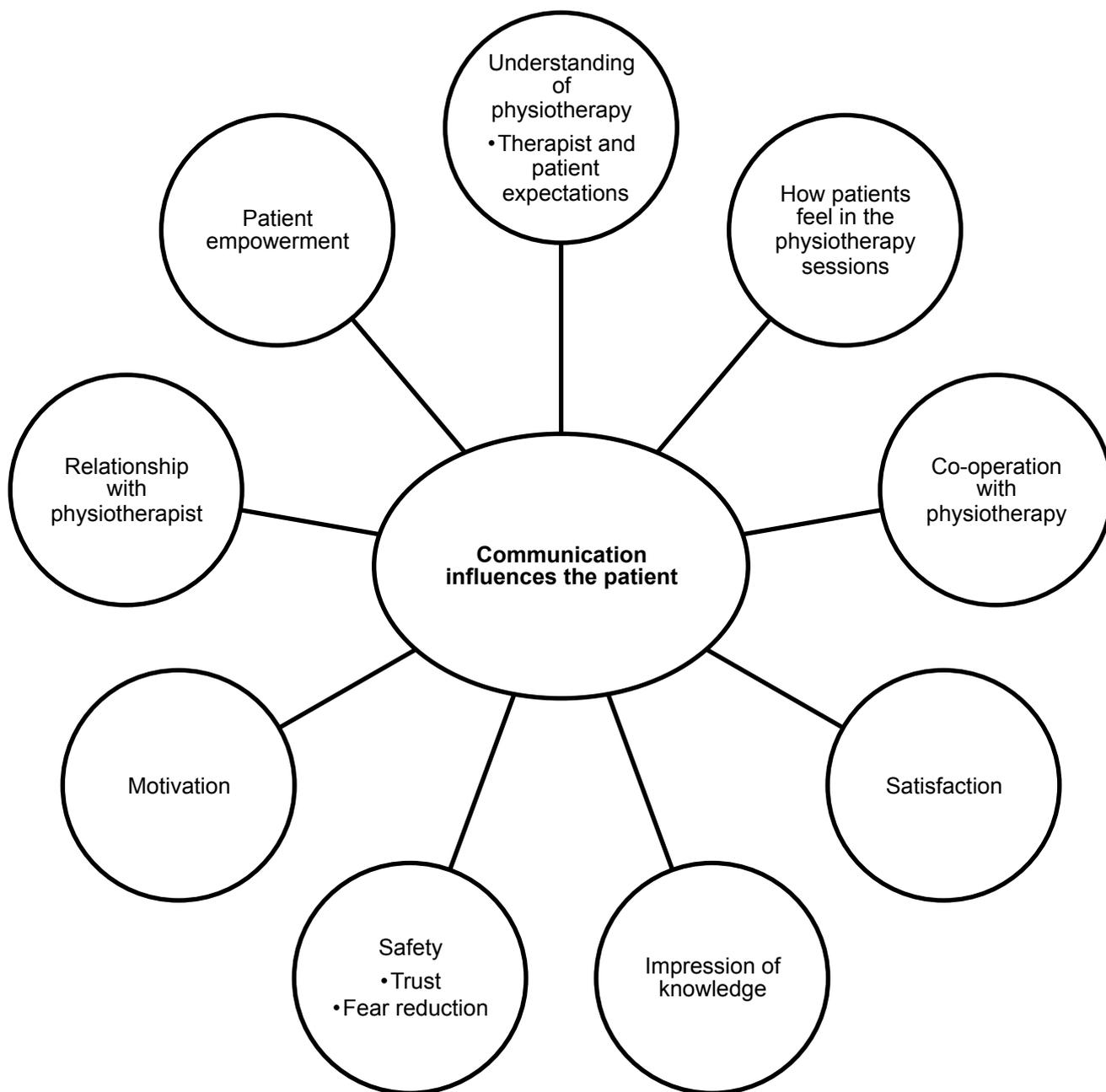


Figure 3.2: Diagram depicting communication-influenced aspects

3.3.1.12 Patient perception and experience of physiotherapy: "...I had a wonderful experience."

As demonstrated in the above-mentioned themes, patients' perception and experience of physiotherapy in the ICU were the result of multiple aspects. Overall, the majority of patients perceived physiotherapy in the ICU favourably. They used words such as 'good', 'wonderful', 'excellent' and 'happy' when describing their experience and perception of physiotherapy in the ICU. However, some patients found the experience difficult. Patients' perceptions of physiotherapy

were chiefly influenced by their understanding, their expectations and their previous experiences thereof.

KT16 (p. 22): *Just that I had a wonderful experience.*

BA1 (p. 5): *Like [I] had to sit on the chair. [I] felt like, they don't care about [me]. They were like, uhm, it takes long even they put [me] on the chair. It's like they put [me] too long. But at the end it did help [me]. [I] didn't understand that. But at the end it did ... [I] was little bit irritated about that. 'Cause of the pains.*

ES8 (p. 19): *It's a ... good experience, hey ... I can't complain. I [had] very good care ...*

VWJ2 (p. 2): *This time it was difficult. It wasn't too much ... Uhm. It was enough physiotherapy ...*

This study aimed to identify and describe patients' perceptions and satisfaction as well as barriers and facilitators of physiotherapy in the ICU. Multiple facilitators and barriers were identified and discussed with regard to physiotherapy in the ICU. Some barriers could be construed as aspects for improvement, for example, the presence of pain, which limits ability and co-operation in mobilisation. However, it must be made clear that not all barriers can be altered, for example, the busyness of the environment. Therefore, some barriers must merely be noted and circumvented to try and limit the effect they have on the service of ICU physiotherapy. By comparison, the facilitators were diverse and patient specific. The presence of the physiotherapist and independent mental preparation of the patient also facilitated physiotherapy in the critical care setting.

The variety of the patients purposefully selected enabled a large pooling of differing perceptions and opinions regarding physiotherapy in the ICU. The data collected in this study allows healthcare practitioners the opportunity to understand and interpret patients' first-hand experiences of ICU physiotherapy. This is a unique opportunity that is not often available in the ICU setting due to previous sedation practice in the ICU.

With the change in ICU practices, including daily sedative interruption and early mobilisation requiring active patient participation, this opportunity may become more readily available. (31)

Concurring with the literature review by Stein-Parbury, (41) the results of this study confirm that patients are able to recall the ICU setting to some extent. This study further demonstrated that some patients were able to recall specific aspects of care (e.g. physiotherapy).

The potential increase in availability of patient perceptions regarding care in the ICU could assist in evaluating and ensuring ICU care quality. Healthcare practitioners could use patient satisfaction and perceptions not only to understand the patient's ICU experience but also to identify potential areas for improvement. As reported by Ariba et al., (21) patients are the consumers of care, and their opinions regarding it should be of concern to healthcare providers. (21) Furthermore, patients are the primary elements in the assessment of service quality. The patient's resultant satisfaction level regarding the service received can be used as an indicator of care quality. (8,22)

3.4 LIMITATIONS

Although the results of this study cannot be generalised and applied to all ICU settings, the diversity in the patients selected for the study as well as the study methods continuing until data saturation demonstrate the credibility of the results. The study findings also provide a good base for future studies in that the study is the first of its nature in South Africa.

A minority of the participants did not partake in the member checking (22%). This is seen as a minor limitation as it is unlikely to have significantly influenced the study results. Another minor limitation could have been the use of an interpreter. This could have resulted in deviations in either the interpretations or explanations of some of the data collected. Every effort was made to reduce this potential effect by using the same interpreter and ensuring the study aims and objectives were understood completely prior to the interview commencement.

3.5 CONCLUSIONS

Physiotherapy in the ICU is a valuable experience predominantly perceived positively and satisfactorily by patients. It is clear that communication is a key component that has an influence on the patient's perception and satisfaction of physiotherapy in the ICU. While there are multiple barriers and challenges encountered in the ICU setting, this does not detract from the value of the physiotherapy service itself. Through the understanding of the patients' perceptions and

experiences regarding physiotherapy in this environment, potential areas for improvement may be uncovered in order to ensure quality of care. As the physiotherapy practices in the ICU change, so should the interaction and communication with ICU patients.

3.6 KEY MESSAGES

- Clear communication between the physiotherapist and the patient is essential to ensure both parties understand what is expected from each other and to manage patient expectations.
- Physiotherapists should be aware that maintaining communication and a professional demeanour assists in preserving the trust in the patient-physiotherapist relationship.
- Patients confirm the value of ICU physiotherapy and the benefits of early mobilisation in the ICU.
- Satisfaction with physiotherapy in the ICU is multifactorial.
- Patient perception of care in the ICU can be investigated.

CHAPTER 4: GENERAL DISCUSSION

4.1 CONTRIBUTIONS TO KNOWLEDGE

There is an endeavour by healthcare professionals to improve quality of care through evidence-based treatments. Measuring patient satisfaction and perception may assist in this regard. Patient's preferences and perceptions (20) form a component in the development of evidence-based practice, informing clinical decisions and resulting in improved quality of care. Similarly, patient satisfaction is increasingly important and frequently used as an indicator of care quality. (22) Understanding a patient's perception of care can provide useful information to administrators in the critical care setting regarding areas of improvement. (23) Knowing and understanding the patient's perception and satisfaction with regard to care ensures professional development in the critical care field and can improve the quality of care. (8,24)

The aims of the thesis were to identify how patient perception and satisfaction in the critical care setting was measured, and to investigate and describe how patients perceive physiotherapy in the critical care setting. The scoping review identified multiple ways in which patient perception and satisfaction were measured in the critical care setting. However, not only was there a lack of validity and reliability reporting regarding the methods identified but also, many measures were self-developed with little description. Ultimately, no clear gold standard for measuring patient perception in the critical care setting was identified.

Patient perception and satisfaction with care are both subjective and influenced by multiple factors and thus, differ from patient to patient. Because no gold standard of measure could be identified, a qualitative approach was adopted. This allowed for the uncovering of the subjective dimensions of patient satisfaction, and enabled the PI to understand the patients' perceptions of physiotherapy in the chosen environment better. The qualitative approach provided rich information, context and an understanding of the deeper meaning behind the data collected.

The scoping review further identified literature gaps regarding patient perception and satisfaction in critical care, namely: 1) the geographical distribution of the published literature; and 2) the physiotherapy service provided.

Since the majority of the studies identified and included in Chapter 2 were predominantly from developed countries, a gap was identified in obtaining an understanding of patient perception of critical care within a developing country. Due to the fact that there are variations with physiotherapy practices across regions, ICU settings and countries, (34) and that patient perception and/or satisfaction with care is influenced by culture, language, (22) age (13,23,53) and gender, (43) studies conducted in different countries could obtain different results.

Only one study (27) identified in the scoping review investigated patient satisfaction with physiotherapy in the critical care setting. In a literature review completed in 2008 by Stiller and Wiles, (27) no research was identified that focused on assessing patient satisfaction with physiotherapy within an ICU context. As stated by Hanekom, Louw and Coetzee, (34) finding methods to measure the value and quality of the physiotherapy service in the critical care setting remains the obligation of the physiotherapy profession. The on-going changes in ICU physiotherapy since 2008 (29) and the literature gaps identified by the scoping review prompted the development of this primary study, which investigates patient perception of physiotherapy in a surgical ICU within a developing country.

The results of this primary study were consistent and agreed with the findings of Stiller and Wiles (27) regarding the positive aspects of physiotherapy in the ICU. Positive aspects included continuity and consistency of care, physiotherapist's caring attitude, friendliness, helpfulness and professionalism. (27) Similarly, a high level of patient satisfaction with ICU physiotherapy was evident in both this primary study and the findings of Stiller and Wiles. (27)

While the results of this primary study collaborated with certain findings of Stiller and Wiles, (27) the two studies were not the same. Stiller and Wiles (27) used a questionnaire, while this study utilised a purely qualitative design. By utilising a qualitative methodology, a rich account of the patients' perceptions of care was retrieved, thus contributing to a deeper understanding of many aspects regarding physiotherapy ICU care. (47,65)

Moreover, the focus of the two studies differed. Stiller and Wiles (27) focused on patient satisfaction with physiotherapy in the ICU and reported on factors such as the physiotherapist's

characteristics, aspects of communication (explanations) and perceived progression of therapy treatment received. This primary study investigated patient perception of physiotherapy in the ICU and included satisfaction as a contributing theme. Thus, the findings from the primary study not only extended the focus of the available literature but also highlighted specific aspects relating to the physiotherapy care received by patients in the ICU. These aspects included: multiple components of communication (such as instructions, demonstrations, interactions and miscommunication); the benefits and progress noted due to ICU physiotherapy; physiotherapy value as expressed by the patients; aspects of safety; tangibilities of the physiotherapy care (pertaining to the environment, equipment and timing of treatment); patient expectations and understanding of physiotherapy; the interdisciplinary team; additional characteristics of the physiotherapist; and continuity of care. In addition, context as to why patients perceived and reported the aspects of physiotherapy care in the manner that they did was provided.

While both studies investigated the physiotherapy service in the ICU, it cannot be assumed that the care received by the patients in the two studies was the same. The recent growth in physiotherapy research, the changes in ICU physiotherapy practise specifically since 2008, prioritising early progressive mobilisation, (29) and variations in physiotherapy practices across countries and ICU settings, (29) could have resulted in the patients receiving very different care. Thus, the primary study contributed new, current and additional information to the limited body of literature on patient perception and satisfaction regarding physiotherapy in the ICU.

Deviating from physiotherapy specifically, the results of this primary study were also aligned with studies (8,12,13,21,22,39,43-46,48,55,56) that investigated other critical care services such as nursing, emergency services and care components of critical care (e.g. informed consent). These studies highlighted communication, informed consent, (43,45,56) verbal information, (56) explanations prior to treatment and the use of alternative methods of communication (46) as positive aspects of critical care.

Factors that increased satisfaction with critical care were related to staff friendliness, (39) professionalism, communication and continuity of care. (8) The negative issues with critical care were related to unfriendly staff, (21) fear, (46) pain (48,55) and poor communication. (13)

Finally, some studies recommended the need to improve and/or continue interaction with staff, (12,21,39) and improve communication, (8,13,22) professionalism, (8) continuity of care, (8) patient education (44) and the management of patient expectations. (13) These recommendations are consistent with aspects reported by the patients in this primary study.

This thesis makes an original contribution to knowledge in that the voice of the patient with regard to their experience of physiotherapy provided in the surgical ICU is presented. The results indicated that some patients are able to remember and recall their ICU experience, particularly regarding physiotherapy, and established that patient perception in the ICU can and should be measured. Thus, the contribution to knowledge may lie in both the richness and variety of information elicited from the patients and reveal new perspectives of understanding in the ICU. This research is original since it is the first study to investigate patient perceptions in the ICU with regard to physiotherapy in a South African context.

4.2 CLINICAL IMPLICATIONS AND RELEVANCE

The thesis highlighted relevant and noteworthy clinical implications, firstly demonstrating that patients recognise and value the physiotherapist as part of the multidisciplinary team involved in their ICU care. For many, physiotherapy was considered a valuable service without which they may not have survived the ICU. In addition, patients described physiotherapy and mobilisation to a large degree as the beginning of their ICU recovery.

While patients reported both difficulties and barriers to mobilisation in the ICU, they also acknowledged the positive impact it had on them and their recovery. Physiotherapists should, therefore, continue to include appropriate early mobilisation in the management of ICU patients as it is supported by current literature and patient opinion.

Secondly, this study highlighted the importance of communication between the physiotherapist and the patient. Physiotherapists should be aware that communication affects multiple aspects of

physiotherapy care and the patients' perceptions thereof. Clear and effective communication between the physiotherapist and the patient should be sought to ensure that both parties are understood, patient expectations are appropriately managed and patient co-operation is encouraged.

Thirdly, physiotherapists should also be aware of their demeanour and attitude in the physiotherapy sessions. Maintaining a professional disposition assists in the preservation of trust and in the development of the physiotherapist-patient relationship. Physiotherapists should pay attention to patient feedback and reactions. Reacting appropriately to patient feedback could affect the patient's perception and satisfaction regarding ICU physiotherapy care, and patient-perceived satisfaction with care has been associated with improved treatment-plan compliance. (16,17) Ensuring patient satisfaction, thereby encouraging patient compliance, could also result in reduced hospital and ICU LOS as well as cost.

Physiotherapists should also be aware that patient perception and satisfaction regarding a service or experience is multifaceted. Therefore, all aspects of care will influence their overall perception of the experience and thus, care should be taken to address the patient-reported needs in addition to the therapeutic-determined needs.

Overall, this study demonstrated that patient perception and satisfaction regarding ICU care can be measured. Thus, physiotherapists can now use this new information as a point of access in order to gain insight from the patients. For individual practitioners or at a departmental level, the information could help in identifying areas requiring improvement in care. Understanding the patient's perception of the physiotherapy service could also assist ICU physiotherapists in their clinical decision-making by combining the best available, evidence-based practice with patient opinions and preferences. (20)

4.3 RECOMMENDATIONS FOR FUTURE RESEARCH

Patient perception and satisfaction regarding care should continue to be an area for future research due to the on-going endeavour for the development of evidence-based practices. The primary study focused on individual interviews with patients receiving physiotherapy in the surgical

ICU. Future research should concentrate on obtaining data in other ICU settings and services because patient demographics and diagnoses may vary from unit to unit. Additionally, patient perceptions are essentially a dynamic process, which could also differ greatly from unit to unit.

Further exploration into specific aspects covered in this study, such as the role of communication in ICU physiotherapy care, could be investigated in greater depth because this study demonstrated that communication is a key aspect of physiotherapy care received in the ICU.

Additionally, the primary study refers to certain activities mentioned by the patients such as mobilisation, use of the 'PEEP bottle' and breathing exercises undertaken in the physiotherapy care. Future studies investigating the physiotherapy service should document the type of care received by patients. The type of care received could affect the patient's perception of care and thus affect the ability to compare future studies investigating the topic. Also, due to the current changes in ICU physiotherapy practices, (29,30,61) it could also affect the audience's interpretation of the study findings.

In order to ensure that patients could participate in the primary study and thus the interviews, all included patients were required to meet the SQ5 and GCS criteria. It is suggested that future studies make use of a measurement to determine the patient's ability to participate in research in order to ensure reliable data collection.

While it might be argued that a strong recommendation be made towards developing a gold standard of measuring patient perception and satisfaction in critical care, this primary study has shown the value of qualitative methodologies in eliciting rich, full, descriptive detail regarding patients' perceptions and satisfaction relating to critical care. Thus, future research could investigate the value of utilising a more qualitative, open format when accessing patient feedback and perceptions as opposed to a structured, standardised questionnaire that may be limiting the patient's voice.

4.4 LIMITATIONS

4.4.1 Scoping review

Two limitations were identified in the scoping review, namely:

- Eight studies were excluded in the scoping review due to language. This is seen as a limitation since information in these articles may have contributed to the results of the scoping review.
- No hand searching was included due to its unreliability, and although a number of databases were searched, they were only Northern Hemisphere indexing.

4.4.2 Primary study

From the primary study, the following limitations were identified:

- Multiple patients were excluded due to lack of ICU or physiotherapy memory. In a review by Stein-Parbury, (41) they reported that 30–100% of the patients included in the review studies could remember at least part of their ICU experience. (41) However, in this primary study, recall difficulty was still evident and considered a limitation, which affected the purposive sampling choices.
- The results are limited to patients from the selected surgical ICU and cannot be generalised for all intensive care units because populations, demographics and conditions may differ.
- A Xhosa interpreter was needed during some interviews to ensure patients could express their opinions and perceptions fully. The need for an external person to translate the interviews could have led to deviation in the communicated word of the patients. This is considered a minor limitation because all efforts were made to ensure that the interpreter understood the study aims, objectives and procedures prior to the interviews, and the same interpreter was used for all interviews conducted in Xhosa to prevent bias.

4.5 STRENGTHS

4.5.1 Scoping review

The inclusion of Spanish studies prevented the scoping review from being limited to the English language only.

4.5.2 Primary study

The following strengths were identified in the primary study:

- The PI was not the physiotherapist treating the patients. As a result, no prior relationship with the participating patients was developed, which could have influenced or skewed the data collected.
- A peer review process was used during the interpretation and analysis of the primary study data. This process ensured that the analysis and interpretation of the data was dependable and confirmable.
- All patients were invited to participate in a member checking session, and a high percentage of the participants (78%) agreed to participate.

4.6 FINAL CONCLUSION

While there is no gold standard to measure patient perception and satisfaction with care in the critical care setting, this thesis advocates that patient perceptions regarding aspects of critical care can and should be measured in order to facilitate the development of evidence-based practice. With the current and on-going changes to both physiotherapy and ICU care practices, patients are now more able to share their experiences of the ICU. It was demonstrated that patients' perception of physiotherapy in the ICU was influenced by many factors, and communication was highlighted as the most influential factor that affected patients' perception of physiotherapy care received. While the results showed that perceptions of physiotherapy were both positive and negative, the majority of patients perceived it positively. As a result, most patients were satisfied overall with the ICU physiotherapy care they received. In this dynamic environment in which there is constant change in practice and a drive for evidence-based practice in order to improve quality of care, patient perception and satisfaction are invaluable in measuring and ensuring quality of care in the ICU.

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METHODOLOGY-RELATED APPENDICES

APPENDIX A: DETAILED SUMMARY OF STUDIES INVESTIGATING SERVICES AND COMPONENTS OF CARE

Table A.1: Comprehensive summary of studies investigating components of care

Care component	Studies	Positive issues	Negative issues
Privacy	Cerdá et al. (24)	<ul style="list-style-type: none"> • Professional empathy • Nursing professionalism • Closing curtains < individual space 	<ul style="list-style-type: none"> • Feelings of vulnerability, shame, nakedness • Distance of family • Disruption of family roles • Loss of independence • Lack of physical individual space
Informed consent	Clark (43)	<ul style="list-style-type: none"> • Effective informed consent was of high value to patients • Positive informed consent process was more likely to have a higher health status after discharge 	<ul style="list-style-type: none"> • ↑ICU stay • Patients paying for healthcare • ↑Age
	Modra et al. (56)	<ul style="list-style-type: none"> • Patients prefer receiving information verbally (61%) • Patients prefer giving consent verbally (60%) • Patients expect to give procedural consent to all procedures (30%) • Patients report sufficient procedural information (80%) • Patients report easy-to-understand information (86%) 	<i>Continued</i>

Care component	Studies	Positive issues	Negative issues
Family participation in ICU care	Garrouste-Orgeas et al. (53)	<ul style="list-style-type: none"> • 77,2% favour family participation • Previous ICU stay • Middle-aged • ↑Age • Care from spouse or grown children 	<ul style="list-style-type: none"> • Image preservation • Embarrassment • Nurses are better skilled • Safety concerns • Unwilling to assist • Physical shyness
Visiting policies	Gonzalez et al. (49)	<ul style="list-style-type: none"> • Flexible hours • 1/3 of patients prefer unlimited visiting times and 1/3 prefer visiting times once a day 	<ul style="list-style-type: none"> • When patient unwell and when visitor dynamics not ideal • Timing: early morning / late evening
	Novaes et al. (45)	<ul style="list-style-type: none"> • ↑Visiting time • Detailed informed consent 	
Communication during respirator treatment	Hafsteindóttir (46)	<ul style="list-style-type: none"> • Explanations prior to treatments • Suggested observation of patient need for suctioning • Suggested use of alternative methods of communication, chosen with input from the patient 	<ul style="list-style-type: none"> • Fear and anxiety • Wanting to give up • Feelings of suffocation, confusion • Nightmares and impaired memories <p style="text-align: right;"><i>Continued</i></p>

Care component	Studies	Positive issues	Negative issues
Sleep	Jones et al. (55)		<ul style="list-style-type: none"> • Discomfort, pain, anxiety, noise and lighting • Wearing a mask • Endotracheal tube presence
	Uğraş and Oztekin (48)		<ul style="list-style-type: none"> • Immobilisation, anxiety, pain and discomfort • Short visiting times • Noisy environment • Nursing interventions
ICU environment	Jongerden et al. (52)	<ul style="list-style-type: none"> • Single-room ICU • Adapted colouring and daylight-exposed rooms • Reduced noise • Better family facilities 	
Pain management	Topolovec-Vranic et al. (51)	<ul style="list-style-type: none"> • Lesser pain scores for the worst pain topic • Communication of pain treatment significance • Nurse and physician responses to pain management 	

Intensive care unit (ICU); increased(↑)

Table A.2: Comprehensive summary of studies investigating services

Services	Studies	Level of satisfaction	Positive issues	Negative issues	Recommendations
Emergency care	Ariba et al. (21)	61,2% rated the care good or excellent	Adequate equipment	<ul style="list-style-type: none"> • ↑Waiting time • ↓Facility size • Unfriendly health workers 	Improved interactions with health care workers
	Goldwag et al. (22)	↑High satisfaction (89% satisfied)		<ul style="list-style-type: none"> • ↑Waiting time • Elementary schooling • Arabic/Russian speaking • Ethnicity • Self-rated health status • Resolution of medical issue • Doctor attitude 	Improved communication with patient
	Oluwadiya et al. (12)	↑High satisfaction		<ul style="list-style-type: none"> • ↓Privacy • ↓Poor interactions with healthcare workers • ↑Time to surgery • One-on-one discussions with Doctor • Noisy setting 	<ul style="list-style-type: none"> • Improved interactions with healthcare workers <p style="text-align: right;"><i>Continued</i></p>

Services	Studies	Level of satisfaction	Positive issues	Negative issues	Recommendations
Emergency care	Sun et al. (13)	Large proportions of patients were satisfied with overall care	<ul style="list-style-type: none"> • ↑Treatment sessions • ↑Age 	<ul style="list-style-type: none"> • Ethnic group • ↓Triage status • ↓Communication with patients • Patients with hand lacerations were less satisfied than patients with abdominal pain 	<ul style="list-style-type: none"> • Manage the perceptions of waiting time • Improve communication with patients • Manage patient expectations
Nursing care	Boev (39)	↑High satisfaction	<ul style="list-style-type: none"> • ↑Friendliness of staff • ↑Pain management 	<ul style="list-style-type: none"> • Preparation for transfer 	<ul style="list-style-type: none"> • Continue positive interactions with healthcare workers
	Hunt (44)			<ul style="list-style-type: none"> • Noisy setting • Delay of planned procedures 	<ul style="list-style-type: none"> • Patient education • Noise reduction • Acknowledge non-verbal communication from patients • Plan nursing care to allow for sleep
	Jonsdottir and Baldursdottir (23)		<ul style="list-style-type: none"> • ↑Age • Gender <p>(Females rated nursing care behaviours higher than males)</p> <ul style="list-style-type: none"> • Lower education 		<ul style="list-style-type: none"> • Nurses should be conscious of fulfilling the patients "unmet needs" <p style="text-align: right;"><i>Continued</i></p>

Services	Studies	Level of satisfaction	Positive issues	Negative issues	Recommendations
Nursing care	Johannessen et al. (40)	↑Extremely high satisfaction		<ul style="list-style-type: none"> • ↓Nurse competence levels • ↓Information for patient • Hygiene 	
	Romero-García et al. (8)	Satisfied with nurses when care is holistic	<ul style="list-style-type: none"> • Holistic care • Verbal and non-verbal communication • Professionalism and clinical competence • Continuous care • Mobilisation • Hygiene and comfort • Pain control • Sleeping rate and the treatments 		<ul style="list-style-type: none"> • Holistic approach to treatment with continuation of care • Effective communication and professionalism <p style="text-align: right;"><i>Continued</i></p>

Services	Studies	Level of satisfaction	Positive issues	Negative issues	Recommendations
Physiotherapy	Stiller and Wiles (27)	↑High satisfaction	<ul style="list-style-type: none"> • ↑Privacy • ↑Dignity • ↑Sufficient explanations • ↑Empathy and care 		

Intensive care unit (ICU); increased (↑); decreased (↓)

APPENDIX B: ETHICS APPROVAL



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Approval Notice Response to Modifications- (New Application)

19-Jun-2015

Van Nes, Michelle MB

Ethics Reference #: S15/04/094

Title: Perception of physiotherapy care in a Surgical ICU: the patients' perspectives.

Dear Miss Michelle Van Nes,

The **Response to Modifications - (New Application)** received on **17-Jun-2015**, was reviewed by members of **Health Research Ethics Committee 2** via Expedited review procedures on **17-Jun-2015** and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: **19-Jun-2015 -19-Jun-2016**

Please remember to use your **protocol number (S15/04/094)** on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:

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 for an external audit.

Translation of the consent document to the language 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).

Provincial and City of Cape Town Approval

Please note that for research at a 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 Helene 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.

We wish you the best as you conduct your research.

For standard HREC forms and documents please visit: www.sun.ac.za/rds

If you have any questions or need further assistance, please contact the HREC office at 219389207.

Included Documents:

Declaration F Karachi

MOD_Cover letter_Response to modifications

MOD_Protocol

Declaration M van Nes

MOD_Participant information leaflet & consent

Participant information leaflet & consent form

Checklist

Declaration S Hanekom

Application form

MOD_Protocol Synopsis

Protocol Synopsis

CV S Hanekom

Protocol

CV M van Nes

CV F Karachi

Sincerely,

Mertrude Davids

HREC Coordinator

Health Research Ethics Committee 2

APPENDIX C: INSTITUTIONAL APPROVAL



Tygerberg Hospital

REFERENCE: Research Projects

ENQUIRIES: Dr G G Marinus

TELEPHONE: 021 938-6267

ETHICS NO: S15/04/094

Perception of physiotherapy care in a Surgical ICU: the patients' perspective.

Dear Miss Michelle Van Nes

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 **on condition that arrangement must be made with the Operational Manager: Nursing of ICU as well as notifying the Physiotherapy Department before commencing of research.**



DR D ERASMUS
CHIEF EXECUTIVE OFFICER
Date: 3 August 2015

TYGERBERG HOSPITAL

ETHICS REFERENCE: S15/04/094

TITLE: Perception of physiotherapy care in a Surgical ICU: the patients' perspective.

BY



An authorized representative of Tygerberg Hospital

NAME Dr DS Erasmus

TITLE CEO

DATE 3 August 2015

APPENDIX D: PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

“Perception of physiotherapy care in a Surgical ICU: the patients’ perspectives.”

REFERENCE NUMBER: S15/04/094

PRINCIPAL INVESTIGATOR: Ms Michelle van Nes

ADDRESS: University of Stellenbosch
Physiotherapy Department
Tygerberg Campus, Medical School
Tygerberg
Parow

CONTACT NUMBER: 083 642 5235

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 study staff or doctor 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 **Health Research Ethics Committee at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki 2013, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The purpose of this research study is to describe your perceptions and satisfactions with physiotherapy care while in you were in the Surgical Intensive care Unit. This study aims is to

understand and describe, from your perspective, how physiotherapy care is experienced in the ICU, and describe whether you are satisfied with the care you received during physiotherapy. This will highlight areas for improvement with regards to the physiotherapy care.

The study will be conducted at Tygerberg Hospital (TBH) in Parow, in the Surgical Intensive Care Unit. We will interview you, once you have been discharged from the ICU and have been moved into a ward at TBH.

The study involves being interviewed or asked several questions by the researcher. The interviewer will also collect information from your medical records. The interviews will be recorded and an observer will take notes. We may contact you after the interviews to check that we have all the correct information.

Why have you been invited to participate?

You were asked and invited to participate in the study as you were a patient at in the Surgical Intensive Care Unit at TBH during August – September 2015.

What will your responsibilities be?

You will be expected to participate in individual interviews of approximately 30 minutes - 60 minutes, and the interview will be audio-taped. During the interview we will talk about your experience of the physiotherapy care you received, what would or could have made this care better and how satisfied you were with the physiotherapy care that you received during your ICU stay.

The interviewer will contact you telephonically after she has analysed the information collected (This will occur some time in September – October 2015). This will be to organise a contact session in order to check that the interviewers understanding and interpretation of what you have said in the interviews is correct.

Will you benefit from taking part in this research?

There is no personal benefit to participating in this research study. The results of this study could result in changes to the service quality of the physiotherapy care in the Surgical Intensive Care

Unit and this may influence the experience that future patients receiving physiotherapy care in the Surgical Intensive Care Unit, may have.

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

There are no risks associated in taking part in this research. You will only be participating in individual interviews. Each participant will be given a resource list with appropriate sources, that you can contact in the event that the interviews cause emotional discomfort and distress.

Who will have access to your medical records?

The interviewer will have access to your medical records in order to collect information about your stay in the ICU. This information will only be used for the study purposes only. All information collected from the file will remain anonymous and all identifying markers will be removed.

The information collected from the interviews will only be handled by the interviewer, interview observer and if needed a translator that would be present in the interview. All audio and written documents will be alphabetically coded to ensure strict confidentiality of all collected data. This data will then be analysed. All information that will be handled by other independent members will already have been alphabetically coded to protect your identity and ensure privacy.

All data, from both the interview process and the medical records, will be stored on a password-protected computer and at the end of the data analysis phase the audio-tapings of the interviews will be destroyed.

Any research publications related to this study will have no identifying information of any of the participants.

What will happen in the unlikely event of some form injury occurring as a direct result of your taking part in this research study?

It is unlikely that you will suffer injury by participating in the interviews, however should you feel the need to talk more about your experiences, you will be provided with a resource list with contact details of counselling options or professionals.

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

No, you will not be paid to encourage you to take part in the study. However should you take part in the study, you will be given a voucher in order to reimburse you for your time and inconvenience for the information checking session. In addition you will also be given a set amount for transport, for the second session only, as the first interview will not require any transport because it will take place while you are still in the hospital. There should be no further costs to you.

Is there any thing else that you should know or do?

You can contact me at 083 642 5235 or the Health Research Ethics Committee at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed. You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I agree to take part in a research study entitled: "Perception of physiotherapy care in a Surgical ICU: the patients' perspectives."

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.

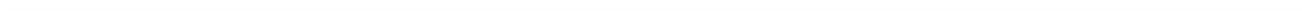
- I assisted the investigator (*name*) to explain the information in this document to (*name of participant*) using the language medium of Afrikaans/Xhosa.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

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

.....

Signature of interpreter

Signature of witness



APPENDIX E: INTERVIEW DISCUSSION SCHEDULE

Purpose:

- The purpose of this interview is to find out how you as the patient found/perceived/experienced the physiotherapy care (including the respiratory, rehabilitation and mobilisation {moving/getting out of bed components}) while you were in the surgical ICU.
- It is to understand what it was like for you.
- I'm interested in **knowing about your experience, and what your comments are.**

Ethics:

- All the data is being recorded and will be used to collect the information from the session.
- You have the right to stop the interview at any time, leave the interview at any time and request the recording be deleted at anytime in the session.
- Data is ONLY being used for research
- Confidentiality will be kept (remove all identifying markers)

Please bear in mind these questions are with regards to the physiotherapy treatment you received while still in the ICU and not with regards to the physiotherapy received now in the wards.

Any questions or issues at this point?

1. Tell me about your experiences with the physiotherapy care while in the ICU?
 - a. What did you understand about physiotherapy?
 - b. What did you do in the physiotherapy sessions? Can you describe what happened in the physiotherapy sessions and what it felt like for you?
 - c. Did you experience any *challenges* during the physiotherapy sessions?
2. Tangibilities:
 - a. What did you think of the *environment and equipment* used during the physiotherapy care? (e.g. chairs etc.)
 - b. What did you think of the appearances of the physiotherapists that treated you?

- c. Did you know **who** the physiotherapists were? (Introduced themselves/ name badges etc.)
- d. When did the physiotherapists in the ICU see you? (time) {Prompts : What time?, How long?}

3. Assurances

- a. What did you think of the **knowledge** the physiotherapists displayed?
- b. Did you understand what was **expected** of you in the physiotherapy sessions?
 - i. Why do you say this?
- c. Were the physiotherapy sessions as you expected?
 - i. If no, then how were they different?

4. Empathy

- a. How do **you feel** the physiotherapists **treated you** in the sessions? (physically, emotionally, mentally?)
- b. Can you describe *examples* from the physiotherapy sessions?

5. Responsiveness

- a. What did you think of the **communication** during the physiotherapy sessions?
- b. How were the decisions made, to decide what the next step/progression was in the sessions?
- c. Did you have any feelings with regards to the physiotherapy care? (fears?/worries?)

6. Reliability

- a. Did you feel safe during the physiotherapy sessions?
- b. Specifically with mobilisation?
- c. Did you **trust** the physiotherapists?
- d. If yes/No: Why do you say so?

7. What do you understand by the *word* satisfaction, and what does it mean to you?

8. Would you say you were satisfied or dissatisfied with the physiotherapy treatment? (*How would you describe the physiotherapy care in terms of satisfaction/dissatisfaction?*)

- a. Why do you say so?
- b. What made you feel like this? (Satisfaction)

- c. What would have made this (satisfaction) better?
- d. What would have made this (satisfaction) worse?

9. Is there anything you feel could have changed/ been improved on?

APPENDIX F: ADEQUACY SCORE (SQ5) (30,58,63)

1. Open and close your eyes	
2. Look at me	
3. Open your mouth and stick out your tongue	
4. Shake yes and no (nod your head)	
5. I will count to 5, frown your eyebrows afterwards	
TOTAL	/5
One mark will be given to each correct response /reaction.	
Interpretation:	
SQ5 = 0	No cooperation
SQ5 = 0-5	Variable cooperation
SQ5 > 4	Close-full cooperation
SQ5 = 5	Full cooperation

APPENDIX G: ADEQUACY SCORE PILOT STUDY

A pilot study was conducted prior to the commencement of the primary study.

G.1 OBJECTIVES

- To determine if the Adequacy score (SQ5) for determining patient co-operation was appropriate for patient participation in the primary study
- To determine if the Adequacy score was able to identify patients who would not be able to participate in the interviews for the primary study

G.2 METHODS

G.2.1 Study setting

The pilot study was conducted at a tertiary institution of the Western Cape, South Africa.

G.2.2 Ethical considerations

Written and verbal consent was obtained from all participants. It was made clear to each participant that participation was requested for the pilot study only and not for the interviews of the primary study.

G.2.3 Sample

A convenience sample of five adult participants was used for the pilot study. All participants had been discharged from the surgical ICU within 3–5 days prior to participation in the pilot study. There was variety in the participants' ICU length of stay (LOS), ICU admission diagnosis, gender and age. See Table G.1 for patient demographic characteristics.

Table G.1: Participant demographic profiles

Participant	Age (years)	Gender	ICU LOS	ICU admission diagnosis	Language	Education
1	31	F	13 days	Traumatic (MVA)	English	Gr 12 (Matric)
2	45	F	4 days	Traumatic (MVA)	Afrikaans	Gr 9 (Std 7)
3	35	M	12 days	Traumatic (MVA)	English/ Xhosa	Gr 12 (Matric)
4	55	M	3 days	Emergency (Abdominal surgery)	English/Afrikaans	Gr 10 (Std 8)
5	52	M	4 days	Elective (Abdominal surgery)	English/ Xhosa	Gr 6

Length of stay (LOS); female (F); male (M); motor vehicle accident (MVA); Grade (Gr.); Standard (Std.)

G.2.4 Measurements

Procedure: The primary investigator (PI) identified the participants through convenient sampling. Prior to commencement of the study, the PI explained the pilot study and the consent form to each participant. Once consent was obtained, the SQ5 was administered. Thereafter, the patients' Glasgow Coma Scale (GCS) scores were determined in addition to their orientation to time, person and place. All scores were documented.

G.3 DATA ANALYSIS

The SQ5 score was compared with the GCS level of each patient as well as the patient's orientation to time, person and place. The SQ5 was deemed appropriate if the score correlated with those of the patient's orientation to time, person and place as well as the GCS level.

G.4 RESULTS

On the day of the pilot study, eight patients had been discharged from the ICU to the wards within the requisite 3 to 5 days period for the pilot study. Three of the patients could not be included because they were: 1) discharged home; 2) partaking in another study; or 3) could not be located in the hospital. Thus, a total of five patients participated in the pilot study. The SQ5 scores and the results are tabulated in Table G.2.

All of the participants scored maximally on the GCS. Four participants demonstrated the maximum for the SQ5. These four participants were also orientated to time, person and place. Only one participant scored below maximum in the SQ5, with a 4/5 score that would indicate variable co-operation. This was also the only patient that was not orientated to time and was noted to have intermittent and confused speech during the explanation of the pilot study.

Table G.2: Pilot study results

Participant	Adequacy score (/5)	GCS (/15)	Orientation			Comments
			Time	Person	Place	
1	5/5	15/15	Y	Y	Y	N
2	5/5	15/15	Y	Y	Y	N
3	4/5	15/15	N	Y	Y	Intermittent confused speech
4	5/5	15/15	Y	Y	Y	N
5	5/5	15/15	Y	Y	Y	N

Glasgow Coma Scale (GCS); no (N); yes(Y)

G.5 CONCLUSION

Due to the results of this pilot study, the SQ5 and the other scores used, it was possible to discern patients that would or would not be able to participate in the primary study interviews. Thus, the SQ5 was appropriate to determine patients' co-operation and ability to participate in the primary study interviews.

APPENDIX H: CCSSA CONGRESS POSTER

Poster presented at the Critical Care Society of Southern Africa (CCSSA) Congress, 2015

Patient perceptions of ICU care: A Scoping review

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INTRODUCTION: Patient satisfaction is fast becoming an essential concept for improving quality of care (1,2). Documenting what elements are important to a patient when evaluating their health care is vital in assessing and improving quality of care (3). A patient's satisfaction and positive experience with health services has been related to increased compliance with treatment plans, better patient's safety and improved clinical results (4,5). The World Health Organisation (WHO) has recognised the importance of patient opinion, perception and satisfaction level, in order to meet all the patients' necessary needs.

A scoping review was undertaken with the aim of determining patient's perception and satisfaction with critical care. The objectives of the scoping review were to describe the components of care, services and the geographical distribution of the literature, for patient perception and/or satisfaction with critical care.

METHODS: A total of seven databases were electronically searched between 06/02/2015 - 20/02/2015 namely, MEDLINE, CINAHL, Science Direct, Pubmed, Web of Science, Scopus, Google Scholar. No time period limitations were set for the databases during the searches. Search terms included: *Physiotherapy or Physical therapy, Patient satisfaction, Perception or patient perception, patient experience, Intensive care unit or ICU, Critical care, hospitalised adult population, hospital, measurements, Measuring, Outcome measure.*

At the end of the search period, two reviewers independently reviewed papers at title, abstract, full-text levels (Refer to Figure 3-1 Selection process flow diagram and Table 2-1 for the study inclusion and exclusion criteria).

Table 2-1 Inclusion and Exclusion Criteria.

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> Only adult populations (>18 years of age) Only English/Spanish articles Only Human Articles Hospitalised environments ICU Critical care Articles only not reviews Patient perception or satisfaction of care Measurements of perception or satisfaction with care 	<ul style="list-style-type: none"> Palliative care / Cancer & End of life care Perceptions of others, rather than the patients (Family/nurse/Physician) Outpatients & Chronic conditions Primary health care Neonates/children populations Only QOL investigations Pregnancy/delivery Behavioural changes Imaging Theoretical/ conceptual studies

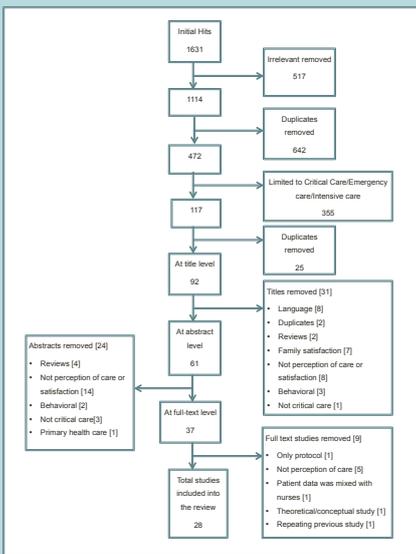


Figure 3-1 Selection Process flow diagram

RESULTS: 28 of the papers were included.

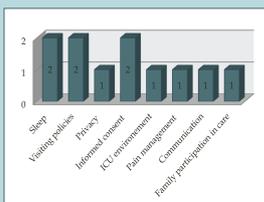


Figure 3-2 Aspects of care investigated

Table 3-7 Study characteristics

Study characteristics	Number (n)
Investigation Categories	
Investigated services (8,9,11,13,18)	1035,7
Investigated care component (19,24,27,30,35)	1139,3
Investigated ICU experience (26,31-33)	414,3
Investigated ICU care quality/satisfaction (7,25,34)	310,7
Countries of Publication	
Europe (n=16)	
France (30)	13,6
The Netherlands (28)	13,6
Switzerland (25)	13,6
Norway (18)	13,6
Iceland (16, 29)	27,1
Spain (8, 34, 36)	310,7
England (20)	13,6
Northern America (n=7)	
Canada (27)	13,6
USA (8,7,13,21,23,31)	621,4
South America (n=1)	
Brazil (22)	13,6
Africa (n=2)	
Nigeria (11,14)	27,1
Australia (n=4)	
Australia (15,17,24,32)	414,2
Asia (n=4)	
Turkey (19,33)	27,1
Israel (9)	13,6
China (26)	13,6

Table 3-2 Studies investigating a component of care

Care Component	Studies	Positive Issues	Negative Issues
Privacy	Cerdá et al (35)	<ul style="list-style-type: none"> Professional empathy Nursing professionalism Closing curtains - individual space 	<ul style="list-style-type: none"> Feelings of vulnerability, shame, nakedness Distance of family Distraction of family roles Loss of independence Lack of physical individual space Shared space
Informed consent	Clark(23)	<ul style="list-style-type: none"> Effective informed consent was of high value to patients Positive informed consent process were more likely to have a higher health status after discharge. Male/female 	<ul style="list-style-type: none"> • ICU stay • Patients paying for healthcare • Age
	Mocra et al(24)	<ul style="list-style-type: none"> • Patients prefer receiving information verbally (61%) • Patients prefer giving consent verbally (60%) • 30% patients expect to give procedural consent to all procedures • 80% report sufficient procedural information • 80% report easy to understand information. 	
Family participation in ICU care	Garroute-Orgeas et al (30)	<ul style="list-style-type: none"> • 77,2% favorable to family participation • Previous ICU stay • Middle aged • Age • Care from spouse or grown children 	<ul style="list-style-type: none"> • Image preservation • Embarrassment • Nurses are better skilled • Safety concerns • Unwilling to assist • Physical shyness
Visiting policies	Gonzalez et al (21)	<ul style="list-style-type: none"> • Flexible hours • 1/3 prefer unlimited visiting time and 1/3 prefer visiting times once a day only. 	<ul style="list-style-type: none"> • When patient unwell • When visitor dynamics not ideal • Timing: early morning/ late evenings
	Novaes et al (22)	<ul style="list-style-type: none"> • Waiting time • Detailed informed consent 	
Communication during respirator treatment	Haltstätter (29)	<ul style="list-style-type: none"> • Explanations prior to treatments • Suggested observation of patient need for suctioning • Suggested use of an alternative methods of communication 	<ul style="list-style-type: none"> • Fear and anxiety • Wanting to give up • Feelings of suffocation, confusion, nightmares and impaired memories.
Sleep	Jones et al (20)		<ul style="list-style-type: none"> • Discomfort • Pain • Anxiety • Noise • Wearing a mask • Endotracheal tube presence • Lighting
	Ugray & Utzeken (19)		<ul style="list-style-type: none"> • Immobilisation • Anxiety • Pain • Discomfort • Short visiting times • Noisy environment • Nursing interventions
ICU environment	Jongerden et al (28)	<ul style="list-style-type: none"> • Single-room ICU • Adapted colouring • Reduced noise • Better family facilities • Daylight exposed rooms • Abdominal pain 	
Pain Management	Ispovodic-Vratic et al (27)	<ul style="list-style-type: none"> • Patient pain scores for the worse pain topic • Communication of pain treatment significance • Nurse and physician responses to pain management 	

Table 3-3 Studies investigating patient perception and/or satisfaction with a service

Services	Studies	Level of satisfaction	Positive issues	Negative issues	Recommendations
Emergency care	Ariza et al (14)	81,2% rated the care either fair or excellent	<ul style="list-style-type: none"> • Adequate equipment • Facility size • Unfriendly health workers 	<ul style="list-style-type: none"> • Waiting time • Facility size • Unfriendly health workers 	<ul style="list-style-type: none"> • Improved interactions with health care workers
	Goldweg et al(1)	High satisfaction (89% satisfied)	<ul style="list-style-type: none"> • Elementary schooling • Arabic/Russian speaking • Self-rated health status • Resolution of medical issue • Dr. attitude 	<ul style="list-style-type: none"> • Waiting time • Elementary schooling • Arabic/Russian speaking • Self-rated health status • Resolution of medical issue • Dr. attitude 	<ul style="list-style-type: none"> • Improved communication with patient
	Chavastya et al (11)	High satisfaction	<ul style="list-style-type: none"> • Privacy • Floor interactions with health care workers • Time to surgery • One-on-one discussions with Dr. • Noisy setting 	<ul style="list-style-type: none"> • Privacy • Floor interactions with health care workers • Time to surgery • One-on-one discussions with Dr. • Noisy setting 	<ul style="list-style-type: none"> • Improved interactions with health care workers • Time to access surgery
	Sun et al(6)	Large proportions of patients were satisfied with overall care.	<ul style="list-style-type: none"> • Treatment sessions • Age • Ethic group • Fringe status • Communication with patients • Ethnicity • Hand lacerations > Abdominal pain 	<ul style="list-style-type: none"> • Ethic group • Fringe status • Communication with patients • Ethnicity • Hand lacerations > Abdominal pain 	<ul style="list-style-type: none"> • Manage the perceptions of waiting time • Improve communication with patients • Manage patient expectations.
Nursing care	Boev (13)	High satisfaction	<ul style="list-style-type: none"> • Friendliness of staff • Pain management 	<ul style="list-style-type: none"> • Preparation for transfer • Noisy setting • Delay of planned procedures 	<ul style="list-style-type: none"> • Continue positive interactions with health care workers
	Hunt (1)		<ul style="list-style-type: none"> • Hygiene & comfort • Pain control • Sleeping rate and the treatments. 	<ul style="list-style-type: none"> • Noisy setting • Delay of planned procedures 	<ul style="list-style-type: none"> • Patient education • Noise reduction • Acknowledge non-verbal communication from patients • Plan nursing care to allow for sleep
	Jonesdottir & Baldursdottir (16)		<ul style="list-style-type: none"> • Age • Gender • Profession (Male) • Lower education 	<ul style="list-style-type: none"> • Age • Gender • Profession (Male) • Lower education 	<ul style="list-style-type: none"> • A moment of care requires nurses to be conscious of fulfilling the patients needs
	Johannessen et al (19)	Extremely high satisfaction	<ul style="list-style-type: none"> • Holistic care • Verbal and non-verbal communication • Professionalism and clinical competence • Continuity care • Mobilisation • Hygiene & comfort • Pain control • Sleeping rate and the treatments. 	<ul style="list-style-type: none"> • Nurse competence levels • Information for patient • Hygiene 	<ul style="list-style-type: none"> • Holistic approach and treatment with continuation of care • Effective communication and professionalism
	Nomeros Garcia et al (8)	Satisfied with nurses when care is holistic	<ul style="list-style-type: none"> • Holistic care • Verbal and non-verbal communication • Professionalism and clinical competence • Continuity care • Mobilisation • Hygiene & comfort • Pain control • Sleeping rate and the treatments. 	<ul style="list-style-type: none"> • Holistic care • Verbal and non-verbal communication • Professionalism and clinical competence • Continuity care • Mobilisation • Hygiene & comfort • Pain control • Sleeping rate and the treatments. 	<ul style="list-style-type: none"> • Holistic approach and treatment with continuation of care • Effective communication and professionalism
Physiotherapy	Stiller & Wiles (15)	High satisfaction	<ul style="list-style-type: none"> • Privacy • Dignity • Sufficient explanations • Empathy & care 	<ul style="list-style-type: none"> • Privacy • Dignity • Sufficient explanations • Empathy & care 	<ul style="list-style-type: none"> • Holistic approach and treatment with continuation of care • Effective communication and professionalism

DISCUSSION & CONCLUSION: The scoping review was able to identify a gap in the available literature for the areas regarding physiotherapy perceptions and satisfactions within the ICU, as well as the geographical distribution of published literature in the field. Only one article, namely: Stiller and Wiles (15) investigated patient satisfaction with regards to physiotherapy care in the ICU setting. Stiller and Wiles (15) were unable to identify any research focused in assessing patient satisfaction with physiotherapy within an ICU context (15) and this scoping review further confirms their findings.

According to the World Bank Group (37), 82,1% of the 28 studies included in the review, were from developed countries, while 17,9% were completed in developing countries. As documented by several of the studies, the patient's perception and/or satisfaction with the care was influenced by gender, age, culture and language. This could lead one to assume that patients perception and satisfaction with care would differ greatly depending on the country and population of patients.

Patients were previously not thought to be appropriately prepared, to judge the components of care and the quality thereof. However they are now more readily seen as crucial informants regarding quality aspects with care (7). This review noted the need for further research into patient perception and satisfaction with physiotherapy in the ICU, and more research in developing countries.

APPENDIX I: SAJCC ABSTRACT (37)

Patient perceptions of ICU care: A Scoping review

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Background. Physiotherapy practice in intensive care units (ICU) is changing. Early mobilisation programmes are included and prioritised. Methods and measures to assess physiotherapy effectiveness in the ICU have often been geared to physiological data. It is unclear whether patients' perspective and satisfaction with care in ICU have been investigated.

Method. A scoping review was undertaken with the aim of determining how patient perception and satisfaction with critical care is measured. Seven databases were searched using the following keywords in various combinations: physiotherapy or physical therapy, patient satisfaction, perception or patient perception, patient experience, intensive care unit or ICU, critical care, hospitalised adult population, hospital, measurements, measuring and outcome measure.

Results. 1 626 articles were independently screened by two reviewers at title, abstract and full text level respectively. The final review included 26 articles. Only two of the studies were conducted in Africa, compared with ten in Europe and six in Northern America, respectively. Nine of the included articles investigated a particular service such as nursing care, emergency care and physiotherapy with regards to patient perception and satisfaction. Only one article, published in 2008, investigated patient perception and satisfaction in physiotherapy. Various outcome measures were identified in this review that measure perception and/or satisfaction. However, there is currently no validated and reliable instrument to assess patient satisfaction with care in the ICU.

Conclusion. A gap in the literature was identified for patient perceptions regarding physiotherapy care in the ICU. The results will be used to inform the planning of a primary qualitative study. Knowing and understanding the patients' perception and satisfaction with care, ensures the professional development in the critical care field, and improving the quality of care.

RESULTS-RELATED APPENDICES

APPENDIX J: CODEBOOK

	Codes [= 65]	SUB- Categories [=23]		Categories [=14]	Themes [= 13]	Theme Definitions	Quotes
1	Impact of mobilisation	Impact of mobilisation (A) 1=A	A + B	PT activities (A)	PT activities (A)	Activities completed during the physiotherapy sessions in addition to the adaptations made and the implications of mobilisation	DS23(p.2): "They make me blow that bottle so they say I must blow that bottle so...Ever since now they learn me how to blow that bottle now. I s-, there's no pain anymore in my ribs."
2	What was done in physiotherapy	Physiotherapy activities (B) 2+3=B					GS7(p.12):"Hulle't geleer my dam om te hoes ook...- te hoes ook. Ja...Hoe om te hoes, dat al die slyme kan altyd...- die slyme. Kan uit kom." [Translated: They also taught me how to cough...to cough as well. Yes...How to cough that all the phlegm can always...-the phlegm. Can come out.]
3	Adaption of task/ comfort						MM5(p.5):"A water-bottle pipe. The uh...physio lady came on the following day...With the bottle. Then we done some few exercise, whereby I was sitting in the chair again.... She will say to me I must breathe in...And then I must breathe...ah...uh...out. And then I must do one, three times. Then after that we will take the bottle, with the pipe, and then I must breathe in deep. And then after that, when I'm blow...when I'm breathing out, I must breathe on that bottle." MJS20(p.8): Ja... Normally because my, my problem is about breathing. It's about breaths. And it's about standing. Because I injured my, my spinal cord. I injured my ribs...So... It feel the people tried to put my ribs back. By giving me the blowing, you know, one of these (indicates)...Ja, the PEEP bottle. JR24(p.1-2):"Uh. Hulle het my nou net uit die bed uit gehelp...En my laat regop sit. Kussing agter my rug, so...stywe kussing... Arms opgelig. Diep asem gehaal...Bene beweeg... Voete... Dis dit." [Translated: Uh. They helped me out of the bed...And let me sit upright. Cushion behind my back, like...a stiff cushion...Lifted arms. Deep breathing...Moving legs...Feet...That's that.] PB6(p.3): "They made in sit on chair for four bloody hours ... I, I dunno. I...can know that you allowed to sit in pain, 'cause I was in pain. " BA1(p.18):"I hate to sit in the chair...Because I was very tired and everything." BA1(p. 13): "Sometimes I would refuse. They say why? I'm tired, I can't sit. Sometimes say I'm dizzy. I can't sit on the chair. They would say okay. It's fine. We'll put you two hours. And then we'll come back and then we'll put you back. And then I said thank you.

							<p>PB6(p.21):"No I was on quite a lot [of lines]...So couldn't actually move around really." VNA11(p.3):"As soon as the tubes were off I was up."</p>
7	Patients expectations of physiotherapy	Expectations and understanding (D) 7+8+9+63+27= D	D	Expectations and understanding (B)	Expectations and understanding (B)	Patients understanding and expectations of physiotherapy in addition to the changes thereof.	<p>MM5 (p.14): "The purpose of all of this [physio] is to get me out and back on my feet...so that I can be the same person that I was." VNA11(p.9): "I thought they were just exercising your limbs. [Laughs] Now I understand it's not just your limbs. It's everything. Ja." KC18(p.8): "En toe het ek darem, uh, verstaan, uh, verstaan waaroor dit eintlik rerig gaan. Dit gaan eintlik oor my longe wat miskien nou verswak, of so iets van die aard, want dit moet versterk word." [Translated: And then I actually, uh, understood, uh, understood what it actually was. It is actually about my lungs that were perhaps weakened, or something of that nature, because it needs to be strengthened.] SF3(p.15): "And of course, once the op is finished...You need physiotherapy to be able to get the muscles going again...You see? It's got to be going. Otherwise... It's like a-a, a battery. Car battery. If it's flat or if it's down... You can't use it. You have to send it somewhere to be recharged. Am I right ?...You can compare that with physiotherapy...Your body needs to go somewhere to be recharged." BA1(p.6): "Noo. In ICU I was expecting to sle-, lie on the bed, totally. So I can wakeup when I go. Not to...step out and sit on the chair. It was like, I was expecting to sleep...the whole day...So...I thought I would lie, all the day. So, when they, put me in the chair I thought that they were not doing their job because I feel sick. But they took me in the chair. How can a sick person can be able to sit? It was like that." VWJ2(p.3): "Dit was taamlik oraait gewees omdat ek het mos baie[fisioterapie] van tevore... ook gedoen... Is nie dat dit 'n snaakse gevoel was, soos die heel eerste keer of so nie...die eerste keer se fisio, dit was vir my erg. Dit was...met die heel eerste operasie, sewe jaar terug. Nou nie 'n idee gehad van fisio of wat gaan gebeur. Dit was vir my nogal erg." [Translated: It was pretty alright because I</p>
8	What patients understand/ understanding PT						

9	New Understanding/ Changed						have done a lot of [physiotherapy] previously...Its not like it was a strange feeling like the first time...the first time of physio, that was bad for me. It was...with the very first operation, seven years ago. I hadn't an idea of physio or what would happen. It was quite bad for me.]
63	Recommendations of physiotherapy						KT16(p.12): "...once I understood what the physio is gonna do for me... it was just positive from there." KC18 (p.22): "...ek sou sê weer, ja. Want soos sy, soos sy vir my verduidelik, wat is die next stap...Dan het ek sommer al myself in gedink dit is nou, dit gaan nou daaroor nou, ja. Verstaan nou? ...So ek het dit meer ver-verstaan, soos hoe sy vir my verduidelik het elke stappie vir stappie". [Translated: ...I would say again, yes. Because like she, like she explained to me, what the next step was...Then I just thought to myself this is now, its about this now, yes. Understand?So I understood it more, like how she explained each step for step to me.]
27	Do patients understand what was expected them?						KT16(p.4): "I have a better understanding [of physiotherapy] because, okay, once they, uh, gave me physio, I noticed everybody else got-gets physio too." KT16(p.21): "Number one, physio is for everybody. Every sick person. Especially like I said, I saw in ICU, we all had different injuries and they were catering to every person's need...From-from being sick and laying in the bed. I know what it is now...When I treat somebody this time round, I think it-it will definitely impact on my work that I do."
5	PT helping	PT helping (C) 5+6=C	C + E	PT value (C)	PT value (C)	The value of physiotherapy as described by the patients	KT16(p.16): "...it's always good to know, there-there's other people besides the doctors and the nurses that are caring for you. It's really good to know, okay, physio is here, 'cause the physio is here to see that you get home. Physio is here to see that you also get home. Just, just not the doctors, just not the nurses. There's somebody else that's actually also here, that's here to see you get home." MM5(p.9): " If it wasn't for them...maybe I couldn't make it..." DS23(p.7): "I feel very good, because while they were, uh, helping me, they did, I-I did know how to walk now I can at least get out of bed do something's I didn't know. Because if they didn't help me, they didn't do nothing in physio, I wouldn't even be here, maybe walk." MSJ20(p.14): "So... I really need them. Through every day, it was a dream for me to see them."
6	Assistance						
24	PT need	PT value (E) 10+24+25+26= E					
25	PT purpose						
26	Role of PT						
10	PT value						

							<p>MM5(p.24): "They play a big role to each and everyone of those patients here".</p> <p>WM14(p.23): "Weet jy, ek sal jou een ding sê, maar dis iets wat hulle nooit-ooit moet weg vat...uit die ICU uit nie...Want daai mense se werk is kosbaar...Want so het ek nou gevoel. Ek is deur dit." [Translated: You know, I'll tell you one thing, but its something they should never ever take away...from the ICU...Because those people's work is precious...because that's how I felt. I am through it.]</p>
11	Tangebilities	Tangebilities (F) 11+12+13=F	F + J +I	Tangebilities (D)	Tangebilities (D)	Refers to aspects included in the physiotherapy care such as equipment, environment and appearance, timing of treatment	<p>DS13(p.38): " I think they are not given enough time to do their side of the job...They got a sort of, they've got a sort of fit in...Like I was supposed to go on for a, go on Friday for a ...a CT scan today...Been laying here at the hospital for two and a half days waiting for the CT scan. And it never happened. And, uhm, so the physios, if, if they had to come fetch me for example, just assuming that when I come here at eight-ten o'clock or ten thirty in the morning... And suddenly there's the CT scan department decided they got a booking from me, that would have been, that's, that would have been the end of that session...That's up to me, that's a slight problem..."</p>
12	Area/environment	PT appearance (I) 17+18+19=I					<p>KT16(p.7): " They set it up in the, in the area, in the environment that I was in, that suited me best, that was comfortable for me. Even though it was the bed, it was the most comfortable."</p>
13	Equipment						<p>GS7(p.18): "Die ICU was te besig." [Translated: The ICU was too busy.]</p>
17	PT appearance						<p>GS7(p.14): "Ek't gewag hulle enige tyd...Ek het nie 'geworry'." [Translated: I waited for them anytime...I didn't worry.]</p>
18	Dress/uniform	PT timing (J) 21=J					<p>JL12(p.2-3): "Hulle't elke oggend gekom...In die oggende is dit beter...Want ek het, was klaar gewas en...en in die middag is dit, is ek 'n bietjie vaak" [Translated: They came every morning...In the mornings it was better...because I was already washed and...in the afternoon, I was a bit drowsy.]</p>
19	Identification of PT						<p>MS21(p.15): "You can point them even, when there are lots of people from them, because they neat and then you can see ...the way they were dressing they are, they were professionals."</p>
21	PT timing						<p>KC18(p.13): "Soos ek sal sê is, die fisio was, was reg aangetrek. Soos-soos 'n persoon wat werk by 'n hospitaal of by 'n kliniek werk." [Translated: Like I'll say, the physio was, was dressed properly. Like-like a person that works at a hospital or clinic.]</p> <p>JR24(p.11): " Netjies gelyk het, ja...Dis vir my belangrik....Jy moet netjies wees. Jy kan nou nie slordig, na iemand toe gaan om...ek</p>

							<p>bedoel vat nou myself, ek kan nie nou na iemand to gaan as ek...slordig lyk nie. Hoe gaan dit die eerste, uhm...First impression? First impressions." [Translated: Looked neat, yes...That is important for me...You must look neat. You can't go untidy to someone...I mean take myself, I can't go to some one if I, look untidy. How will it the first, uhm... First impression? First impressions.]</p> <p>DS13(p.11): "And then I sat on the bed for a while. 'Cause there was only one chair in the ward and [it] was being used by someone else."</p>
15	Characteristics of PT	PT characteristics and behaviour (H=) 20+15+16=H	H	Pt characteristics and behaviour (E)	The physiotherapist (E) (E+F)	PT-related categories (Behaviour, competence, characteristics) as perceived by the patients	<p>MM5(p.14): "they know what they doing"</p> <p>DS13 (p.20-21): "more technical side of the nursing side"</p> <p>KT16(p.14): "The knowledge was-was was quite good. 'Cause I-I was surprised to see that she could read my monitor...Ja. Because I'm in the medical field, so I could read the monitor, I could read the monitor. I knew exactly what it said. I just didn't tell her, that I can read the monitor."</p> <p>ES8(p.6): "Hulle's baie goed opgelei...Want die manier hoe hulle met jou gepraat het en gesê het hoe jy dinge moet doen. En nie te vinnig nie. Net op my tyd. " [Translated: They are very well trained...because the manner how they speak to you and how they say the things that you must do it. Not too fast. Just on my own pace.]</p> <p>JL12(p.10): "Ek het gevoel hulle het kennis met hulle werk...Die s-'way', die 'way', t-, hoe hulle met jou werk." [Translated: I felt that they had knowledge with their work...It's the way,it's the way, they work with you.]</p> <p>VWJ2(p.8): "Nee want, soos die eerste wat sy my gehelp het om die bed regop te trek, so, kan jy gevoel het om...uhm...sy't nie gegaan en die bed gevat en regop gepluk of 'whatever'... Sy't dit met gevoel gedoen. So...Jy kom gou agter waneer... Waneer iemand, amper sê ek, lus het om jou seer te maak..." [Translated: No because, with the first time she helped me to pull up the bed upright, so, you felt like ... um ... she did not go and pull up the bed or whatever... She did it with feeling . So ... You realise quickly when, when someone , I almost said , wishes to hurt you...]</p> <p>PA4(p.23): "And you can see one her face she gets upset...The way she talks... Her voice kind of like going a bit up. She's raising her voice...And stuff like that. Complaining to the doctor. And the doctor would come and like forcing as well."</p>
20	PT behaviour [Actions]						
16	Dependability						
22	Competence	Competence (K) 22+23=K	K	Competence (F)			
23	PT knowledge						

29	Communication	Communication (M) 29,+20+31+32+33+56+4=M	M	Communication (G)	Communication (F)	The exchange of information through verbalisation and social contact	KT16(p.2): " ...then they send somebody over and then she spoke to me, and she introduced herself. She said to me the importance of physio and I said, okay, no, Okay I will give it a try."
30	Explanations						MSJ20(p.11): "In a way you're not sure of yourself...In a way you think that you won't make it...You know. They always try to put words on you. But you will lift your spirit up."
31	Demonstrations						MSJ20(p.27): "So it was so painful...And I wanted to give up...I wanted to tell the doctor; No. If you cannot put me asleep and do me this, I won't do this anymore...But she keep on correcting me... Telling me that others have gone through this."
32	Methods of communication						DS13(p.28): "Excellent. Nothing, no, no, uhm, no lack of communication or problem ... No lack of communication or poor communication between the physios and myself... Or the other lady opposite... The other patient."
33	Interactions						MSJ20(p.28): " ...We speak like friends...we communicate like friends...we take each other like friends. We take each other that, we can handle each other about this."
56	Miscommunication						KT16(p.11): "Oh, it was difficult...and then after a while the pipes came out. And I could...speak to her, one on one...Look, there was no other way for me to communicate with her. And she knew that, therefore she knew, she brought the book and pen everyday so that I could in case, like, before we started she'd ask me if I would like to ask a couple of questions or if I wanna write something down, is there something that I wanna know about yesterday? So she would give me that opportunity... So before we started, for me to do it...Well, that was terrible. Communication for me was... I hated it. But at that point it was the best way of communication. But the thing is the message got across, the point got across, and I could understand whatever..."
4	Decisions of what to do in sessions						WM14(p.18): "Baie keer het ek nie mooi verstaan nie, want dan, jy weet as jy kort-aseem en jy...kry nie lekker asem nie, dan is dit asof ek haar bietjie mis.... En dan sê sy vir my, tannie, kom ons begin nou weer van voor af." [Translated: Many times I did not understand properly, because then, you know if your short of breath and you....can't get a good breath in, then it was as if I misunderstood her...And then she would say Auntie, come lets start from the beginning again.]
57	Refusal of Rx	KT16(p.14): "Cause, you know, she didn't force me to do anything. She came down to my level, and she spoke to me in the tone that I could understand."					

							<p>KC18(p.6): "...ek was nie eintlik bereid gewees daarvoor nie, maar soos die fisio my verduidelik het, wat is die, die rede hoekom en waarom sy dit doen. En toe het ek net my liggaam laat, laat saam-saam met die, uh, fisio laat gaan." [Translated: ...I was not really prepared for it, but as the physio explained to me, what is, what the reasons are and why she does it. And then I gave my body to work with , uh, to go with the physio.]</p> <p>KC18(p.24): "Omdat sy in my, in my moederstaal gepraat het, het ek haar baie, baie goed verstaan. " [Translated: Because she spoke in my, in my mother-tongue, I understood very, very well.]</p> <p>PA4(p.7): "Then...she came back, like the next day... wanted to do physio again. And I refuse. And the others coming, try. I refuse... I was so sick and tired."</p> <p>PA4(pg8-9): " The thing was the because she left [me] unattended. This is the only thing. Not...because [I] standing because [I] was trying to stand but she left [me]...and [I] couldn't climb back in the bed...She did explain what she's gonna do. But she didn't ex...she didn't tell [me] that she's gonna leave. This is the only thing.</p>
34	Safety	Safety (N) 34+35+36+37+38+59=N	N	Safety (H)	Safety (G)	Aspects of protection and prevention of injury or damage as perceived by patients	<p>KT16(p.16): "Just by the exercise and by speaking to me every day. Ya-you know, it's just that that reassurance, don't worry it's gonna be fine, we here to help you, we're here to ensure your safety, we're here to-, we not gonna do anything to harm you or anything like that, you know?"</p> <p>ES8(p.12): "want... hulle vir jou vashou... En nie laat val nie...Kan ek nogal sê ek het nie 'n vrees gehad nie... Was baie goed gewees...Baie veilig. Baie" [Translated: Because...they held you...and didn't let you fall...I can say, i didnt't have any fears...was very good....very safe. Very]</p> <p>WM14(p.20-21): "Omdat ek vertrou in hulle gehad het...Het dit vir my gevoel, jy weet, ek sal deur die brug kom en dit het, dit is toe ook so... Kyk jou verhouding met hulle... Want ek het gevoel my verhouding met hulle is, is goed" [Translated: Because I had trust in them... It let me feel, you know, that I would get over the bridge, it was then like that... Look you're relationship with them...Because I felt my relationship with them is, is good.]</p> <p>SF3(p.13): "Now did you know, that, uh...if you look at...fear and pain. Fear one side, pain the other side...If you...have fear in your heart. It makes the pain worse. Am I right?"</p>
35	Caution						
36	Assistance/physical assistance						
37	Trust						
38	Reassurance						
59	Broken trust/lost hope						

39	Satisfaction	Satisfaction (O) 39+40+41+42+ 61=O	O	Satisfaction (I)	Satisfaction (H)	Patient's perceived satisfaction	<p>KT16(p.18): "...somebody provides a service to you, are you generally happy with the service that you were given[?] So you either satisfied or you're unsatisfied. One of the two. Can't be in-between really. So. If you asking me, was the service satisf[actory], I would say it was more than satisfactory..."</p> <p>KC18(p.28): "Ek was baie tevrede gewees met hulle samewerking, en wat hulle ge-, wat hulle nou eintlik doen. Uh. Want ek dink daar's 'n doel vir alles...Daar's werk vir alles. En dit wat hulle vir my gedoen het, ek voel honderd persent tevrede met alles wat hulle vir my gedoen het. Ja." [Translated: I was very satisfied with their cooperation, and what they, what they actually did. Uh. Because I think there is a reason for everything...There is work for everything. And what they did, I feel one hundred percent satisfied with everything they did for me.]</p> <p>KT16(p.19): "Because I learned a lot and-and-and and the bottom-line is, the goal was reached, the service that I got was excellent. But more-most importantly the goal was reached. The goal was for me to get, was to be mobilised from that bed to the chair."</p> <p>VNA11(p.22):" Just her attitude, you know? Ja, her attitude towards me, to-towards the patients. The way she handled...me. You know? ...Physically. Uhm. Talking to me, all of that."</p> <p>VNA11(p.23): "Attitude determines your altitude...How far, how you get things done...Depends on yourself."</p> <p>DS23(p.18):":The way they were holding [me], communicate with [me], make [me] do exercise. That's why [I've said I am] satisfied with them."</p> <p>MS21(p.22):"They were working like everyone else. Like, uh, the understanding, the communication the handling of, uh, physio, like exercise. [I] will say that [I] was satisfied, yes, with them."</p> <p>KT16(p.20): "So if you look untidy and you don't look the part or your hair's untidy, or you swearing what, it's not gonna work by me. You work, you -you working in a hospital environment, the sisters are neatly dressed, the doctors are neatly dressed, I expect the same from the physio. "</p> <p>VNA11(p.23): " I think if, if, uh, if her attitude was, uh, not so...you know, cheerful or, uhm, nice... If she was a bit, maybe had a bad day or something then that wouldn't have made it so great."</p> <p>SF3(p.6): "...that is also something that I would suggest, you know? Give the patient time to come by their fullest, full senses. It's not use giving them physiotherapy and the poor guy is zonked out [on] pain</p>
40	Reasons for satisfaction						
41	Decreased satisfaction						
42	Increased satisfaction						
61	Proposed changes						

							and tablets, he doesn't even know what's going on around him." KC18(p.18): "Om sommer net 'n tydperk te kan neersit en te sê ons is daai tyd daar." [Translated: To just put a time period and to say we are there at that time.]
43	Pt empowerment	Pt empowerment (P) 43+44+45+46=P	P + Q	PT benefits/ progression (J)	PT benefits/ progression (I)	Aspects promoting independence and evidence of benefits or progress due to physiotherapy as perceived by patients	KT16(p.3): " ...When [I] was physically upright, sitting in the chair for the first time. That made a huge difference. [It] takes you from the bed, everything you've learned mentally, and bring it now into the chair...[its a] different mindset. [It's] a different scenario in terms of how you have pictured it. Because, you can actually do the things now, and you understand more, as to what they were talking about. Once you sitting in there and you can physically do the things that you can do." KT16(p.18): "There's nothing that I can say that I've learned that, that is useless. Right now I'm still doing this stuff that she told me to do in the, in the ICU, I still get to do it in the bed. And so I feel I am a bit more ahead than the rest of the people because they lay everyday- I don't lay in the bed anymore, I sit up. I do my own thing." VNA11(p.16): "...she's doing something to help me, you know? She's... gonna help me, help myself, you know? And so. [She] showed me how to do things a diff-, a little bit different, make it a bit easier." MM5(p.16): "So it helped me a lot as a person as well, not just to rely on the physio. To try do the exercises on my own..."
44	Pt independence						
45	Sharing knowledge						
46	Teaching						
47	Progression	Progression (Q) 47+48=Q					
48	Improvement in abilities/condition						
49	Barriers	Barriers (R) 49=R	R + G + S	PT barriers & facilitators (K)	PT barriers & facilitators (J)	Aspects that affect the feasibility of physiotherapy in the ICU	SF3(p.10): " Little bit wobbly, yes...Head spinning... Uhm... I sta-still have...drugs in me that needs to come out. You understand? " PB6(p.21):"No I was on quite a lot [of lines]...So couldn't actually move around really." VNA11(p.3):"As soon as the tubes were off I was up." SF3(p.6):"they give you some kind of...uh...painkillers, morphine and all that stuff. Right? Now, this stuff, plays havoc with your mind." DS13(p.38):" I think they are not given enough time to do their side of the job...They got a sort of, they've got a sort of fit in...Like I was supposed to go on for a, go on Friday for a, an ECG. A ECG...a CT scan today...Been laying here at the hospital for two and a half days waiting for the CT scan. And it never happened. And, uhm, so the physios, if, if they had to come fetch me for example, just assuming that when I come here at eight-ten o'clock or ten thirty in the morning... And suddenly there's the CT scan department decided they got a booking from me, that would have been, that's, that would have been the end of that session...That's up to me, that's a slight
50	Facilitators	Facilitators (S) 50+51=S					
51	Mind shifts						
14	Challenges with PT	Challenges (G) 14+62=G					
62	Difficulty/Issues with PT/Rx						

							problem..." DS13(p.11): "And then I sat on the bed for a while. 'Cause there was only one chair in the ward and was being used by someone else."
52	PT experience	Pt experience (T) 52=T	T + W + L	PT experience (L) (= Pt perception of PT)	PT experience (K)	How patients perceive and experience physiotherapy in the ICU	KT16(p.22): "Just that I had a wonderful experience." BA1(p.5): "Like [I] had to sit on the chair. [I] felt like, they don't care about [me]. They were like, uhm, it takes long even they put [me] on the chair. It's like they put [me] too long. But at the end it did help [me]. [I] didn't understand that. But at the end it did... [I] was little bit irritated about that. 'Cause of the pains. " ES8 (p. 19): <i>Dis 'n... goeie ervaring, nê ... ek kan niks kla nie. Ek [was] baie goed versorg ... [Translated: It's a ... good experience, hey ... I can't complain. I [had] very good care ...]</i>
65	Sense of worth	Sense of worth (W) 65=W					
28	How felt in PT	How patients felt (L) 28+60+55+58=L					
55	Anger						
60	Upset						
58	Abandonment						
							VWJ2(p.2): "Hierdie keer was dit moeilik. Dit was nie so erg baie nie... Uhm. Was genoeg fisioterapie..." [Translated: This time it was difficult. It wasn't too much....Uhm. It was enough physiotherapy...]
53	Change	Continuity of care (U) 53+54=U	U	Continuity of care (M)	Continuity of care (L)	Continuation of care received	MSJ20(p.3): "And I just hope that I stay continue with the girl...[with] their group." PA4(p.5): "They change now, then they change after that, they change, they do some-, they did something that [I] was not, like, comfortable to do, like to sit on the bed. " PA4(p.19): "I think that second one, [I] wa-is, it was the one that [we] were not communicating well."
54	Continuity of care						
64	Interdisciplinary team	Interdisciplinary team (V) 64=V	V	Interdisciplinary team (N)	Interdisciplinary team (M)	Team involvement in the physiotherapy care received as perceived by patients	PB6(p.21): "...they were very helpful for the sisters of...for the...uh...application if they needed a pipe, or this or that...But the doctors did assist them...They knew this is an important thing that the physio's are doing, so...Give them a hand where it's needed...They did help her as well, to take me out of my bed and into the chair also." DS23(p.16): "It was because they were working together. Because there were two or three, they were working as a team, so one will say do this, and then other one will agree. And then they will help each other with, uh, lifting [me] and then exercise with [me]. So. That's why [I] said they do have the knowledge of what they were doing."

intensive care unit (ICU); physiotherapy (PT); patient (pt)

APPENDIX K: REFLECTION ON THE QUALITATIVE PROCESS

Qualitative methods are more frequently used in the assessment and research of healthcare services. (65) These methods enabled the PI to identify bias and to reflect continuously on the study process because of the subjective nature of the investigator as the instrument of measure. The use of the field journal facilitated the identification of potential bias, allowed for consideration and documentation of the study processes and provided another data point for triangulation.

Through the process of developing the discussion schedule, conducting the interviews personally, clearing and checking the transcriptions, analysing and coding the data and performing the member-checking sessions, the PI completely immersed herself in the data. This allowed for a continuous reflective and iterative process. Therefore, the data was considered at multiple points in the study process to identify gaps, to plan further and to collect data until saturation was reached.

Multiple steps were employed to ensure credibility of the data collected and the study process. In the first week of interviews, an observer was present in addition to the tape recorder. This facilitated feedback from the observer regarding the interview technique and quality, allowing for further reflection and development for the interviews that followed, as well as growing confidence in the quality of the data collected. Interviews were conducted in English or Afrikaans, and a Xhosa translator was also employed in the Xhosa interviews to ensure that the participants could express themselves completely in their home language. The study process was available for auditing by supervisors at all points. In addition, peer reviewing and member checking with 78% of participants provided the PI with a deeper confidence in the data and results obtained.

As a physiotherapist, the PI found solace in participating in all phases of study personally. It was a privilege to listen to the experiences of the participants and to use these experiences to facilitate knowledge in the hope of improving the quality of care regarding physiotherapy in the ICU. In the same way that certain participants felt empowered through the knowledge that was imparted to them during their physiotherapy sessions, the PI was also empowered to improve care quality through the knowledge received from the patients. The scoping review (Chapter 2) provided the PI

with an understanding of the literature available concerning patient perception and satisfaction in critical care. Confidence in the results of the primary study was further instilled since certain results were consistent with the published literature identified in Chapter 2. This further emphasised the significance of the conclusions made in Chapter 3.

APPENDIX L: AMERICAN JOURNAL OF CRITICAL CARE: JOURNAL REQUIREMENTS (66)



AUTHOR GUIDELINES

The editors of the *American Journal of Critical Care (AJCC)* invite authors to submit original manuscripts describing investigations, advances, or observations from all specialties related to the care of critically and acutely ill patients. Papers promoting collaborative practice and research are encouraged. Manuscripts will be considered on the understanding that they have not been published elsewhere and have been submitted solely to *AJCC*. (This restriction does not apply to abstracts.)

Manuscripts must be submitted online via the *AJCC* online manuscript submission and review system at www.editorialmanager.com/ajcc. At the time of submission, complete contact information (postal address, e-mail address, telephone and fax numbers) for the corresponding author is required. First and last names, e-mail addresses, and institutional affiliations of all coauthors also are required. (Print copies of the journal will be sent only to those coauthors who provide their postal address.) Manuscripts must be submitted in Microsoft Word, or a compatible format.

Each author should complete an "Authorship, Financial Disclosure, Copyright Transfer, and Acknowledgment Form" and submit the completed form by fax or e-mail as a PDF attachment (no mailed documents, please).

Authors who desire OnlineNOW publication can make that choice during the online submission process. The full-text of OnlineNOW articles appears exclusively on the journal's Web site at www.ajcconline.org, with only the abstract of the article appearing in the print and digital editions of the journal. OnlineNOW articles enjoy a faster turnaround time from acceptance to publication than do full-text articles in print. OnlineNOW articles are peer reviewed, copyedited, formatted, indexed, and citable just like *AJCC*'s print offerings.

Quality improvement studies help maximize the integrity and safety of critical care. *AJCC* welcomes such articles. However, due to their subjective relationship to context and social processes, such articles are difficult to evaluate using traditional empirical standards. For this reason, *AJCC* asks that quality improvement studies adhere to the Standards for Quality Improvement Reporting Excellence (SQUIRE) Guidelines. For more information about SQUIRE, please see http://qshc.bmj.com/content/vol17/Suppl_1 or doi:10.1136/qshc.2008.029058.

Editorial Office Contact Information

AJCC Editorial Office, Attn.: Peer Review Coordinator, phone, (949) 448-7340 or (800) 394-5995, ext 242; fax, (949) 448-6633; e-mail, ajcc.editorialoffice@aacn.org. For help submitting your manuscript online, visit www.editorialmanager.com/ajcc and click "Author Tutorial." For technical help or questions not addressed by the Author Tutorial document, e-mail ajcchelp@aacn.org.

AJCC cannot accept responsibility for lost manuscripts; please keep a copy for your files. We accept the following types of manuscripts:

- Research articles (1500-3000 words; preference is no more than 3 tables and 3 figures)
- Brief reports (750-1200 words; limit to 1 table and 1 figure)
- Case reports (500-1500 words; no more than 1 table and 1 figure). *AJCC* accepts a maximum of 6 per year.
- Letters (250-500 words)

In general, by invitation only:

- Review articles (1500-3000 words)
- Guest editorials (500-1000 words)
- Commentaries (500-1000 words)

Peer Review—Submissions are subject to peer review. To ensure a blinded review, do not include the author's name or institution in the running head or anywhere in the manuscript after the title page or in the file names of manuscript components (abstract, manuscript, figure/table). This includes references in the first person to the author's own work. Manuscripts that do not meet this requirement will not be reviewed. Two or more authorities will judge the validity, originality, and significance of the work presented. This process takes roughly 3 months, but delays are sometimes unavoidable. After the manuscript has been reviewed, the author will be informed whether the manuscript has been accepted or rejected, or requires revision before publication.

Accepted manuscripts become the property of the American Association of Critical-Care Nurses (AACN) and may not be published without the written permission of AACN. Accepted manuscripts are subject to editing to conform to the *American Medical Association Manual of Style*, 10th edition (2007). Authors will be asked to review galley proofs and PDFs of page proofs prior to publication.

Manuscript Content—Manuscript content should be laid out in accordance with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (*N Engl J Med*. 1991;324:424-428). Each page should be numbered and each line in the body of the text should be numbered.

Authorship, Financial Disclosure, Copyright Transfer, and Acknowledgment Form—Please include a cover letter with the *AJCC* Authorship, Financial Disclosure, Copyright Transfer, and Acknowledgment Form, signed and dated by each author. Be sure to fill in the title of your manuscript on the Authorship, Financial Disclosure, Copyright Transfer, and Acknowledgment Form (see below). All financial disclosures—including disclosures of no financial conflicts—will be published.

Title Page: This is page 1, should occupy only 1 page, and should contain the following:

- Title (should be concise yet informative)
- Running title (usually 2 to 5 words)
- The authors' full names in preferred publishing order, with degrees, credentials, ranks, and affiliations

- **The name, address, e-mail address, and telephone (home and office) and fax numbers of the author to whom all correspondence and reprint requests should be addressed**
- **The institution(s) at which the work was performed**
- **Key words consistent with those found in the most recently published *CINAHL Subject Heading List***
- **Grant or other financial support used in the study**
- **Any acknowledgments the authors wish to make (do not put acknowledgments at the end of the manuscript).**

Brief Report—Short reports of original studies, evaluations, and pilot data should be submitted as brief reports of 750 to 1200 words (not including abstract, table, figure, references, and any online-only material). An abstract is required. A structured abstract is recommended, but an unstructured abstract will be accepted. Please include no more than 1 table and 1 figure.

Abstract—Abstract format varies as follows:

Clinical and basic research studies—must have structured abstracts of no more than 250 words (Haynes RB, Mulrow CD, Huth EJ, Altman DG, Gardner MJ. More informative abstracts revisited. *Ann Intern Med.* 1990;113:69-76). Abstracts must be written in the 3rd person. Abstracts for clinical studies should have the following subheadings: Background, Objectives, Methods, Results, Conclusions.

Laboratory studies and new apparatuses and techniques—a shorter form is requested (Relman AS. New “information for authors”—and readers. *N Engl J Med.* 1990;323:356). These abstracts should have the following subheadings: Background, Methods, Results, Conclusions.

Review articles and brief reports—abstracts need not be structured.

Case reports—an unstructured abstract of no more than 150 words is required.

Ethics—When human experimentation is being reported, a statement must be included confirming that the work was done in accordance with the appropriate institutional review body and carried out with the ethical standards set forth in the Helsinki Declaration of 1975. When laboratory animals are used, provide a statement that the work was carried out according to the National Research Council’s protocol for, or any national law on, the care and use of laboratory animals.

Releases—If any material in the manuscript is from a prior copyrighted publication, the manuscript **must be accompanied by a letter of permission from the copyright holder.** However, we prefer not to publish figures that have been published elsewhere. If applicable, permission to use unpublished data and personal communications must be included.

Patient Descriptions, Photographs, and Pedigrees—Include a signed statement of informed consent to publish

(in print and online) patient descriptions, photographs, and pedigrees from all persons (parents or legal guardians for minors) who can be identified in such written descriptions, photographs, or pedigrees. Such persons should be shown the manuscript before its submission.

Plagiarism or Academic Misconduct—All manuscripts are scanned for plagiarism. If potential plagiarism (including self-plagiarism) is detected, authors will be contacted for clarification. If plagiarism is confirmed, editorial action may be taken. These actions may also be taken if other examples of scientific misconduct (eg, breaches of publication ethics) are discovered, either before or after publication. The actions taken by the editors may include (but are not limited to): publication of the breach in the journal, retraction of published articles, notification of institutional authorities, and loss of privileges of publishing in the journal in the future.

References—These should start on a separate page following the text. They must be numbered consecutively by their order of appearance in the text. References cited in figures and tables must be numbered sequentially as if they are cited where the figure or title is first cited in the text. In the text, designate reference numbers either as superscripts or on the line in parentheses. *Do not use a word processor’s footnote or endnote function.* Check all references for accuracy and completeness. Abbreviate journal titles as found in *Index Medicus*. If in doubt as to the correct abbreviation, cite the complete journal name. Do not use periods in abbreviations of journal titles. List all authors, but if the number exceeds 6, list only the first 3 authors followed by the phrase “et al.” Please follow the format and punctuation shown in the following examples:

Journal Articles

Last name and initials (no periods) of authors, title of article (capitalize only the first word, proper names, and abbreviations normally capitalized; no quotation marks), journal title (italicize and use *Index Medicus* abbreviations), year of publication, volume, inclusive page numbers.

Example:

Pun BT, Gordon SM, Peterson JF, et al. Large-scale implementation of sedation and delirium monitoring in the intensive care unit: a report from two medical centers. *Crit Care Med.* 2005;33(6):1199-1205.

Books

Last name and initials of authors; title of book (italicize and capitalize all significant words); edition number (if after first edition); last name and initials of editor if any; city and state of publication; publisher; year of publication; page numbers (only if specifically cited).

Example:

Munhall PL, Boyd CO. *Nursing Research: A Qualitative Perspective.* 2nd ed. New York, NY: National League for Nursing; 1998.

Book Chapters

Last name and initials of authors; title of chapter; “In:” fol-

lowed by last name and initials of editors, “ed.”; title of book, etc, as above.

Example:

Lewinsohn P. Depression in adolescents. In: Gottlib IH, Hammen CL, eds. *Handbook of Depression*. New York, NY: Guilford Press; 2002:541-553.

Online References

Author(s), if given; title of the specific item cited (if none is given, use the name of the organization responsible for the site); name of the Web site; full URL; published (date); date the Web site was accessed.

Example:

International Society for Infectious Diseases. ProMED-mail Web site. <http://www.promedmail.org>. Accessed April 29, 2006.

Drug Names—Use complete generic names only. The trade name of a particular drug may be cited in parentheses the first time the generic name appears.

Units of Measurement—Physiologic measurements should be reported in metric units (International System of Units, SI); conventional units may be placed in parentheses after the SI units. Use metric units or decimal multiples for length, height, weight, and volume. Show temperature in degrees Celsius, blood pressure in millimeters of mercury, and volume (liquid and gas) in milliliters, not cubic centimeters. Laboratory values may be reported in conventional units.

Abbreviations and Symbols—Avoid nonstandard abbreviations. Use the full term for an abbreviation or symbol on first reference, unless it is a standard unit of measure.

Letters—Letters to the editors commenting on articles published in the journal are welcome. The editors reserve the right to accept, reject, or excerpt letters without changing the views expressed by the writer. The author of an original article often is given the opportunity to respond to published comments. Letters should be sent via e-mail (ajcc@aacn.org). Electronic letters (eLetters) can be sent to the editors by clicking “Respond to This Article” on either the full-text or PDF view of each article on the *AJCC* Web site, www.ajconline.org.

Figures and Tables—Accepted manuscripts must be submitted with artwork (figures and photographs) in a high-resolution format (300 dpi or above). We cannot use artwork that is embedded in PowerPoint, Microsoft Word, or Excel files. Upload original tables and figures as separate files. Figures such as graphs and data points should be provided in the file along with the other parts of the manuscript (as a Microsoft Word text file). Do not submit files downloaded from the Internet; these reproduce poorly. Preferred file formats are TIFF and EPS. Although JPG and BMP are acceptable, these formats are not the best to use, as they are low resolution. Photographs in which the patient could be recognized must be accompanied by a statement signed by the patient or patient’s guardian granting permission to publish the photograph for educational purposes. If permission is not

obtained, the photograph will be omitted or cropped to ensure that the patient’s identity is not disclosed.

Legends for Illustrations—Figure legends should begin on a new manuscript page. They should be inserted in consecutive order.

Tables—Each table must be numbered (consecutively in the order mentioned in the text) and titled. Each column within a table should have a heading. Abbreviations must be explained in a footnote. Please do not place more than 1 table on a page.

CHECKLIST FOR AUTHORS

- Cover letter (include name, home and work addresses, home and work telephone numbers, fax number, and e-mail addresses of corresponding author) with Authorship, Financial Disclosure, Copyright Transfer, and Acknowledgment Form signed by *each* author. (The form is available online at <http://ajcc.aacnjournals.org/misc/ifora.shtml#authorship>.) Manuscripts must be submitted online via Editorial Manager, the *AJCC* online manuscript submission and review system, at www.editorialmanager.com/ajcc. Editorial Manager will combine your submission into a single PDF file for purposes of blinded peer review, but the manuscript you submit online should contain the following components:
 - Title page (double-spaced) includes:
 - Title of manuscript
 - Running title
 - Name, professional credentials, institutional or academic affiliation(s), city and state of all authors in the order intended for publication
 - Name, address, e-mail address, and telephone (home and work) and fax numbers of author to whom correspondence should be addressed
 - Institution(s) at which the work was performed
 - Grant or other financial support used for the study
 - Key words for indexing: 3 to 5 CINAHL search terms
 - Acknowledgments, disclaimers, sources of financial support (or claim of no conflict of interest)
 - Text of manuscript (number as page 1; double-spaced; *do not* include authors’ names or institutions in the running head or in the manuscript). Use page and line numbering.
 - Summary of Key Points and/or bulleted list of practical bedside clinical applications of research findings (4 to 6 items with 2 to 3 sentences serving as introduction) for use on Clinical Pearls page (upload into the Editorial Manager system as a separate file; double-spaced on a single page. This is only required for research articles.)
 - References (include as numbered pages; double-spaced on separate pages within the same document file as the manuscript text; follow reference style described in guidelines)
 - Tables (double-spaced, 1 per page; numbered consecutively; include title for each), figures, and legends. Upload the tables and figures as separate files. Authors are encouraged to limit the numbers of tables and figures to those necessary for delivery of key information
 - Permissions to publish identifiable persons in photographs, copyrighted materials, and any material not belonging to the author.

APPENDIX M: *BMC CRITICAL CARE*: JOURNAL REQUIREMENTS (67)

Instructions for authors

Research Articles

See '[About this journal](#)' for descriptions of different article types and information about policies and the refereeing process.

Submission process

Manuscripts must be submitted by one of the authors of the manuscript, and should not be submitted by anyone on their behalf. The corresponding author takes responsibility for the article during submission and peer review.

Please note that all content published in *Critical Care* is entirely open access. *Critical Care* levies an article-processing charge on all accepted Research Articles that have not been directly invited by the journal; if the corresponding author's institution is a [BioMed Central member](#) the cost of the article-processing charge may be covered by the membership (see [About](#) page for detail). Please note that the membership is only automatically recognised on submission if the corresponding author is based at the member institution. Authors of invited Research Articles are entitled to a full waiver on the journal article processing charge and should complete a waiver request during the submission process.

To facilitate rapid publication and to minimize administrative costs, *Critical Care* prefers [online submission](#).

Files can be submitted as a batch, or one by one. The submission process can be interrupted at any time; when users return to the site, they can carry on where they left off.

See below for examples of [word processor](#) and [graphics file formats](#) that can be accepted for the main manuscript document by the online submission system. Additional files of any type, such as [movies](#), animations, or [original data files](#), can also

be submitted as part of the manuscript.

During submission you will be asked to provide a cover letter. Use this to explain why your manuscript should be published in the journal, to elaborate on any issues relating to our editorial policies in the ['About Critical Care'](#) page, and to declare any potential competing interests.

Assistance with the process of manuscript preparation and submission is available from [BioMed Central customer support team](#).

We also provide a collection of links to useful tools and resources for scientific authors on our [Useful Tools](#) page.

File formats

The following word processor file formats are acceptable for the main manuscript document:

- Microsoft word (DOC, DOCX)
- WordPerfect (version 5 and above)
- Rich text format (RTF)
- Portable document format (PDF)
- TeX/LaTeX (use [BioMed Central's TeX template](#))

TeX/LaTeX users: Please use [BioMed Central's TeX template](#) and BibTeX stylefile if you use TeX format. During the TeX submission process, please submit your TeX file as the main manuscript file and your bib/bbl file as a dependent file. Please also convert your TeX file into a PDF and submit this PDF as an additional file with the name 'Reference PDF'. This PDF will be used by internal staff as a reference point to check the layout of the article as the author intended. Please also note that all figures must be coded at the end of the TeX file and not inline.

If you have used another template for your manuscript, or if you do not wish to use BibTeX, then please submit your manuscript as a DVI file. We do not recommend converting to RTF.

For all TeX submissions, all relevant editable source must be submitted during the submission process. Failing to submit these source files will cause unnecessary delays

in the publication procedures.

Preparing main manuscript text

General guidelines of the journal's style and language are given [below](#).

Overview of manuscript sections for Research Articles

Manuscripts for Research Articles submitted to *Critical Care* should be divided into the following sections (in this order):

- [Title page](#)
- [Abstract](#)
- [Keywords](#)
- [Article headings](#)
- [Introduction](#)
- [Methods](#)
- [Results and discussion](#)
- [Conclusions](#)
- [Key messages](#)
- [List of abbreviations used](#) (if any)
- [Competing interests](#)
- [Authors' contributions](#)
- [Authors' information](#)
- [Acknowledgements](#)
- [Endnotes](#)
- [References](#)
- [Illustrations and figures](#) (if any)
- [Tables and captions](#)
- [Preparing additional files](#)

The **Accession Numbers** of any nucleic acid sequences, protein sequences or atomic coordinates cited in the manuscript should be provided, in square brackets and include the corresponding database name; for example, [EMBL:AB026295, EMBL:AC137000, DDBJ:AE000812, GenBank:U49845, PDB:1BFM, Swiss-Prot:Q96KQ7, PIR:S66116].

The databases for which we can provide direct links are: EMBL Nucleotide Sequence Database ([EMBL](#)), DNA Data Bank of Japan ([DDBJ](#)), GenBank at the NCBI ([GenBank](#)), Protein Data Bank ([PDB](#)), Protein Information Resource ([PIR](#)) and the Swiss-Prot Protein Database ([Swiss-Prot](#)).

For reporting standards please see the information in the [About](#) section.

Title page

The title page should list

- the title of the article
- the full names
- institutional addresses
- email addresses for all authors

The corresponding author should also be indicated.

Please note that the title should include the study design, for example "A versus B in the treatment of C: a randomized controlled trial" or "X is a risk factor for Y: a case control study". Please see the policy section in ['About Critical Care'](#) for further details.

Please note that if a collaboration group should be listed as an author, please list the Group name as an author. If you would like the names of the individual members of the Group to be searchable through their individual PubMed records, please include this information in the "acknowledgements" section in accordance with the instructions below. Please note that the individual names may not be included in the PubMed record at the time a published article is initially included in PubMed as it takes PubMed additional time to code this information.

Abstract

The Abstract of the manuscript should not exceed 350 words and must be structured into separate sections: **Introduction**, the context and purpose of the study; **Methods**, how the study was performed and statistical tests used; **Results**, the main findings; **Conclusions**, brief summary and potential implications; **Trial registration**, if your research reports the results of a controlled health care intervention, please list your trial registry, along with the unique identifying number (e.g. **Trial registration:** Current Controlled Trials ISRCTN73824458). Please note that there should be no space between the letters and numbers of your trial registration number. We recommend manuscripts that report randomized controlled trials follow the [CONSORT extension for abstracts](#).

Please minimize the use of abbreviations and do not cite references in the abstract.

Please see also our guide for writing an easily accessible [abstract](#).

Keywords

Three to ten keywords representing the main content of the article.

Introduction

The Introduction section should be written in a way that is accessible to researchers without specialist knowledge in that area and must clearly state - and, if helpful, illustrate - the background to the research and its aims. Reports of clinical research should, where appropriate, include a summary of a search of the literature to indicate why this study was necessary and what it aimed to contribute to the field. The section should end with a brief statement of what is being reported in the article.

Methods

The methods section should include the design of the study, the setting, the type of participants or materials involved, a clear description of all interventions and comparisons, and the type of analysis used, including a power calculation if appropriate. Generic drug names should generally be used. When proprietary brands are used in research, include the brand names in parentheses in the methods section. For further details of the journal's data-release policy, see the policy section in '[About this journal](#)'.

Results and discussion

The Results and discussion may be combined into a single section or presented separately. Results of statistical analysis should include, where appropriate, relative and absolute risks or risk reductions, and confidence intervals. The Results and discussion sections may also be broken into subsections with short, informative headings.

Conclusions

This should state clearly the main conclusions of the research and give a clear

explanation of their importance and relevance. Summary illustrations may be included.

Key messages

These should be up to five bullet points summarising the main findings of your study.

List of abbreviations

If abbreviations are used in the text they should be defined in the text at first use, and a list of abbreviations can be provided, which should precede the competing interests and authors' contributions.

Competing interests

A competing interest exists when your interpretation of data or presentation of information may be influenced by your personal or financial relationship with other people or organizations. Authors must disclose any financial competing interests; they should also reveal any non-financial competing interests that may cause them embarrassment were they to become public after the publication of the manuscript.

Authors are required to complete a declaration of competing interests. All competing interests that are declared will be listed at the end of published articles. Where an author gives no competing interests, the listing will read 'The author(s) declare that they have no competing interests'.

When completing your declaration, please consider the following questions:

Financial competing interests

In the past three years have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? Is such an organization financing this manuscript (including the article-processing charge)? If so, please specify.

Do you hold any stocks or shares in an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? If so, please specify.

Do you hold or are you currently applying for any patents relating to the content of the manuscript? Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript? If so, please specify.

Do you have any other financial competing interests? If so, please specify.

Non-financial competing interests

Are there any non-financial competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) to declare in relation to this manuscript? If so, please specify.

If you are unsure as to whether you, or one your co-authors, has a competing interest please discuss it with the editorial office.

Authors' contributions

In order to give appropriate credit to each author of a paper, the individual contributions of authors to the manuscript should be specified in this section.

According to [ICMJE guidelines](#), An 'author' is generally considered to be someone who has made substantive intellectual contributions to a published study. To qualify as an author one should 1) have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) have been involved in drafting the manuscript or revising it critically for important intellectual content; 3) have given final approval of the version to be published; and 4) agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.

We suggest the following kind of format (please use initials to refer to each author's contribution): AB carried out the molecular genetic studies, participated in the sequence alignment and drafted the manuscript. JY carried out the immunoassays. MT participated in the sequence alignment. ES participated in the design of the study and performed the statistical analysis. FG conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and

approved the final manuscript.

All contributors who do not meet the criteria for authorship should be listed in an acknowledgements section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, a department chair who provided only general support, or those who contributed as part of a large collaboration group.

Authors' information

You may choose to use this section to include any relevant information about the author(s) that may aid the reader's interpretation of the article, and understand the standpoint of the author(s). This may include details about the authors' qualifications, current positions they hold at institutions or societies, or any other relevant background information. Please refer to authors using their initials. Note this section should not be used to describe any competing interests.

Acknowledgements

Please acknowledge anyone who contributed towards the article by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. Please also include the source(s) of funding for each author, and for the manuscript preparation. Authors must describe the role of the funding body, if any, in design, in the collection, analysis, and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication. Please also acknowledge anyone who contributed materials essential for the study. If a language editor has made significant revision of the manuscript, we recommend that you acknowledge the editor by name, where possible.

The role of a scientific (medical) writer must be included in the acknowledgements

section, including their source(s) of funding. We suggest wording such as 'We thank Jane Doe who provided medical writing services on behalf of XYZ Pharmaceuticals Ltd.'

If you would like the names of the individual members of a collaboration Group to be searchable through their individual PubMed records, please ensure that the title of the collaboration Group is included on the title page and in the submission system and also include collaborating author names as the last paragraph of the "acknowledgements" section. Please add authors in the format First Name, Middle initial(s) (optional), Last Name. You can add institution or country information for each author if you wish, but this should be consistent across all authors.

Please note that individual names may not be present in the PubMed record at the time a published article is initially included in PubMed as it takes PubMed additional time to code this information.

Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements section.

Endnotes

Endnotes should be designated within the text using a superscript lowercase letter and all notes (along with their corresponding letter) should be included in the Endnotes section. Please format this section in a paragraph rather than a list.

References

All references, including URLs, must be numbered consecutively, in square brackets, in the order in which they are cited in the text, followed by any in tables or legends. Each reference must have an individual reference number. Please avoid excessive referencing. If automatic numbering systems are used, the reference numbers must be finalized and the bibliography must be fully formatted before submission.

Only articles, clinical trial registration records and abstracts that have been published

or are in press, or are available through public e-print/preprint servers, may be cited; unpublished abstracts, unpublished data and personal communications should not be included in the reference list, but may be included in the text and referred to as "unpublished observations" or "personal communications" giving the names of the involved researchers. Obtaining permission to quote personal communications and unpublished data from the cited colleagues is the responsibility of the author. Footnotes are not allowed, but endnotes are permitted. Journal abbreviations follow Index Medicus/MEDLINE. Citations in the reference list should include all named authors, up to the first six before adding 'et al.'..

Any *in press* articles cited within the references and necessary for the reviewers' assessment of the manuscript should be made available if requested by the editorial office.

An Endnote style file is [available](#).

Examples of the *Critical Care* reference style are shown [below](#). Please ensure that the reference style is followed precisely; if the references are not in the correct style they may have to be retyped and carefully proofread.

All web links and URLs, including links to the authors' own websites, should be given a reference number and included in the reference list rather than within the text of the manuscript. They should be provided in full, including both the title of the site and the URL, as well as the date the site was accessed, in the following format: The Mouse Tumor Biology Database. <http://tumor.informatics.jax.org/mtbwi/index.do>. Accessed 20 May 2013. If an author or group of authors can clearly be associated with a web link, such as for weblogs, then they should be included in the reference.

Authors may wish to make use of reference management software to ensure that reference lists are correctly formatted. An example of such software is [Papers](#), which is part of Springer Science+Business Media.

Examples of the *Critical Care* reference style

Article within a journal

Smith JJ. The world of science. *Am J Sci*. 1999;36:234-5.

Article within a journal (no page numbers)

Rohrmann S, Overvad K, Bueno-de-Mesquita HB, Jakobsen MU, Egeberg R, Tjønneland A, et al. Meat consumption and mortality - results from the European Prospective Investigation into Cancer and Nutrition. *BMC Medicine*. 2013;11:63.

Article within a journal by DOI

Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. *Dig J Mol Med*. 2000; doi:10.1007/s801090000086.

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OnlineFirst chapter in a series (without a volume designation but with a DOI)

Saito Y, Hyuga H. Rate equation approaches to amplification of enantiomeric excess and chiral symmetry breaking. *Top Curr Chem*. 2007. doi:10.1007/128_2006_108.

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