THE ROLE OF THE PHYSIOTHERAPIST IN THE NEONATAL INTENSIVE CARE UNIT: *PERCEPTIONS FROM NEONATAL HEALTHCARE PROFESSIONALS*

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A thesis submitted in fulfilment of the requirements for the

degree of Master of Science in the Department of Physiotherapy,

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Date: November 2019

DECLARATION

I declare that ***The role of the physiotherapist in the Neonatal Intensive Care Unit: Perceptions from Neonatal Healthcare Professionals*** is my own work, has not been submitted for any degree, or examination, at any other university, and all the resources I have used, or quoted, have been indicated, and acknowledged by complete references.

Name: Jamie Lee Ponto

Date: November 2019

Signed: 

ABSTRACT

Background: The role of the physiotherapist in the neonatal intensive care unit is unclear. How other neonatal healthcare professionals and physiotherapists themselves perceive their role in the management of neonates, their practice patterns and services, their role in the neonatal intensive care multidisciplinary team, their use of evidence-based practice and awareness of the profession in this setting has not been well explored. This information is lacking in the South African healthcare context as well. Therefore, the aim of the study was to explore and describe the perception of doctors, nurses and physiotherapists of the role of the physiotherapist in public and private sector neonatal intensive care units in South Africa. **Methods:** A qualitative exploratory research design was used. All medical practitioners (paediatricians and neonatologists), nurses and physiotherapists working in the neonatal intensive care units in two private sector and two public sector hospitals in the Cape Metropole region in the Western Cape South Africa who provided consent to participate were included. An inclusive (total population) sampling method was used where all healthcare professionals working in these units were invited to an individual face-to-face audiotaped interview using a semi-structured interview guide and conducted by the researcher at a time and place convenient to the participants following informed consent. Data was transcribed verbatim and analysed using both deductive and inductive thematic content analysis to develop codes, categories and themes. Trustworthiness was ensured by ensuring credibility, conformability, dependability and transferability of data. Ethics was obtained from the relevant Institutional Review Board. **Results:** Twenty-one healthcare professionals participated, including doctors (n=5), nurses (n=6) and physiotherapists (n=10). The mean age in years of the participants was 41+/–11 years with the physiotherapists having the lowest mean age. The participants had various years of general and neonatal intensive care experience and physiotherapists in specific only had basic undergraduate qualifications with minimal specialised

training in neonatal intensive care. Five major themes emerged namely: i) the role of the physiotherapists in the management of the neonatal ICU patient, ii) practice patterns and services iii) teamwork iv) training and qualifications including evidence-based practice, v) awareness of and exposure to neonatal intensive care physiotherapy. **Conclusion:** Physiotherapists working in this neonatal intensive care setting need to promote their profession through education of other neonatal healthcare professionals in order to improve awareness, referral patterns and integration into the multidisciplinary team. Evidence-based practices and improving training and skills development in the area of neonatal physiotherapy can be further explored in this setting.

Keywords: *perception. neonatal intensive care, neonatal critical care, physiotherapy, doctors, nurses, healthcare professional*

Word Count: 413 including abstract headings

ABBREVIATIONS

- APCP Association of Paediatric Chartered Physiotherapists
- APTA American Physical Therapy Association
- HIE Hypoxic Ischemic Encephalopathy
- HPCSA Health Professions Council of South Africa
- ICU Intensive Care Unit
- MDT Multidisciplinary team
- NCCU Neonatal Critical Care Unit
- NDT Neurodevelopmental therapy
- NHS National Health System
- NICU Neonatal Intensive Care Unit

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ETHICS

Ethics approval was obtained from the Biomedical Research Ethics Committee of the University of the Western Cape (Ethics reference number– BM17/9/17) and renewed each year (Addendum 1). Detailed information regarding Ethics can be found in Chapter Three: Methodology.

FUNDING AND CONFLICT OF INTEREST

The primary researcher acknowledges that the study was self-funded and has no conflict of interest related to the study.

CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 NICU Environment:

A neonatal intensive care unit (NICU) is a "specially equipped area of a hospital where critically ill and unstable newborns receive diagnostic, therapeutic and life support care interventions for a variety of conditions" (Sharma, Samuel, & Aranha, 2018, p.111). The NICU accommodates infants who are "preterm, have low birth weights, congenital abnormalities, respiratory disorders, neuromuscular disorders and infant's post-surgery for example following thoraco-abdominal surgery or cardiac surgeries" (Alaparthi, Chokshi, Krishnan, & Vaishali, 2013, p.360).

1.1.2. Premature Birth and Admission Rates to the NICU

Lee, Blencowe & Lawn (2018) estimated globally that 14.8 million infants were born preterm in 2014 with 81% of premature births occurring in Asia and sub-Saharan Africa. Approximately 15% of preterm newborns were born prior to thirty-two weeks gestation and required special inpatient care (Lee et al., 2018). South Africa, a low-to-middle-income country presents with rates of 14.17% compared to 7% in higher-income countries of preterm birth (PTB) and low birth weight (LBW) rates (Fouche, Kritzinger & Le Roux, 2018). At Steve Biko Academic Hospital in the Gauteng province of South Africa, a retrospective descriptive audit was conducted over a one-year period (1 January – 31 December 2011). The audit indicated that of the 15 675 total live births occurring in the region only 890 (5.8%) were admitted to the NICU (Lloyd & de Witt, 2013). Save the children NGO estimated that in South Africa, more than 8 out of 100 babies are born prematurely. South Africa is also ranked as 24 out of 184

countries for number of newborn deaths secondary to complications from preterm birth (Sangonet, 2012). Due to the lack of specialised services, resources and equipment available in the public sector in South Africa, many neonates may not access or receive the care they require.

1.1.3 Complications Associated with Premature Birth

Complications associated with premature births are respiratory distress syndrome, intraventricular haemorrhage and periventricular leukomalacia resulting in long-term consequences such as cognitive impairment, cerebral palsy, recurrent seizures, bronchopulmonary dysplasia and retinopathy of the prematurity (Randis, 2008). In summary, "preterm infants, particularly those who experience one or more of the complications discussed above, are at risk for neurodevelopmental disabilities such as cerebral palsy, developmental delay, and mental retardation" (Randis, 2008, para. 9). The aforementioned complications have implications for the resources, monitoring and quality of care required for these infants. Therefore, it is crucial that physiotherapists within these settings address immediate physical needs and provide developmental support for infants hospitalised in the NICU (Kennedy & Long, 2006).

1.1.4 Multidisciplinary Team in NICU

Care of the neonate requires specialised equipment and the input of a variety of healthcare professionals with expertise in neonatal care (WHO, 2016). These tangible and human resources are required for quality neonatal care (WHO, 2016). Healthcare professionals in the NICU team consist of physicians, neonatal specialists, nurses and may or may not include physiotherapists, occupational therapists, special and language therapists, social works and lactation consultants (Vergara & Bigsby, 2004). Physicians and nurses are represented in all

NICU multidisciplinary teams while developmental and support team members vary at every institution (Vergara & Bigsby, 2004).

1.1.5 Frameworks within the NICU Setting

A competency and evidence-based guideline was developed by the Association of Chartered Physiotherapists in the United Kingdom for physiotherapists working in the NICU. Competency frameworks are used to guide physiotherapists in the NICU on the skills they need to treat a neonate. These include skills pertaining to the assessment and management of "rapidly changing physiological and behavioural stability in neonates; support and education" of emotionally charged families; as well as the effective collaboration with other medical professionals regarding plans of care (Sweeney, Heriza & Blanchard, 2009, p.111). Physiotherapists have a variety of skills that can be used to manage neonates with the goal of improving outcomes and reducing complications (Alaparthi, Chokshi, Krishnan & Vaishali, 2013).

1.1.6 Physiotherapy Techniques used in the NICU

Chest physiotherapy in the NICU commonly includes techniques like percussion, vibration, positioning for postural drainage and airway suctioning (Giannantonia, Papacci, Ciarniello, Tesfagabir, Puraco & Cota, F 2010). In some hospitals around the world, extubations are also routinely performed by "physiotherapists in accordance with the NICU protocol" (Kumar, Shergill, Navkaran & Jairaman, 2013, p.141).

For neuromuscular dysfunction in the neonate, common treatment techniques for "neuromuscular physiotherapy include positioning, skin-to-skin holding (kangaroo care), passive movements, orofacial stimulation, range of motion exercise, soft tissue mobilisation (surgical scar release), hydrotherapy and parent education (feeding, dressing, positioning of infants for sleep, interaction/play" (Alaparthi et al., 2013, p.360). Neuromuscular

physiotherapy facilitates posture and movement which aids the achievement of developmental milestones (Alaparthi et al., 2013). Physiotherapists therefore play a beneficial role in the management of neonates and can be recognised as a vital member of the NICU healthcare professional team (Alfadil, 2017).

1.1.7 Perceptions of Various Healthcare Professionals

"Perception" refers to the way in which a subject is regarded, understood, or interpreted" (Lexico, 2019). The perceptions of medical and allied health professionals regarding the role of physiotherapists in the NICU are unclear and could be affected by a variety of factors. These factors may include knowledge and awareness of the existence and awareness of indications or guidelines for the referral of infants to the physiotherapist in the NICU, communication between physiotherapists and medical healthcare professionals during the management of neonates and whether medical healthcare professionals are aware of the potential benefits of physiotherapy for neonates. Furthermore, the perception of physiotherapists of their own role in the NICU could be based on whether physiotherapists actually understand what their role in NICU is, based on their integration in the NICU team, their understanding of the benefits of their treatments and their clinical skills competency and experience working in the NICU.

Many studies exploring the perceptions that health professionals have pertaining physiotherapy as a profession exist (Abichandani & Radia, 2015). There are also studies that describe the role of the physiotherapist within a multidisciplinary team in a critical care team (Gupte & Swaminathan, 2016) and within a rehabilitation team (Dalley & Simm, 2001).

There is a scarcity of literature that explores the perceptions of healthcare professionals including doctors, nurses and physiotherapists themselves of the role of physiotherapists within the NICU. South African related literature on the perceptions of healthcare professionals of the

role of physiotherapists within the NICU is minimal to none. An understanding of the perception of the role of the physiotherapist in the NICU can assist physiotherapists in their ability to communicate their role to medical and other allied health professionals and, as a result hereof, contribute to more holistic patient care of those admitted to the NICU. Therefore, the aim of this study was to explore the perceptions of nurses, medical doctors and physiotherapists of the role the physiotherapist in both the private and public sector Neonatal Intensive Care setting in the Cape Metropole Region, Western Cape Province of South Africa.

1.2 Problem Statement

Guidelines specific to England, Australia and Brazil have been established for a physiotherapist working in the NICU. These guidelines outline the various conditions for which neonates can be referred for, what the referral protocol or screening process for that specific hospital is and, arguably most importantly, what the role of the physiotherapist is in the NICU. There are few studies that explore the perceptions of medical doctors, nurses and physiotherapists on the role of the physiotherapist in the Neonatal ICU. This information is lacking in the South African context. The lack of research regarding these topics in the South African setting may suggest that there is a lack of knowledge and understanding pertaining to the role of a physiotherapist in the NICU. While studies have indicated that physiotherapy is an integral part of the holistic care of patients and identified the need for integration of multidisciplinary services within the critical care unit whether this is true for the NICU needs exploration (Gupte & Swaminathan, 2016). There is currently literature that states the benefits of physiotherapy for the neonate and the conditions for which physiotherapy is indicated for in a neonate but it is unclear as to how physiotherapists and their role in the NICU are perceived by other healthcare professionals in the NICU team in the South African context. This has been a motivation for the study's research question.

1.3 Research Question

What is the perception of doctors, nurses and physiotherapists of the role of the physiotherapist in public and private sector NICUs in the Cape Metropole of the Western Cape, in South Africa?

1.4 Research Aim

To explore and describe the perception of doctors, nurses and physiotherapists of the role of the physiotherapist in public and private sector NICUs in the Cape Metropole of the Western Cape, in South Africa.

1.5 Research Objectives

1.5.1. To explore and describe the perception of the doctors of the role of the physiotherapist in the NICU.

1.5.2. To explore and describe the perception of the nurses of the role of the physiotherapist in the NICU.

1.5.3. To explore and describe the perception of the physiotherapists on their role in the NICU.

1.6 Significance of the Overall Study

A multidisciplinary teamwork approach is an essential component of holistic care. Effective teamwork has been linked to the combination of team members' skills, experience, and knowledge and thus improving better patient outcomes. Understanding the perceptions of healthcare professionals of the role of the physiotherapist in the NICU may highlight areas for improvement, the potential benefits of physiotherapy in NICU and highlight the need for physiotherapists in the NICU multidisciplinary team for the holistic management and treatment of neonates for improved outcomes. The question is novel, and the findings provide new insight

in the area of Neonatal Intensive Care Physiotherapy. The findings also provide an in depth understanding of the role of the physiotherapists in the NICU with regards to patient management, multidisciplinary team integration, services and training, skills and competencies as well as awareness and knowledge of the profession by doctors and nurses. The study also provides information as to how physiotherapists perceive their role in the neonatal setting. This understanding of the perception regarding the role of the physiotherapist in the NICU brings awareness about the profession in an area of neonatal physiotherapy that is still lacking research evidence. Understanding the role of the physiotherapist and benefits of physiotherapy in the NICU by doctors and nursing staff, could possibly bring about a change in referral patterns and integration of physiotherapy services in the NICU if the service of physiotherapy is perceived as being beneficial to improve outcomes following neonatal care.

1.7 Ethics

Ethics clearance to conduct the study was obtained from the University of the Western Cape (Ethics reference number– BM17/9/17 [Appendix 1]). All participants were provided an information sheet [Appendix 2] and a consent form [Appendix 3], available in English only as all participants were trained and fluent in the English language. The data collected from each of the participants, were captured and stored on a password-protected computer. If any harm or any problems were caused or experienced by the participants that the researcher was unable to resolve, an appropriate referral was made. Finally, participants had the right to withdraw at any time, during the study process, without facing any consequences.

1.8 Structure of the Thesis

The thesis is structured according to the conventional thesis structure with six chapters including an introduction, literature review, methodology, results, discussion and conclusion. The content of each chapter is described as follows:

1.8.1 Chapter One: Introduction

The researcher introduces the main concepts around neonatal intensive care, healthcare professionals in this area of care, specifically physiotherapy and describes why the perception of doctors and nurses of the role of the physiotherapists in the neonatal intensive care unit is important to explore. The researcher identifies the lack of evidence (problem statement) in relation to the research question and aim and describes the research question, aim and objectives. The significance of the study is highlighted, the ethics considerations outlined in brief, and lastly concluded with a description of the structure of the thesis.

1.8.2 Chapter Two: Literature Review

In this chapter, the researcher reviews the relevant literature, in terms the role of the physiotherapist in the NICU including patient management and techniques used. Physiotherapy is explained as a health profession. Secondly, the perceptions of various health professionals regarding the role of physiotherapists in the NICU is discussed. Thirdly, the concept of multidisciplinary involvement of the physiotherapists is discussed. Lastly, frameworks and guidelines for physiotherapists working in the NICU are explained. The researcher highlights the lack of evidence on the perception of health professionals on the role of physiotherapists in the NICU and reiterates the need for this research study.

1.8.3 Chapter Three: Methodology

The researcher describes the methodological design relevant for this research study and includes a description of the research setting, the study design, study population, sampling method, instrument used for data collection, the data collection procedure, data capturing and analysis, trustworthiness and ethics considerations.

1.8.4 Chapter Four: Study Findings

In this chapter, the researcher describes the characteristics of the participants of the study and discusses the emerging themes and categories following data analysis and presents these findings in a narrative format.

1.8.5 Chapter Five: Discussion, Limitations and Strengths, Recommendations

The discussion chapter highlights the main findings of the study and integrates these findings with other evidence on the topic explored. The researcher analyses and interprets the findings with regards to the implications for future research and improvements in the field of neonatal physiotherapy. Finally, the limitations and strengths of the study are outlined in brief and the chapter concludes with recommendations.

1.8.6 Chapter Six: Conclusion

The conclusion chapter draws a closure on the problem identified, the study method and findings and discusses the way forward and how the findings can be used by relevant stakeholders in the area of neonatal ICU.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction:

In this chapter, the NICU setting is explained in detail, with criteria for admission to the NICU also being described. The current state of healthcare in South Africa is also explained. The researcher reviews the relevant literature relating to the perceptions of the role of the physiotherapist in the NICU, the multidisciplinary team in the NICU and physiotherapy techniques within this setting. The definition of the physiotherapist and scope of practice is explained. Finally, frameworks and guidelines for physiotherapists working in the NICU is explained.

2.2 The Neonatal Intensive Care Setting

The neonatal intensive care unit is "described as an “intensive care unit designed for premature and ill newborn babies” (Medicine.net, 2018, para.1). It is abbreviated to NICU but can also be called a newborn intensive care unit or neonatal critical care unit (NCCU). Premature newborns are defined as any baby born with gestational age less than thirty-seven completed weeks (WHO, 2019). According to the gestational age at birth, preterm newborns can be categorised as extremely preterm (less than twenty-eight weeks), very preterm (between twenty-eight weeks and less than thirty-two weeks) and moderate preterm (between thirty-two weeks and less than thirty-seven weeks) (da Silva Neves Moreira Arakaki, Monteiro de Oliveira, Bogossian, Viviane, Saraiva de Almeida, Dias da Silva & Cidrini Ferreira, 2015).

2.3 South African Healthcare System and Neonatal ICUs

Young (2016) described the South African Healthcare system as a “two-tiered system divided along socioeconomic lines” (Young, 2016, p.3). Public sector hospitals are government funded.

The cost of government-funded healthcare is largely or entirely covered by the state or offered to the population for reduced rates based on household income (Young, 2016). Additionally, citizens have the option to purchase private medical aid schemes to access private healthcare services which are renowned for reduced waiting times to access services, improved infrastructure and greater treatment options (Young, 2016).

There is currently a total of nineteen public and private sector hospitals in the Western Cape that offer Neonatal Critical Care services: four public sector NICUs and fifteen private sector NICUs. These NICUs have limited beds but increasingly struggle to accommodate the growing number of neonates. It is important in this resource-limited healthcare setting, that available staff resources in the NICU are efficiently and effectively utilised to provide quality care and improve outcomes. This clearly demonstrates that the demand on public healthcare services far surpasses that on private healthcare services. Subsequent to this increased demand, increasing pressure is placed on resources and equipment is less (Brands South Africa, 2012). This affects the quality of care with strict protocols such as triaging guiding the prioritisation of resources.

There is currently no formal list in the Western Cape that shows the availability of NICU facilities. This information was gathered by accessing each hospital website individually to scrutinise the services offered. According to Stats SA, as many as 45 million people, or 82 out of every 100 South Africans, cannot afford medical aid insurance and, as a result hereof, are largely dependent on public healthcare (Stats SA, 2017).

2.4 Criteria for Admission to NICU

Intensive care may be allocated to give the best chance of survival for the neonate, or it can be allocated to benefit as many infants as possible as is the case in the South African public health sector (Pieper & Hesseling, 2007). If mothers have accessed neonatal care, their unborn babies will routinely receive NICU care if they weigh an estimated weight of more than 999 grams

and/or have a gestational age of at least 28 weeks, if the infrastructure allows for this (Pieper & Hesseling, 2007). For mothers who have not accessed antenatal services, their babies must weigh over 1 200 g or have a gestational age of at least 30 weeks to qualify for admission into the NICU (Pieper & Hesseling, 2007). Mothers who have a history of multiple previous obstetric complications are often admitted even if they do not fulfil the above admission criteria (Pieper & Hesseling, 2007). An article written by Lloyd and de Witt, (2013) explored neonatal mortality in South Africa and found that administrative problems were one of the five major contributors to deaths due to prematurity "Inadequate facilities, no accessible intensive care unit (ICU) beds with ventilators, lack of transport and inadequate resuscitation equipment" were frequently cited as the contributing factors that had an influence on neonatal mortality (Lloyd & de Witt, 2013, p.518). Thus, the burden of disease within the South African context and the lack of resources available to provide quality of care may be summarised as the main problems.

2.5 Multidisciplinary Team in the NICU

Care of the neonate requires specialised equipment and the input of a variety of healthcare professionals with expertise in this specialised field. This follows that several tangible resources and variety of human resources are required for quality neonatal care (UNICEF, 2011). Healthcare professionals in the NICU team may be grouped into the following categories: *medical* (e.g. physicians and nurses), *developmental* (e.g. physical therapists, occupational therapists, psychologists, speech and language pathologists, social workers) and *support team* (e.g. clerical staff, environmental services) members (Vergara & Bigsby, 2004). Physicians and nurses are represented in all NICU teams while developmental and support team members vary from institution to institution (Vergara & Bigsby, 2004).

Freibott, Guillen, Mackley & Locke (2016) noted that medical staff who are working in the NICU can significantly reduce parental stress through effective communication and motivational support. Additionally, Sharma, et al. (2018) states that antenatal counselling of parents also reduces parental stress and anxiety, improves parental satisfaction with the services provided. Physiotherapy is an integral component of the interdisciplinary team in the NICU (Mahoney & Cohen, 2005).

2.6 Physiotherapy Scope of Practice in General and in Relation to NICU

According to the HPCSA (Health Professions Council of South Africa) the physiotherapist is described as "someone who assesses, treats and manages a wide variety of injuries including ailments from the fields of orthopaedics, neurology, respiratory, cardio-vascular, obstetrics, sports medicine, paediatrics, geriatrics, intensive care units and general rehabilitation" (Health Professions Council of South Africa, n.d, para. 1). Other medical fields and community care also fall within the scope of practice. According to the American Physical Therapy Association, the physiotherapists' roles and responsibilities in the NICU include the following: screening of neonates to determine referral needs, examining neonates, interpreting findings, developing and implementing intervention plans, minimising the complications of prematurity and effective collaboration with families and allied professionals to evaluate management plan efficacy (APTA, 2009). Lastly it also consists of consulting with providers of specialised equipment or services in preparation for community-based care and communicating, demonstrating, and evaluating neonatal physical therapy care procedures with NICU professionals and other caregivers (APTA, 2009). As first line practitioners, physiotherapists also practice alongside the patients' medical team. The physiotherapist is also seen as autonomous in professional decision-making (South African Society of Physiotherapy , 2014).

2.7 Autonomy

There is a dearth in the literature that explores autonomy within the physiotherapy profession and the barriers professionals face when trying to implement their autonomy within the hospital setting. According to the World Confederation for Physical Therapy (WCPT), physiotherapists can act as "first contact practitioners, and patients may seek direct services without referral from another health professional" (WCPT, 2017, para.2). "Professional autonomy" as defined by Sanstrom (2007) is the ability to control the conditions of one's work and is a direct result of a trust relationship established between a profession and the society.

An article written by Aiken, Ball & Raferty (2001) titled "Are teamwork and professional autonomy compatible, and do they result in improved hospital care" reported that greater nursing autonomy was related to improved perceptions of the quality of care delivered and higher levels of job satisfaction (Aiken et al., 2001). Bergman (1990) reported that approximately 55% of physiotherapists in his research study perceived that physicians and other staff members primarily expected them to act as independent practitioners, whilst about one-third (34%) felt that they were expected to commence treatment after referral from or discussion with the physician. "Most physiotherapists (86%) were firmly in control of their treatment methods, but felt restricted freedom in deciding whom to treat, and when to terminate treatment" (Bergman, 1990, p.79). These articles infer that increasingly levels of autonomy have proven benefits. Furthermore, the decision regarding whom to treat and when treatment is appropriate should lie with the treating physiotherapist. The literature quoted in the latter are the most recent evidence available pertaining to autonomy. They are quite dated and show the lack of recent literature available pertaining to autonomy of physiotherapists in the neonatal ICU. There is also a dearth of recent evidence on the autonomy of physiotherapists in other ICUs as well as healthcare in general.

2.8 Physiotherapy in the NICU

"Neonatal physiotherapy is an advanced practice within paediatric physiotherapy" (Brady & Smith, 2012, p.296). Owing to this, physiotherapists who provide care to neonates require advanced clinical skills in the NICU and intermediate care settings (Brady & Smith, 2012). These include skills pertaining to the assessment and management of rapidly changing physiological and behavioural stability in neonates; support and education of emotional families; as well as the effective collaboration with other medical professionals regarding management plans (Brady & Smith, 2012).

While chest physiotherapy is a well-known practice, its benefits for neonates remains unclear. Alaparthi et al. (2013) and Kamath, Singh, Khandelwal, & Salhan (2012) report that chest physiotherapy is particularly useful in maintaining a clear airway, to re-expand collapsed lung segments (atelectasis), maintain adequate levels of oxygenation and poor gaseous exchange, facilitate early weaning and manage excessive secretions. However, Flenady and Gray (2002) provide conflicting evidence. Flenady and Gray (2002) suggest that active chest physiotherapy may only benefit a select number of infants taken off mechanical breathing support. The review written by Flenady and Gray (2002) found that less babies required ventilation post-extubation due to the benefits of chest physiotherapy on the neonate, however no other benefits were shown. Furthermore, this benefit was mainly due to the results of studies conducted many years preceding advances such as improved humidification systems to moisten the air the infant breathes, and the drug surfactant (Flenady & Gray, 2002). These advances may have reduced the risk of post-extubation complications to such an extent that chest physiotherapy is largely irrelevant for this indication in modern times (Flenady & Gray, 2002) . Hough, Flenady, Johnston & Woodgate (2010) findings on whether chest physiotherapy treatment reduces morbidity in infants requiring mechanical ventilation report that there is no clear overall benefit or harm from chest physiotherapy. Certain individual chest physiotherapy techniques were

found to be more beneficial than others in resolving atelectasis and maintaining oxygenation, but the results found in the review do not favour one technique over another (Hough et al., 2010). Hough et al. (2010). reports that due to the limited number, poor quality and age of trials in the review, there is not sufficient evidence to determine whether chest physiotherapy is beneficial or harmful in the treatment of infants being ventilated in today's intensive care units.

In the South African setting, there is a scarcity in the literature pertaining to the role and benefits of the physiotherapist in the NICU. As professionals, physiotherapists need to reflect and clarify their role in this specialised area.

2.9 Evidence based practice

It is important for physiotherapists to incorporate evidence-based practice into their daily treatments and practices to further establish and strengthen their role within the NICU setting. "Evidence-based practice" is a process whereby physiotherapists integrate the highest quality and most recent evidence with clinical expertise and client preferences to produce the most appropriate and effective service (Scurlock-Evans, Upton & Upton, 2014). Engaging and utilising both research and clinical findings can enhance the efficacy of physiotherapists' clinical practice and assist with preventing the misuse, overuse and underuse of healthcare services (Scurlock-Evans et al., 2014). Despite the clear benefits of evidence-based practice, its "practical usage amongst physiotherapists and other health care professionals have been inconsistent" (Scurlock-Evans et al., 2014, p.208).

A systematic review exploring evidence-based practice conducted by Shurlock-Evans et al., (2014) concluded that there are many barriers associated with evidence-based practice implementation. Barriers described were a "lack of time and skills to research evidence available and misperceptions of what constitutes evidence" (Scurlock-Evans et al., 2014, p.218). Furthermore, a significant challenge described by physiotherapists in the systematic

review was the lack of high quality (i.e. valid and reliable) research evidence freely available to them (Scurlock-Evans et al., 2014).

An article written by Davidson and Iles (2006) concurred similar results to that of Scurlock-Evans et al., (2014). Participants had a positive attitude toward evidence-based practice, but barriers to usage was also highlighted. The main barriers mentioned were "time required to keep up to date with current evidence, access to easily understandable summaries of evidence, journal access and lack of personal skills in searching and evaluating research evidence" (Davidson & Iles, 2006, p.93). These barriers need to be kept in mind when exploring the usage of evidence-based practice amongst physiotherapists generally and, specifically, in the NICU.

2.10 Guidelines for Physiotherapy Treatment

Core knowledge forms the basis of effective treatment formulation in physiotherapy. Physiotherapists need to achieve an adequate level of competence to be able to treat high-risk and vulnerable infants. The nursing and midwifery council defines competence as the "possession of knowledge, skills and abilities required for lawful, safe and effective professional practice without direct supervision" (NHS Trust, 2019, para.3). An article written by Sweeney et al. (2009) stated that the competencies for NICU physiotherapists are defined according to roles, proficiencies and knowledge.

A competency framework and evidence-based practice guideline was developed by the Neonatal Committee of the Association of Paediatric Chartered Physiotherapists (APCP) for physiotherapists working in the United Kingdom in the NICU in May 2015. This framework was developed by a panel of specialist neonatal and paediatric physiotherapists from clinical, research, and academic settings whose aim was to establish the basis by which to "prepare the paediatric physiotherapy workforce to deliver safe, quality, standardised, competent, family-

focused care to neonates within the NICU, High Dependency and Special Care setting" (Brady & Smith, 2011, p.10). These guidelines may be adopted to assist physiotherapists with the skills they may require to be NICU-competent.

Another framework that was established by the American Physiotherapy Association (APTA), is the ROC-IT Home framework. The ROC-IT Home describes a five-point framework that seeks to assist the physiotherapist with limited or no knowledge in the NICU to be able to treat within this setting (Kennedy & Long, 2006). These essentials are consistent with professional standards for physiotherapy in acute care environments (Kennedy & Long, 2006). Following these essential guidelines will increase the likelihood that therapeutic interventions will promote desired developmental outcomes while minimising complications.

2.11 Perceptions Regarding the Role of the Physiotherapist

There are currently multiple studies which describe perceptions that various health professionals have about the role of the physiotherapist in various settings within a hospital. There is currently very limited research that investigates the perceptions that physiotherapists have regarding their own profession. Also, research that is available mentions the perceptions that health professionals have on the broad role of the physiotherapist and not on the perceptions they have regarding the role of the physiotherapist within a NICU setting. Below is a list of articles that summarise the perceptions of physiotherapy by various health professionals:

- Agni and Battin (2017) conducted a study titled "Awareness of physiotherapy among general practitioners: a pilot study". From the study it was concluded that there is awareness regarding the physiotherapy profession among general practitioners. With regards to the different fields of physiotherapy, orthopaedics' and neurological fields are the most known, followed by cardiorespiratory and sports rehabilitation. Also,

physicians believe that prescribing exercises is the main intervention used by a therapist and they possess very little knowledge regarding the recent advances in rehabilitation.

- Gupte and Swaminathan (2016) on “Nurses perception of the role of physiotherapists in a critical care team, report of a qualitative study”. This study stated that physiotherapy has been accepted as an integral component of the management of patients who require intensive care and physiotherapists play a unique role as a part of the Intensive Care Unit team.
- A study conducted by Abichandani and Radia (2015) on the awareness of various aspects of physiotherapy among medical residents, found that awareness levels varied. The awareness levels were the highest for musculoskeletal physiotherapy, followed by sports physiotherapy and neuro-physiotherapy. The least was found for cardio-vascular, for obesity and for industrial health. The article concluded that physiotherapists need to educate medical residents about fields of physiotherapy, treatment modalities and evaluations through continuing education programmes.
- According to Acharya, et al. (2012) on “Physiotherapy awareness among clinical doctors in Nepal”, clinical doctors were well informed regarding the physiotherapy profession but required explanations regarding appropriate types of referrals and specialised services provided by the physiotherapist.
- Puckree, Harinarain, Ramdath, Singh, Ras & Jet (2011) conducted a study titled “Knowledge, perceptions and attitudes of final year medical, occupational therapy and sports science students regarding physiotherapy in KwaZulu Natal”. The researchers indicate that most of the participants, regardless of occupational group, identified orthopaedics and sports medicine as the physiotherapy field that they had the greatest knowledge about. As far as conditions treated by physiotherapists, all occupational therapy students were aware that physiotherapists managed a range of conditions

compared to medical students and sport science students who commonly identified muscle strain, stroke arthritis and para/quadriplegia to be conditions most commonly treated. Most of the students acknowledged that physiotherapists play an important role in healthcare in South Africa.

- According to Odebiyi et al., (2010), lack of or poor knowledge about a profession may lead to misconceptions about the profession and inter-professional conflicts. Thus, good awareness of the role of physiotherapy in healthcare delivery may influence its use (Odebiyi et al., 2004).
- A study conducted by Jones (2001), assessed the perceptions and knowledge medical professionals had about the physiotherapy service within an Intensive Care Unit. The results showed that 79% of medical staff deemed the services provided by physiotherapists to be of a high/exemplary standard. It also mentioned that physiotherapists should take part in research procedures to establish the evidence of their treatment interventions (Jones, 2001).
- Lastly, Stanton, Fox, Frangos, Hoover & Spilecki (1985) on "Assessment of resident physician's knowledge of physical therapy" concluded a lack of knowledge among the resident physicians especially about the treatment modalities used by the physical therapists.

To summarise it is noteworthy that the articles by Stanton et al. (1985) and Abichandani and Radia (2015) were conducted twenty years apart yet concurred in their findings. Results showed that there is a lack of knowledge pertaining to treatment techniques and modalities used by physiotherapists. It is also evident that all the articles listed mention a lack of awareness in one or more aspects of physiotherapy. It is important for physiotherapy to advocate for their role and importance thereof. Lastly, Jones (2001) and Abichandani and Radia (2015) also mention that there is a need to educate health professionals regarding the role of the

physiotherapist. It is vital to assume, as noted by Odebiyi et al., (2010), that insight regarding the role of the physiotherapist as it pertains to healthcare delivery may guide its utilisation.

2.12 Summary

There is currently limited literature that provides guidelines or frameworks for physiotherapists working or wishing to pursue a career in NICU-centred physiotherapy services. Prior conducted studies conducted in the NICU did not explore the perceptions of the nursing staff, medical doctor and physiotherapist regarding the role of the physiotherapist in this setting. Many studies have explored the practice patterns of physiotherapists in the NICU but failed to explore the perceptions of selected medical professionals regarding this.

There is a scarcity of literature in the South African hospital setting for "incorporating interdisciplinary practice in the critical care setting and role of perception between healthcare providers of various professions" (Gupte & Swaminathan, 2016, p.14). Lack of knowledge about a profession may lead to misconceptions about the profession and may result in a skewed perception of said profession. It may lead to the profession not being used adequately to provide the services needed to render holistic care to the patient.

An article by Gupte and Swaminathan (2016), described nursing staff's perception of the role of the physiotherapist in the critical care unit but did not explore these perceptions in the setting of the NICU. Understanding the perception regarding the role of the physiotherapist in the NICU may encourage awareness about the profession in an area of neonate physiotherapy that is still lacking in scientific research. A further understanding of the role of the physiotherapist and the benefits of physiotherapy in the NICU by doctors and nursing staff, have the potential to encourage major changes in referral patterns and integration of physiotherapy services in the NICU if the service of physiotherapy is perceived as being beneficial towards the neonate

Despite the growth in evidence base, scope of practice through research and the demand for physiotherapy services, physiotherapy is still struggling to achieve status and be recognised as an essential service within the healthcare profession (Puckree, et al., 2011).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methodological approach used in this study and includes a description of the research setting, the research design, the study population, recruitment of the population and sampling. Furthermore, the procedure regarding data collection, instrumentation used to achieve the study objectives, data capturing, and analysis and trustworthiness of the study findings are discussed. Lastly, the ethical considerations and ethical principles are explained as is related to research conducted on humans according to the Helsinki Declaration (WHO, 2016).

3.2 Research Design

A qualitative exploratory research design was used. “Exploratory research intends merely to explore the research questions and does not intend to offer final and conclusive solutions to existing problems” (Dudovskiy, 2018, para.1). This design approach was used to identify the perceptions that exist amongst doctors, nurses and physiotherapists regarding the role of the physiotherapist in the neonatal intensive care unit (NICU). Qualitative research, as opposed to quantitative research, provides depth and detail by recording attitudes, thoughts and feelings. It also creates openness amongst participants encouraging participants to expand on their responses that might address topics not initially considered (Essays, 2018). As there is little known about the perceptions of medical healthcare professionals about the role of the physiotherapists in the NICU, a qualitative approached was deemed to be best to explore the topic in depth, so as to provide a baseline for further research in the area. Inductive reasoning was also used in this study. The researcher begins with a “completely open mind without any preconceived ideas of what will be found, and the aim is to generate a new theory based on the

data" (Gabriel, n.d. para.6). This method is appropriate for this research study as it aims to explore what the perceptions of the health professionals are pertaining to the role of the physiotherapist in the NICU as this is an area that has not been well explored in South Africa.

3.3 Research Setting

The research setting consisted of neonatal intensive care units located in the public and private sector hospitals in the Cape Metropole Region of the Western Cape, South Africa. There are four public sector and fifteen private sector NICUs in the Cape Metropole Region. The researcher attempted to contact all public and private sector hospitals in the Cape Metropole Region of the Western Cape in South Africa. Only two public sector NICUs one in Cape Town and one in the Southern Suburb and two private-sector NICUs one in the Northern and the other in the Southern Suburb agreed to participate in the study (Table 3.2). The other hospitals declined to participate and the reason for this was due to the policies within certain private sector hospitals which did not support research studies. There is currently only one document in South African Literature that stipulates paediatric neonatal facilities and the requirements needed to provide this service in public sector hospitals in South Africa. There is currently no literature available for the private sector indicating facilities and staff requirements. Due to the specialist nature of the care that is provided in the neonatal intensive care unit, the unit must form an independent component located close or adjacent to the maternity unit, especially the birthing unit and the Kangaroo Mother Care (KMC) unit (IUSS Health Facility Guides, 2014). A Gazette written by the Department of Health of South Africa in 2014 was released and showed the requirements for paediatric and neonatal facilities within South Africa. It visited numerous district, regional and tertiary neonatal facilities in various provinces of South Africa. The Gazette states that the allocation of neonatal bed types is dependent on the level of care provided (IUSS Health Facility Guides, 2014). Table 3.1 illustrates the percentage distribution

of neonatal beds amongst district, regional and tertiary hospitals. The minimum amount of beds allocated to an NICU should be six beds.

Table 3.1 Neonatal bed allocation within District, Regional and Tertiary hospitals in various provinces in South Africa

	DISTRICT	REGIONAL	TERTIARY
Standard(intermediate)	34%	34%	15%
High care	34%	23%	50%
ICU	-	10%	30%
KMC (low care)	33%	33%	5%

(IUSS Health Facility Guides, 2014, p.94)

Table 3.2: The NICU facilities in the Western Cape

NICU FACILITIES IN THE WESTERN CAPE	
PRIVATE (15)	**PUBLIC (4)**
Melomed Gatesville	New Somerset Hospital
Melomed Mitchells Plain	Mowbray Maternity Hospital
Melomed Tokai	Groote Schuur Hospital
Netcare Blaauwberg	Red Cross Hospital
Netcare N1 City	
Netcare Christiaan Barnard	
Mediclinic Paarl	
Mediclinic Panorama	

Mediclinic Cape Gate	
Mediclinic Cape Town	
Mediclinic Constantiaberg	
Mediclinic Louis Leipold	
Mediclinic Milnerton	
Mediclinic Stellenbosch	
Mediclinic Worcester	
Mediclinic Vergelegen	

Staff allocated to the NICU include nursing staff who provide continuous care to patients in shifts, and visiting clinical staff who provide periodic or specialised care to patients (such as medical doctors, allied healthcare workers and persons who provide support services, which include cleaning staff and maintenance staff (IUSS Health Facility Guides, 2014). Staff numbers are dependent on the activities provided within the neonatal unit (IUSS Health Facility Guides, 2014).

3.4 Population and Sampling

The population included all (N= 58), the doctors (N=16) (paediatricians and neonatologists), nurses (N=14) and physiotherapists (N=28) working in the NICU or paediatric wards in the participating hospitals (Figure 3.1).

3.4.1 Recruitment of the Population

Permission to conduct research at the various public and private sector hospitals was sought. Recruitment of participants differed slightly in the public sector hospitals in comparison to the private sector hospitals.

In the public sector hospitals, a confirmation letter stating the approval for conducting research was emailed to the researcher. In the confirmation letter, contact details were provided for the relevant Heads of Department and Research Personal for those hospitals. Heads of Department for Neonatology/Paediatrics were contacted telephonically or emailed for a potential list of participants who would be willing to participate in the research study. A list of email addresses was then obtained, and an invitation was extended to the various health professionals to participate in the research study. Follow-up emails were sent if no response was received within one week of the initial email being sent. If the participants had not replied within one month of the initial email, they were excluded from the research study. Only health professionals working in the paediatric wards or NICU were approached to participate in the research study. Once confirmation was received via email to participate, appointments were then made with the consenting health professionals at a venue, date and time that was most convenient for them.

In the private sector, the researcher contacted the various hospitals telephonically to enquire what the research protocol for that specific hospital was. Application forms were then completed to apply for permission to conduct research at the various private sector hospitals. Certain private sector hospitals also provided email addresses for the Heads of the Research Committee and the researcher contacted the necessary person for a potential list of participants. As the doctors contracted to those hospitals were independent practitioners, the researcher contacted the receptionists of those doctors for their email addresses. An invitation was then extended to the doctors to participate in the research study. Follow- up emails were sent if no response was received within one week of the initial email being sent. If the participants had not replied within one month of the initial email, they were excluded from the research study. Only doctors working in the paediatric wards or NICU were approached to participate in the research study. The researcher also approached nurses and physiotherapists working in the

paediatric wards where she worked, to invite them to participate in the research study. Once confirmation and consent were received from the various health professionals a venue, date and time that was most convenient for them was arranged.

3.4.2 Sampling

A total inclusive sampling method was used to sample the medical practitioners (paediatricians and neonatologists) nurses and physiotherapists working in the NICU in these hospitals. “Total population sampling is a type of purposive sampling technique where you choose to examine the entire population (i.e., the total population) that have a particular set of characteristics” (Laerd Dissertation, 2019, para. 1). All participants (n=58) were purposively sampled. The participants had experience and/or worked in the paediatric and/or neonatal intensive care units in the public and private sector hospitals in the Cape Metropole Region of the Western Cape in South Africa.

3.4.3 Sample Size

Evidence by Creswell (1998) recommends between five and twenty-five participants are required in qualitative studies. The goal of qualitative research should be the attainment of saturation. Data saturation occurs when no new ideas or themes emerge from the data that has been obtained (Urquhart, 2013). The sample size for the study included a total of 21 consenting participants that included five medical doctors, six nurses and ten physiotherapists working in the respective public and private sector hospitals in either the NICU or paediatric wards that agreed to participate in the research study (Figure 3.1).

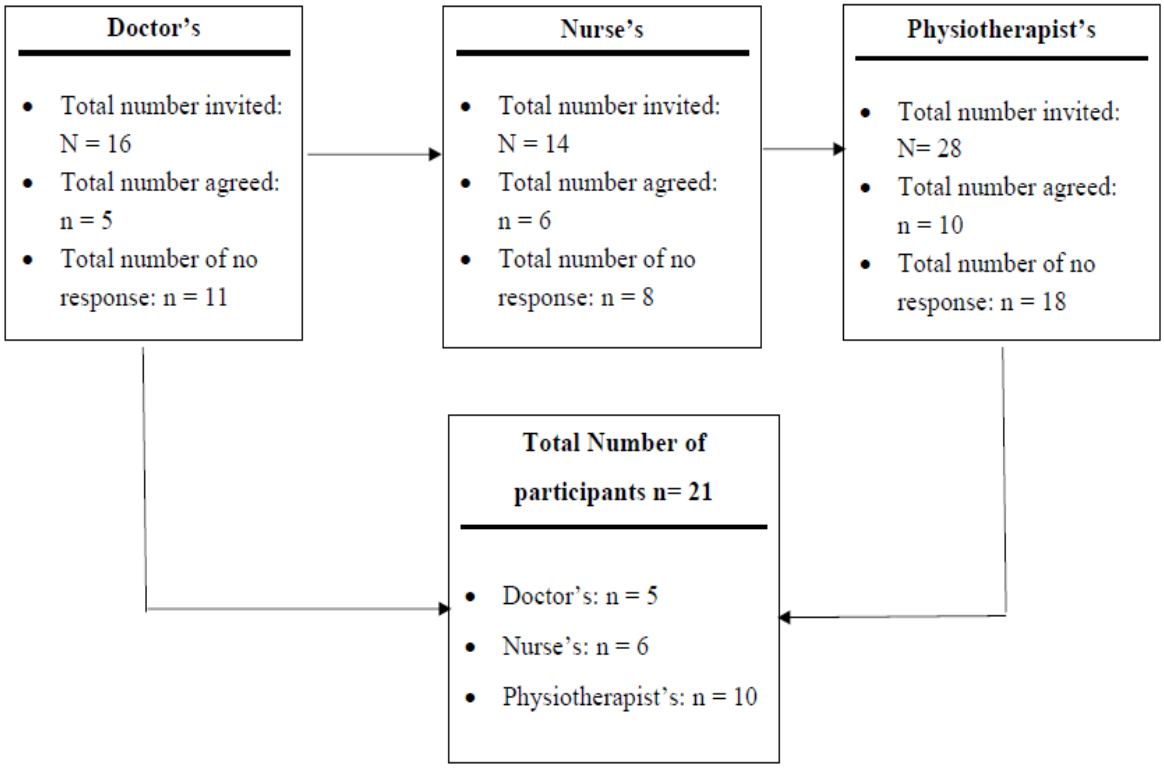

Figure 3.1 The population and sampling of each health professional in public and private sector hospitals in the Cape Metropole Region, in the Western Cape in South Africa

3.5 Instrumentation

The data was collected using a semi-structured interview guide designed by the researcher with questions based on predetermined aspects found in other literature on the role of the physiotherapist in the NICU. All the health professionals were trained in English, and thus the interview guide was developed in English only and the interview conducted in the English language.

The semi-structured interview guide was developed in line with the study objectives (Appendix 4 and 5). The doctors and nurses answered a separate interview guide as opposed to the physiotherapists to obtain more relevant data that is applicable to each profession. The semi-structured interview guide consisted of two main sections.

The first section contained socio-demographic information such as the participant's age, sex, health profession or discipline, year of graduation, years of experience in private sector (general and NICU specific) and any previous experience in public or private sector (general and NICU specific) respectively. In the physiotherapists interview guide exposure and previous treatment of a neonate in the NICU was also included. Exposure to and treatment of an infant may influence physiotherapists' perception of the role of the physiotherapist in the NICU and thus this question was added.

The second section focused on the perception of doctors, nurses and physiotherapists on the perceived role of the physiotherapist in NICU. For the doctors and nurses, focus was placed on what the availability of physiotherapy services in the NICU are, the referral system in place for physiotherapy within the NICU setting, the role of the physiotherapist in discharge planning, the inter or multidisciplinary approach between all healthcare professionals specifically with the physiotherapists in the management and treatment of neonates in the NICU, whether frameworks/guidelines existed for the referral to the physiotherapist in the NICU and lastly whether they felt that there was a need for the physiotherapist within the NICU team. Questions posed to the physiotherapists were the same as those for the doctors and nurses, but additional questions were posed to the physiotherapists that were not included in the doctors and nurses' interviews. These additional questions included: practice patterns used on neonates (frequency of treatment and treatment techniques used), elaboration on training and qualifications of physiotherapists working within the NICU and evidence-based practice used in the NICU by physiotherapists.

3.5.1 Pilot Interview

To ensure credibility within the research study, one interview was conducted with a doctor, nurse and physiotherapist to determine whether the questions in the semi-structured interview

guide answered the desired objectives of the research study. Thereafter, amendments to the semi-structured interview guide were made to ensure that the research study objectives were being met. Amendments were only made to the physiotherapy interview guide. In section 2 physiotherapy in the NICU with regards to patient management was separated into an individual question, thereafter, question two followed with practice patterns and techniques used within the NICU. All the other questions in the interview guide remained the same with the addition of an explanation required if the participant answered that there were not any physiotherapy services available in the NICU and when they answered "no" to involvement in discharge planning and to referral within the NICU. The data gathered from the pilot study was incorporated into the research study. Another aim of the pilot interview was to determine the time taken to complete the interview. The interviews lasted between fifteen and thirty minutes depending on the participant.

3.6 Procedure

3.6.1 Data Collection

Ethics approval was obtained from the University of the Western Cape Senate Research Ethics Committee as well as the various public and private sector hospitals. The researcher extended two invitations to the purposively selected health professionals urging them to participate in the research study. The invitations were made via email whereby the researcher contacted the unit manager of the NICU and the various hospitals for the details of the health professionals. A personal invite was then extended by the researcher to the health professionals at the various hospitals to participate in the study. Once the invitation was accepted by the health professionals, a suitable date, time and venue was then discussed. The venue at which the interview was conducted was decided upon according to the comfort and ease of accessibility for the participant, however basic requirements such as privacy and a moderate level of quietness was considered.

The researcher conducted individual “face-to-face” interviews with consenting participants. A face-to-face administration was used, for the interviewer to maintain control of the interview and assist in keeping the interviewee focused until completion. Probing techniques were used to obtain richer information from participants (Fielding & Thomas, 2001). Throughout the interview process the researcher summarised and confirmed data collected for verification of understanding. The researcher also took field notes whilst conducting the interview, to review at a later stage. Each interview lasted approximately thirty to forty-five minutes, depending on the depth and richness of data obtained from each individual participant. All interviews were audiotaped which allowed for the data to be transcribed and analysed.

3.6.2 Data Capturing and Analysis

The data related to the participants’ profile was collected before the start of interviews. This data was captured in a Microsoft Excel spreadsheet and exported to the Statistical Package for Social Sciences version 23 for quantitative data analysis. This quantitative data was analysed using frequencies, percentages, means and standard deviations and the findings related to the profile presented in a table in the results chapter.

Following the collection of the qualitative data, all audiotapes were transcribed verbatim by an independent transcriber. Both deductive and inductive thematic content analysis, as described by Braun and Clarke (2006), was used to analyse the qualitative data obtained. The researcher first familiarised herself with the data. This step required the researcher to fully immerse herself in the data by reading and re-reading the transcripts to understand what was being said, and that what was being transcribed had not been altered but was the true reflection of what was being said on the audiotape. This included listening to the audio tapes while reading the transcribed material.

Once familiar with the data, the researcher started identifying initial codes, which were features of the data that may have appeared as interesting and meaningful. These codes were more numerous and specific than themes and provided an indication of the context of the conversation (Braun & Clarke, 2006). This coding was done manually using different colours for different codes. Secondly, codes were categorised into groups and coded using different colours. Lastly the dominant themes were identified and categorised together.

In the third step, the themes which had appeared numerous times were categorised under broad headings in relation to the research question. Hereafter, the researcher identified those themes which answered the research question and were relevant to the objectives of the research study. In the fourth step, the researcher compared the themes independently to determine whether the themes generated from the research, answered the research study's objectives. The fifth step was to name and explain what each theme was about and how and why it was significant (Braun & Clarke, 2006). A description was made alongside the data which described its content and relevance to the intended research question and respective research objective. Finally, the researcher wrote the content analysis in a report including the story originating from the verbal data, themes generated, and the use of literature to support the data. The process of data analysis involved constant reviewing of the original verbal and transcribed data, codes found, and themes generated (Braun & Clarke, 2006).

3.7 Trustworthiness

Lincoln and Guba (1985) proposes four criteria to ensure trustworthiness within qualitative research. According to Lincoln and Guba (1985) trustworthiness is important in a research study as it evaluates the rigour of the study. The four paradigms of trustworthiness described by Lincoln and Guba are credibility, dependability, transferability and confirmability.

3.7.1 Credibility

Also, referred to as internal validity. “It seeks to ensure that the study measures or tests what is actually intended” (Shenton, 2004, p.64). In this study, credibility was ensured after verbatim transcription had been done. Member checking was done to confirm participants’ intention and if the transcribed information captured the meaning expressed by the interview. Member checking is a process whereby the data that has been obtained is shared amongst all the participants of the study, and the participants are provided the opportunity to provide feedback to the researcher, as to if what they had said was accurately reflected in the report. Member checking was done by emailing all the participants the summarised version of the results and asking for their feedback regarding it.

3.7.2 Dependability

Also, referred to as reliability. This infers that if the same study were to be repeated in the same context, with the same methods and same participants, similar results would be obtained (Shenton, 2004). Dependability in this study was ensured by keeping accurate records of all steps followed in conducting the study and this was done in a manner whereby it would be possible to retrace all the research steps.

3.7.3 Transferability

Also, referred to as external validity. Transferability is concerned with the extent to which the findings of one study can be applied to other situations (Shenton, 2004). It was addressed by the researcher using a detailed description of the research through quotations whilst still maintaining the meaning of the participant responses.

3.7.4 Confirmability

Refers to the objectivity of the study where the outcomes are supported by the collected data and not the preferences of the researcher (Shenton, 2004). Confirmability in this study was

ensured by an audit which will be done by a third party or supervisor who will revise transcripts and generate themes independently (Lincoln & Guba, 1985). Data is collected via 1) the audio-taped interviews, 2) the transcriptions and 3) the researcher's field journal.

3.8 Ethics

Ethics clearance was obtained from the Biomedical Research and Ethics Committee (Appendix 1). Permission was then sought from the various public and private sector hospitals. Information sheets (Appendix 2) were given to the participating healthcare professionals to thoroughly inform them about the study, the importance thereof and possible benefits of the study. Participating healthcare workers were then asked to provide written and signed consent to participate in the study (Appendix 3). Signed written consent forms were obtained from all participants who indicated their voluntary participation in the study. Participants were informed that they can withdraw at any time from the study, without any repercussions for them. Participants were assured of their anonymity pertaining to the participants' names. No names were used in the research study and the interviews and transcribed data were coded to ensure the anonymity of the participants. Only the researcher and research supervisor had access to these codes for sole purpose of the researcher being able to recheck information that was provided by with the participant.

Codes were used to replace participants' names. The code list was destroyed following completion of the study. All hard data was stored in a locked cabinet in the researcher's office and electronic data was password protected with only the researcher and research supervisor having access to the password. Scrambling of electronic data was done to remove any reference to specific individuals' data and all data will be destroyed five years after completion of study. In this way confidentiality was ensured. No reference to specific participant's and involved institutions were made in any publications of these results.

3.9 Summary

The research design and setting, including which health services and health settings were included in the study, were highlighted. The recruitment of the study population, the included population, sampling method and size were clearly defined. The instrumentation including a semi-structured interview guide, data collection procedure and data capturing and analysis process including trustworthiness was outlined and explained in depth. Lastly ethical considerations for this study was presented. The following chapter will outline and describe the results of the study.

CHAPTER FOUR

STUDY FINDINGS

4.1 Introduction

This chapter presents the results of the content analysis of the transcribed data. The researcher presents the findings regarding healthcare professionals' perception on the role of the physiotherapist in the Neonatal Intensive Care Unit from both the private and public sectors within the Cape Metropole Region in the Western Cape. Firstly, the demographics of the participants who agreed to take part in the study are described followed by a description of the emerging themes and categories that are substantiated by verbatim quotes.

4.2. Characteristics of the Participants (n = 21)

A total of twenty-one participants were included in the research study. Of the twenty-one participants, more physiotherapists participated ***(n=10, 47.61%)*** in the interviews. Most of the participants were female ***(n=18, 85.71%)***. The median age was **39 years** and ranged between **24 to 62** years of age. Lastly, more participants from the private sector neonatal units ***(n=11, 52.38%)*** took part in the study. Years of experience are categorised under general paediatric experience and NICU specific experience. Of the total twenty-one participants included in the research study, only five health professionals mentioned that they did not work in the NICU specifically ***(n=5, 23.80%).*** Most health professionals have ten or more years of general paediatric experience in the public or private sector ***(n=12, 57.14%).*** Lastly, there is an equal amount of health professionals that either have between one to five years or between ten or more years NICU specific experience in the public or private sector ***(n=12, 57.14%)***. Table 4.1 depicts the participants' traits.

Table 4.1: Characteristics of the Participants

CHARACTERISTICS	DOCTOR (n = 5)	NURSE (n = 6)	PHYSIOTHERAPIST (n = 10)	TOTAL	PERCENTAGE
GENDER (n, %)					
Male	2	0	1	3	14.3%
Female	3	6	9	18	85.7%
AGE (mean years +/- SD)					
	49.5 +/- 10.8	**42.8 +/-10.4**	**35.3 +/-10**		
HEALTH SECTOR (n, %)					
Private	3	2	5	10	**47.6%**
Public	2	4	5	11	**52.4%**
YEARS OF GENERAL PAEDIATRIC EXPERIENCE (n, %)					
1-5 years	1	-	3	4	**19.04%**
5-10 years	1	-	4	5	**23.80%**
10 or more years	3	6	3	12	**57.14%**
YEARS OF NICU EXPERIENCE (n, %)					
No experience	-	2	3	5	**23.80%**
1-5 years	-	1	5	6	**28.57%**
5-10 years	2	-	2	4	**19.04%**
10 or more years	3	3	-	6	**28.57%**

4.3 Themes Regarding the Perception of the Doctors, Nurses and Physiotherapists on the Role of the Physiotherapist in the NICU

Five major themes emerged from the data analysed (Figure 4.1). These themes and the categories within these themes included: i) the role of the physiotherapists in the management of the neonatal ICU patient (perceived role of the physiotherapist in patient management, assessment and treatment, discharge planning and follow-up and education and promotion of the profession), ii) practice patterns and services (availability of services and referral system), iii) teamwork (integrative role within the multidisciplinary team), iv) training and qualifications (training, skills development and qualifications, evidence-based practice), v) awareness of neonatal intensive care physiotherapy (awareness of the role they play in the NICU, exposure to neonatal intensive care physiotherapy and the perceived need for physiotherapy in the NICU). These themes and their included categories are discussed and followed by verbatim quotes from the doctors, nurses and physiotherapists.

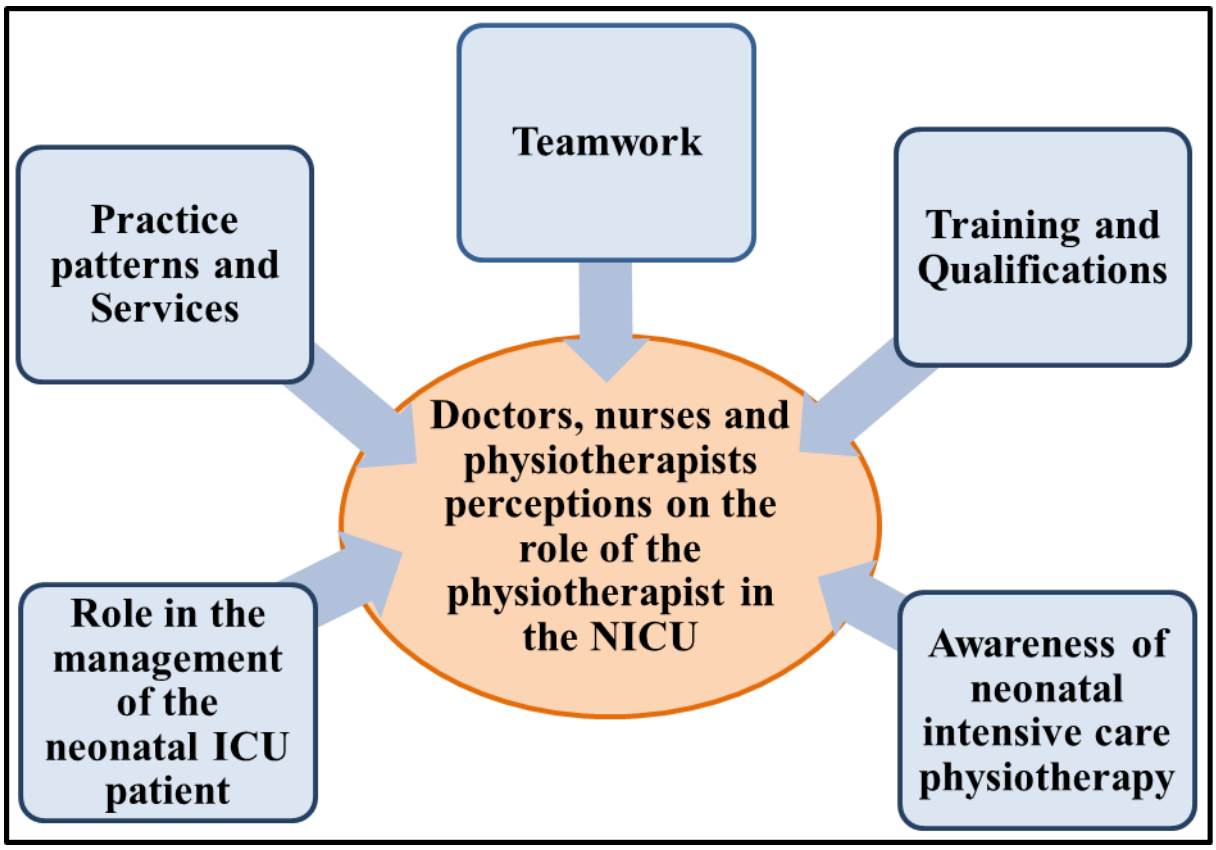

Figure 4.1 The five emerging themes

4.3.1 The Role of the Physiotherapists in the Management of the Neonatal ICU Patient

a) Perceived Role of the Physiotherapist in Patient Management

The doctors perceived the role of the physiotherapists in the NICU to mostly manage neonates with neurological conditions. The doctors said:

> *D2: "The current stuff now is mainly about neurodevelopmental care, so that is where I see the primary role is. Our primary need is going to be NDT [Neurodevelopmental Therapy] as the baby grows."*

> *D3: "Majority of the input from the physio's have been with the HIE [Hypoxic Ischemic Encephalopathy] type babies who have required some sort of input and they are needing help, once they start showing signs of increased tone."*

D4: "In terms of other aspects of physical therapy, there is a place for physio[therapy] in babies with a either a global or localised neurological injury, to prevent and treat fixed deformities and to rehabilitate in terms of local injury like Erb's Palsy."

On the other hand, the nurses and physiotherapists referred to the physiotherapists' role in the NICU to include the management of neonates with respiratory conditions as well as neurological conditions. They said:

N1: "I am sure they would benefit from a physiotherapist also with positioning and very basic nesting situations at that moment. I am sure with exercises and positioning things could be prevented from what we actually see full blown in the clinic."

N2: "I feel in terms of patient care it (physiotherapy) would be helpful towards the professional nurses especially for babies that have special needs perhaps those that were born with birth asphyxia and their outcome is going to be poor."

N3: "When they are intubated and need to get secretions out [of the lungs]."

N4: "[Also], for relief of nasal congestion, like suctioning the nostrils."

P1: "I think it's around positioning for me, and positioning depends on what the baby is there for. It might be around preventing deformities or improving chest function."

P2: "To clear the patient's chest and if they have a neurodevelopmental delay, [to] assist in improving that."

P4: "From those post-surgery, there I could see they [are] definitely needed because they are post-surgery. They have a wound and they can't do their cardio-respiratory on their own and the nurses need assistance with suctioning."

P5: "Your priority would be your chest patients, to maintain that they have good airways and if there is any developmental delay [address that]."

P7: "I could even pick up that her milestones were a bit delayed because she had been in hospital for a long period. For that first year of life it would be beneficial for her to actually do types of play therapy besides just the chest physio."

P9: Early detection of developmental issues will be for the benefit of the patient. Treatment of possible chest infections, even preventing infections is important by keeping the airway clear. Patients are often immobile for long periods and on machines. Bone density is affected, and this may lead to many complications later in life."

In summary, while all three healthcare professionals perceive the role of the NICU physiotherapist to manage NICU patients with neurological conditions, only nurses and physiotherapists refer to the role of the NICU physiotherapist to manage NICU patients with respiratory conditions.

b) Assessment and Treatment

The doctors specifically referred to physiotherapy assessment and treatment techniques used to assist with neurological conditions. They perceived that the physiotherapists treatment of the neonate to include positioning, massage, exercises and stretches and referred to early treatment being more beneficial to outcome. The doctors appreciated the value of these treatments in neonates in decreasing tone, assisting with mobility and neurodevelopmental improvements. The doctors said:

D1: "I think the sooner you start with massage and just mobilising them, the better it is."

D2: "The primary role I see is education of staff about positioning and a bit of massage mainly."

D3: "Once they show signs of increased tone [to] assist with mobility and exercises and stretches."

Physiotherapists described multiple therapy techniques that could be used in the NICU in patient management. Treatment techniques included facilitation of development, neurodevelopmental facilitation, chest physiotherapy, education, positioning and stretching, baby massage and passive movements. Physiotherapists say:

P1: "It's around facilitation of development and developmental positions. For me, it's about positioning to get the best function."

P3: "What I have been using in NICU , is basically what I have learnt in the NDT training and the baby therapy [courses].Mostly positioning , a lot of deep touch and sensory stuff to make sure that you are not over stimulating the baby."

*P5**:** "I think for us [it] would be the chest, vibes and shaking but like I said gently on the surface. Everything is individualised to each neonate, not every child is the same, so you can't have a general persistent treatment intervention."*

Therefore, it can be said that physiotherapists are aware of the possible treatment techniques that could be used for patients in the NICU.

Physiotherapists also discussed the treatment techniques they use in the care of the neonate but described these techniques in more detail and more broadly than the doctors did. The techniques described are not only limited to neurological conditions. The physiotherapists described techniques such as chest physiotherapy including suctioning and manual techniques,

positioning, mobility, strengthening and passive movements. The physiotherapists also described their role in the NICU as providing early intervention for neonates with neurodevelopmental delay and providing education and a support system for parents. The physiotherapists said:

> *P4: "Educating the parents on the stimulation of the child."*
>
> *P5: "When it is difficult to clear secretions and you have to do manual techniques like your vibes."*
>
> *P8: "Things like positioning and maybe helping with cluster care. Specific to the infant finding out [if] they might need a splint, or if you are seeing neurodevelopmental signs [they]might need a regular program of stretches and stimulation to help maximise development."*
>
> *P10: "The role is basically to clear secretions via suctioning. In terms of the parents it's about education, educating them on the condition and positioning. I have done passive movements on club foot [as well]."*

While physiotherapists perceived that their role in the NICU to include early intervention and assistance with neurodevelopmental delay, they also perceived that physiotherapy intervention in the NICU should be 'appropriate' and 'when needed'. Physiotherapists say:

> *P1: "So, I think it's positioning [it] depends on the baby and what the baby is there for."*
>
> *P5: "It depends on the age and how old that baby is really to decide where your role is appropriate. Definitely your priority is really chest at that time."*

P8 "So, I definitely think our role is a team player and I think early intervention, we all know makes a significant difference. So, it's not only providing that early intervention to maximise children's potential but also supporting the parents from an early age on how to manage and care for infants."

Therefore, physiotherapists perceive their role to be broad; encompassing various treatment techniques and education and training of parents and other staff. Whereas, doctors perceive the primary role of the physiotherapist in the NICU to be limited to physiotherapy interventions to address neurological conditions of neonates.

Lastly, the nurses perceived the physiotherapist's role in the assessment and treatment of the neonate to also aid in specialised care whose parents cannot be there in critical times as well as assisting with chest physiotherapy. They say:

N 2: "*Often the moms are not available, or they are young or at school and due to staff, the patient won't get the adequate care it needs. So, if we have physio's on board it would be helpful for the nurses as well as alleviate the patient load. The patient will also be able to get more specialised care and you [will then] know that the patient is moving forward and not stagnating."*

N2: "If we had the help of the physio's just doing chest physio, getting the secretions out."

N3: "I think it would be nice for the mother and baby as you said for positioning and help the mommy with the breast feeding. It [also] would be nice if they follow up the kid, because the baby was premature, he still needs to develop all that milestones -yes, it is very important."

N4: "Well chest first of all that is the main role for physio [and] also for relief of nasal congestion, like suctioning the nostrils that would be"

Therefore, nurses also perceive the physiotherapist's role to be broad, including respiratory and neurological care as well as specialised care of critical neonates

c) Discharge Planning and Follow-up

The doctors and nurses' perceptions regarding the role of physiotherapy in discharge planning in the NICU varied. Some doctors perceived that the physiotherapists in the NICU have no role to play in discharge planning whereas others perceived that physiotherapists can be involved in discharge planning if needed or appropriate. Doctors who stated that they perceived no role in discharge planning substantiated that they felt this way as they believed that not all babies required continuous treatment whilst in the NICU. Other doctors stated that there is a follow-up protocol of neonates to the outpatient clinic whereby the physiotherapist will be notified if there are any problems with the neonate that requires further management. The doctors said:

D 1: "They don't need to get continuous treatment all the time."

D2: "Up in the nursery it's all the doctors that do that and there is a protocol for follow up."

D4: "If there is a need for physio[therapy] [then]they are consulted regarding discharge planning."

DT5: "Role in discharge planning: none."

Only one doctor mentioned that mothers require home advice for their child once discharged.

D1: "*They don't need to get continuous treatment all the time. Sometimes the mom just needs some guidelines, things [that] she can do at home to strengthen the baby's muscles."*

Therefore, doctors have varying perceptions of the role of the physiotherapist in discharge planning in the NICU with a few doctors considering a role for a physiotherapist in home education and training of the parents of these neonates.

Most nurses however mentioned that there should be a role implemented for physiotherapy in discharge planning and explained the importance of such a service. Nurses say:

N3: "I think it would be nice for the mother and baby as you said for positioning and help the mommy with the breast feeding. It [also] would be nice if they follow up the kid, because the baby was premature, he still needs to develop all that milestones -yes, it is very important."

N4: "I feel they do have a say in it, because they were treating the patient. Even though the doctor would listen to that chest, he will always ask the physio's opinion."

N5: "I think there should be a role, especially when it comes to the development of the baby's lungs. [Also] especially for [those] that have been in the NICU for a long time."

Therefore, nursing staff perceive a potential role for physiotherapists in discharge planning of patients in the NICU.

Lastly, almost all the physiotherapists said that they are not involved in discharge planning in the NICU. They stated that discharge is based on the doctors' discretion and does not include the physiotherapist. Physiotherapists say:

P1: "My main [role] was to see the child and to teach the staff how they could manage the child. I obviously wasn't part of the discharge at all."

P2: "At the moment, obviously the doctor is the one who calls the shots and who discharges even, though we think the patient should stay."

P7: "Previously, I don't think there was any involvement with the physio[therapist] with regards to discharge planning and with the handover, it was strictly from the doctors point and with the nurse's perspective and they handed over to the parents."

While these physiotherapists perceived having no current role in discharge planning within the NICU, a few of the physiotherapists stated that physiotherapists have a potential role to play in discharge planning in the NICU. However, they added that discharge decisions should be made as a team. The physiotherapists who perceived having a role in discharge planning also identified the role they could play in discharge planning and the possible benefits thereof. Physiotherapists' explained that the benefits of their integration in the team and role in discharge planning is that their involvement will allow for discussion around and referral for follow-up visits, to educate nurses and parents regarding certain developmental milestones for the neonate and for neurodevelopmental delay. This would be addressed by immediate care and input from the physiotherapist. The physiotherapists said:

P3: "I think it would be great if we could really be involved in the discharge and just make sure that we don't lose the patient, that the mommy is aware that you have to come for regular follow-ups , so I think that is where our main role is."

P4: "So, there are roles for physio[therapy], but it is not that prevalent at [public sector hospitals], and it won't be respiratory wise base, it would be more mobility wise and NDT based."

P7: "I think it will be beneficial for the physio[therapist] to be actively involved and part of the whole discharge planning. If the baby was there for a prolonged period, there might be developmental delay and I think it would be beneficial to advise the parents of things they can do at home-educate them."

In summary, while the doctors' perceptions vary with some saying physiotherapists have no role and others saying they do have a role in discharge planning, the physiotherapists also have different perceptions of their role in discharge planning like the doctors, but highlighted the potential of being involved in discharge planning and identified the benefits thereof, by supporting and motivating their role in discharge planning in the NICU.

d) Education and Promotion of Profession.

Most of the physiotherapists and a few nurses say that the role of the physiotherapists is education of and providing a support system for parents, education and training of staff as well as promotion of the physiotherapy profession within the NICU. They say:

P1: "It would be more around training of staff and training of the team, around positioning and what physio[therapists] can offer and then intervention as needed."

P3: "It's not so much a hands-on approach, it's just an advisory approach."

P5: "It's a lot of things, training and us having the understanding of why we are treating."

P7: "It's about breaking that barrier and educating people and making them understand and them seeing the improvements."

N2: "We often have physio's that teach us how to do exercises with these babies."

N5: "Not a hands-on role but more education."

It can therefore be said that physiotherapists and nurses identify the role physiotherapists have in the education and promotion of the profession.

4.3.2 Practice Patterns and Services

a) Availability of Services

Doctors, nurses and physiotherapists mostly state that there is no full-time physiotherapist working in the NICU or a limited service is being provided to the patients:

D1: "*Now and again if we have problem baby upstairs, we would ask her if she has time to come and see the baby, but it depends on the hours that she is allowed to work. A lot of times she doesn't have enough time to come and see the babies."*

D3: "*They are usually here once or twice a week depending on their own availability."*

N1: "Here, I have never known [of] a permanent physiotherapist until very recently. They only get called up to the unit if one of the consultant's wishes for a baby to be seen. So unfortunately, no regular service."

P1: "So the only service that there is , is that if there is a particularly difficult case or a baby that they want help with, then they will ask at the high risk clinic if we will try and find some time to go up there and give some input to the nurses."

P8: "Ten percent of my time is allocated to the NICU and I am here for one morning in the week."

Therefore, it is evident that physiotherapy is a limited service when provided to patients within the public and private sector hospitals.

Doctors don't agree that physiotherapists should be working with neonates as they are too "fragile", but they do agree that there is a role for physiotherapists when the child becomes older. Doctors say:

> *D2:* "*I think the whole thrust of neonatal care is hands off because the kids are fragile and handling them causes a problem especially in the little ones."*

> *D2: "The physio only comes in later, when they are a little bit older."*

Therefore, doctors disagree that physiotherapy services should be part of the NICU.

Nurses however state that physiotherapy is more prevalent in the paediatric wards rather than the NICU. Nurses say:

> *N2: "Referral was more common in the PICU more than in the NICU setting."*

> *N2: "I think it was used more in paediatrics in the private sector."*

Therefore, nurses consider the role of the physiotherapist to be more common in the paediatric wards rather than the NICU setting. Reasons given by nurses and physiotherapists for the lack of availability of physiotherapy services within the NICU were funding and staffing constraints. Physiotherapists mentioned that physiotherapy in the NICU, was a specialist trade and best suited for senior therapists. Physiotherapists also mention that that there is overlapping of skills between nurses and physiotherapists:

> *N1:* "*[The reason] for no regular service [would be] financial, they cut posts and [a] physiotherapist would be quite low down on the perceived importance of paying role."*

> *N2: "Private: the paediatricians would get in their private physio[therapists] at the cost of the parent, it's a different economic sector that you are looking at."*

P4: "There isn't a system in place for physio[therapy] in the NICU, purely because that service was scaled down. There was in the past, [but] because we needed more senior physio[therapists]for it and you needed to be specialised [it was scaled down]."

P5: "There was [a] time where it was so difficult to treat those patients because they were unstable, or the nursing staff were already treating them. They were more, not effective but knew exactly what the child needed at that time. For us, we couldn't be there at every beck and call [due to] staff constraints."

In summary there are numerous factors that may influence the availability of physiotherapy services within the NICU. These factors include funding available to implement the service, availability of skilled therapists to work in this highly specialised area and lastly whether health professionals feel that physiotherapy is suitable for neonates.

b) Referral System

Doctors, nurses and physiotherapists mostly state that there is no formal referral system in place to physiotherapy in the NICU. Referral is referred to as an informal process with no guidelines or frameworks that have been implemented for physiotherapy treatment in the NICU. Doctors would contact the physiotherapist directly and discuss the case with the therapist. Referral is based on the doctor's discretion, and neurological conditions were usually referred. They say:

D2: "Doctors directly refer and its usually neuro stuff."

D3: "Well, it is more from a verbal communication point. There is no sort of written system or booking system, it's just a matter of contact[ing] them on the given day that they are here, presenting the patient and asking if they can assist. Then they will make a plan to come and see the baby."

D4: "No system in place, because the use of physio[therapy]is minimal. They do not routinely visit the unit to look for referrals. If physio[therapy]is needed, one is telephonically contacted."

N1: "Consultants would phone and [ask the physiotherapist] when [they] have time [would they] come and see [the] baby."

N2: "Paediatricians will phone the high-risk clinic and they will ask one of the physio[therapists]if they have time to come and review a baby."

N3: "No guidelines with regards to referring a neonate to the physio in the NICU."

P1: "[Referral is] based on the doctor's discretion. If they were having difficulty with the child, then they would come ask for help."

P8: "Since we have only been here for six months, those haven't been put in place."

P10: "No guidelines or framework that I know of."

Therefore, it is evident that there is no formal referral system in place for a neonate to be referred to physiotherapy in NICU. Referral to physiotherapy is based solely on the doctor's discretion.

Lastly, only a few physiotherapists mentioned guidelines that were present for referral of a neonate to physiotherapy in the NICU. Abroad, guidelines were set in place for physiotherapy treatment in the NICU:

P5: "Doctors abroad always have guidelines, policies in the National Health System."

P7 "I think the settings and framework specifically there was, that most of the patients and babies that I saw were oxygen dependent. I think those that were born with a

saturation [that] was low and they were dependent on oxygen, they were referred for chest physio."

Therefore, it is evident that not many hospitals have guidelines in place for physiotherapy in the NICU.

4.3.3 Teamwork

a) Integrative Role within the Multidisciplinary Team

Most doctors, nurses and physiotherapists said that physiotherapists do not form part of the multidisciplinary team in the NICU or said that the physiotherapists role in the team is very limited. They stated that their role and integration in the team was minimal as the physiotherapists were always not actively involved in the care of the patients in the NICU and did not attend daily ward rounds. Doctors referred to physiotherapists being more actively involved in the team in the outpatient setting such as the clinic. The doctors, nurses and physiotherapists elaborated on the role of the physiotherapists in the NICU multidisciplinary team by saying:

N1: "Not at the moment. We were saying, it would be wonderful if a physiotherapist [could] be on the ward round."

D2: "They are not integrated into the team in the nursery yet on a regular basis, but here in the clinic always."

N3: "No integration of the physiotherapist in the NICU."

D3: "Not really part of the multidisciplinary team. I stand to be corrected, but for the most part, the physio[therapists] are not really employed to be functioning in the NICU

setting. They are more on the outpatient setting and available should we need them, but they are not necessarily integrated into the team."

D4: "The use of physio[therapy] is limited, they do not form part of the MDT routinely."

P4: "There isn't one at the moment, so honestly speaking there isn't a physio[therapist], so they have no role in the MDT."

P5: "Here definitely its multi you can say interdisciplinary team. It's an interdisciplinary approach to all patients in neonatal, it might not involve physio but definitely all the other disciplines."

While all three healthcare professionals, including the physiotherapist, perceived there to be minimal to no role of the physiotherapists in the NICU multidisciplinary team and said that physiotherapists do not routinely form part of the multidisciplinary team in the NICU. There were other perceptions regarding the integration of the physiotherapists in the NICU multidisciplinary team especially with regards to the public sector NICUs.

The nurses stated that a "teamwork approach" is present in the NICU in the public sector hospitals

N4: "It was one team; it was good teamwork because [the] nurses were informed of what was happening with physio[therapy][treatment] with the patient. The physio[therapist] would also teach us how to [perform certain treatments], in case it was really necessary to apply, and she wasn't around."

N6: *"From the government point, because of the multidisciplinary team, there was always open communication [if a] child needs rehab[ilitation][or to be] seen as outpatients."*

Therefore, there is a perceived sense by nurses that physiotherapists in public sector are part of the multidisciplinary team.

The physiotherapists stated that individual relationships with certain healthcare professions in the NICU are formed rather than a "team approach" being used. They said:

P2: "In our practice there is not a lot of liaison between the different professions."

P4: "So there isn't one at the moment -honestly speaking there isn't a physio, so they have no role in the MDT."

P9: "Often in hospital set ups, the MDT works as individual disciplines. Communication does not happen as often as it should. This is a big gap in the system as an MDT, you should be working as a team."

In summary, nurses believe that physiotherapists form part of the multidisciplinary team in the NICU in the public sector whilst physiotherapists say that individual relationships are formed rather than the team approach being implemented. There is no clear understanding of what the role of or integration of the physiotherapist in the multidisciplinary team is.

4.3.4 Training and Qualifications

a) Training, Skills Development and Qualifications

Questions relating to training and qualifications were not posed to the doctors and nurses and only physiotherapists provided answers to this theme.

Some physiotherapists working in the NICU stated that undergraduate training in this area of physiotherapy is minimal and say that that postgraduate qualifications are not needed to work in this area. Some said that the only qualification they have is their undergraduate degree. Physiotherapists say:

> *P9: "Minimal or no training was given before working in the NICU. Any qualified physiotherapist could work with these babies. I had no previous training before working there."*

> *P10: "Only BSc, no post-grad courses that I went on."*

Many physiotherapists stated that physiotherapists working in the NICU need to be aware of the baby's vital signs and developmental milestones. They perceived the latter as important knowledge to possess if a physiotherapist were to treat the neonate**.** They said:

> *P4: "We knew working there that they did need to know specific baby milestones and certain primitive things, but mainly in NICU is your vitals."*

> *P7: "Also [to] be aware of the vital signs and just be careful when you are treating to monitor and observe the vital signs."*

A few physiotherapists mentioned they have qualified in Neurodevelopmental therapy course and completed the baby therapy courses which have assisted them when working in the NICU:

> *P3: "NDT and baby therapy course completed."*

> *P8: "Formal education: I did the Bobath early intervention course."*

Therefore, most physiotherapists working in the NICU stressed that they do not have additional postgraduate qualifications besides their undergraduate physiotherapy degree. Working in the

NICU is a specialised environment and most physiotherapists do acknowledge that certain skills and knowledge is required before working in a NICU. However, the physiotherapists mainly report having undergraduate qualifications and training with minimal postgraduate training and continuous professional development and education.

Lastly, some physiotherapists mention physiotherapists might possess a set of skills that no other health professionals have, making them an asset in this critical area. They say:

P2: "I think we should, because at the moment I know it is the nurse's job to suction the babies. I think with them practicing yes, they could have the skills, but they might not have the sense of knowledge as a physio[therapist], in terms of the anatomy and treatment techniques."

P5: "Yes, I do, the reason being we might have skills that other people don't have, that we [can] teach."

Therefore, it can be said that physiotherapists regard themselves to have skills unlike any other health professionals which further establishes the need for them in the NICU.

b) Evidence-Based Practice

Some physiotherapists stated that their treatment is based on experience and from observing what other physiotherapists are doing rather than basing their treatments on evidence. Physiotherapists stated that they are uncertain about whether evidence-based practice is being implemented in the NICU setting by physiotherapists working there. They say:

> *P1: "I think it's more based on experience from my high-risk clinic work and obviously working elsewhere."*

P2: "I am just going on what I have been shown from the other physio[therapists] in the practice, they have been doing it for years, so they know what they are doing."

P4: "There is definitely data out there. I think it [is] because I don't work with it, so I don't look out for it. I don't read up on it, so I don't really know, or can say for sure on that one."

P5: "Look I can't tell you any one out the top of my head, but I know there is research available. It [is] just that we don't always go up and check on it."

P9: "I don't think they always use evidence-based treatment in ICU, or rather when I worked there. I am also not aware of any protocols or guidelines."

Therefore, most physiotherapists say that their treatments are based more on experience rather than evidence available in literature on the physiotherapeutic management of the neonatal patient.

4.3.5 Awareness of Neonatal Intensive Care Physiotherapy

a) Awareness of the Role Physiotherapists Play in the NICU

The lack of awareness of the role of the physiotherapist in the ICU is evident in general and can be linked to the varying perceptions highlighted in the latter themes. Many of the doctors, nurses and physiotherapists stated that they were uncertain of the role of the physiotherapist in NICU. The lack of awareness was perceived to be attributed to the limited availability of physiotherapy services and therefore limit the perceived need for physiotherapy services in the NICU.

Interestingly, one nurse reported that she did not know that physiotherapists could work in the NICU. Another nurse also mentioned that physiotherapy is a once-off consultation and the transfer of information between the physiotherapist and nursing staff:

> *N1: "It was usually only a once-off visit for babies [and] the transfer of information from physio[therapist]to nurse."*

> *N3: "First time that someone is saying that physio[therapy]can be used in the NICU*."

Therefore, nurses are not aware that physiotherapy can be used for patients in the NICU and they perceive the role to be the transfer of information between therapist and nursing staff rather than "hands on treatment".

The doctors, but more so the nurses, remarked that the limited availability of physiotherapy services within the NICU is due to a lack of awareness and knowledge regarding the role of the physiotherapist in patient management in the NICU. Physiotherapists also said that they were unaware what their role was. They said:

> *D3: "We don't necessarily have a full understanding of what services can be offered from the physiotherapy point of view in the NICU setting. We're so used to operating without it, that we not necessarily aware of what benefits it may bring."*

> *N3: "So, I think yes, not really sure where the physio[therapist] will be needed, not educated enough about their role."*

> *N4: "What I have observed there was no indication for physiotherapy in the NICU in the ten years that I had been working there."*

*N6**:** "I think that my knowledge is also very limited on what [service physiotherapists can provide] apart from massages. You become a bit ignorant if you don't know [or are] exposed to these things."*

P4: "It's hard to say, because I have very little experience and the experience I do have is from those post-surgery."

P6: "I am also not sure what other conditions I can be treating."

Physiotherapists perceived that the nurses and doctors need to be educated about the role the physiotherapist in the NICU. They also believe that physiotherapists need to better explain their role in the NICU to other health professionals:

N3: "Not educated enough about their role"

N5: "Come and teach, because they don't have time to teach because there are lots of people who don't understand."

*P7: "I definitely feel that there is a role. I think then if there [are] hospitals that obviously don't refer, or doctors that don't refer I think it's good maybe to approach them and explain to them the benefits**.** There is a role, it is about breaking the barrier and educating people and making them understand and obviously them seeing the improvements and so forth."*

Lastly physiotherapists believe that if we withdraw from certain areas in medicine and critical care, it ultimately causes us to lose our scope of practice in that area. They say:

P5: "I also think the fact that we completely pull away from an area means at the end of the day, people realize "oh you are not needed there", physio[therapists] get to lose their complete scope throughout."

b) Exposure to Neonatal Intensive Care Physiotherapy and the Perceived Need for Physiotherapy in the NICU

Most doctors describe the physiotherapist's role in patient care in the NICU as very limited and mention that there is not a need for them in this setting. Doctors say:

> *D1: "I don't think that there is a huge need for a physio in the nursery."*
>
> *D2: "I don't think [that] there is a huge need for a physio[therapist] in the nursery and we don't use physio[therapy] for chest at all.*
>
> *D3: "Babies, they [are] still as far as neurodevelopmental concern, are still very young [and] issues really only arise as they get older. It might not necessarily be for the ICU setting but rather for the follow up setting more than the acute."*

Therefore, doctors do not believe that there is a need for physiotherapy services within the NICU.

Nurses and physiotherapists contrary to doctor's state that there is a role for physiotherapists in the NICU. Some nurses also describe the potential role the physiotherapist could fulfil in this area. Physiotherapy roles as described by nurses would be chest physiotherapy and assisting with neurodevelopmental delay. Nurses say:

> *N1: "Whereas now a days the role is huge, the role that they could play, so yes there is definitely a role to play."*
>
> *N2: "I definitely think there would be a role, if we had help of the physio[therapist] for chest physio[therapy] and [to] help them reach their milestones. Also, I think with the physio[therapist] on board you will have an overall holistic approach to the care of the babies/children within your institution. They might pick up something you [are not*

aware] of and this will aid the progress of the child getting better and moving on which is important."

N4: "I think there is a need for physio[therapy] in the NICU. It also then entirely depends on what the doctor, neonatologist wants. They might feel that the baby is too vulnerable and especially when it comes to percussions, but there are different ways of percussing a patient as well. I don't know of [physiotherapists] in our hospital since I have been working there. Physio was never actually recommended for the babies."

Whereas physiotherapists role in patient management in the NICU is described in a much broader sense by physiotherapists. Roles as described by physiotherapists were involvement in post-surgery cases to improve cardio-respiratory function, chest physiotherapy involving suctioning, education and training of staff and involvement in developmental delay. Physiotherapists say:

P1: "I think that there is a very important role, but it would be more around training of staff and training of the team, around positioning and what physio[therapists] can offer and then intervention as needed."

P4: "From those post -surgery, there I could see they [are] definitely needed because they are post-surgery. They have a wound and they can't do their cardio-respiratory on their own and the nurses need assistance with suctioning."

P6: "So, I think there is a role, but it comes with training of [physiotherapists]."

P7: "I definitely feel that there is a role."

P9: "There is definitely a role for the physiotherapists in the NICU. Early detection of developmental issues will be for the benefit of the patient. Treatment of possible chest

infections, even preventing infections is important by keeping the airway clear. Patients are often immobile for long periods and on machines. Bone density is affected, and this may lead to many complications later in life."

Therefore, nurses and physiotherapists believe that there is a role for the physiotherapist in the NICU. Role described by physiotherapists are much broader compared to nurses who describe primarily the physiotherapist role to be chest physiotherapy and assisting with neurodevelopmental delay. Whilst doctors believe that physiotherapy in the NICU is not appropriate.

4.4 Summary

In summary, this chapter described the findings of the study. The characteristics of the participants were described and the perceived role of the physiotherapist in the NICU was described under five themes that emerged from the data namely the role in the management of the Neonatal ICU patient, practice patterns and services, teamwork, training and qualifications and awareness of Neonatal Intensive Care Physiotherapy. These findings will be critically analysed and discussed in an integrated discussion referring to findings from other research studies and include a discussion on the implication of the findings of this study for NICU Physiotherapy in South Africa.

CHAPTER 5

OVERVIEW AND DISCUSSION

5.1 Introduction

In this chapter, the researcher integrates the findings with other related evidence on the topic. The aim of the study and its objectives are discussed in terms of the resultant findings. Furthermore, an analysis of the implications of the findings on the physiotherapists' role in the NICU is highlighted. Additionally, the study limitations, strengths and recommendations for future study and improvements in the area of NICU Physiotherapy is explored. The perceptions of healthcare professionals about the role of the physiotherapist in the ICU are examined according to the emerging themes and their categories in an integrated way together with evidence supporting or negating findings.

5.2 Discussion of the Findings

The study achieved its aim to explore and describe the perceptions of healthcare professionals (doctors, nurses and physiotherapists) of the role of the physiotherapists in the NICU. The participants who participated varied in age across the three professions and physiotherapists working in the NICU were the youngest amongst the assessed professionals. There were more female participants compared to male participants. Most healthcare professionals were working in the public sector and were not exclusively working in the NICUs but were also responsible for the care of patients in the paediatric wards and outpatient clinics. Experience was varied between all three groups of health professionals. The majority of doctors and nurses had ten or more years of experience in the paediatric wards and NICU wards. Most physiotherapists had five to ten years of experience in the paediatric wards, whilst five out of the ten physiotherapy participants stated that they have no experience or exposure to the NICU setting.

The perception of the healthcare professionals was related to how they perceived the role of the physiotherapists various aspects of in the management of NICU patients: assessment and treatment, discharge planning and follow-up as well as education and promotion of the profession in the NICU. Their perceptions included the following aspects: perceptions of the physiotherapists' services and practice patterns (including availability of services and referral practices), their integration in the NICU multidisciplinary team, the physiotherapist's training, and qualifications and their role in evidence-based practice in the NICU. Furthermore, the healthcare professionals' perceptions included their perceived awareness of the role of the physiotherapist in NICU and their perceived awareness based on exposure to the profession within the NICU team. These themes and their related categories are discussed critically in line with the current scope of practice of the NICU physiotherapists and the available evidence on the role and/or perceived role of the NICU physiotherapists globally and in South Africa.

5.2.1 Role in the Management of the Neonatal ICU Patient:

Four main headings where elaborated on in this research study as it pertains to the role of the physiotherapist in management of the NICU patient. All three healthcare professionals (doctors, nurses and physiotherapists) perceived physiotherapy as a beneficial practice in the management of patients with neurological conditions, however only nursing staff and physiotherapists extended management to include respiratory disorders. As previously mentioned, there are many articles which highlight the benefits of chest physiotherapy in the adult ICU setting, but physiotherapy and its benefits for neonates are unclear. Additionally, other articles state that chest physiotherapy has no clear benefits for neonates (Hough et al., 2010). Flenady and Gray (2002) reported that less babies required ventilation post-extubation due to the benefits of chest physiotherapy, however no other benefits were demonstrated. Perceptions held by nurses and physiotherapists pertaining to chest physiotherapy suggest that nurses are unaware of the advances in research in this area of physiotherapy and uncertain as

to whether this technique is of benefit to the neonate. Given that no clear evidence supports respiratory physiotherapy in this setting, and clear benefits in neurological conditions are demonstrated, doctors are more closely aligned with evidence-related practices. The reasons underlying why doctors hold these opinions related to the use of physiotherapy in this setting, may be two-fold: are doctors increasingly exposed to physiotherapists working in neuro-specialised areas of neonatal care or is the physiotherapy profession simply being promoted more intensely in this specialisation? This question cannot be answered without further investigation.

The role of the physiotherapist in discharge planning for neonates is perceived differently by all healthcare professionals. Most nurses report that physiotherapists should be involved in discharge planning as it would improve overall holistic care of the neonate. While physiotherapists concur with the views of nursing staff, currently this role is not being fulfilled as discharge is traditionally based on the doctors discretion. Given the lack of recent literature pertaining to the topic, an older study, conducted by Bergman (1990), was analysed to explore the professional role and autonomy in physiotherapy. As mentioned in the literature review, the majority of physiotherapists felt that their other healthcare colleagues expected them to them to act as independent practitioners, whist some felt that they were expected to commence treatment after referral from or discussion with the physician (Bergman, 1990). Given the 'first-line practitioner' status of the physiotherapist, they are awarded the capability, ability and responsibility to apply professional judgment in-line with their scope of practice, and to professionally act on that judgment (APTA, 2009). Given the assumed perceptions of their colleagues, physiotherapists are essentially limiting their autonomy within the NICU and therefore are not able to fully utilise their scope of practice. The ideal role of the physiotherapist in discharge planning is described in a study by Heck et al., (2014) which states

that physiotherapists fulfil a critical role in the multidisciplinary team by ensuring that appropriate discharge recommendations are made. It has been suggested that when a physiotherapist's discharge recommendations are not taken into consideration, patients are more likely to be re-admitted to acute care within a short period (Heck et al.,2014). In the ideal process described by Heck et al., (2014) all services and equipment that is required would be arranged before discharge, and the patient and family would receive adequate education to feel prepared and confident. When physiotherapists are excluded from the discharge process there is greater potential for patients and their families to forego on the benefits afforded by holistic management.

Physiotherapists perceive their role in patient management to be broad, encompassing various treatment techniques within the NICU. They described techniques such as chest physiotherapy including suctioning and manual techniques, positioning, mobility, strengthening and passive movements. Doctors however consider the role of the physiotherapists to be limited to physiotherapy interventions to address neurological conditions of neonates which is in line with their perception that physiotherapists in the NICU mainly treat and manage neonates within this speciality. The latter may suggest the following: either doctors are unaware of other treatment techniques that physiotherapists may provide to the neonate in the NICU or they are alignment with current evidence pertaining to the role of the physiotherapist in the NICU. It is important for physiotherapists to both access and understand the evidence related to physiotherapy for neonates, in order to better provide a more evidence-based treatment. An article written by Abichandani and Radia (2015) which investigated the awareness of various aspects of physiotherapy among medical residents, found that the onus lies on the physiotherapist to educate medical residents about the various fields of physiotherapy and the various treatment modalities they utilise. As with physiotherapists, nurses also deem the role

of the physiotherapist in patient mangement to be broad and to aid in specialised care of the neonate. Given their close partnership in various healthcare situations, nurses are likely to be in a better position to comment on the various treatment modalities used by physiotherapists as opposed to doctors.

Only physiotherapists and a select number of nurses report that the physiotherapists' role in the NICU encompasses education and promotion of the profession. Doctors did not recognise this role. Patient education is defined as "a strategic learning experience combing methods such as teaching, counselling and behaviour modification techniques to influence patients' knowledge and health behaviour (Forbes, Mandrusiak, Russel, & Smith, 2018). Education assists health professionals in communicating vital information to enhance patient self-efficacy and self-management skills (Forbes et al., 2018). It is accepted as an essential component of effective patient care and an integral part of practice (Forbes et al., 2018). There is evidence to suggest that education yields positive results in decreasing pain, disability and function (Forbes et al., 2018). Hence, the findings of our study highlight the knowledge gap doctors have regarding the educational role of physiotherapist and the benefits thereof within the NICU setting.

5.2.2. Practice Patterns and Services

The availability of physiotherapy services, referral system and guidelines for physiotherapy management in the NICU were discussed. Physiotherapists described multiple therapy techniques that can be used in the NICU when managing neonates. Treatment techniques included neurodevelopmental facilitation, chest physiotherapy, education, positioning and stretching, baby massage and passive movements. Alaparthi et al., (2013), describe similar treatment techniques used by physiotherapists in the NICU. The study by Alaparthi et al. (2013) was conducted in a developed NICU setting and the participants of their study provided greater

detail regarding neonatal care and treatment compared to the physiotherapists in our setting. The increasing amount of specialist detail offered by participants in the aforementioned study may be due to the fact that those physiotherapists work exclusively in the NICU or have greater experience than the physiotherapist particpants in this study. Furthermore, the scope of physiotherapy practice within neonatal medicine is not as well defined in South Africa when compared to other countries.

All the health professionals assessed in this study acknowledged that the physiotherapy services provided in public and private sector hospitals are limited. Physiotherapists stated that the lack of services provided was secondary to insufficient funding for resources to implement the service and provide skilled and competent physiotherapists to work in this highly specialised area. This may affect the overall quality of care provided to the neonate in these units. While it is common knowledeg that the South African public healthcare sector provides healthcare to the majority of its citizens, it is over burdened with persons old and young requiring curative intervention (Brands South Africa, 2012). It is reported that there are less monetary resources available to spend on specialised services resulting in a lack thereof in certain facilities (Pieper & Hesseling, 2007). This includes specialised services such as neonatal critical care. Physiotherapy in the NICU is also not a well-known practice within South Africa and since this research study's findings demonstrate the lack of awareness of the service referral, these services are limited. Due to training and skills lacking in this area, there are fewer skilled therapists who can possibly promote the profession. There is also a lack of research pertaining to South African NICUs and the role the physiotherapist and physiotherapy management. This area needs to be explored to determine how physiotherapy would be beneficial to neonates.

In terms of referral system in the NICU, doctors, nurses and physiotherapists mostly observed that there is no formal referral system in place to the physiotherapy department. Referral is reliant on the doctors discretion. This, as previously highlighted, suggests that physiotherapists are not exercising their autonomous role within this setting. There is also a lack of research that describes frameworks and guidelines for physiotherapists working or wishing to work in the NICU. However there are multiple frameworks available in the United States and United Kingdom for physiotherapists wishing to work in this specialised area. These guidelines provide information pertaining to roles and responsibilities that physiotherapists need to fullfill within the NICU, indications for referral to the physiotherapist and whether current physiotherapy practices within the NICU adhere to the evidence-based practice. All health professionals in this study stated that there are no formal referral guidelines for physiotherapy referral in the NICU. The lack of referral could suggest that doctors are unaware of the indication for physiotherapy and the need for a framework within the NICU for physiotherapists.

5.2.3 Teamwork

The integrative role of the physiotherapist within the multidisciplinary team was discussed. A number of individuals in each of the three categories of health professionals state that physiotherapists do not form part of the multidisciplinary team. The scarcity of NICU referrals to physiotherapy within the Cape Metropole region results in their exclusion in multidisciplinary team in this setting. “Team care is considered to have numerous advantages over traditional care” (Atwal & Caldwell, 2006, p.360). Advantages include “improved planning, more clinically effective services, a more responsive and patient focused service, the avoidance of duplication of services and more satisfying roles for health-care professionals” (Atwal & Caldwell, 2006, p.360). Nursing staff perceive the role of physiotherapists in the

public sector to be more evident than that in the private sector. They deem physiotherapist to be critical members of the ward rounds in the public sector NICU and subsequently integrate them in the multidisciplinary team. Conversely, doctors are seen as the primary decision-makers pertaining to patient care and negate physiotherapist recommendations even when readily available. Overall, there seems to be little consensus regarding the role and integration of the physiotherapist in the multidisciplinary team.

5.2.4 Training and Qualifications

Training, skills development, qualifications and evidence-based practice were discussed by the healthcare professionals. The majority of physiotherapists working in the NICU reported that they do not have any additional postgraduate qualifications to supplement their undergraduate physiotherapy degree. Many physiotherapists also stated that their treatments are based on experience and from observing other physiotherapists rather than based evidence. This highlights a lack of training at both under- and postgraduate levels as well as a lack of awareness and free access to available evidence. The force of habit to accept with what is known from experience may also act as barriers to change. Furthermore, it can suggest that physiotherapists as per their training and undergraduate programmes are not given enough exposure to evidence-based practice and teachings regarding research specifically critical analysis of evidence-based articles and how to implement them. As previously mentioned by Scurlock-Evans et al., (2014) there are numerous benefits to implementing evidence-based teachings into clinical practice however, practical usage by a range of healthcare professionals has been inconsistent (Scurlock-Evans et al., 2014). Given the high cost of ICU care, “the requirement for all those who work in ICUs, including physiotherapists to provide evidence-based practice is mandatory” (Stiller, 2000, p.1801).

5.2.5 Awareness of Neonatal Intensive Care Physiotherapy

The apparent awareness of the role physiotherapists has in the NICU, exposure to neonatal intensive care physiotherapy and the perceived need for physiotherapists in the NICU, were discussed by the healthcare professionals. There was a lack of awareness of the role of the physiotherapist in the NICU and a minority view that physiotherapists in the NICU are not essential. This may be due to a lack of understanding of the profession's benefits in this area of care, a lack of education and promotion of the profession, and the lack of services and integration in the team.

Majority of the doctors expressed the view that there is no need for physiotherapists in the NICU setting. Nurses and physiotherapists, in contrast, stated that there is a role for physiotherapists and described the potential role they could fulfil in this area, such as assisting with neurodevelopmental care and chest physiotherapy. This raises the question: are doctors views supported by literature or is it driven by lack of exposure to the benefits of physiotherapy in the NICU?

There is a dearth in the literature that explores the awareness of health professionals of physiotherapy management and treatment of neonates in the NICU. An article written by Sharma, Samuel, & Aranha that explored parent and health care perspectives of the role of the physiotherapist in the NICU, reported that in developing countries such as India, the public are not aware of physiotherapy interventions performed in the NICU (Sharma, Samuel, & Aranha, 2018). Another article written by Ebenezer Martin, Goh, Jemeela, Abraham & Jabbar (2019) concluded that there is lack of awareness and knowledge of physiotherapy as a profession amongst medical and health sciences undergraduates. Awareness pertaining to physiotherapy referrals and specialized services provided by the physiotherapists for potential benefits of the patients' needs to be promoted (Acharya, et al., 2012). These latter evidence supports the

findings of this research study and show that there is a general lack of awareness of the roles of physiotherapists in not only the neonatal ICU but in general healthcare and that the awareness of this role needs to be increased.

5.3 Summary

In summary, physiotherapists are perceived to have a role to play in the NICU with regards to treatment of the neonate, discharge planning, follow-up care, education and training of staff and parents of the neonates. However, the aforementioned perceived roles are not clearly defined and vary between healthcare professionals working in the NICU. There is a lack of postgraduate training and education in this specialised setting suggesting a lack of specific competencies and skills. Evidence-based practices are lacking as physiotherapists state that they manage neonates based on their observations of treatments used by their older and more experienced colleagues. There is a lack of awareness of the role of the physiotherapist in the NICU and minimal exposure to the profession by doctors more so than by nurses. While there is a perception that physiotherapists would be beneficial in discharge planning and follow-up and should be part of the multidisciplinary team in the NICU, this perception varies between doctors and nurses and even physiotherapists themselves. The lack of referral guidelines for physiotherapy in the NICU also gives the perception that physiotherapists have a minimal role to play in this specialised area of medicine and critical care. The findings of this study therefore suggest that the profession needs to place greater emphasis on their role in the NICU and provide referral guidelines for their input. It would be beneficial to educate healthcare professionals in the NICU that the role of the physiotherapists extends beyond the management of neurodevelopment complications. Physiotherapists need to promote their profession in the NICU, provide evidence of the benefits of their treatments, improve their competencies and skills in neonatal care and define their role in the NICU adequately.

5.4 Strengths

This research study is novel and one of the first research studies on the perception of healthcare professionals of the role of the physiotherapist in the NICU that has been conducted in both public and private sector NICUs in the Cape Metropole Region of the Western Cape, South Africa. The research design was particularly appropriate to obtain an in-depth understanding of the research question and the number of participants participating allowed for a broad array of views or perceptions. The researcher was able to explore an area of physiotherapy that has not been explored before and has added valuable information to the evidence base including the South African healthcare literature.

5.5 Limitations

Limitations of the research study included the following:

- It was difficult to source the exact number of public and private sector NICUs as this information is not readily available in the literature;
- It was difficult to determine the exact population of doctors, nurses and physiotherapists especially in the private sector due to the shift rotations and working hours of doctors and nurses, thereby complicating the method of determining the population and sourcing the sample;
- While there were a total of 21 participants and interviews, there were fewer doctors and nurses in the sample and this may affect the findings from these groups of healthcare professionals (however, this may be a minor limitation as data saturation from these groups were reached);
- The healthcare professionals who participated did not all work exclusively in the NICU; and

- As only four NICUs (two public and two private) were included, the findings cannot be generalised to NICUs and the physiotherapists working in NICUs in different parts of the province or country in general.
- Lastly more private sector health professionals participated in the research study than public sector and therefore the perceptions might be skewed.

5.6 Recommendations

Based on the findings of this study it is recommended that physiotherapists define their role in the NICU and create awareness by educating healthcare professionals working in the NICU about their role in the management of the neonate and to promote the benefits of their treatments and the profession in the NICU. Physiotherapists should first understand their role within the NICU and how their perceived role aligns with evidence-based recommendations. Physiotherapists should improve the availability of their services in the NICU and develop a referral guideline or framework for improved referral mechanisms. Physiotherapists should increase their visibility in the NICUs and attend ward rounds, involve themselves in the NICU multidisciplinary team and improve communication between themselves and the healthcare professionals in the NICU team. Future research on the perceptions of healthcare professionals of the role of the physiotherapist in the NICU should include more NICUs settings in the country in order to provide a more generalisable set of findings to use for the improvements to be made by the profession in the NICU. Promotion of the profession and increased awareness of the benefits of physiotherapy in the NICU can improve perceptions of the role of the physiotherapists in the NICU and improve referral patterns and management for the neonate and improve quality of care and outcomes in the NICU. Lastly, it may be useful for future researchers to create a database of NICUs in the country and per province and the healthcare professionals working in these units. This database may assist researchers when conducting research in the area to determine the population and sample more accurately. Further research

on this topic should explore perceptions of the role of the physiotherapists in the NICU with regards to documentation, assessment and competencies and skills and reasons for lack of involvement in discharge planning and follow-up and the use of evidence-based practices in the NICU, which could assist physiotherapists wanting to work in the NICU as well as to better inform health professionals and the public of the role of the physiotherapist in the NICU.

CHAPTER SIX

CONCLUSION

In a resource-limited and transforming healthcare setting, like that of South Africa, new or current information regarding what healthcare professionals are doing in both the public and private sector is needed. This information can guide healthcare professionals, managers and funders in how to best utilise resources and which resources need to be advocated for.

The perception of healthcare professionals of the role of physiotherapists in the NICU is an important study that provides insight and understanding to an area minimally explored. Exploring and understanding this role has provided evidence of the perceived role of physiotherapists in neonatal assessment, treatment, management and discharge planning, availability of their services and referral practices, education and training of staff and parents of neonates, promotion of the profession in the team, involvement in the multidisciplinary NICU team and use of evidence-based practices in the NICU.

Physiotherapists can now use this information to better define their role in the NICU and improve the perceptions of healthcare professionals of their role in the ICU. This will in turn improve awareness and knowledge of the NICU healthcare professionals and parents of neonates of their scope of practice in the NICU and the benefits of their treatments. Physiotherapists in this setting are now informed of the need to develop a referral guideline and a framework for clinical competencies within the context of NICUs in the Western Cape and explore whether this is also required for the South African context in general. It is evident that physiotherapists need to promote their profession in this area of specialised care and educate other healthcare professionals of the benefits of their treatment.

The lack of use of evidence in practice must be explored further and physiotherapists need to consider improving their competencies and skills for the appropriate management of neonates in the NICUs. Physiotherapists need to standardise their practices within the NICU in the South African setting. They should motivate for increased resources from the healthcare budget in order to increase human resource to improve the availability of their services in the NICU.

The physiotherapists and other healthcare professionals can use the information gained from this study to improve the profession and the care provided in the NICU and to motivate for more skilled staff and improved competencies in physiotherapy. Other healthcare professionals working in the NICU can use the information to improve their understanding of the role of the physiotherapist in the NICU.

Lastly, it would be beneficial to the profession to use this baseline study in order to do a larger in depth study in the country as a whole in order to understand what is currently happening in the profession in the NICU and for the healthcare funders to support the profession based on their perceived needs to support their role in the NICU.

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APPENDIX ONE

ETHICS LETTER

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

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20 November 2018

Ms J Ponto
Physiotherapy
Faculty of Community and Health Science

Ethics Reference Number: BM17/9/17

Project Title: The role of physiotherapist in the neonatal intensive care unit: Perceptions from neonatal health care professionals.

Approval Period: 09 November 2018 – 09 November 2019

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

BMREC REGISTRATION NUMBER -130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE

APPENDIX TWO

INFORMATION SHEET

Project Title: The role of the Physiotherapist in the Neonatal Intensive Care Unit:

Perceptions from Neonatal Health Care Professionals

What is this study about?

This is a research project being conducted by Jamie Lee Ponto a Physiotherapy Masters student at the University of the Western Cape. We are inviting you to participate in this research project, because you are involved in the management and treatment of neonates in either the paediatric wards or in the neonatal wards in these hospitals in which research is wishing to be conducted in. The purpose of this research project is to explore the perceptions of nurses, medical doctors and physiotherapists of the role the physiotherapist has in the NICU setting.

What will I be asked to do if I agree to participate?

You will be asked to participate in an interview with the researcher. The interview will be approximately 30-45 minutes whereby you will be asked questions regarding your perception of the role of the physiotherapist in the NICU. A date, time and venue will be decided upon by you, that is most suitable and convenient.

Questions that may be asked will be what is your perception of the role of the physiotherapist in the NICU, is there referral to the physiotherapist in the NICU, what multi-disciplinary framework is in place for the referral of neonates to the physiotherapist in the NICU.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. To ensure your anonymity coded identifiable information will not be included on the surveys and

other collected data. A code will be placed on the survey and other collected data; using an identification key, the researcher will be able to link your survey to your identity; and only the researcher will have access to the identification key. To ensure your confidentiality, all hard data will be stored in a locked cabinet in the researcher's office and electronic data will be password protected with only the researcher and research supervisor having access to the password. Scrambling of electronic data will be done to remove any reference to specific individuals' data and all data will be destroyed 5 years after completion of study. If we write a report or article about this research project, your identity will be protected.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the perceptions that medical staff have regarding the role of the physiotherapist in the NICU. We hope that, in the future, other people might benefit from this study through improved understanding of the role of the physiotherapist in the NICU.

Do I have to be in this research, and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify

What if I have questions?

This research is being conducted by ***Jamie Lee Ponto, Department of Physiotherapy*** at the University of the Western Cape. If you have any questions about the research study itself, please contact ***Jamie Lee Ponto*** at***: 0828748902 email: jamielee.ponto@gmail.com***

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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APPENDIX THREE

CONSENT FORM

Title of Research Project: The role of the Physiotherapist in the Neonatal Intensive Care Unit: *Perceptions from Neonatal Health Care Professionals*

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name…….

Participant's signature…….

Date……

APPENDIX FOUR

SEMI-STRUCTURED INTERVIEW GUIDE 1

Doctor's and nurse's perception of the role of the physiotherapist in the Neonatal Intensive Care Unit

Section 1:

Please complete the following:

Age	
Gender	
Medical Profession: Doctor Nurse Physiotherapist	
Qualification/s/Specialization (E.g. BSc, PhD, Neonatology, ICU Nurse etc)	
Years of working experience in public sector: • General experience: • NICU specific experience:	
Years of working experience in private sector: • General experience: • NICU specific experience:	

Section 2:

2.1 How do you perceive the role of the physiotherapist in patient management in the NICU?

2.2 Can you please elaborate on the availability of physiotherapy services in the unit: **If no services are provided in the NICU, what do you think the reason for this is?**

2.3 Can you elaborate on the current referral system with regards to physiotherapy referral in the NICU**? (who refers, where are the referrals placed in the ward, who contacts the physiotherapist)? If no system in place, why not?**

2.4 Can you elaborate on the guidelines or framework used regarding indications for referral of neonates appropriate for physiotherapy **(are there any specific guidelines used, is it evidence based)?**

2.5 Can you elaborate on the integration of the physiotherapist in the NICU inter/multidisciplinary team **(how is the communication between physiotherapist, doctor and nursing staff regarding the neonate)?**

2.6 What do you perceive the role of the physiotherapist to be in terms of discharge planning in the NICU?

- What is the current role of the physiotherapist in the NICU with regards to discharge planning?
- What should / could the role of the physiotherapist be in discharge planning in the NICU?

Closing question: Is there anything else you would like to share with me with regards to your perception of the role of the physiotherapist in the NICU, that we have not touched on previously?

- In summary, do you feel that there is a role for a physiotherapist in the NICU?

Thank you for your time and participation in this study

APPENDIX FIVE

SEMI-STRUCTURED INTERVIEW GUIDE 2

Physiotherapists perception of their role in the Neonatal Intensive Care Unit

Section 1:

Please complete the following:

Age	
Gender	
Medical Profession: Physiotherapist	
Qualification/s/Specialization (E.g. BSc, MSc, PhD, ICU, CPR or Other)	
Years of working experience in public sector: • General experience • NICU specific experience	
Years of working experience in private sector: • General experience • NICU specific experience	
Have you treated patients in the Neonatal ICU?	Yes: No:

	(reason)_____ _____ ____

Section 2:

2.1 How do you perceive your role as a physiotherapist in the NICU? **Relate it to perceived role and what current role was**

- With regards to patient management:
- With regards to practice patterns used and what the importance of these techniques would be?

2.2 Can you elaborate on the availability of services in the unit: what are the working hours (after hour services) and frequency of treatments performed?

- If no services are provided in the NICU, what do you think the reason for this is?

2.3 Can you elaborate on training, qualifications and skills base of physiotherapists working in the NICU/PICU?

2.4 Are you aware of any training /qualifications available for physiotherapists interested in working in the NICU?

2.5 Can you please elaborate on evidence-based practice used in the NICU, are physiotherapists aware of protocols/guidelines that currently exist for physiotherapy treatment in the NICU and are there implementation of these guidelines in the NICU?

2.6 Can you elaborate on any existing guidelines or framework regarding indications for referral of neonates appropriate for physiotherapy in the NICU?

2.7 Can you elaborate on your perception of the role of the physiotherapist with regards to discharge planning?

- What is the current role of the physiotherapist in discharge planning in the NICU?

- What should the role of the physiotherapist be in discharge planning in the NICU?

2.8 Lastly, can you elaborate on the inter/multi-disciplinary team involvement with the physiotherapist in the NICU? **Please comment on.**

- Communication with Doctor's
- Communication with nursing staff
- Communication with OT's, Dieticians, Speech Therapists

Closing question: Is there anything else that you have not mentioned previously in the interview with regards to your perception of the role of the physiotherapist in the NICU, that we have not touched on previously?

- Do you feel that there is a role for the physiotherapist in the NICU?

Thank you for your time and participation in this study