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Sibuyi, Makwena Midah

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DOES THE UNDERGRADUATE EXPERIENTIAL LEARNING PROGRAMME IN PAEDIATRICS ADEQUATELY PREPARE STUDENTS FOR WORKPLACE? PERCEPTIONS OF COMMUNITY SERVICE PHYSIOTHERAPISTS

Makwena Midah Sibuyi (0004601V)

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science (Physiotherapy)

Johannesburg, 2017

DECLARATION

I, Makwena Midah Sibuyi, declare that this Research Report is my own, unaided work. It is being submitted for the Degree of Master of Science (Physiotherapy) at University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Signed on the 15th of September 2017 in Johannesburg

……

To my husband

McDonald Sibuyi

And our children

Vutlharhi and Ofentse Sibuyi

ABSTRACT

Background: Universities are expected to produce quality graduates that will be capable of addressing the health care needs of their surrounding community. Since the inception of compulsory community service in South Africa, the experiences of physiotherapists in their community service year have been investigated, and amongst other findings, it was reported that certain skills were not covered sufficiently during their undergraduate training. However, undergraduate paediatric experiential learning programmes have not been studied. Thus, research in this field is scarce.

Aim: This study aimed to determine whether community service physiotherapists perceived the undergraduate experiential learning programmes in paediatrics to have adequately prepared them for employment and furthermore to determine the contributing factors that lead to the perception of adequate preparedness.

Methods: A total of 250 community service physiotherapists in the year 2015 were invited to take part in the study via text messages and emails. Of these, only 101 responded and agreed to take part in the study. A link to the self-constructed online questionnaire with RedCap was emailed to the participants. The participants were informed that participation in the study implied consent. An email reminder was sent every seven days for a period of three months to participants who had not completed and submitted their questionnaire. All data from the completed questionnaires was analysed on the RedCap account by the researcher. Quantitative data was analysed with a statistical test, STATA version 9.0, and a p-value of less than 0.05 was considered statistically significant.

Results: Only one questionnaire was disqualified from the 101 questionnaires that were received. Therefore, the study achieved a response rate of 40%. Overall, 57% of the community service physiotherapists felt adequately prepared to render paediatric services at their workplace. Graduates that had a specific paediatric block felt more prepared than those who did not have a specific paediatric block. The university from which community service physiotherapists have graduated contributed significantly to the perception of adequate preparedness.

Conclusion: This study identified the need to develop comprehensive guidelines for the undergraduate paediatric programmes and to develop a standardised paediatric physiotherapy framework for the eight institutions in South Africa. Universities without a structured

paediatric block should consider implementing such a block in order to enhance their students' experience and confidence.

Keywords: curricula review, paediatric physiotherapy, communication, clinical competence, clinical education

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AIMS	Alberta Infant Motor Scale
ANOVA	Analysis of Variance
CCFOs	Critical Cross-Field Outcomes
CPD	Continuous Professional Development
CSP	Chartered Society of Physiotherapy
DALY	Disability-Adjusted Life Year
DHET	Department of Higher Education and Training
GMFCS	Gross Motor Function Classification System
HIV	Human Immunodeficiency Virus
HPCSA	Health Professions Council of South Africa
ICF	International Classification of Function and Disability
MDG	Millennium Development Goal
NHI	National Health Insurance
NICU:	Neonatal Intensive Care Unit
NQF	National Qualifications Framework
OECD	Organisation for Economic Cooperation and Development
PASA	Physiotherapy Association of South Africa
PICU	Paediatric Intensive Care Unit
SAQA	South African Qualifications Authority
SASP	South African Society of Physiotherapy
SoP	Section of Paediatrics
Stats SA	Statistics South Africa
TB	Tuberculosis

WCPT World Confederation for Physical Therapy

CHAPTER 1: INTRODUCTION

1.1 Introduction

In this chapter, the background for this study will be presented. The aims, objectives, and potential significance of this study within the South African context will be outlined.

1.2 Background

In South Africa, a compulsory community service year in physiotherapy and in other allied health professionals was implemented as far back as the year 2003 (Reid, 2002). Since then, the number of rehabilitation professionals in the public health sector has significantly increased. For instance, the number of state-employed physiotherapists has increased by 40%, whilst that of occupational physiotherapists has increased by 33% (Harrison, 2009).

The motive for the foregoing was to improve staffing (Penn, Mupawose and Stein, 2009) and provide services in previously under-serviced areas. During the community service year, health care professionals are in a position to further develop their skills and acquire knowledge, behaviour patterns, and critical thinking by rendering their services (Hatcher, et al., 2014). Another motive was that graduates needed to reciprocate, through their skills and work, the financial inputs that they have received directly (through bursaries) and indirectly through post-school education (Department of Higher Education and Training [DHET], 2015).

Higher education institutions are expected to produce quality graduates that will be capable of addressing issues around the health care needs of their surrounding community members (Frantz and Rhoda, 2007; Unger and Hanekom, 2014). In the past, anecdotal evidence gave the impression that the curricula of health professionals had become fragmented, static, and was slow to respond to the health care needs of the South African communities that were served by their graduates (Frenk, et al., 2010; Van Heerden, 2013).

In physiotherapy, clinical education is considered a crucial component in the development of the undergraduate curriculum by the Chartered Society of Physiotherapy (CSP, 2010) and by the World Confederation for Physical Therapy (WCPT, 2011). Through clinical education, learners are able to develop their professional identity, behaviour, clinical reasoning skills,

and to transfer skills and knowledge taught in the classroom into practice (Ernstzen, Bitzer and Grimmer-Somers, 2009). The issues around the perception of physiotherapy students with regard to their preparedness to enter clinical practice or employment have not received adequate attention, and as a result, there is limited research published in South Africa (Unger and Hanekom, 2014).

Physiotherapy is regulated by the Health Professions Council of South Africa (HPCSA) under the South Africa Board of Physiotherapy, Podiatry and Biokinetics. The council regulates the health professions in the country with aspects pertaining to registration, education and training, professional conduct and ethical behaviour, ensuring continuing professional development, and fostering compliance with health care standards (HPCSA, 2016). The subcommittee for education and training has the responsibility to accreditate institutions and review any new programmes they might have. They ensure that the educational programmes at the eight South African universities that offer a bachelor's degree in physiotherapy address the local burden of diseases, that the standards of education are internationally competitive, and that students have the necessary attributes, attitudes, and competencies to become better advocates of health (HPCSA, 2016). According to the regulations that define the scope of the profession of physiotherapy, they state that the scope of paediatric physiotherapy practice should include all fields of medicine and surgery, including cerebral palsy, care of children with minimal brain dysfunction, developmental abnormalities, and the prevention of orthopaedic and postural deformities (HPCSA, 2016).

In South Africa, training for a bachelor's degree in physiotherapy is offered at only eight universities (University of Pretoria, Sefako Makgatho Health Sciences University, Stellenbosch University, University of Cape Town, University of Western Cape, University of KwaZulu-Natal, University of the Witwatersrand, and University of the Free State) as a four-year full-time course. Commonly, from third year going into fourth year, students train in different clinical settings (for different modules) rotating through general hospitals, paediatric sites, and community areas (universities' websites). However, it is not known whether all the universities have a paediatric clinical rotation block or not.

1.3 Problem Statement

Since 2003, community service physiotherapists have been entering into compulsory community service with the aim of making physiotherapy services more accessible in the communities (Reid, 2002). To date, no research has been conducted to explore the perceptions of community service physiotherapists concerning whether their clinical experience in paediatrics adequately prepared them for the workplace.

Student perception is important and should be considered in any discussion of their education (Vyawahare, et al., 2013). Therefore, student perception may add value to the processes of paediatric programme evaluation.

1.4 Research Question

The research question of this study is as follows:

- What are the perceptions of community service physiotherapists about their undergraduate experiential learning programmes in paediatrics, and do they feel adequately prepared to render paediatric services at their workplace?

1.5 Research Aim

The aim of this study was to determine the perceptions of community service physiotherapists with regard to their undergraduate experiential learning programmes in paediatrics and whether they perceived the programmes to be adequate in preparing them to deliver paediatric services at their workplace.

1.6 Objectives

The study had five objectives:

- To describe the socio-demographics of the community service physiotherapists
- To compare the implementation of the paediatric block across the universities
- To describe the perceptions of community service physiotherapists about their undergraduate paediatric programmes

- To determine the mentoring and support systems available to physiotherapists during their community service year
- To determine factors that relate to the perceived adequate preparedness for working with paediatric patients

1.7 Significance of Study

The information gathered from the questionnaires will indicate the overall level of perceived preparedness in paediatric physiotherapy amongst community service physiotherapists; furthermore, this information could be used to recommend guidelines for and alignment of the paediatrics curriculum at the eight physiotherapy departments. This could also assist in enhancing the preparation of physiotherapy graduates to be well equipped and sensitive to the health care needs of children in their communities and South Africa at large.

1.8 Operational Definitions

Clinical educator: Clinical educators are appointed by universities to assist with student clinical training (Strohschein, Iagler and May, 2002; Frantz and Rhoda, 2007) although they have little pedagogical training (Lekkas, et al., 2007).

Community service physiotherapy: Community or civic service is defined as an "organized period of substantial engagement and contribution to local, national or world community, recognized and valued by society, with minimal monetary cost to the participant" (McBride, et al., 2006).

District hospital level: A district hospital is defined as a level 1 facility, and it is the first level of referral. Only generalist staff, i.e. general practitioners, nurses, and allied health professionals are available and provide access to early diagnoses, therapeutic and rehabilitation services. These hospitals receive referrals from community health centres and clinics. Thus, health care services at this level involve disease-specific health promotion and education activities at the community level (Department of Health, 2012).

Experiential learning: Silberman (2007) defined the model of experiential learning as "the involvement of learners in concrete activities that enable them to experience what they are learning and the opportunity to reflect on those activities".

Generic skills: This refers to skills that are not specific to a particular occupation but are used in almost every job. These skills are integrated into the job and can be used across different fields (Lestus, 2013).

Perception: The way in which something is regarded, understood, or interpreted (Oxford English Dictionary).

Profession-specific skills: These are skills that are specific to a particular occupation, and without these skills, a person cannot successfully perform the job (Lestus, 2013).

Regional hospital level: This is the second level of health care (level 2), and they receive referrals from and provide specialist support to district hospitals (Department of Health, 2012).

Tertiary hospital level: This is the third level of health care (level 3), and they receive referrals from and provide sub-specialist support to regional hospitals. Special facilities at this level include intensive-care units (Department of Health, 2012).

1.9 Outline of Research Report

Chapter 1 presents the background with regard to community service physiotherapy in South Africa, the problem statement, the research aim and its objectives, and lastly the significance of the study.

Chapter 2 reviews pertinent literature, with keywords such as curricula review, preparedness for workplace, community service physiotherapists, paediatric physical therapy, communication, confidence, clinical competence, clinical education, and clinical supervision.

Chapter 3 looks at the methodology used for the study, including statistical analysis.

In Chapter 4, the results of the study are presented and interpreted according to their objectives.

Chapter 5 discusses the results and compares them with literature.

Chapter 6 gives the conclusion and recommendations for future research, clinical practice, policy guidelines, universities, students, and the profession.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter provided an introduction and background to the study. This chapter will focus on the important aspects of the undergraduate experiential learning programmes in physiotherapy (including paediatrics), such as the generic skills and profession-specific skills that are needed to adequately equip students for their workplace in South Africa.

Keywords that were used to obtain information for this study included curricula review, preparedness for workplace, community service physiotherapists, paediatric physiotherapy, communication, confidence, clinical competence, clinical education, and clinical supervision. Google Scholar was the main search engine that was used to access journals through the following databases: Elsevier, Pub Med, Science Direct, and BioMed Central. Literature was also gathered through various journals (South African Journal of Physiotherapy, Pediatric Physical Therapy, South African Journal of Occupational Therapy, and the African Journal of Health Professions Education) that were mainly concerned with undergraduate training of health care professionals, including physiotherapy, from the year 2001 to 2016.

2.1.1 Health care within a South African context

Democratic South Africa has introduced a progressive constitution, institutional and legislative frameworks through which it implemented the transformation project from the apartheid era into a democratic, prosperous, non-sexist, and non-racial society. South Africa has created and adapted a set of planning tools to lead and manage its development; these are embedded within the objectives of the Millennium Development Goals (MDGs), e.g. to eradicate extreme poverty and hunger (MDG1), to reduce child mortality (MDG4), to improve maternal health (MDG5), and to combat HIV/AIDS, malaria, and other diseases (MDG6) (MDGs report, 2013).

According to the 2015 mid-year census report, the country's population was estimated to be approximately 55 million (Statistics South Africa [Stats SA], 2015); this has increased from the 2011 census by 4 million. Based on the population by age, approximately 30% of the population is younger than the age of 15. The number of children aged below five years was higher (11%) when compared with children aged from five to nine years (10%) and those

aged from ten to fourteen years (9.3%). The majority of this young population lives in KwaZulu-Natal province (22.9%) and Gauteng province (19.7%) (Stats SA, 2015). The level of mortality is said to be the fundamental indicator of child health (Bradshaw, et al., 2003). South Africa has achieved an improvement with respect to its MDG 4 (to reduce child mortality). Attributable factors involve health programmes government has implemented in order to address the severe impact on health caused by HIV/AIDS and tuberculosis, i.e. HIV and AIDS voluntary testing and counselling, Prevention of Mother to Child Transmission, HIV treatment and care, Medical Male Circumcision, TB control programmes, and the National Strategic Plan on HIV, STI and TB (2012-2016) (MDGs report, 2013).

2.1.2 Paediatric burden of diseases

South Africa's burden of diseases in terms of the mortality profile and the disability-adjusted life years (DALYs) is projected to be even higher than in developed countries. This has a great impact on the country's health care system and policy development, as there will be a need to have more hospital beds and to recruit more skilled medical and other health care workers in South Africa to address the burden of HIV/AIDS, communicable and non-communicable diseases and injuries (NHI Note 2, 2009). The DALYs by Broad Group South Africa in the year 2000 estimated that HIV/AIDS would only contribute about 31% (30.9%), whereas non-communicable diseases would contribute 33% (33.0%) towards the burden of diseases. This would be followed by communicable diseases with approximately 22% (21.7%), and lastly by injuries, which would contribute about 14% (14.3%). It is clear that South Africa is experiencing a rise in non-communicable diseases. This therefore results in the increase in the demand to care for children living with long-term health conditions (Mayosi, et al., 2009).

Non-communicable diseases have a high prevalence in rural areas with poverty, malnutrition, pneumonia, diarrhoea, cancer, and congenital conditions (congenital heart diseases, neural tube defects, and hydrocephalus) being contributing factors. Children in urban areas are mostly affected by asthma, which affects about 10% of children, whereas obesity and being overweight affects about 20% of children (Robertson, 2006).

Advances in HIV/AIDS treatment have improved children's life expectancy. However, children may experience a decrease in physical, functional, and psychological capacity (Oyeyemi, et al., 2007). HIV is associated with disability, which is common across sub-

Saharan Africa, affecting people of all ages. Tuberculosis has been reported to be the underlying cause of death in African children, along with severe pneumonia and severe malnutrition (McNally, et al., 2007; Nantongo, et al., 2013). Tuberculosis is also known to be the cause of meningitis in children (Schoeman and Donald, 2013; Wolzak, et al., 2012). Tuberculous meningitis is associated with very high fatality rates severe disability in children who survive the disease (Schoeman and Donald, 2013). The most common complications that arise and contribute towards disability include tuberculous hydrocephalus (Van Well, et al., 2009) and stroke (Lammie, et al., 2009).

Approximately 24% of children below the age of five in South Africa are moderately or severely stunted with neurodevelopmental shortfalls causing developmental delays (Doherty, et al., 2016). Developmental delays stand out as most strongly linked to HIV in children living with HIV/AIDS. In the systemic review by Banks, et al. (2014), the median prevalence of motor delay was 67.7% (95% CI: 62.2-73.2%). This is associated with cerebral palsy, which is commonly managed by physiotherapists. It is the most common developmental disorder that is associated with lifelong motor impairment and disability (Banks, et al., 2014). The motor disorders of cerebral palsy are usually accompanied by impaired cognition, communication and sensory perception, behavioural abnormalities, seizure disorders, or a combination of all of these features. Physiotherapy is reported to be effective in improving exercise endurance, muscle strength, and gross motor function in children with cerebral palsy (Martin, Baker and Harvey, 2010).

Physiotherapists are trained to identify neuromuscular and musculoskeletal limitations that would otherwise inhibit normal movement or physical activity in patients with physical impairments (Hands, 2008). Thus, physiotherapists have to be in a position to recognise limitations that will predispose children to exercise deficit disorders (Haga, 2009). One of the prominent paediatric conditions seen by physiotherapists as a result of the burden of injuries is the Traumatic Brain Injury. The main causes of this condition are often attributed to the high rates of violence in South Africa, i.e. the syndromes of child violence (Beale, 2003) and the high incidence of motor vehicle accidents reported by the Road Accident Fund for South Africa in the year 2000.

2.1.3 Delivery of health care

South Africa has two health care systems for its population, namely, the public and the private health sectors (Van Rensburg, 2004). The public health sector is based on the district health approach to deliver primary health care services (Tanser, Gijsbertsen and Herbst, 2006; Nteta, Mokgatle-Nthabu and Oguntibeju, 2010; Naledi, Barroni and Schneider, 2011). The role of primary health care as defined by the Alma-Ata is to address the health care issues in the community and render promotive, preventive, curative, and rehabilitative services (Declaration of Alma-Ata, 1978). Primary health care is thought to be an economical approach to minimising maternal health and child mortality as incorporated in the MDGs (MDGs report, 2013). This model of health care allows for early diagnosis and intervention, and referral to secondary and tertiary health care (Wilcox, et al., 2015). A majority of the South African population depends mostly on the public health sector, which receives funds from general tax. The private health care sector only benefits citizens who can afford to be covered by a medical scheme, and this is only about 16% of the population (Ataguba and Akazilli, 2010).

The South African public health sector utilises a three-tiered health system to deliver health care services to its population at primary, secondary, and tertiary levels (Coovadia, et al., 2009). Hospitals and clinics have extended their services by incorporating outreach services to the community within the demarcated municipal areas. Although health care services are rendered free of charge, the primary health care system still faces hurdles with regard to a lack of managerial capacity, health coverage, migration of professionals, negative perceptions of citizens regarding the treatment they receive at the various facilities, growing imbalances of resource distribution between urban and rural areas, and the inaccessibility of some of these facilities (Tanser, Gijsbertsen and Herbst, 2006; Nteta, Mokgatle-Nthabu and Oguntibeju, 2010; Naledi, Barroni and Schneider, 2011; Wilcox, et al., 2015).

South Africa is, however, moving towards the socialised health care model with the inception of the National Health Insurance (NHI) scheme, which will narrow the gap between the public and the private health sectors and equalise health care services. This health care system will require that all taxpayers make mandatory contributions such that there is a universal coverage for all South Africans with sufficient and affordable health care services (Ataguba and Akazilli, 2010; Matsoso, 2013).

2.2 Undergraduate Physiotherapy Curricula

The undergraduate curriculum for the education of health professionals needs to address health issues in terms of the disease profile unique to their own country and integrate it with the health policies (Kern, Thomas and Hughes, 2009). Thus, as the health profile of disease changes, the curriculum should be reviewed for relevance and quality (Davenport, Spath and Blauvelt, 2009). The need to collect information about the undergraduate paediatric physiotherapy content, i.e. what diseases are being taught and how the paediatric material is organised and delivered within the paediatric curriculum, has long been recognised as far back as the year 1993 by Cherry and Knutson (1993). The Section of Pediatrics of the American Physical Therapy Association has addressed these issues and updated information around the paediatric education of the entry-level physical therapists since the year 2001, and revised it in the year 2008 in the 'Pediatric Curriculum Content in Professional Physical Therapists Education'. The Section of Pediatrics (SoP) again revised the document in the year 2010 following the inconsistencies that were discovered through formal and informal gatherings with paediatric educators. They found gaps with guidelines referring to the topics, content that was covered, and the knowledge, skills, and abilities expected of a novice graduate. As a result, a competency-based approach was used to endorse core competencies that were specifically designed to focus on the knowledge and skills that were unique to paediatric practice. Furthermore, the approach was employed to assist educators and clinicians by linking core competencies to teaching strategies, learning activities, assessment outcomes, and curricular structures (Rapport, et al., 2014).

In South Africa, Mostert-Wentzel, Frantz and Van Rooijen (2013b) conducted a document analysis survey in their study. The purpose of their study was to give an overview of education in community physiotherapy from study guides and to see how the government's health policies and priorities were integrated into the curriculum. They found that nearly all eight physiotherapy departments were addressing the social determinants of health, district health systems, and health education in their curricula. At the time, these were aligned with the National Department Of Health's vision to alleviate poverty and improve the life expectancy of all South African citizens by minimising child and maternal mortality, reducing the burden of HIV/AIDS and tuberculosis, and increasing the effectiveness of health care systems (Department of Health, 2012). They also found that physiotherapists were skilled to address the quadruple burden of disease in the country, but also that the majority of the study guides were focused on services towards adult patients and not on children.

The literature on the status of the undergraduate paediatric physiotherapy curriculum in South Africa is limited. Published information regarding revised paediatric curriculum as a result of inputs from their graduates is also scarce. According to Vyawahare, et al. (2013), student perception adds value to the curriculum review process, and the impact of any curriculum review needs to be evaluated by the students coming out of those programmes. It was further discovered that a curriculum that has been reviewed for relevance may influence the notion of students' readiness for professional practice (Unger and Hanekom, 2014).

2.3 Competency Framework

According to Krause, et al. (2006), a competence framework only provides a guide to an array of knowledge, level of that knowledge, and the skills that the practitioner will need in order to work at a safe, effective, and professional standard. It does not consider competencies that were formally assessed and passed. It is thus described as a tool that supports self-assessment and personal development plans rather than a tool that is used to judge performance. Students need to make self-assessments in order for them to be aware of areas that they feel competent or not competent in (Frantz and Rhoda, 2007; Jones, Mclntyre and Naylor, 2010). Self-assessment of competence not only encourages learners to assess themselves but also prompts them to take responsibility for their own learning and gain perception of their competence in relation to the competence needed at work to ensure safe and quality patient care (Kajander-Unkuri, et al., 2013).

2.3.1 The roles of health care professionals: CanMED 2015

In Canada, many of the medical education organisations have endorsed the CanMED 2015 Physician Competency Framework. This is the most recognised and widely applied health care professional competency framework in the world. Identified in this competency framework are the seven intrinsic roles of health care professionals that will enable them to provide high-quality and safe patient-centred care. The medical expert role encompasses all the other roles, namely, expert, communicator, collaborator, leader, health advocate, scholar, and professional (Frank, Snell and Sherbino, 2015). This framework, just like any undergraduate curriculum, has gone through renewal processes since its first edition based on the community's needs, opinion of experts, and the drive to provide a sound education.

The medical expert role regards health care professionals as experts in their field. They have the responsibility to practise their profession within their scope of practice and employ their clinical skills to make assessments, diagnoses, and execute effective treatment plans. Health care professionals have to be aware that treatment cannot be imposed on patients, but rather that they should engage the patient and obtain informed consent detailing the risks and benefits of and the rationale for the proposed treatment (Bhanji, et al., 2015).

The role of the health care professional as a communicator encourages therapeutic relationships to be established between the health care professional and the patient with his or her family. The health care professional has to be an active listener in order to gather information regarding the patient's own views of the disease, fears, and stresses involved (Neville, et al., 2015).

As a collaborator, the health care professional has the responsibility to understand the different roles of other health care professionals. This is necessary in order for the health care professional to work effectively as a team member, hand over patients to others for continuity of care, and identify and resolve conflicts in a timely manner (Richardson, et al., 2015).

The health care professional is also viewed as a leader at work. As such, he or she has to be organised in his or her personal life and be able to bring a balance between work and personal life (Dath, et al., 2015).

Health care professionals have the responsibility to become health advocates on behalf of their patients. This may involve teaching on disease prevention and promoting a healthy behaviour. They assist their patients to access other services beyond their profession through referrals (Sherbino, et al., 2015).

Another role of the health care professional is that of a scholar. When the health care professional takes on the role of a scholar, he or she has to be a lifelong learner, use evidence-based practice, and be a mentor (Richardson, et al., 2015).

Lastly, the health care provider is considered to be a professional. As a professional, the health care provider has to show commitment and be accountable to his or her patients and to the profession itself by participating in peer-review assessments (Snell, et al., 2015).

2.3.2 South African Qualifications Authority: Critical Cross-Field Outcomes

In the South African Qualifications Authority (SAQA) qualifications document, the Critical Cross-Field Outcomes (CCFOs) are adopted. These are generic outcomes that inform all teaching and learning. They are also considered critical for the development of the capacity for lifelong learning. All qualifications should include all of the CCFOs at their appropriate level of the National Qualifications Framework (NQF) (SAQA, 2014). Physiotherapy is at NQF Level 08 in South Africa, according to the Department of Higher Education and Training. Therefore, graduates at this level and above are expected to be able to:

(i) Identify and solve problems in which the responses should demonstrate critical and creative thinking.
(ii) Be able to work effectively with other team members from groups, organisations, and/or community.
(iii) Be able to organise and manage oneself and activities in a responsible and effective manner.
(iv) Be able to collect, analyse, organise, and critically evaluate information.
(v) Communicate effectively by using visual, mathematical, and/or language skills in an oral and/or written presentation.
(vi) Use science and technology effectively and critically show responsibility to the environment and health of others.
(vii) Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

There are similarities between the CanMED 2015 competency framework and the South African Qualifications Authority. This implies that training institutions have the responsibility to meet the national standards that are compatible with international standards (HPCSA, 2016) so that health graduates will be competent to get jobs outside South Africa (Krause, et al., 2006).

2.4 Roles Specific to Physiotherapists (Irrespective of their Special Interest)

The South African Society of Physiotherapy (SASP), along with the objectives of the WCPT, has developed standards of physiotherapy education and practice to improve the quality of physiotherapy and the health of South African citizens (SASP, 2012). These are also in line with the CanMED competency framework.

2.4.1 Expert

Physiotherapists are experts in function and mobility; therefore, they have to take the lead in the promotion, prevention, treatment, and rehabilitation of mobility and restoring functional ability in their patients, irrespective of their age, injury, or disease (relevant to physiotherapy). The physiotherapist uses his or her expertise in human movement and related biomechanics to perform a subjective and objective assessment that will lead to determining the diagnosis, prognosis, and indications and contra-indications to treatment whilst simultaneously taking into account the patient's culture, environment, psychological, and socio-economic status. Physiotherapists are able to identify the patient's personal and environmental factors that may reduce function and participation through the use of the International Classification of Function and Disability (Ibragimova, Granlund and Bjorck-Akessan, 2009). It has been shown in a qualitative study amongst undergraduate physiotherapy students and novice physiotherapists in Portugal that integrating the patients' problems with their needs, lifestyle, and their environment assisted the physiotherapists to improve their clinical reasoning skills and yielded better patient outcomes (Cruz, Moore and Cross, 2012).

The socio-economic status of the patient contributes to how treatment will be structured. Patients from a low socio-economic status may not always afford to come to the treatment centre, as they cannot afford to pay for transport. Therefore, appointments may be scheduled only once per month as compared to twice or three times per week. The physiotherapist has to learn how to improvise treatment and give examples of what the patient can use at home to mimic therapy (SASP, 2012). Additional to physiotherapists preventing and managing illnesses, they have to be able to palliate suffering with empathy and within ethical norms and guidelines (Krause, et al., 2006).

2.4.2 Communication

Physiotherapists employ verbal, non-verbal, written, and electronic communication strategies between other therapists, patients, and their families. This implies that physiotherapists have to keep records of patient files that are legible and accurate at all times. Aspects of communication in the field of physiotherapy that have been explored include: how therapists provide instructions and corrections, how patients and therapists interact about goal-setting, and how therapists take history from their patients (Parry, 2004). For the sake of effective communication, physiotherapists are encouraged to form therapeutic relationships between their patients and their families. This will facilitate the collection and sharing of important information about their disease, and again, most importantly, gain confidence from the patient about the physiotherapy treatment (Muruganantham and Shah, 2015).

The physiotherapist also has to take into account issues such as confidentiality, privacy, and autonomy. Patients need to feel that they can trust the physiotherapist with their information and that the information will be kept in strict confidence. The physiotherapist needs to employ active listening skills when engaging with the patient in order to have insight into the patient's perspective regarding his or her disease, fears, and what the patient may expect from physiotherapy. Both the patient and the physiotherapist should share decision-making and work on a common goal towards therapy (SASP, 2012). However, one challenge that affects the execution of effective communication is the language barrier between health care professionals and patients. In the study investigating perceived readiness for work amongst the community service for speech-language and hearing therapists, it was found that more than half of the participants experienced communication difficulties that were related to the language spoken. These were graduates from Stellenbosch University and were placed in areas where the dominant language, in this case, isiXhosa, was not spoken (Wranz, 2011).

2.4.3 Collaboration

Physiotherapists work closely together with other members of the health care team. This promotes interprofessional practice and achieves optimal patient care in that there comes a need in the management of the patient where the physiotherapist has to refer the patient to other health care professionals. Thus, it is important that the physiotherapist understand and respect the roles, responsibilities, and the differing perspectives of other health care professionals. As much as collaboration with others is key to the successful management of

patients, the use of profession-specific jargon and lack of understanding of other roles has been identified as a barrier to collaborative practice (Bose and Hinojosa, 2008; Hillier, Civetta and Pridham, 2010). Therefore, each health care professional should be able to clearly articulate their scope of practice and give easily understood details of their therapeutic techniques (Hunter, et al., 2013). The role of collaboration also requires that the physiotherapist be able to identify factors that may lead to conflicts in the team that may ruin the environment during patient care. Accordingly, such conflicts have to be resolved promptly (Krause, et al., 2006; SASP, 2012).

2.4.4 Health advocate

Physiotherapists have the responsibility to collaborate with the community and other health stakeholders to identify determinants of the health of patients. They also have the responsibility to address factors that act as barriers to accessing health services, assist patients to navigate the health care system, and participate in activities that promote good health and prevent health complications and disability (Krause, et al., 2006; SASP, 2012).

2.4.5 Scholar

Physiotherapists are committed to ongoing learning for the purpose of improving patient outcomes through seeking, creating, applying, disseminating, and translating knowledge to physiotherapy practice. The physiotherapist needs to be motivated to learn and undertake a reflective practice. A reflective practice would enable the physiotherapist to make self-evaluations and consider feedback from patients to continuously reflect upon actions and decisions in order to improve knowledge and skills (Ruiz-Lopez, et al., 2015). As a scholar, the physiotherapist has to be able to analyse and critique evidence in order to integrate the best available evidence into practice (SASP, 2012).

2.4.6 Leader

The physiotherapist needs to be able to demonstrate leadership skills in his or her profession by being able to balance time for work, professional activities, and personal responsibilities. The physiotherapist will be in a position to manage or supervise other personnel involved in the delivery of physiotherapy services such as physiotherapy assistants, community service physiotherapists, and students on clinical blocks, i.e. preparing job descriptions, having

regular departmental meetings, and orientating students on the block and evaluating their assessments. The physiotherapist has to participate in quality improvement and ensure a safe physical environment for himself or herself, other team members, and staff. This involves reviewing and updating policies and protocols and complying with Standards of Practice for Physiotherapy and the Code of Ethics, and ensuring that equipment is serviced and calibrated (SASP, 2012).

2.4.7 Professional

Physiotherapists have to show commitment to their patients and to the profession by always conducting themselves in a legal and ethical manner, i.e. registering and renewing their membership with the HPCSA every year, respecting the autonomy of the patient, and obtaining informed consent from the patient before starting with treatment (HPCSA, 2016). The HPCSA does not provide specific guidelines regarding the competency framework for the education and training of physiotherapists. It does, however, provide minimal information on the content of the physiotherapy curriculum.

2.5 Competencies Necessary in Paediatric Physiotherapy

The Section of Pediatrics of the American Physical Therapy has developed a competency-based framework whereby essential core competencies that were unique to paediatrics were identified. This competency-based framework was designed in order to inform the paediatric content in the entry level of physical therapy curriculum (Rapport, et al., 2014).

A physiotherapist working with children has to be knowledgeable about human development, particularly motor development, and be able to analyse the development of movement skills in children. The physiotherapist also has to apply age-appropriate patient management, i.e. select appropriate screening tests such as the Gross Motor Function Classification for children with cerebral palsy and Movement ABC, play activities with age-appropriate toys preference and cognitive level. The SoP identified collaboration with the child's family throughout therapy as key, in that the child functions within a family unit. The physiotherapist has to be able to involve the family in decision-making and consider their priorities when setting goals for therapy. In the study investigating child mental health consultation with families of medically compromised infants, it was found that the active involvement of parents became helpful in reducing the guilt and anxiety related to the

impairment of the premature infant. They recognised that letting parents share their grief may facilitate the perception of their child's individuality, i.e. characteristics, temperament, and his or her developmental potential (Mayes, 2003).

The physiotherapist has to be involved in health promotion and safety such as prescription of age-appropriate exercises for both able and disabled children. The physiotherapist also needs to provide health education to the family and caregivers, and refer cases to other health care professionals (Rapport, et al., 2014).

Lillo-Navarro, et al. (2015) carried out a qualitative study that examined the thoughts of parents having children with physical disabilities and the factors influencing adherence to home exercise programmes prescribed by physiotherapists. The parents that participated in the study reported that they only complied with home exercises that they preferred, i.e. exercises that worked, were fun and their children could enjoy, and were less complex and did not consume too much of their time at home from their daily chores or limited their affective relationship with the children. The participants further explained that the method that the physiotherapist uses when educating them on exercises has a potential to increase or decrease adherence to treatment. Participants appreciated physiotherapists that were able to instil confidence in them by demonstrating the exercises, giving feedback whilst parents demonstrate the exercise, and keeping regular contact with the parents (Lillo-Navarro, et al., 2015). Physiotherapists working with children may need to consider these facts as they prescribe home exercise programmes to the caregivers. The physiotherapist has to show knowledge in the different legislature and policies related to the care of children in order to advocate for their needs and access services in a timely manner (Rapport, et al., 2014).

2.6 International Classification of Function as a Model to Guide Clinical Thinking, Practice and Education in Paediatrics

The World Health Organization's International Classification of Functioning, Disability and Health published a version of Children and Youth in 2007 to capture the growth and development characteristics of infants, toddlers, children, and adolescents. It includes mental aspects such as attention, memory and perception, as well as activities of family life, play, learning, and education (Darragh, Huddlestone and King, 2009). This version provides a common language in terms of diagnoses and co-morbidities. It provides a framework for interdisciplinary practice and provides a basis for functional intervention. Assessment of

paediatric patients utilising this model facilitates clinical reasoning and a holistic approach to the patient's problems, which will, in turn, result in better treatment plans and outcomes (Ibragimova, Granlund and Bjorck-Akessan, 2009).

A family centred approach is another approach that physiotherapists take. This approach encourages effective communication and collaboration between the physiotherapist, child, and the family (Dunst and Trivette, 2009). Although active involvement of the family is encouraged, this approach does not endorse a service shift that puts unwanted amounts of responsibility on parents but rather finds a balance between family participation and appropriate support (Hodgetts, et al., 2013). The involvement of a family is essential because they are recognised as a constant factor in the child's life, and thus they are in a better position to indicate problems and identify factors that could improve participation in the child, as they are more familiar with the child's home environment (Stucki, Ewert and Cieza, 2002; Ustin, et al., 2003; Rosenbaum, 2011). The collaboration facilitates prioritisation of treatment goals that could otherwise not be similar with those set by the health care provider if there was no collaboration with the family (Thomas-Stonell, et al., 2009; Chiarello, 2013).

Jelsma and Scott (2011), in their study, found that physiotherapy learners who utilised the ICF framework thoroughly to gather patient information, analyse, and plan treatments actually produced high-quality assessments compared with students who only applied the ICF concepts loosely. Therefore, educators need to promote and apply the ICF model in the training of physiotherapy students in order for them to be in a position to analyse the interaction of elements which affect function, performance, and participation of the child (Rosenbaum and Steward, 2004).

2.7 Paediatric Rehabilitation and Care as Part of Physiotherapy Education

The training of physiotherapists has become increasingly based on the biopsychosocial approach to disability and management of health conditions (Horna and Peterson, 2005). Paediatric rehabilitation includes services to neonates, children, and youth in different practice settings such as early intervention, school, outpatient clinic, and at hospitals (King and Chiarello, 2014). There is an increasing demand for rehabilitation services in low-income countries according to the world report on disability. This is attributable to the high rates of disability, shortage of rehabilitation staff, and limited training resources (World Health Organization [WHO], 2011b).

2.7.1 Early identification

As previously mentioned that physiotherapists are experts in function, human movement, and human development, they are the best people to survey and screen gross motor development in children. Movement and motor coordination are said to be the most important components of child development in which the child becomes functional and independent (Foulder-Hughes and Cooke, 2003). Gross motor delays are common in children with HIV/AIDS and vary in severity and outcome, i.e. some children will catch up with milestones at a later stage, whereas others may have a permanent motor disability such as in the case of children with cerebral palsy (Banks, et al., 2014).

Early identification begins with physiotherapists conducting a developmental surveillance; nevertheless, the physiotherapist does not have to use standardised tools (Guevara, et al., 2013). However, they have to listen to the parents' concerns regarding their child's development if there are any concerns, obtain a developmental history from the parents, make an accurate observation to identify early signs of delays, and maintain a record of the findings. The physiotherapist has to be able to effectively communicate and collaborate with parents on the gross motor development of the child, as in this case the parents/caregiver will be the most reliable source to report on the development of the child. This is because some movements may be performed well by the child at home compared to when performing under pressure during clinic visits (Noritz, Murphy and Neuromotor expert panel, 2013).

A standardised age-appropriate screening tool is administered when there are concerns, i.e. when the child is identified as at risk of developmental delay (Noritz, Murphy and Neuromotor expert panel, 2013). Early identification of motor delays gives the physiotherapist an opportunity to start treatment early and make a timely referral to other health care professionals (Noritz, Murphy and Neuromotor expert panel, 2013). The paediatric undergraduate training of physiotherapy students has the responsibility to train them on the variety of standardised screening tools that detect early gross motor delays in children in order for them to start early interventions and referrals.

2.7.2 Early childhood intervention

Early intervention programmes are directed at young children with developmental delays and children who are at risk of acquiring developmental delays and their families. Active participation of families in early intervention services has been reported to reduce parental stress and anxiety related to the impairment of the premature infant, and as a result improves the parent-child interaction (Mayes, 2003). Kaaresen, et al. (2007) conducted a randomised controlled trial of an early intervention programme with low birth weight infants. They found that the level of parenting stress in both mothers and fathers was reduced to the level of term infants, and the effect was sustained up to two years of corrected age. The involvement of families in early intervention programmes is highly encouraged, as families are viewed as effective agents in maximising the development of their child. Families should be involved with health care professionals in prioritising treatment goals and identifying their child's specific needs (Baker-Henningham and Boo, 2010).

Early detection of high-risk infants for developmental disorders provides an opportunity for intervention at a young age during which the central nervous system is characterised by considerable plasticity, and functional recovery may still occur. Early intervention programmes are delivered through collaboration with other health care professionals (occupational therapists, dieticians, and speech and hearing therapists) to minimise the severity of impairments that may be present in all developmental domains (Kaaresen, et al., 2007).

The delivery of early physiotherapy intervention has been shown to be able to prevent and manage motor disorder through facilitating the flexor development of preterm infants (Cameron, Maehle and Reid, 2005). Thus at this stage a physiotherapist need to be competent with the techniques of handling and positioning the high-risk infant and to have the knowledge of when to start with stimulation. Interventions need to be structured and adapted according to the infant's specific needs. Literature recommends the optimal time to be when the infant is at the quiet alert state because that is when the infant will be responsive to social interaction (D'Angelo and Unanue, 2000; Blauw-Hospers, et al., 2007). Early intervention at term age generally focuses on motor development stimulation or remediation, specifically targeting children with identified developmental delays, and aims to prevent further musculoskeletal complications (Blauw-Hospers, et al., 2007).

The literature review on early childhood stimulation interventions in developing countries by Baker-Henningham and Boo (2010) found that about 95% of the studies reported evidence that early stimulation interventions for young children produced cognitive development, whereas about 58% of the studies showed evidence with regard to motor development over a short-term period (one year). In a randomised controlled clinical trial evaluating the effects of physical therapy intervention on motor outcome of infants born very preterm with very low birth weight in Scotland, the researchers found that physical therapy intervention had no significant effect on the treatment group's motor performance when compared with the non-treatment group (Cameron, Maehle and Reid, 2005). Interestingly, it was also found that the participants in the treatment group did not show any abnormal motor developments when assessed with the Alberta Infant Motor Scale (AIMS) at four months corrected age. It was also noted that participants with higher levels of parental compliance obtained higher scores on the AIMS compared with those who had lower levels of parental compliance (Cameron, Maehle and Reid, 2005).

The aforementioned results emphasise the need for physiotherapists to champion their role as educators, communicators, and collaborators in order to have good treatment outcomes. Baker-Henningham and Boo (2010) concluded in their review study that the success and the effectiveness of an early stimulation intervention programme are characterised by an increased treatment frequency, interventions that begin early before the term age, and interventions with long periods (at least one year) and with follow-ups.

2.7.3 Differential diagnosis

There is increasing awareness respecting issues around disability, and thus health care professionals, including physiotherapists, will find themselves in a position where they need to be able to make a differential diagnosis. They will not only be treating the patient's primary diagnosis but will also need to be able to know how to manage the patient based on the presenting features which will differ from the next patient with the same diagnosis.

A differential diagnosis allows the health care practitioner, including physiotherapists, to figure out what to look for in patients so that they can identify their unique needs and form support systems, i.e. referral to other health care practitioners (Watson, 2008) and provide families with information that will help them to make informed decisions about their child's health. It offers reassurance to families of children with disabilities by exploring their

challenges and strengths associated with the diagnosis (Lauchlan and Boyle, 2007). This requires physiotherapists to actively exercise their roles in health care as experts in their field and be able to come up with a differential diagnosis when treating their paediatric patients. They need to be able to work effectively with other health care professionals in order to properly refer their patients to the next level of care.

2.7.4 Common paediatric conditions treated by physiotherapists

An audit with reference to paediatric conditions that were commonly treated by physiotherapists was conducted from the physiotherapy paediatric statistics at the third-largest hospital in the world, Chris Hani Baragwanath hospital, in the year 2010 (Vachiat, 2012). The physiotherapy department received plenty of referrals whereby 22% (22.3%) were paediatric patients presented with a wide spectrum of diagnoses.

The aforementioned diagnoses were categorised into four categories (neurology, respiratory, neuromusculoskeletal, and other), with neurology cases being the highest (27.6%), followed by burns cases (18.9%). However, not all of the paediatric conditions were accommodated in the undergraduate curriculum due to time constraints (Vachiat, 2012). The most common paediatric conditions that were accommodated in the undergraduate physiotherapy curriculum included cerebral palsy, developmental delays, burns, pneumonia, acute lung diseases, head injuries, meningitis, tuberculosis, and lower limb fractures. Therefore, the implication is that community service physiotherapists may not only be treating paediatric conditions that they are familiar with but may also get referrals on conditions that they are unfamiliar with. In light of this, the undergraduate paediatric physiotherapy training should enable graduates to assess and treat conditions that were not covered within the curriculum if all assessment and treatment principles are covered in a way that allows application to a variety of conditions.

2.8 Clinical Education and Clinical Placements

Lekkas, et al. (2007) referred to clinical education as the supervised acquisition of professional skills. Through clinical education, learners are able to develop their professional identity, behaviour, reflection, clinical reasoning skills, and the ability to transfer skills and knowledge taught in the classroom into practice (Ernstzen, Bitzer and Grimmer-Somers, 2009). The clinical environment in a way mimics the work environment, which will be the

compulsory community service year after graduation. This implies that successful undergraduate clinical placements are crucial in the preparation of students for the workplace.

Taking into account that during the year of compulsory community service physiotherapists will be rendering services in a diverse clinical environment that includes special schools, hospitals (tertiary, regional, and district), community clinics, and rehabilitation centres, it is equally important that students acquire training in these areas as well (Mostert-Wentzel, Frantz and Rhoda, 2013b; Frantz and Rhoda, 2007). Community clinical placements give students opportunities to interact with people from different cultural backgrounds. Thus, the student will become aware of the cultural determinants of health and render services specific to the needs of the community. The student will also learn to collaborate with community health workers and other health care professionals to increase community participation and empowerment by involving the community members in preventative and promotive health activities (Ernstzen, Bitzer and Grimmer-Somers, 2009).

Clinical placements in special schools help physiotherapy students to learn about disability amongst children and adolescents. In a study conducted by Shields, et al. (2013) in Australia, physiotherapy students worked with a group of adolescents with disabilities and provided a progressive resistance training programme during a paediatric clinical placement. The students in the above-mentioned study reported that the paediatric clinical placement afforded them the opportunity to have a greater understanding of disability and as a result developed a positive attitude towards people with disability. A negative attitude, according to Rimmer, et al. (2004) and Temple and Walkley (2007), has the potential to act as a barrier to exercise in people living with disability. Disabled people are prone to become overweight and obese. The students were also able to develop effective communication skills by learning how to encourage the patient during an exercise and how to teach an exercise programme. This implies that the paediatric clinical placements at special schools will equip students with profession-specific skills and generic skills.

Clinical placements in acute settings such as hospitals facilitate clinical learning in general wards, intensive-care units, high-care units, and outpatient clinics. Physiotherapists working in these acute hospital settings require unique skills to adapt to the challenging environment of the hospital and the short patient length of stay (Gorman, et al., 2010). These settings will provide the physiotherapy students with the opportunity to have hands-on experience with the

health conditions that were taught in class and again learn about new ones. The students will further learn how to read and gather relevant data from patient files, identify contraindications to physiotherapy, and the need to communicate with their patients and work as a team with other health care professionals (Gorman, et al., 2010). Therefore, clinical placements would add value and provide meaningful clinical learning experience towards the development of competent physiotherapy graduates. However, the question arises as to whether these clinical placements are always available for the training of students, especially for paediatrics.

In other countries such as Hong Kong, clinical placements have been reported to be difficult to allocate, and thus students become deprived of the opportunity to get clinical exposure before graduating (Baldry and Bithell, 2000; Thomas, et al., 2007; Hanson, 2011; Roberts and Simon, 2012). Another challenge students may experience is the lack of appropriate patients to work with during their practical blocks. In a study conducted amongst other health care professionals where the researchers evaluated the paediatric experiential learning programmes in dentistry, students reported that they were not satisfied with the number of paediatric patients they were provided with during the block. They had a short supply of paediatric patients, and as a result, they were unable to complete their clinical quota (Vyawahare, et al., 2013).

Clinicians at clinical placements also play a crucial role in the training of students. In clinical placements where there is a shortage of clinicians as compared to the number of students allocated, the clinical block may become stressful and not meaningful to both the clinicians and students. In a study conducted by Casares, et al. (2003) and Hanson (2011), clinicians were reported to be reluctant to assist with the training of students at their institutions, as they had concerns that they might become unproductive at work. They had concerns regarding the anticipated increase in the caseload and paperwork, stress due to time constraints, and having to deal with unprepared and difficult students (Davies, Hanna and Cott, 2011; Hanson, 2011).

Following the aforementioned concerns, the assessment of clinician productivity with occupational therapy and dietetics students on their clinical block was conducted by Rodger, et al. (2012). These authors looked at the statistics of patients seen and the time spent with patients. Contrary to the concerns raised, it was found that on average the daily mean number of patients increased when supervisors were with students. This finding should take away the

fear and the concerns that clinicians might have regarding student supervision so that more clinical placements can open and train students.

2.8.1 Clinical supervision

The study by Frantz and Rhoda (2007) found that in South Africa, many clinicians from various institutions have taken up the responsibility to supervise students. This was also similar to the study conducted by Sole, et al. (2012), where clinical supervision was mostly the responsibility of clinical supervisors at many clinical placements in New Zealand. However, it does not imply that students are supervised by clinicians only; they will also receive supervision from clinical educators and one of the university lecturers whilst placed on clinical blocks (Talberg and Scott, 2014).

Clinical supervisors are ideally senior physiotherapists employed by the government (Frantz and Rhoda, 2007) to orientate students to clinical placement. Clinical educators are appointed by universities to assist with student clinical training (Strohschein, IIagler and May, 2002; Frantz and Rhoda, 2007), i.e. they are involved in the process of developing learners' clinical skills by engaging them in critical thinking and reflection on practice (Lambert and Glacken, 2005; Frantz and Rhoda, 2007), although they have little pedagogical training (Lekkas, et al., 2007).

The role of the university lecturer is to support the clinical educator and students whilst on the clinical block. They carry the pedagogical understanding and communication skills, which impacts directly on the student's development on clinical reasoning (Ryan and Higgs, 2008). Regarding the issue of how best students should be supervised during their clinical practicals, literature does not give clear answers around the optimal length and frequency of supervision (Kilminster and Jolly, 2000).

2.9 The Transition from a Student to a Professional and the Perception of Preparedness

Luthy, et al. (2004) recognised various contributing factors towards the stressful transition from being a student to a professional. They found that insufficient preparation by the medical schools and lack of support and education for the newly qualified doctors were contributing factors. However, the amount of experience gained during clinical training in

their undergraduate years was able to reduce stress to some extent (Illing, Peile and Morrison, 2008). These findings imply that the hands-on clinical skills that were acquired during clinical training were essential and could not have been replaced with anything else. Furthermore, it was deemed crucial that the medical school curriculum aim at providing a cumulative exposure to clinical environments during the undergraduate programmes (Brennan, et al., 2010), as clinical experience is key to professional competence (Kline and Hodges, 2006).

Mostert-Wentzel, Frantz and Van Rooijen (2013a) advised that in order for the community service physiotherapists to be prepared for the nature of community service, as undergraduates they have to be exposed to the complex health care environment in different settings, treating common conditions and risk factors contributing to local burden of disease. They need to have a thorough understanding of social justice and the determinants of health. There is limited research done on how undergraduate students view their clinical experiences during paediatric clinical placements and how it prepares them for the realities of their employment in South Africa (Naidoo, Van Wyk and Joubert, 2014; Singh, et al., 2015). McKenna, et al. (2001) highlighted that the undergraduate paediatric clinical experience is essential, and it has the potential to influence students whether or not to choose paediatrics as a career path upon graduation. A South African study by Ernstzen, Bitzer and Grimmer-Somers (2009) explored the learning experiences of final-year physiotherapy students during their primary health care clinical placement. This group of students felt that the clinical placement did not adequately prepare them to render primary health care services, particularly in areas of the foundational aspects of group therapy and home-based care, the social determinants of health, and the contextual factors of the community being served. They acknowledged that although there was much to learn on the clinical block, these learning opportunities were not always aligned with the outcomes of the clinical block, and there were less opportunities for interdisciplinary collaborations, as some were just ignorant about one another's roles.

The perception of adequate preparedness was influenced by the years of working experience in a systemic review study by Lau, et al. (2016) in Australia where the researchers investigated the experiences of physical therapists working in acute hospital settings. They found that novice physical therapists tend to feel less confident about their decision-making skills and have a less defined sense of professional identity, i.e. they struggled to discern their

role within the interdisciplinary team as well as the role of other health care professionals. These findings were also in consistent with the employers' perspectives on the novice physiotherapy graduates in New Zealand. The employers in the aforementioned study perceived that their graduates demonstrated low confidence in generic skills, i.e. communication, decision-making, collaboration, and critical thinking when compared with profession-specific skills (Sole, et al., 2012). It appears that confidence and competence in generic skills contribute largely towards preparing students for their future workplace. Thus it cannot be emphasised enough that these skills need to be incorporated into the undergraduate curriculum.

2.10 Community Service Physiotherapy and the Multidisciplinary Team

The primary motive of introducing compulsory community service was to improve staffing (Penn, Mupawose and Stein, 2009). Part of the motive was also to provide services in previously under-serviced areas.

Physiotherapists are part of the clinical health care team in the workplace, and the nature of their job is very interactive. Therefore, community service physiotherapists need to comprehend the functions and roles of other health care team members and also be able to communicate with them effectively in order to render high-quality and coordinated client care services (Barnsteiner, et al., 2007). This interprofessional team approach enhances collaborative work, but translation into everyday practice becomes a challenge due to time constraints and ineffective communication skills (Morgan, Pullon and McKinlay, 2015). It also promotes sharing of knowledge and experiences amongst different health care professionals (Barrett, Sellman and Thomas, 2005; Atwal and Caldwell, 2006). Darragh, Huddlestone and King (2009) and Simons, Ziviani and Copley (2011) highlight in their studies that the increasing number of patients with chronic conditions, shortages in staff members, and the ageing population were key indicators for the interprofessional team approach towards patient care.

2.11 Conclusion

In summary, about three in ten people in South Africa are below the age of 15 years, and the majority are children (11%) below the age of 5 years. The newly graduated physiotherapists entering the workplace will be confronted with a high number of paediatric patients with

neurodevelopmental delays, long-term health conditions, and lifelong disabilities because of the quadruple burden of diseases. The management of these children requires an interdisciplinary team approach. Thus, universities have the responsibility to adequately equip their students with skills necessary to help them render paediatric services. Little information is known concerning how community service physiotherapists perceive their undergraduate training in paediatrics.

The chapter that follows will consider the research methodology employed in this study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The foregoing chapter reviewed literature relevant to this study. In this chapter, the methodology used will be described under the following subheadings: the study design, study context, study population, inclusion criteria, exclusion criteria, sample selection, assessment tool, procedure, and statistical analysis. Ethical considerations will also be discussed in this chapter.

3.2 Study Design

A descriptive cross-sectional study (Alexander, et al., 2015) was conducted amongst community service physiotherapists in the year 2015. A self-administered online questionnaire (Singh, et al., 2015) with RedCap was used to collect data.

3.3 Study Context

Final-year physiotherapy students are required to apply where they would like to work in the following year of compulsory community service. Each applicant is allowed an initial choice of five preferred placement locations that are drawn from a list of public health facilities approved for community service by the Department of Health. It has been reported that during this first round, approximately 85% of applicants are placed according to their first choice. The remaining 15% will need to choose again in the second round of placements, and in this round, about 10% of applicants are placed. If applicants did not secure placements in either the first or second round, they will be allocated to the remaining posts in the country – wherever these may be (Department of Higher Education and Training, 2015).

The national statutory office will then consolidate the list to be distributed to the senior Allied Health managers in the nine provinces of South Africa. The list is then distributed further down to physiotherapy provincial coordinators for service placement. Community service physiotherapists provide physiotherapy services in the public health sector at different hospital levels (tertiary, regional, and district), special schools, and rehabilitation centres (Mostert-Wentzel, Frantz and Rhoda, 2013a).

3.4 Study Population

The study was conducted amongst community service physiotherapists that have graduated from the eight universities that offered physiotherapy training in the year 2014. In South Africa, the bachelor's degree in physiotherapy is offered as a four-year full-time course that is equivalent to NQF Level 08. Physiotherapists should possess the same critical cross-field outcomes as other professionals at the same NQF level (SAQA, 2014). In the year 2014, there were 352 fourth-year physiotherapy students who graduated (University of Pretoria=44, Sefako Makgatho Health Sciences University=42 (previously known as University of Limpopo – Medunsa campus), University of the Witwatersrand=33, Stellenbosch University=44, University of Cape Town=52, University of the Western Cape=47, University of KwaZulu-Natal=52, and University of the Free State=38). (Information provided by the heads of physiotherapy departments.)

3.5 Inclusion Criteria

The study included all community service physiotherapists who graduated in the year 2014 (N=352) with a bachelor's degree in physiotherapy from all eight medical universities of South Africa and who were willing to participate in the study.

3.6 Exclusion Criteria

There were no exclusion criteria. Those who did not want to participate opted not to complete the online questionnaire.

3.7 Sample Selection

A convenience sampling technique was used for this study. This technique is defined as a type of non-probability sampling technique. Non-probability sampling focuses on sampling techniques that are based on the judgement of the researcher (Lund research, 2012). In this case, the researcher only used participants that were contactable, i.e. had valid email addresses and were willing to take part in the study.

3.8 Sample Size

Based on the sampling error of 5% and a population size of 352, a sample size of 181 was required for this study. The sample size was calculated according to Yamane's (1967) formula below.

$$n = \frac{N}{1 + N(e)^2}$$

Where

n is the sample size

N is the population size

e is the sampling error (5%)

3.9 Assessment Tool

A self-constructed questionnaire was administered. This questionnaire was adapted from the questions that were used in an empirical study by Talberg and Scott (2014), where they gathered perceptions of physiotherapy students regarding their preparedness to enter clinical practice. However, this was developed online (not face to face) with RedCap as the administrator (see Appendix D). This questionnaire was administered in a cross-sectional study with the aim of determining whether South African community service physiotherapists perceived their undergraduate experiential learning programmes in paediatrics to have adequately prepared them for employment and to further determine factors that lead to the perception of adequate preparedness.

The questionnaire contained 41 questions categorised into four sections:

- Section A of the questionnaire sought participant demographics including gender, age, the university they qualified from, and provinces in which they were employed.

- Section B compared the implementation of the undergraduate paediatric block across the eight universities. The participants were asked to indicate the year in which their

university started with the paediatric block rotations, the duration, and the type of paediatric block(s).

- Section C was about the paediatric service delivery in their first year of employment and the mentoring and support systems made available for them.

- Section D was aimed at determining the perception about their confidence in both generic and profession-specific skills. Generic skills are non-profession-specific, and they included communication, interdisciplinary collaboration, and advocacy, whereas the profession-specific skills included the ability to use outcome measures when designing a treatment plan, to make a differential diagnosis, to educate caregivers, to prescribe home exercise programmes, and to identify and adapt treatment. The questions in section D were based on the competency framework that was developed to guide the education and training of physiotherapy students and to further determine the physiotherapy exit-level outcomes by Krause, et al. (2006).

A modified four-point Likert scale was used, where 1 indicated 'not at all confident', 2 'unsure', 3 'confident', and 4 'extremely confident' (Porter, et al., 2013).

3.9.1 Validity

Face and content validity of the questionnaire was ensured by a panel consisting of five members of experienced physiotherapists in the field of paediatrics (Talberg and Scott, 2014). The link to the RedCap questionnaire was sent by email to the panel to input on the face validity of the tool. The views of the panel did not result in any changes being effected. The same panel also addressed the content validity of the questionnaire. The research aim and study objectives were attached to the email with the link to each member on the panel. The members of the panel responded individually to the researcher via email and gave input about the content of the questionnaire, i.e. whether the questions asked in the questionnaire would be able to address the research aim and its objectives. A meeting was convened to discuss and clarify certain aspects of the questionnaire. Feedback resulted in some minor grammatical changes being made on the questionnaire.

3.9.2 Reliability

The reliability of the self-constructed questionnaire was addressed by the varying response formats on the questionnaire to restrict a response set (Siniscalco and Auriat, 2005). The closed-response formats comprised checklists where participants just 'click' a four-point Likert scale and open-response formats were given a text box for participants to elaborate on their response for clarity. Reliability was also ensured by means of a pilot study (Lodico, Spaulding and Voegtle, 2010) and through the use of one researcher who managed the administration of the questionnaire and data capture (Mangrey, et al., 2010). Test re-test reliability was not established.

3.9.3 Pilot study

A pilot study was conducted with three post-community service physiotherapists and two experienced physiotherapists with more than three years of clinical experience. They assessed the questionnaire with regard to the flow of the questions, whether it would be easy to collect meaningful data, response formats, the length of the questionnaire, the layout, and the wording (Singh, et al., 2015). Minor changes were made to the questionnaire to improve the clarity of a few questions.

3.9.4 Bias

The inherent bias in convenience sampling implies that the sample is unlikely to be representative of the population being studied (Lund research, 2012). It will also be difficult to make generalisations with the findings from the sample. To minimise bias, participants received a link (https://redcap.core.wits.ac.za/redcap/surveys/?s=kzYnJWvnbR) via email to the online RedCap questionnaire, which was unique to each participant so that it could not be shared with multiple participants. All responses were anonymous. The names of the universities were numbered. The returned questionnaires were given numerical record identities to track missing responses. Only the researcher and the statistician had access to raw data and utilised a codebook to analyse data.

3.10 Procedure

The research procedure would be best demonstrated in the flow chart in Figure 3.1.

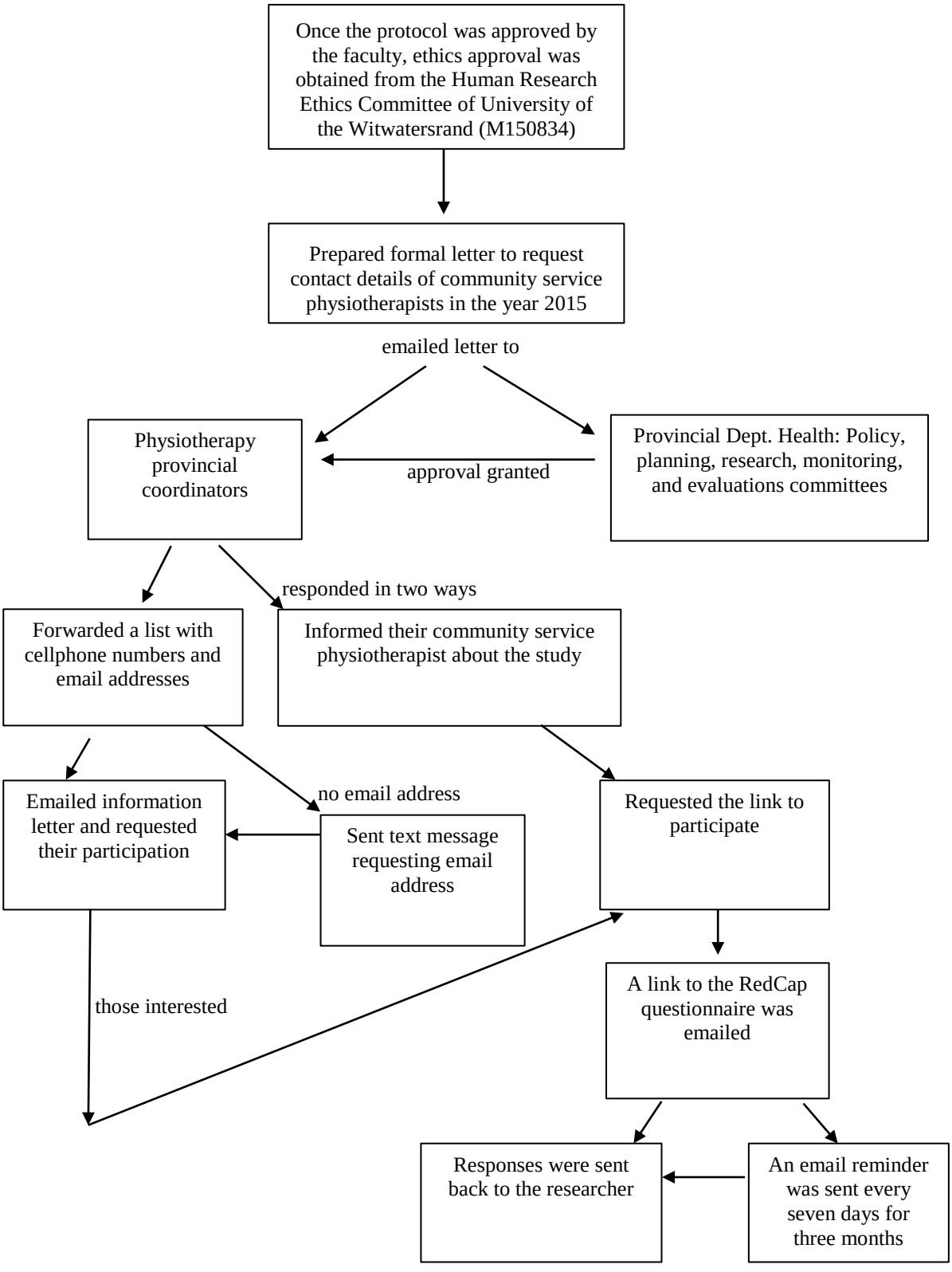

Figure 3.1: Research procedure

3.11 Statistical Analysis

The software that was used in the study to analyse data was STATA version 9.0. Data was assessed for missing values, and questionnaires that were incomplete were excluded from data analysis.

Continuous data was interpreted with mean scores and standard deviations (Mean±SD), whilst categorical data was interpreted with percentages and frequencies. For comparison of continuous data, analysis of variance (ANOVA) was used to establish whether there was an overall significant difference in the different areas of clinical skills in all eight universities. These clinical skills included the ability to use outcome measures, to interact with children, to communicate with the child's family, and to work with other health professionals. They also included being able to make a differential diagnoses, to educate the caregiver, to construct and implement a treatment plan and to reassess, to adapt treatment, to advocate for the child's needs, and to prescribe a home exercise programme.

A Bonferroni post-hoc analysis was used to assess where differences exist between the universities. Fisher's exact test was used to determine factors which significantly contributed towards the graduates' perception of adequate preparedness which was tested against gender, age, university they qualified from, total number of weeks spent in the clinical block, and the specific paediatric block in both third and fourth year. Fisher's exact test was preferred, as data in this study was derived from a small sample size and it had a small number of expected values in the contingency table (Lund research, 2012). The use of this test was also determined by the low responses on some of the questions specified in section B of the questionnaire, which investigated the undergraduate paediatric clinical block. A p-value of 0.05 was considered statistically significant. All categorical responses on the questionnaire were exported to Microsoft Office Excel 2007 spreadsheet, and free text responses were collated in word-processed documents (Microsoft Office Word 2007).

Table 3.1: Variables and statistical analysis

OBJECTIVES	VARIABLES	STATISTICAL ANALYSIS
1. To describe demographics Age, Gender, University, Placement, and Province	Categorical	Percentages and Frequencies
2. To compare the implementation of the undergraduate paediatric blocks 2.1 Commencement of the block 2.2 Duration of the block 2.3 Type of paediatric block 2.4 Confidence in skills	Categorical	Percentages, Frequencies, ANOVA
3. To determine factors of perceived adequate preparedness	Categorical	Fisher's exact test

3.12 Ethical Considerations

Ethical clearance to conduct the study was first obtained from the Human Research Ethics Committee (medical) of the University of the Witwatersrand. The clearance certificate number is M150834 (see Appendix B). This ethical clearance certificate allowed the researcher to request permission to conduct the study at the provincial departments of health in North West, Free State, and the Eastern Cape and from the provincial physiotherapy coordinators in Limpopo, Gauteng, Northern Cape, Western Cape, and Mpumalanga. The study followed the basic research ethics principles that follow.

3.12.1 Autonomy

Respect for autonomy was considered in this study, as the researcher took the responsibility of being transparent when requesting permission to conduct the study by attaching the study's clear objectives and research aims on the request letters. The researcher explained further that the purpose of conducting the study was in partial fulfilment of the requirements for the degree of Master of Science in Physiotherapy. As this was an online survey, there was no formal written informed consent that the participants could complete prior to participating in the study. However, it was explained to them that consent to participate was implied by returning the completed questionnaire (McMahon, Cusack and Donoghue, 2014). Participation in the study was not coerced, but it was out of free willingness to participate, i.e. there were no incentives promised to participants. Confidentiality was ensured, and all responses were anonymous.

3.12.2 Justice

The researcher exercised fairness in the distribution of the questionnaire for the study. The study was an online survey; therefore, all participants received a link through their email addresses to the RedCap questionnaire. No participant was given a hard copy of the questionnaire.

3.12.3 Beneficence

The results of the study will be published. The study will add to the body of physiotherapy research that is available, in particular, paediatrics. Participation in the study will encourage the participants to make their own self-assessment of competence in the field of paediatric physiotherapy.

3.12.4 Non-maleficence

The intention of the study was not to cause harm, and thus the participants had to weigh the risks and benefits of participating in the study. The risk involved participants using their private internet to complete the online survey; therefore, this had cost implications. The benefit involved the participants contributing to the large body of research in physiotherapy.

3.13 Conclusion

In conclusion, this cross-sectional study had a total population of 352 community service physiotherapists that met the inclusion criteria, but only 101 community service physiotherapists participated in the study. A self-constructed online questionnaire (RedCap) was developed, and participants took part in the study by following a link. The statistical test used to analyse data was STATA version 9.0. Statistical significance was set at $p<0.05$.

The next chapter presents the findings of this chapter.

CHAPTER 4: RESULTS

4.1 Introduction

The previous chapter discussed the research methodology used in the study. In this chapter, the results of the study are presented and interpreted. A total number of 352 fourth-year physiotherapy students graduated from the eight different universities in the year 2014. Of this total population, only 250 had valid email addresses. The link to the RedCap questionnaire was emailed to all the 250 graduates, and only 101 physiotherapy graduates (101/250) completed the questionnaire. One questionnaire was disqualified, as the participant did not enter any information in the demographic fields. The response rate for this study was therefore 40%. This is 55% of the target sample size of 181 as calculated in Chapter 3 section 3.7.

4.2 The Socio-Demographic Characteristics of the Community Service Physiotherapists

4.2.1 Gender

The physiotherapy profession is represented by both the male and female genders. Figure 4.1 illustrates participation in the study by gender, i.e. female versus male participation (n=100):

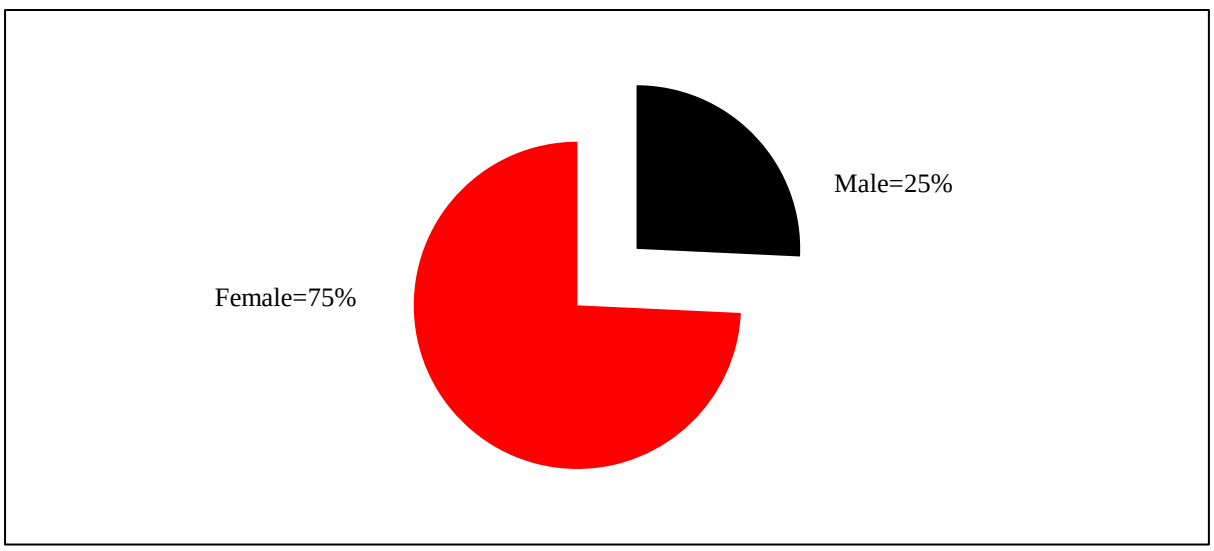

Figure 4.1: Gender of participants (n=100)

According to Figure 4.1, the majority of the graduates (75%) who took part in the study were female.

Since the female gender dominated in the study compared to the male gender, it may give the impression that perhaps they dominated even in class. Table 4.1 shows the breakdown of the participants' gender by their universities.

Table 4.1: Breakdown of gender per university (n=100)

University	Female	Male
1 (n=8)	7	1
2 (n=13)	10	3
3 (n=14)	10	4
4 (n=10)	7	3
5 (n=13)	13	0
6 (n=4)	2	2
7 (n=24)	15	9
8 (n=14)	10	4

It was interesting to note from Table 4.1 that the female representation dominated across all the universities except in University Six, where the female and male genders were presented equally. However, there was a very low response from this university, so this is probably not representative of the entire class.

4.2.2 Age

Physiotherapy is a four-year full-time course. Considering that there are no requirements to work before enrolling for the profession, physiotherapy students can finish the course at an early age. Figure 4.2 shows the age range of the physiotherapy graduates by the time they completed their degree in South Africa (n=100).

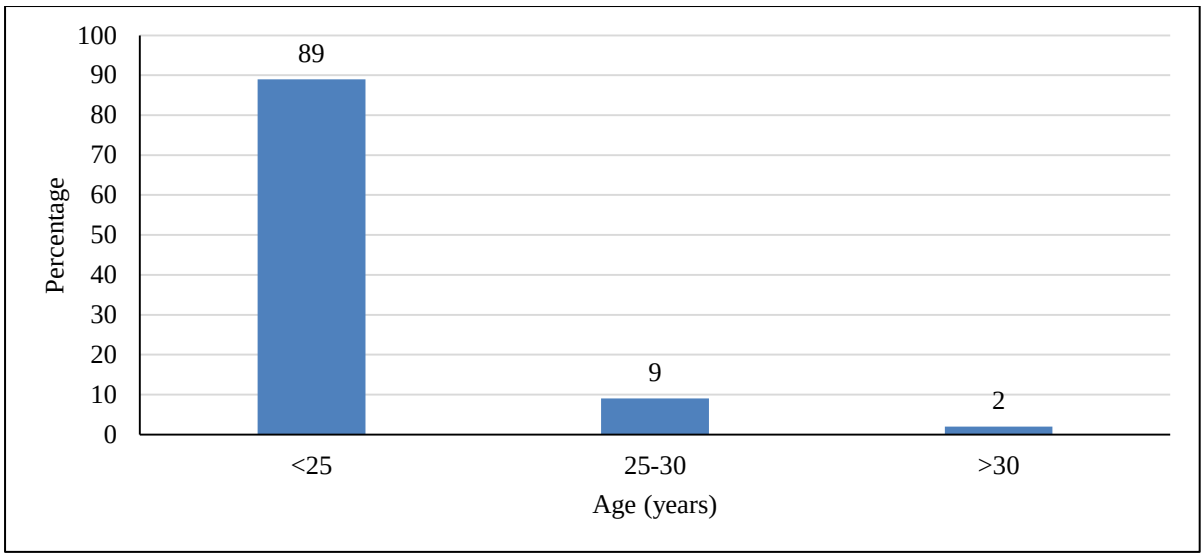

Figure 4.2: Age of participants (n=100)

Figure 4.2 indicates that the majority of the physiotherapy graduates (90%) who participated in the study were younger than 25 years.

4.2.3 University

The degree Bachelor of Science in Physiotherapy is currently offered at eight different universities in South Africa. Table 4.2 shows the number of participants from each university. The universities have been numbered for the sake of anonymity.

Table 4.2: Participation of community service physiotherapists per the universities they graduated from (n=100)

University	n	Frequency
1	8	8.0%
2	13	13.0%
3	14	14.0%
4	10	10.0%
5	13	13.0%
6	4	4.0%
7	24	24.0%
8	14	14.0%

All eight universities were represented in the study. Tables 4.5 highlights that there was a high participation (n=24) in the study of physiotherapy graduates from University Seven. Participation of physiotherapy graduates from University Six was relatively low (n=4).

4.2.4 Province

Community service physiotherapists are placed in all the nine provinces of South Africa upon graduation. Table 4.3 shows in which provinces the participants who responded to this questionnaire were employed.

Table 4.3: Participation of community service physiotherapists per province (n=100)

	Province								
University	**LP**	**GP**	**MP**	**NC**	**NW**	**KZN**	**WC**	**EC**	**FS**
1 (n=8)	1	1	1	2	0	1	1	1	0
2 (n=13)	1	2	1	0	0	5	4	0	0
3 (n=14)	1	6	0	0	0	5	2	0	0
4 (n=10)	5	3	2	0	0	0	0	0	0
5 (n=13)	2	8	1	0	2	0	0	0	0
6 (n=4)	1	0	1	2	0	0	0	0	0
7 (n=24)	2	16	2	0	0	4	0	0	0
8 (n=14)	0	1	0	0	0	13	0	0	0
Total	**13**	**37**	**8**	**4**	**2**	**28**	**7**	**1**	**0**

The majority of the participants (n=37) in Table 4.3 were placed in Gauteng province and KwaZulu-Natal province (n=28) compared to other provinces. In the Eastern Cape province, there was only one graduate (n=1) who participated in the study. There was only one province (Free State) that did not have community service physiotherapists participating in the study, and therefore it was not represented.

4.2.5 Current placement

Community service physiotherapists could be placed in different health sectors such as hospitals, rehabilitation centres, clinics, or special schools. Figure 4.3 shows where the participants (n=97) were currently working.

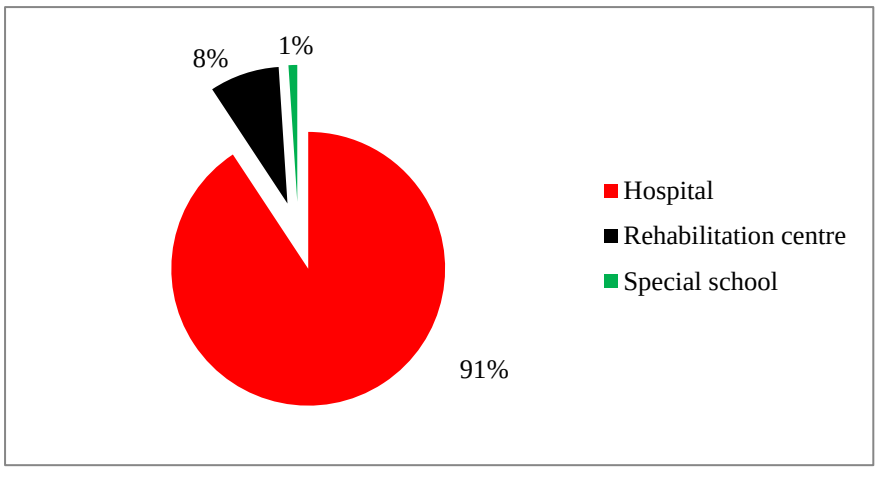

Figure 4.3: Current placement of the community service physiotherapists (n=97)

A majority of the community service physiotherapists (91%), as shown in Figure 4.3, were currently working in public hospitals.

4.2.6 Hospital levels

The secondary health care system consists of district, regional, and tertiary hospitals. Figure 4.4 shows the different levels of hospitals where the participants (n=88) were placed.

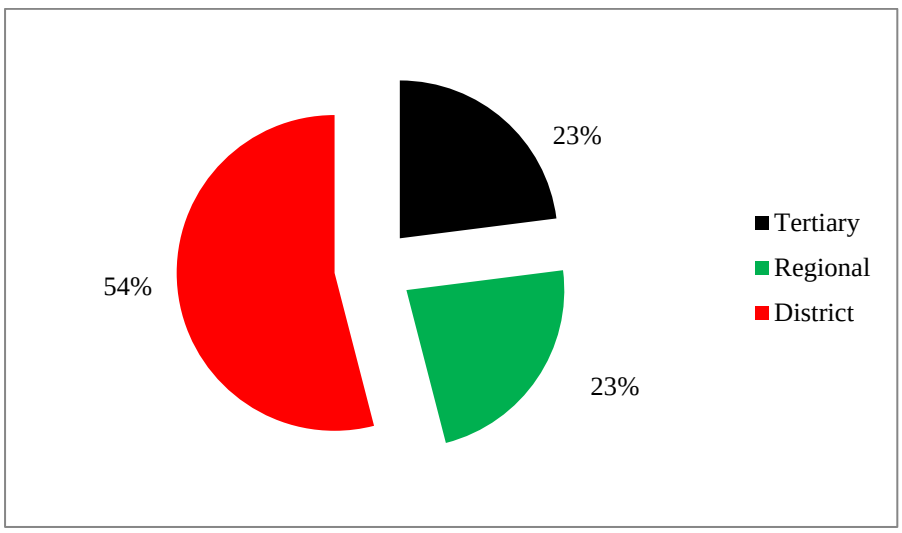

Figure 4.4: The level of hospital where the majority of community service physiotherapists were working (n=88)

Of the 91% of community service physiotherapists placed in hospitals, as illustrated in Figure 4.4, more than half (54%) of them were in district hospitals.

4.3 A Comparison of the Implementation of the Undergraduate Paediatric Block Across the Eight Universities

The experiential learning for the undergraduate physiotherapy programmes usually starts during the third year of the curriculum and then continues into the fourth year. Table 4.4 demonstrates how the specific paediatric block rotation was implemented across the eight universities.

Table 4.4: Implementation of the undergraduate paediatric block per university (n=100)

UNIVERSITY	PARTICIPANTS WITH PAEDIATRIC BLOCK IN 3RD YEAR	AVERAGE NUMBER OF WEEKS PER STUDENT (allocated by university)	PARTICIPANTS WITH PAEDIATRIC BLOCK IN 4TH YEAR	AVERAGE NUMBER OF WEEKS PER STUDENT (allocated by university)
1. (n=8)	0	0	8	5
2. (n=13)	0	0	13	6
3. (n=14)	14	5	13	5
4. (n=10)	10	4	0	0
5. (n=13)	0	0	12	4
6. (n=4)	2	5	2	4
7. (n=24)	24	4	24	4
8. (n=14)	4	4	0	0

According to Table 4.4, it appears that not all the universities offered a specific paediatric block, i.e. a practical block preserved for the assessment and treatment of children and adolescents. Only three universities (University Three, University Four, and University Seven) had a specific paediatric block in the third year in which all the participants got paediatric experience in the block. Two universities (University Six and University Eight) had a paediatric block, but not all students took part in the block. This paediatric block may have been regarded as an elective block where participants may have chosen to have it as a block in either third or fourth year.

Most of the universities (six out of eight) had a paediatric block in the final year in which all the participants gained paediatric experience. Only two universities (University Three and University Seven) had a specific paediatric block both in third and fourth year.

Although some universities did not have a specific paediatric block(s), students will often gain paediatric experience whilst placed on other clinical blocks (mixed block) such as community, neurology, or orthopaedics. The students that had a specific paediatric block may also gain more paediatric experience whilst placed on these blocks. Table 4.5 shows the number of participants who only gained experience via the mixed block and participants that gained more paediatric experience whilst on the mixed block.

Table 4.5: The number of participants with additional paediatric block (n=64)

TOTAL NUMBER OF PARTICIPANTS WITH MIXED PAEDIATRIC BLOCK	TOTAL NUMBER OF PARTICIPANTS WHO ACCUMULATED EXPERIENCE IN THE MIXED BLOCK + PAEDIATRIC BLOCK	TOTAL NUMBER OF PARTICIPANTS WHO GAINED EXPERIENCE IN THE MIXED BLOCK ONLY
n=64	n=56	n=8

The majority of the participants (n=64) had the opportunity to see paediatric patients on other blocks, and more than half of them (n=56) had previously gained experience from the specific paediatric block. Therefore, the mixed block was additional exposure for them. Table 4.5 brings out that a few (n=8) were only exposed to paediatrics through a mixed block.

Students in their clinical blocks need to be supported by means of clinical supervision which may arise from clinical supervisors, clinical educators, and their university lecturers. Table 4.6 shows the most frequent form of clinical supervision the students received.

Table 4.6: Type of supervision during the paediatric block (n=100)

University	Clinical supervisor	Clinical educator	University lecturer
1 (n=8)	5	2	1
2 (n=13)	10	2	1
3 (n=14)	10	4	0
4 (n=10)	8	0	2
5 (n=12)	10	2	0
6 (n=4)	4	0	0
7 (n=24)	23	0	1
8 (n=4)	4	0	0
Total	**80**	**10**	**5**
Overall %	**90%**	**11%**	**6%**

Table 4.6 indicates that the majority of the participants (n=80) reported that they frequently received clinical supervision from their clinical supervisors during their paediatric block.

The universities have the responsibility of arranging paediatric clinical areas for students at various clinical sites. Table 4.7 presents the various clinical areas that students were allocated to by their different universities.

Table 4.7: Clinical areas covered during the paediatric block per university (n=89)

	SPECIAL SCHOOL		GENERAL WARDS		CLINIC		POPD		PICU		NICU	
UNIVER-SITY	**3rd**	**4th**	**3rd**	**4th**	**3rd**	**4th**	**3rd**	**4th**	**3rd**	**4th**	**3rd**	**4th**
1 (n=8)	0	2	0	6	0	0	0	0	0	0	0	0
2 (n=13)	0	6	0	3	1	3	0	0	0	0	0	0
3 (n=14)	9	9	3	3	2	0	0	0	0	0	0	0
4 (n=10)	2	0	7	0	0	0	2	0	0	0	0	0
5 (n=12)	0	8	0	4	0	0	0	0	0	0	0	0
6 (n=4)	1	2	1	0	0	0	0	0	0	0	0	0
7 (n=24)	23	0	0	24	1	0	0	0	0	0	0	0
8 (n=4)	0	0	3	0	0	0	1	0	0	0	0	0
Total	**35**	**27**	**14**	**40**	**4**	**3**	**3**	**0**	**0**	**0**	**0**	**0**

According to Table 4.7, the majority of the participants were allocated clinical areas at special schools and general wards in the hospitals. The participants did not work in paediatric and neonatal intensive-care units.

4.4 The Perceptions of Community Service Physiotherapists about Their Undergraduate Paediatric Programmes

The average length of the paediatric block was between four to six weeks as seen in Table 4.4. Table 4.8 presents whether the participants perceived the paediatric block to have been long enough for them to gain skills necessary for working with children.

Table 4.8: The perception of community service physiotherapists on whether the paediatric block was long enough for them per university (n=89)

UNIVERSITY	YES (n)	NO (n)
1. (n=8)	5	3
2. (n=13)	10	3
3. (n=14)	11	3
4. (n=10)	6	4
5. (n=12)	2	10
6. (n=4)	3	1
7. (n=24)	16	8
8. (n=4)	1	3
Total	**54**	**35**
Overall %	**61%**	**39%**

Overall, more than half of the community service physiotherapists (n=54) were satisfied with the average length of weeks spent during the paediatric block(s). However, as Table 4.8 shows, the majority of the participants from University Five (n=10) and University Eight (n=3) felt that the paediatric block was not long enough for them.

For students to gain clinical experience and improve on clinical skills, there needs to be a sufficient supply of paediatric patients during the block. Table 4.9 presents whether the participants were satisfied with the provision of patients during the paediatric block.

Table 4.9: Community service physiotherapists' satisfaction with the number of paediatric patients on the block per university (n=89)

UNIVERSITY	YES (n)	NO (n)
1. (n=8)	7	1
2. (n=13)	8	5
3. (n=14)	8	6
4. (n=10)	6	4
5. (n=12)	7	5
6. (n=4)	2	2
7. (n=24)	18	6
8. (n=4)	3	1
Total	**59**	**30**
Overall %	**66%**	**34%**

Overall, 66% of the participants from all the eight universities were satisfied with the provision of paediatric patients that they had during the paediatric block, according to Table 4.9.

The undergraduate physiotherapy training consists of the theoretical part and the practical part whereby students can transfer what they learnt in class to a real situation. Table 4.10 highlights whether the participants were exposed to similar paediatric conditions that they learnt in the classroom.

Table 4.10: Paediatric conditions seen on the block versus conditions taught in class (n=89)

UNIVERSITY	YES (n)	NO (n)
1. (n=8)	8	0
2. (n=13)	12	1
3. (n=14)	8	6
4. (n=10)	8	2
5. (n=12)	11	1
6. (n=4)	3	1
7. (n=24)	22	2
8. (n=4)	4	0
Total	**76**	**13**
Overall %	**85%**	**15%**

Overall, according to Table 4.10, 85% of the participants confirmed that they were exposed to paediatric conditions during the block similar to those they were taught in the classroom.

The purpose of the undergraduate experiential learning programme is to prepare students for their workplace. Table 4.11 presents whether the participants felt that their universities had adequately prepared them to render paediatric services at their workplace.

Table 4.11: Community service physiotherapist's perception of adequate preparedness to render paediatric services per university (n=99)

UNIVERSITY	ADEQUATELY PREPARED	NOT ADEQUATELY PREPARED
1. (n=8)	88% (n=7)	12% (n=1)
2. (n=13)	69% (n=9)	31% (n=4)
3. (n=14)	43% (n=6)	57% (n=8)
4. (n=10)	80% (n=8)	20% (n=2)
5. (n=13)	15% (n=2)	85% (n=11)
6. (n=4)	50% (n=2)	50% (n=2)
7. (n=24)	75% (n=18)	25% (n=6)
8. (n=13)	38% (n=5)	62% (n=8)

The majority of the participants from four different universities (University One, University Two, University Four, and University Seven) felt that their universities have adequately prepared them to render paediatric services, whereas participants from University Three, University Five, and University Eight felt that their universities have inadequately prepared them to render paediatric services. Based on Table 4.11, it is of interest that University Three, University Four, and University Seven had a specific paediatric block as a part of their undergraduate curriculum.

ANOVA was used to compare the overall significant difference in each clinical skill in graduates from the eight universities. The clinical skills included the following:

- ability to use outcome measures;
- ability to interact with children;
- ability to communicate with the child's family;
- ability to work with other health professionals;
- ability to make a differential diagnoses;
- ability to educate the caregiver;
- ability to construct and implement a treatment plan and to reassess;
- ability to adapt treatment;
- ability to advocate for the child's needs'; and
- ability to prescribe a home exercise programme.

The p-value was calculated within each clinical skill. When the p-value was <0.05, a post-hoc analysis test was used to determine which specific universities differed. A modified four-point Likert scale was used for the participants to rate their level of confidence whereby 1 was not at all confident, 2 was unsure, 3 was confident, and 4 was extremely confident. Thus the maximum mean score would be 4. Table 4.12 shows ANOVA results of confidence in competencies across the eight universities.

Table 4.12: Confidence in clinical skills per university (n=100)

SKILLS	UNIVERSITY	MEAN±SD	P-VALUES
1. Ability to make differential diagnoses	1	2.5±0.78	0.02
	2	2.6±0.48	
	3	2.4±0.76	
	4	2.8±0.91	
	5	1.9±0.28	
	6	2.8±0.50	
	7	2.7±0.69	
	8	2.6±0.49	
2. Ability to educate caregiver	1	3.5±0.53	0.01
	2	3.3±0.63	
	3	2.9±0.77	
	4	3.6±0.51	
	5	2.8±0.43	
	6	3.5±0.58	
	7	3.1±0.68	
	8	3.3±0.47	
3. Ability to construct and implement a treatment plan and to reassess	1	3.1±0.35	0.00
	2	2.9±0.64	
	3	2.6±0.84	
	4	3.4±0.52	
	5	2.3±0.48	
	6	3.3±0.50	
	7	3.1±0.58	
	8	3.1±0.53	
4. Ability to adapt physiotherapy intervention	1	3.0±0.76	0.01
	2	2.8±0.69	
	3	2.8±0.89	
	4	3.4±0.69	
	5	2.4±0.51	
	6	3.0±0.00	
	7	3.1±0.65	
	8	3.1±0.36	
5. Ability to advocate for the child's needs	1	3.4±0.51	0.03
	2	2.8±0.38	
	3	2.4±0.76	
	4	3.1±0.60	
	5	2.8±0.55	
	6	3.0±0.00	
	7	2.8±0.65	
	8	2.9±0.53	

The highlighted areas in Table 4.12 depict those universities with a low mean confidence level for certain clinical skills. Only five clinical skills (5/10) had an overall statistically significant difference across the eight universities.

(i) Ability to make a differential diagnosis

There was an overall statistically significant difference (p=0.02) in confidence with the perception of making a differential diagnosis across the universities. The post-hoc analysis showed that University Five had a significantly lower score than University Four and University Seven respectively.

(ii) Ability to educate caregiver

There was an overall statistically significant difference (p=0.01) in confidence with the perception of educating the caregiver across the universities. The post-hoc analysis showed that University Five had a significantly lower score than University Four.

(iii) Ability to construct and implement a treatment plan and to reassess

The overall confidence with the perception of constructing and implementing a treatment plan and reassessment across the universities was very significant (p=0.00). The post-hoc analysis showed that University Five had a significantly lower score than University Four and University Seven respectively.

(iv) Ability to adapt physiotherapy intervention

There was an overall statistically significant difference (p=0.01) in confidence with the perception of adapting a physiotherapy intervention across the universities. The post-hoc analysis showed that University Five had a significantly lower score than University Four.

(v) Ability to advocate for the child's needs

There was an overall statistically significant difference (p=0.03) in confidence with the perception of advocating for the child's needs across the universities. The post-hoc analysis showed that University One had a significantly lower score than University Three.

4.5 Mentoring and Support Systems That Were Available to Physiotherapists during Their Year of Community Service

The newly qualified physiotherapists are expected to work under supervision during compulsory community service. However, for some graduates, this may not be the case. Figure 4.5 shows the number of community service physiotherapists who are working alone at their workplace (n=98).

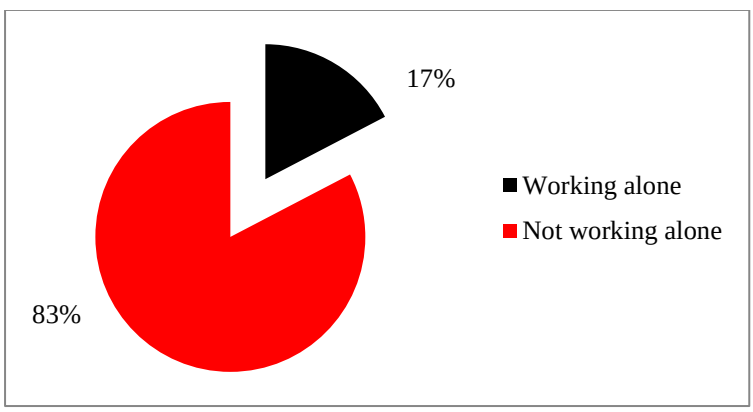

Figure 4.5: The number of community service physiotherapists working alone (n=98)

The results in Figure 4.5 show that a small group of community service physiotherapists (17%) were working alone in their departments.

Community service physiotherapists are usually expected to work in all clinical fields by means of rotation. Therefore, some might have had the opportunity to work in paediatrics. Figure 4.6 presents the number of community service physiotherapists who rotated to paediatrics.

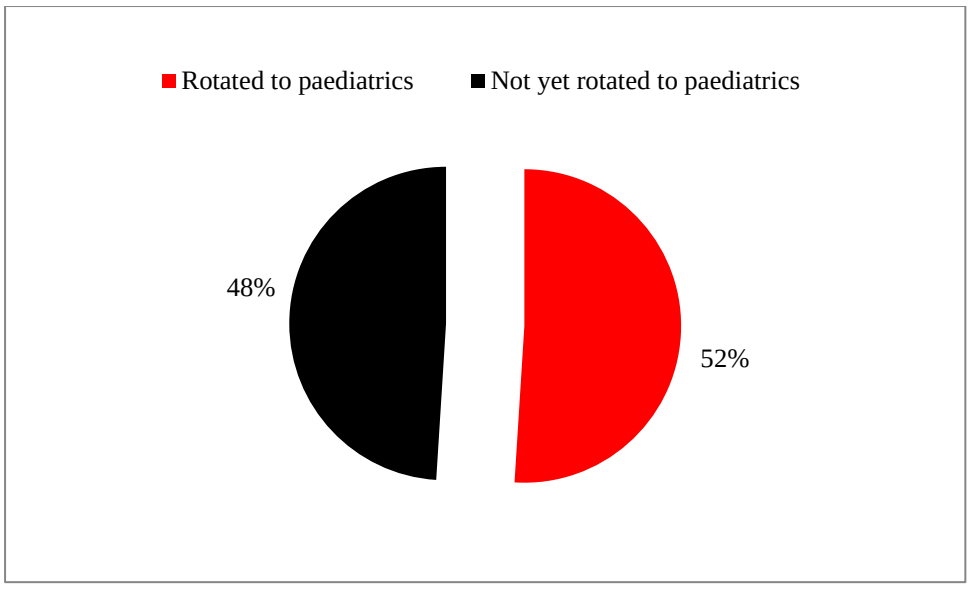

Figure 4.6: The number of community service physiotherapists with paediatric workplace experience (n=99)

The majority of the community service physiotherapists (52%), as shown in Figure 4.6, have had a chance to rotate to paediatrics. However, it was not clear how many perceived themselves as being adequately prepared.

Figure 4.7 shows the perception of adequate preparedness from community service physiotherapists with paediatric workplace experience.

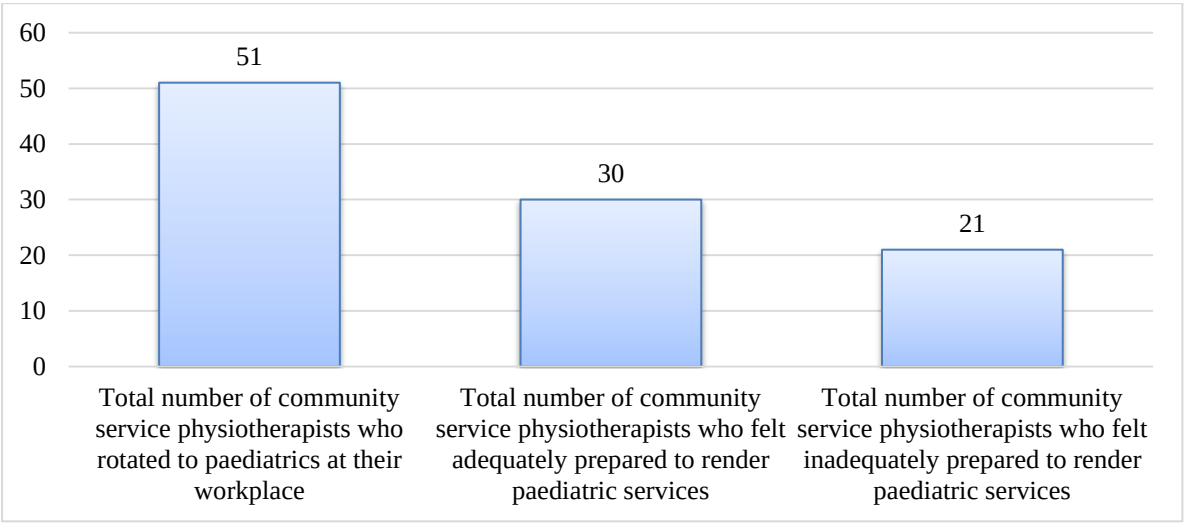

Figure 4.7: Perception of preparedness amongst community service physiotherapists with paediatric workplace experience (n=52)

According to Figure 4.7, of the 52% of the participants that have rotated to the paediatric block at their workplace, about 30% of them felt adequately prepared by their undergraduate paediatric experiential learning programme.

Health care professionals including physiotherapists are encouraged to be scholars. Figure 4.8 shows the number community service physiotherapists who engaged in continuous professional development in the field of paediatrics.

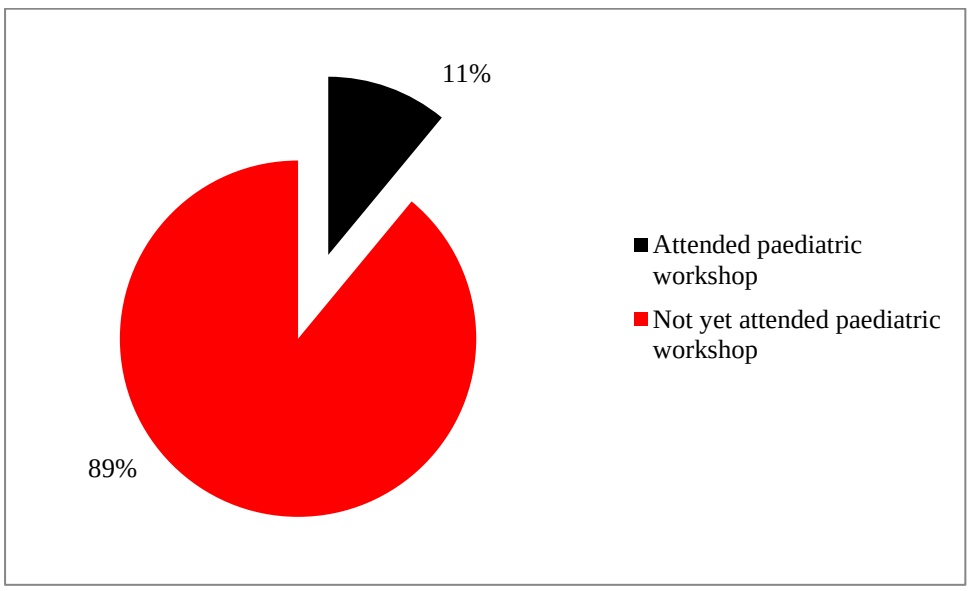

Figure 4.8: The number of community service physiotherapists who attended paediatric workshops (n=100)

Figure 4.5 illustrates that the majority of community service physiotherapists (89%) have not yet had the opportunity to attend paediatric workshops since the time they started working.

4.6 Factors that Contribute to the Perception of Adequate Preparedness for Working with Paediatric Patients

Fisher's exact tests were preferred for this study in order to accommodate the small sample size. They were used to determine the contributing factors towards the community service physiotherapists' perception of adequate preparedness to render paediatric services at their workplace.

Table 4.13: Perception of adequate preparedness versus gender (n=100)

PERCEPTION	MALE	FEMALE
Adequately prepared	16	41
Not adequately prepared	9	34
TOTAL	**25**	**75**

Fisher's exact=0.49

There was no statistically significant difference (p>0.05) between gender and the perception of adequate preparedness, as highlighted in Table 4.13.

Table 4.14 indicates whether age contributes to the perceptions of adequate preparedness.

Table 4.14: Perception of adequate preparedness versus age (n=100)

PERCEPTION	<25 YEARS	25-30 YEARS	>30 YEARS
Adequately prepared	59	5	0
Not adequately prepared	37	4	2
Total	**89**	**9**	**2**

Fisher's exact=0.36

The results in Table 4.14 show that there was no statistically significant difference (p>0.05) between the perceptions of adequate preparedness and age.

Table 4.15 indicates whether the university contributes to the perception of adequate preparedness.

Table 4.15: Perception of adequate preparedness versus university (n=99)

PERCEPTION	UNIV 1	UNIV 2	UNIV 3	UNIV 4	UNIV 5	UNIV 6	UNIV 7	UNIV 8
Adequately prepared	7	9	6	8	2	2	18	5
Not adequately prepared	1	4	8	2	11	2	6	8
Total	**8**	**13**	**14**	**10**	**13**	**4**	**24**	**13**

Fisher's exact=0.00

The results in Table 4.15 showed a statistically significant difference ($p<0.05$) between the perception of adequate preparedness and the university (all graduates with and without specific paediatric block).

Table 4.16 indicates whether the specific paediatric block in third year contributes to the perception of adequate preparedness.

Table 4.16: Perception of adequate preparedness versus the specific paediatric block in third year (n=99)

PERCEPTION	PARTICIPANTS WITH SPECIFIC PAEDIATRIC BLOCK IN THIRD YEAR	PARTICIPANTS WITHOUT SPECIFIC PAEDIATRIC BLOCK IN THIRD YEAR
Adequately prepared	38	19
Not adequately prepared	20	23
Total	**58**	**42**

Fisher's exact=0.06

The results in Table 4.16 highlighted a tendency towards a statistically significant difference ($p>0.05$) between the perception of adequate preparedness versus the specific paediatric block in third year. Additionally, the majority of graduates who had the specific paediatric block in third year (n=58) felt adequately prepared (n=38).

Table 4.17 indicates whether the specific paediatric block in fourth year contributes to the perception of adequate preparedness.

Table 4.17: Perception of adequate preparedness versus the specific paediatric block in fourth year (n=99)

PERCEPTION	PARTICIPANTS WITH SPECIFIC PAEDIATRIC BLOCK IN FOURTH YEAR	PARTICIPANTS WITHOUT SPECIFIC PAEDIATRIC BLOCK IN FOURTH YEAR
Adequately prepared	44	13
Not adequately prepared	30	12
Total	**74**	**25**

Fisher's exact=0.64

There was no statistically significant difference (p>0.05) between the perception of adequate preparedness versus the specific paediatric block in fourth year. Similarly, Table 4.17 shows that the majority of graduates who had the specific paediatric block in fourth year (n=74) felt adequately prepared (n=44).

Table 4.18 indicates whether the total number of weeks contributes to the perception of adequate preparedness.

Table 4.18: Perception of adequate preparedness versus the total number of weeks of paediatric experience (n=100)

PERCEPTION	0 WEEKS	1-8 WEEKS	9-12 WEEKS
Adequately prepared	0	45	9
Not adequately prepared	10	28	8
Total	**10**	**73**	**17**

Fisher's exact=0.12

According to Table 4.18, there was no statistically significant difference (p>0.05) between the perception of adequate preparedness and the total number of weeks spent in the paediatric practical block. However, those with cumulative clinical experience with reference to the number of weeks have shown to be adequately prepared.

4.7 Conclusion

Participation in the study was mainly from the female gender in all eight universities as compared to the male gender. The majority of these participants were allocated community service posts at district hospitals in the two most populated provinces, i.e. Gauteng province and KwaZulu-Natal province. Every participant reported to have gained clinical paediatric experience at the undergraduate level. Although its method of delivery varied across all the universities. Despite this, common ground was found in that the minimum duration of the clinical block was between four and six weeks and participants were satisfied with this duration and the paediatric patients they were given during the block, and therefore they could apply hands-on skills in the paediatric conditions that were taught in the classroom. As a result, 57% of the participants felt that their universities have adequately prepared them to render paediatric services at their current workplace. When determining the possible contributing factors towards this sense of adequate preparedness, it was found that the university that the community service physiotherapists have graduated from was statistically significant.

The results of this study will be discussed in detail in the following chapter.

CHAPTER 5: DISCUSSION

5.1 Introduction

The preceding chapter focused on the results of this study. In this chapter, the findings of the study from the previous chapter are discussed and compared with literature reviewed. The response rate for this self-administered online questionnaire was 40%. This response rate was higher when compared with the guidelines for online surveys which is about 33% (Nutty, 2008). In general, online surveys have been reported to achieve a low response rate when compared with paper-based surveys, i.e. in a face-to-face environment (Nutty, 2008). Despite this, online surveys have their own advantages. University students are usually familiar with technology and online teaching; thus, completing an online survey will not be foreign to them. There is also a cost-saving advantage as the cost of printing and mailing of questionnaires is eliminated, and the survey data is returned in an electronic format (Kaplowitz, Hadlock and Levine, 2004). On that account, the researcher preferred to use an online survey over a paper-based survey.

Nair, Wayland and Soediro (2005) investigated methods to boost online survey response rates at five universities in Australia. They identified two methods that worked, and these were to give incentives to students and to send repeat reminder emails to non-respondents. For this study, the method to send reminder emails to non-respondents was used. Reminder emails were sent every seven days for a period of three months. This method has contributed to the increase in the response rate. The method of providing incentives to participants was not preferred by the researcher, as it may have ethical implications with regard to undermining the autonomy of the participants in the study. The participants may complete the questionnaire for the sake of the reward and not carefully think about their responses.

The objectives of the study were to (1) describe the socio-demographics of the community service physiotherapists, (2) compare the implementation of the undergraduate paediatric block across the eight universities, (3) describe the perceptions of community service physiotherapists about their undergraduate paediatric programmes, (4) determine the mentoring and support systems that were available to physiotherapists during their year of community service, and (5) determine what factors may have contributed to the perception of adequate preparedness for working with paediatric patients.

5.2 The Socio-Demographic Profile of the Community Service Physiotherapists

5.2.1 Gender distribution

Figure 4.1 revealed that the majority of the community service physiotherapists (75%) who took part in the study were females as compared with the male community service physiotherapists (25%). Although the study had a small sample size and focused only on newly qualified physiotherapists, it was interesting to find that the female gender was dominant in almost all the eight universities (Table 4.1). It might have occurred that female community service physiotherapists had greater interest than male community service physiotherapists in the study and thus participated in large numbers, or it could just be a fact that physiotherapy is a profession that is dominated by the female gender just like with other female-dominated professions such as social work and education (DHET, 2015). Otherwise, physiotherapy has for a long time been viewed as a female-dominated allied health profession in the United Kingdom (Hammond, 2009).

It was perceived in the past that the youthful male gender would most likely apply to study physiotherapy, as they viewed the profession to be ‘sporty’ or ‘scientific’, whereas young females would apply to study physiotherapy in order to help and care for the society (Hammond, 2009). Therefore, compulsory community service becomes an intervention that rectifies the gender imbalances by ensuring that the male gender, although in small numbers, also contribute to frontline delivery of services (DHET, 2015).

5.2.2 Age distribution

The results indicated that the majority of the community service physiotherapists (90%) entering the workplace were below the age of 25 years (Figure 4.2). In South Africa, there is no requirement for students to have an undergraduate degree before studying physiotherapy, unlike in the United States. Similarly, Canada students can enrol at tertiary institutions straight after finishing their secondary school (Statistics Canada, 2010; North-West University, 2016). It is therefore common for South African graduates to obtain their first bachelor’s degree at a younger age.

In other Organisation for Economic Cooperation and Development (OECD) countries such as Belgium and the United Kingdom, the mean age of graduates obtaining their first

qualification was at 22 years, except for Iceland and Israel where graduates were graduating at the age of 27 and above. These variations in the age distribution were as a result of varying factors such as the differences in the typical age at which students graduate from the upper secondary education, the intake capacity of institutions and their admission procedures, the length of the tertiary education programmes, and the obligation for learners to do military service or to enter the labour market before enrolling in tertiary institutions (OECD, 2014).

5.2.3 University and province

The researcher acknowledges skewing of data as participation in some provinces, hospitals, and universities were better represented in some portions of the sample than in others. The rural provinces, especially those without universities offering physiotherapy training such as Mpumalanga, North West, and Limpopo, were underrepresented in this study. The majority of the community service physiotherapists who participated in this study were allocated posts in Gauteng province (n=37) and KwaZulu-Natal province (n=28). The Gauteng province has three universities (University of Pretoria, Sefako Makgatho Health Sciences University, and University of the Witwatersrand), and most graduates were allocated posts within the province. On the other hand, KwaZulu-Natal province only has one university, and almost all of its graduates were allocated posts within the province (Table 4.3). This explains the high number of community service physiotherapists in these provinces. Another contributing factor to the high distribution of community service physiotherapists in these provinces may be respecting the number of hospitals in provinces, whereas smaller provinces would have a low number of hospitals when compared with large provinces. Therefore, this has a negative impact on smaller provinces in that their capacity to take more community service physiotherapists will be limited.

The imbalance in the distribution of health care workers in rural areas compared to urban areas is still a challenge despite the need for them to increase in rural areas. Research by Mangrey, et al. (2010), when they investigated the level of knowledge regarding HIV/AIDS amongst community service physiotherapists in KwaZulu-Natal province, found that about 50% of community service physiotherapists were placed in urban public hospitals. This may not be surprising, as final-year physiotherapy students in South Africa are requested by the National Department of Health to indicate according to their preference where they would like to do their community service year. Some will be placed according to their preference (usually a place that is attractive to them) and not necessarily where there is a need to

improve staffing. It was further indicated on the report of the working group on community service for graduates in South Africa that by the second round of placement, posts in urban public hospitals are usually filled (DHET, 2015). Similar challenges have also been reported in other countries such as Australia and Canada (Williams and McMeeken, 2014), and the major contributing factor, amongst others, included the apparent attractiveness of the area (Holyoke, et al., 2012). This implies that the rural and deep rural province will continue to be avoided and therefore will have limited access to basic health care services.

5.2.4 Current workplace

The results showed that most community service physiotherapists (91%) in the year 2015 occupied posts in hospitals in the public health sector when compared with special schools and rehabilitation centres (Figure 4.3). This has been a strategy for government to recoup its investment in the education of physiotherapists regardless of whether the individual was offered a bursary or not. They have since funded vacant posts which can only be filled by community service health professionals, and at the time, this was for medical doctors. This carried on until such time in the year 2003 when compulsory community service was introduced to physiotherapy (Perold and Omar, 1997; Letseka, et al., 2009). Therefore, physiotherapy students are assured employment in their year of community service.

Of those working in public hospitals, 54% were allocated posts in district hospitals (Figure 4.4). The South African government uses district hospitals as a vehicle to deliver primary health care services to the surrounding communities (Tanser, Gijsbertsen and Herbst, 2006; Nteta, Mokgatle-Nthabu and Oguntibeju, 2010; Naledi, Barroni and Schneider, 2011). In light of that, these graduates are strategically placed in order to promote accessibility to physiotherapy services in the communities. The community service physiotherapists working in primary health care will be executing their health professional roles as health advocates and collaborating with community members in providing promotive, preventive, curative, and rehabilitative services (Krause, et al., 2006; SASP, 2012).

5.3 The Implementation of the Undergraduate Paediatric Block across the Eight Universities

5.3.1 The implementation of the paediatric block

Table 4.4 showed that much variability existed with regard to the delivery of the paediatric block across the eight universities. First, five universities (3, 4, 6, 7, and 8) started with the paediatric experiential learning programmes as early as in third year, whereas the remaining three universities (1, 2, and 5) only started in fourth year. Secondly, only three universities (3, 6, and 7) offered paediatric clinical placements over a period of two years, i.e. in both third and fourth year, whilst other universities only offered paediatric clinical placements for one year in either third or fourth year. Thirdly, only three universities (3, 4, and 7) had a specific paediatric block whereby the clinical placement was exclusively in paediatrics, whereas at other universities, the paediatric block was either an elective block or mixed on other adult blocks such as community block (Table 4.5).

Reasons pertaining to this current status of the undergraduate paediatric experiential learning programmes deserve to be further investigated within South Africa. The Health Professions Council of South Africa Board of Physiotherapy, Podiatry and Biokinetics only recommends students to accumulate at least 1 000 hours in clinical practice before graduating (HPCSA, 2016). No guidelines are provided about how much of this time should be spent in paediatric clinical areas.

5.3.2 Clinical supervision

Table 4.6 showed where physiotherapy students frequently received supervision during their paediatric clinical placements. It appeared that most students were frequently supervised by their clinical supervisors (n=80) when compared to clinical educators and the university lectures. This may not be a true reflection in practice, as the option for supervision from more than one source was not provided in the questionnaire. Students need the support of supervisors at their clinical placements in order to facilitate learning and acquiring necessary skills in paediatrics. Clinical supervisors and university lecturers are responsible for student training; however, universities have employed clinical educators at clinical placements to give clinical support (Talberg and Scott, 2014).

In the case study that was conducted amongst fourth-year occupational therapy students at the University of KwaZulu-Natal by Naidoo, Van Wyk and Joubert (2014) and in another evaluating the undergraduate clinical learning in paediatric dentistry by Vyawahare, et al. (2013), common attributes were highlighted that supervisors should display during clinical placements in order for students to have a successful clinical block. These included constructive criticism and the ability to reinforce strengths observed in their students, effective communication and interpersonal skills, and the capability of the supervisor to model good professional behaviour and to demonstrate treatment techniques adequately.

5.3.3 Clinical areas

The majority of the community service physiotherapists acquired paediatric clinical skills whilst placed at special schools and general wards, which excluded Neonatal Intensive Care Unit (NICU) and Paediatric Intensive Care Unit (PICU) (Table 4.7). This may be that NICU and PICU are not included in the undergraduate physiotherapy curriculum, as they are viewed as specialised fields, and thus training is offered at a postgraduate level. In the fourth year of the undergraduate curriculum, the focus became more on clinical training in acute hospitals rather than in special schools and clinics. Very few community service physiotherapists (four in third year and three in fourth year) reported to have been placed at the clinics (Table 4.7). Similarly, in their study, McMahon, Cusack and O'Donoghue (2014) found that the undergraduate clinical education in physiotherapy was still centred around the secondary level of health care.

According to the report issued by the Australian University Teaching Council, there was a concern that there was lack of paediatric and disability experience among their newly qualified graduates (McMeekan, et al., 2005). However, the findings of this study suggested the opposite. The results showed that the South African community service physiotherapists who participated in this study have accumulated clinical experience in paediatrics and in childhood disability as a result of clinical placements in special schools (Table 4.7).

According to a study in Australia by Shields, et al. (2013) that explored perceptions of physiotherapy students on their paediatric clinical placement, they found that paediatric clinical placements were able to assist them with the opportunity to improve their attitudes and perceptions towards disability. Furthermore, students were able to improve on their generic and profession-specific skills, for example, how to interact with the paediatric patient

and the family and how to give clear instructions (without jargon) when prescribing an exercise (Shields, et al., 2013). Effective communication skills are an essential part of physiotherapy and even more so when working with children, as physiotherapists need to appreciate that the child functions within a family unit and thus prefers a family centred care approach (Dunst and Trivette, 2009). The physiotherapist has to be able to involve the family in decision-making and consider their priorities when setting goals for therapy (Rapport, et al., 2014).

Some graduates (n=56) had the privilege of gaining more experience from their specific paediatric blocks and also from other blocks not necessarily meant for paediatrics, for example, in the community block (Table 4.5). They were able to practise clinical skills on children and not on adults or laboratories. This is contrary to the results that were found in the study conducted by Schreiber, et al. (2011) in the United States of America whereby, due to the inconsistency in the provision of physiotherapy educational programmes including paediatric clinical placements, some physiotherapy students were graduating without having had contact with children.

5.4 The Perceptions of Community Service Physiotherapists about Their Undergraduate Paediatric Programmes

5.4.1 The average duration of the paediatric block

Table 4.8 showed that the average duration of the clinical blocks was between four and six weeks. These were the average number of weeks given by the universities. However, this did not imply that all graduates were exposed to the paediatric block for that length of time; it was only three groups of graduates from Universities Three, Four, and Seven that actually benefited, as they exclusively worked with children for that period. Similarly in New Zealand, general physiotherapy clinical blocks (although not on specific paediatric blocks) took on average between four and six weeks in either musculoskeletal physiotherapy, neurorehabilitation, cardiopulmonary rehabilitation, and community (Sole, et al., 2012). Thus, the length of the physiotherapy undergraduate clinical blocks in South Africa is similar internationally.

There was lack of consistency amongst the South African universities (that offer a bachelor's degree in physiotherapy) as regards the manner in which the paediatric blocks were delivered.

This has been a concern of Schreiber, et al. (2011) and Cherry and Knutson (1993) when they investigated the status of paediatric physiotherapy education in the United States. They found many variations that existed between institutions regarding the amount of time that was devoted to the paediatric content and the clinical practical hours within the curriculum and thus highlighted the necessity for students to spend more clinical time with children. The Health Professions Council of South Africa Board of Physiotherapy, Podiatry and Biokinetics recommended 1 000 hours in clinical practice, but it is not divided into the different profession-specific areas (modules) that should be included in the undergraduate physiotherapy curriculum. Therefore, for paediatrics, there are no specific recommendations with respect to minimum clinical practice hours.

5.4.2 Provision of paediatric patients and their conditions

Table 4.9 showed that the community service physiotherapists were satisfied with the number of paediatric patients that they had to assess and treat whilst at the clinical block. The Health Professions Council of South Africa Board of Physiotherapy, Podiatry and Biokinetics also, in this case, did not offer specific guidelines on the targeted number of patients that should be allocated for each student. This will be dependent on the university and the clinicians at the clinical site to determine targets for students. Thus, this will ultimately differ per university. This level of satisfaction cannot be quantified; however, it would make sense that the more patients the students get to see, the more confident they will become with their clinical skills.

The community service physiotherapists reported in Table 4.10 that they saw similar paediatric conditions that were taught in class whilst at their clinical placements. This implied that their paediatric modules were aligned with the common paediatric conditions that were seen in practice. These common conditions were highlighted at the physiotherapy department at Chris Hani Baragwanath Hospital (Vachiat, 2012). They included:

A. Neurology

- Cerebral palsy
- Traumatic brain injuries
- Spinal cord injuries
- Developmental Coordination Disorder

B. Respiratory

- Pneumonia
- Bronchiolitis
- Acute severe asthma
- Acute respiratory disease
- Atelectasis
- Children treated with mechanical ventilation
- Prevention of pulmonary complications in cardiac surgery
- Cystic Fibrosis

C. Neuromusculoskeletal

- Hemophilia
- Lower back pain
- Sports injuries in children
- Spinal conditions

D. Other

- Burns
- HIV
- Palliative care
- Pain

The aforementioned referrals highlighted the burden of paediatric diseases during the year 2012. However, as Mostert-Wentzel, Frantz and Rooijen (2013b) have indicated in their study that the curriculum should be able to address the health needs of the community, what was common then may not be common in three years. Thus, as the paediatric disease profile changes, the curriculum will also need to change accordingly.

5.4.3 The perception of adequate preparedness

Overall, more than half (57%) of the community service physiotherapists who participated in this study perceived their undergraduate experiential learning programmes in paediatrics to have adequately prepared them to render paediatric physiotherapy services at their current

workplace (Table 4.11). Of interest was that not all graduates from universities which had a paediatric-specific clinical block (Universities Three, Four, and Seven) felt adequately prepared (Table 4.4). Only two universities (University Four and University Seven) felt adequately prepared to render paediatric services (Table 4.11). This finding cannot be directly compared with the existing literature in South Africa by Mostert-Wentzel, Frantz and Van Rooijen (2013a; b) on community service physiotherapists, as this study, according to the researcher's knowledge, is the first to explore perceptions of community service physiotherapists in a particular clinical area, namely, paediatrics.

Talberg and Scott (2014) are of the view that the sense of readiness may be attributable to the alignment of the curriculum with clinical expectations. Mostert-Wentzel, Frantz and Van Rooijen (2013a) also highlighted in their study that in order for the community service physiotherapists to be prepared for the workplace, they require exposure in the complex health care environment, in different settings and treating common conditions. According to the results, the community service physiotherapists were trained in similar environments (Table 4.8) to where they were currently working (Figure 4.3). This is supported by the study conducted by Frantz and Rhoda (2007) and Illing, Peile and Morrison (2008) when they found that the undergraduates' perceived preparedness to work as new graduates was influenced and improved by prior experiential learning in clinical practice during the undergraduate programmes. The paediatric conditions that they were exposed to during the clinical blocks were also similar to conditions that they were taught in class (Table 4.10). Therefore, it appears that the undergraduate curriculum was aligned with clinical expectations and produced graduates that were familiar with the different health care environments.

The perception of adequate preparedness varied across the different universities (Table 4.11). Graduates from three universities (University Three=57%, University Five=85%, and University Eight=62%) strongly felt that the undergraduate experiential learning programme did not adequately prepare them to render paediatric services at their workplace. The graduates from University Five and University Eight both had four weeks of the paediatric clinical block for one year (Table 4.4), and again both these graduates indicated that they were not satisfied with the duration of the block (Table 4.7). This was different to graduates from University Three, as they had a paediatric-specific clinical block which was an average of five weeks for a duration of two years. These group of graduates from University Three had more weeks spent in their paediatric clinical block, but they still felt inadequately

prepared. The increased number of weeks and the specific paediatric block for two years did not guarantee perception of adequate preparedness. Therefore, this shows that it is not purely on the number of hours allocated for a clinical block but what is being done with the time allocated.

The foregoing findings were similar to what was observed in novice speech-language graduates. Their perceptions of adequate preparedness in providing general speech-language services and dysphagia to the adult and paediatric population varied from different universities (Singh, et al., 2015). Participants who perceived themselves to be less adequately prepared to render dysphagia services indicated that their universities had offered them limited clinical learning opportunities, whereas others reported that they graduated with no clinical learning experience.

The sense of general preparedness or unpreparedness is dependent on the ability of the learner to balance core skills and knowledge of basic sciences against generic competencies (Schreiber, et al., 2011). Thus, there is a need for university lecturers and clinicians to reinforce both profession-specific and generic skills in the undergraduate curriculum in order to achieve the desired state of overall preparedness (Unger and Hanekom, 2014). At clinical placements, clinicians can spend more time demonstrating treatment techniques and handling skills to students in order for them to improve on these skills and, furthermore, to emphasise the importance of communication and collaboration with other members of the multidisciplinary team (Frank, Snell and Sherbino, 2015).

5.4.4 Confidence with clinical skills

In as much as perception of adequate preparedness by community service physiotherapists varied across the eight universities, these newly qualified graduates representing their universities displayed varying levels of confidence with certain clinical skills. Table 4.12 showed that skills that had a statistically significant difference amongst the universities ($p<0.05$) were more profession-specific than generic. Profession-specific skills are skills that are specific to a particular occupation, and without these skills, a person cannot successfully perform their job (Lestus, 2013). A group of graduates representing University Five constantly had a significantly lower score on profession-specific skills when compared with other universities, particularly the ability to make a differential diagnoses (mean score of 1.9), ability to educate the caregiver (mean score of 2.8), ability to construct and implement a

treatment plan and to reassess (mean score of 2.3), and the ability to adapt treatment (mean score of 2.4) (Table 4.12). This implied that these graduates did not perceive themselves as confident in the application of these clinical skills, which could further imply a true lack of competence, as suggested by Black, et al. (2010).

Similarly, a study by Sole, et al. (2012) explored the employers' perspectives of competencies and attributes of novice physiotherapists in New Zealand. They found that their graduates had low levels of confidence with regard to how they saw the profession and their own skills and knowledge. However, this was not of great concern to them, as clinical expertise were not expected in the first year of work. The employers valued non-clinical skills and personal attributes in the first year of work, for example, enthusiasm for the profession and good communication skills (Sole, et al., 2012). Thus, the compulsory community service year will provide an opportunity for the newly qualified graduates to improve on the clinical skills (DHET, 2015) that they perceived themselves not to be confident in. To accomplish this objective, they will need the support of their peers and also of their senior clinicians who have experience.

Confidence reflects on the ability to perform tasks satisfactorily (Colbeck, Cabrera and Terenzini, 2013). Thus, it is important that graduates reflect on their skills (both generic and profession-specific) to gain perception of their competence in relation to what is required to ensure safe and quality patient care (Kajander-Unkuri, et al., 2013).

5.5 Mentoring and the Support Systems Available to Physiotherapists during Their Community Service Year

5.5.1 Community service physiotherapists working alone

Figure 4.5 showed that 17% of the community service physiotherapists in the year 2015 were working alone in their departments. This may be attributable to the chronic understaffing in state hospitals that was reported by Mayosi, et al. (2012) and Whitside (2014). Those affected community service physiotherapists find themselves performing both patient care and administrative duties. Of great concern is not having a mentor for guidance. Graduates who have no clear sense of what is required of them and have little supervision and support are unlikely to gain from their community service year, and they may therefore be of little service to the communities they serve (DHET, 2015). Skinner, Williams and Haines (2015)

emphasised that clear expectations of job roles and performance standards along with formal or informal mentoring programmes should be implemented in order for novice physiotherapists to become experienced clinical practitioners. In light of this chronic staff shortage, Taylor (2010) is of the view that during the final year of study, students should rather be encouraged to do self-study and be progressively weaned off from depending on supervisors and present them with situations that mimic the real world.

Mentoring and peer support programmes were viewed as essential components in the development of clinical skills by Williams and McMeeken (2014) in their study about building capacity in rural physiotherapy workforce with respect to creating a paediatric training partnership. They provided a six-month postgraduate paediatric clinical and academic training to two physiotherapists in rural Australia. These support systems were seen to have a strong effect on developing self-awareness and confidence in new graduates (Williams and McMeeken, 2014). Mostert-Wentzel, Frantz and Van Rooijen (2013a) suggested that improved functioning of a professional therapist can be reinforced through teamwork, as it prevents professional isolation, and also through team discussions fosters improved clinical decision-making.

5.5.2 Paediatric workplace experience

Figure 4.6 showed that more than half (52%) of the community service physiotherapists had the chance to work with children through clinical rotations at their workplace. Of these, 30% perceived the undergraduate paediatric experiential learning programmes to have adequately prepared them to render paediatric services at their workplace (Figure 4.7). This is an interesting finding, as it may add value to the overall general perception of adequate preparedness by the community service physiotherapists (Table 4.11) now that they were able to rate their undergraduate paediatric clinical blocks against their workplace experiences. This can also be said about the remaining 22% that their workplace paediatric experience made them realise that they were inadequately prepared.

A national survey in the United Kingdom was conducted amongst newly qualified medical doctors with the aim of assessing the level of preparedness for practice, the variability of preparedness amongst them, and the perceived impact of the compulsory foundation programme on the perception of preparedness (Van Hamel and Jenner, 2015). Although it was not the aim of this study to determine the impact of community service on the perception

of adequate preparedness to render paediatric services, the United Kingdom study provided insightful information. It was found that their perception of preparedness was affected by the medical school they graduated from and the foundation programmes where they were providing services. To relate the UK study to this study, it could very well be that the workplace may have contributed to the perception of preparedness. The undergraduate paediatric clinical placements resembled the workplace environment; thus, the transition into work was effortless. This confirms what has been said by Frantz and Rhoda (2007) and Illing, Peile and Morrison (2008), that the perceived preparedness to work was influenced by prior experiential learning in clinical practice during the undergraduate programmes.

5.5.3 Continuous professional learning

Figure 4.8 showed that only a few participants (11%) had the opportunity to attend paediatric workshops. There may be challenges and barriers that hindered participation in paediatric workshops, being that they were scarce and centralised, i.e. only took place in certain provinces. Therefore, due to financial implications, not everyone could afford to attend. The World Health Organization published its global policy for improving the retention of health workers in rural and remote places. Education through continuing education and professional development (CPD) programmes were identified as key. They recommended that CPD programmes should meet the needs of rural health workers and that they should be accessible from where they live and work. This policy can assist physiotherapy organisations to target areas closer to their members when planning workshops and also help government in the retention of staff, especially in rural and remote areas where there is usually a shortage of staff (WHO, 2010).

Respecting the Critical Cross-Field Outcomes, physiotherapists, as with all professionals, are expected to engage in lifelong learning and undertake a reflective practice (SAQA, 2014). A reflective practice would enable the physiotherapist to make self-evaluations and consider feedback from patients to continuously reflect on their own actions and decisions in order to improve their knowledge and skills (Ruiz-Lopez, et al., 2015). Furthermore, physiotherapists need to be able to collect, analyse, organise, and critically evaluate information in order for them to be evidence-based practitioners. Engaging in continuous professional education will assist them to better execute their health professional role as experts and mentors to others (Bhanji, et al., 2015).

5.6 Factors that Contributed to the Perception of Adequate Preparedness

Only one factor was statistically significant ($p<0.05$) and thus contributed towards the community service physiotherapists' perception of adequate preparedness in rendering paediatric services.

5.6.1 The university

The universities that the participants have graduated from contributed to the graduates' perception of adequate preparedness to render paediatric services at their workplace (Table 4.15). The results in Table 4.11 showed that the perception of graduate preparedness differed across the eight universities. Graduates from four universities felt that their universities have adequately prepared them (the variation ranged from 69% to 88%), whilst graduates from three universities felt that their universities have not adequately prepared them (the variation ranged from 57% to 85%). Graduates from the remaining university expressed a 50% split (half perceived themselves to be adequately prepared, whereas the other half perceived themselves as not adequately prepared). Although the overall level of preparedness was 57%, universities did not prepare students in the same manner, i.e. they did not deliver the paediatric experiential learning programmes according to the same standard. Thus some students benefitted a great deal, whilst others did not. This became evident in Table 4.12 where these groups of graduates felt less confident with clinical skills (especially graduates from University Five), and where lack of confidence could imply lack of competence (Black, et al., 2010).

A survey was conducted amongst medical doctors in the United Kingdom on whether the new doctors were safe to practise their profession (General Medical Council, 2014). The survey had a similar finding – perception of preparedness varied between medical schools (60.7% to 85%). This perception was largely contributed by the characteristics of the students that were selected into the medical school, i.e. ethnicity, gender, age and personality traits, the type of undergraduate education they received, and the clinical experience that they gained (General Medical Council, 2014).

5.6.2 The total number of weeks spent in the paediatric block

The Fisher's exact test did not show any statistically significant difference (p=0.12) in the total number of weeks spent in the paediatric block and the perception of adequate preparedness (Table 4.18). Similarly, Schreiber, et al. (2011) (although the experience was expressed in hours and not in weeks) found that there were no statistically significant differences in the total number of paediatric hours between undergraduate programmes that reported to have adequate versus inadequate paediatric content. In addition, it was also discovered that the programmes that were reported to have adequate paediatric content actually had more practical hours as compared to programmes that had inadequate paediatric content. This was attributable to insufficient paediatric clinical placements, and as a result, some of their students graduated without having paediatric clinical experience (Schreiber, et al., 2011). The experience gained in the block was valuable and necessary to better equip students with skills they will need for their future workplace (Penman and Oliver, 2004).

5.6.3 Age and gender

The results did not show a statistically significant difference (p>0.05) between the perceptions of adequate preparedness and age. However, the majority of those who felt adequately prepared were younger than 25 years (Table 4.14). This is not surprising, as the vast majority of the participants in this study fell into this age category, and so the association between age and perceptions would be difficult to gauge in this sample. A survey amongst new doctors (F1) in the United Kingdom on whether they felt prepared to practise their profession revealed that age affected how the doctors answered to the question of how prepared they felt. Interestingly, for reasons not mentioned, it was found that F1 doctors in their 20s felt more prepared than doctors in their early 30s (General Medical Council, 2014). This may have occurred when the young qualified graduates rated their overall perception of adequate preparedness against the whole medical undergraduate curriculum instead of a particular module within the medical curriculum. Thus, it reflected on their subjective assessment of being a general practitioner and not objectively in terms of the clinical skills required in the speciality field.

The results did not show a statistically significant difference (p>0.05) between gender and the perception of adequate preparedness (Table 4.13). According to the review study by Rees, Manrouxe and McDonald (2013), gender did not predict the perception of preparedness, but

women were found to be less likely than men to agree that they felt adequately prepared (Svirko, Lambert and Goldacre, 2013). Similarly, a survey on the confidence gap between women and men in the United States found that women are less self-assured than men. For women to succeed, they needed to have confidence in order to feel competent (The Atlantic, 2014).

5.6.4 Specific paediatric blocks (third and fourth year)

There was no statistically significant difference ($p>0.05$) between the perception of adequate preparedness versus the specific paediatric block in either third year or fourth year. However, most graduates in third and fourth year ($n=38$ and $n=44$ respectively) whose universities have implemented the specific paediatric block perceived themselves to be adequately prepared to render paediatric services (Table 4.16 and Table 4.17). This is most likely to be the case, given that the specific paediatric block provides an environment that is fully oriented around paediatric patients. It provides students with the opportunity to learn and enhance their clinical skills as shown in Table 4.12. For instance, the development of communication and collaborative skills are essential in the field of paediatrics (Dunst and Trivette, 2009). Unfortunately, these results cannot be compared with those in literature due to the scarcity of research in this field of paediatrics.

5.7 Conclusion

This was the first national study to explore graduates' perceptions concerning their undergraduate physiotherapy paediatric experiential learning programmes and how these programmes have contributed to the perception of adequate preparedness to render paediatric services at their workplace. There is a gap in the available literature in this field of research. Thus, some of the findings could not be compared.

The conclusions of this study are presented in the next concluding chapter, and the researcher provides recommendations for clinical practice, the profession, the universities, policy change, and future research.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The penultimate chapter discussed the results of the study. This final chapter will provide a conclusion of this study. The study aimed at determining the perceptions of community service physiotherapists with reference to their undergraduate experiential learning programmes in paediatrics and whether they perceived the programmes to have adequately prepared them to render paediatric services at their workplace.

Data on the socio-demographics of the participants revealed that the physiotherapy profession was largely dominated by the female gender, as was the case with almost all the universities (Table 4.1). The majority of these young professionals were allocated placements at district hospitals in Gauteng and KwaZulu-Natal (Table 4.3).

All eight universities offered paediatric training to their students, but the way in which it was implemented and delivered varied (Table 4.4 and Table 4.5). Variation in itself is inevitable and may not be a bad thing as long as it does not negatively affect the quality of service delivery. However, according to the results, this variation has resulted in some universities producing physiotherapy graduates who perceived themselves to be inadequately prepared by their undergraduate paediatric experiential learning programmes (Table 4.11). This appears to have affected their level of confidence regarding clinical skills, which might be associated with incompetence (Table 4.12).

A specific paediatric block for a period of four to six weeks in either third year, fourth year, or both, appeared to be of great benefit to the participants over the mixed and elective block. However, this did not guarantee perception of adequate preparedness. Perhaps the problem was not only limited to the structuring of the paediatric block, i.e. a mixed block or a specific block and the number of weeks, but rather to how it was delivered within the allocated time frame. Common to all the universities was that their graduates lacked clinical experience in paediatric and neonatal intensive-care units (Table 4.7). Undergraduate clinical experience in these areas is indicated, as graduates will be expected to assess and treat children admitted to intensive-care units and most especially for those who will be placed in tertiary and regional hospitals where there are intensive-care units.

Despite the variation in the implementation of the undergraduate paediatric clinical blocks, an overall figure of 57% of the community service physiotherapists in the year 2015 perceived themselves to be adequately prepared to render paediatric services at their workplace. The level of preparedness varied and was high in certain universities and low in other universities (Table 4.11). The main contributing factor that was statistically significant (p=0.00) was the university from which the participants have graduated (Table 4.15). This is as a result of lack of consistency in the implementation and delivery of the undergraduate experiential learning programmes in paediatrics across the eight South African universities.

There were community service physiotherapists who were working alone in their departments and thus lacked profession-specific supervision (Figure 4.5). As suggested by Mostert-Wentzel, Frantz and Van Rooijen (2013a), collaboration with other health care professionals and using an interprofessional team approach will reduce the effects of working alone and professional isolation.

6.2 Study Limitations

The sample size for this study was small (n=100), as only community service physiotherapists that were contactable participated. Thus, the results could not be generalised, as they are not a true representation of the perceptions of all the community service physiotherapists (N=352) in the year 2015. Some participants were still using student email addresses from their universities, which were less accessible than their private emails. This limited participation in the study.

The researcher utilised a self-constructed online questionnaire (RedCap) which was not standardised. The level of participation differed in provinces and universities; as a result, it contributed to the skewing of data and introduced bias. Participation in this study required access to the Internet. Network connection was a problem especially for community service physiotherapists who were working in rural areas, and as a result, some participants had a challenge in opening the link. The other limitation was that not all participants had the chance to work in paediatrics by the time they completed the questionnaire. Thus, they could not really judge their ability to work with children if they had not yet rotated to paediatrics at their workplace, implying that their perception was limited to their undergraduate paediatric clinical blocks.

The study did not determine, for example, the total number of patients each participant was allocated, the common paediatric conditions they saw, reasons why participants felt adequately and inadequately prepared, and the reasons why participants did not attend paediatric workshops. This would have been addressed with open-ended questions or by interviews in focus group discussions (Ranasinghe, et al., 2011). Another motive of conducting the focus group discussion would be to interview the community service physiotherapists regarding what they perceived to be the strengths and weaknesses of their undergraduate paediatric experiential learning programmes. Furthermore, what they perceive to be solutions to overcoming challenges in order to strengthen the paediatric module in the physiotherapy curriculum could have been interrogated more thoroughly in a discussion. This process would have enabled the researcher to collect rich, in-depth data from the study.

6.3 Implications of the Study

Data from this study can be decoded and be given to the physiotherapy heads of department for each university in order to see their own graduates' perceptions and to also include these perceptions when they review their undergraduate paediatric module in the physiotherapy curriculum. Above all, the study has indicated the need for an in-depth analysis through qualitative methods to determine causes that lead to the feelings of preparedness and unpreparedness.

6.4 Recommendations

This study has several recommendations, although they may not be implemented before a qualitative study is conducted with the participants. What follows are recommendations of this study.

Physiotherapists: Community service physiotherapists who were working alone in their departments (Figure 4.5) can request assistance from the South African Society of Physiotherapy 'buddy system', where they will get the support of qualified physiotherapists (Mostert-Wentzel, Frantz and Van Rooijen, 2013a). They could also contact the paediatric special interest groups or the newly formed physiotherapy organisation called the Physiotherapy Association of South Africa (PASA). Mentoring programmes in the workplace and clear job roles in the form of specific job descriptions, performance standards, and

quarterly reviews should be drawn for community service physiotherapists, as is being done with other employees. This will help supervisors and managers at work to pick up areas of concern earlier rather than later during the year of community service.

The universities: Universities can embark on a marketing strategy to recruit more males into the profession. They can use male physiotherapists to represent the profession during career exhibitions for high school learners.

It was observed that a majority of the participants who had a specific paediatric block perceived themselves to have been adequately prepared to render paediatric services as compared to participants who did not have a specific paediatric block (Table 4.4 and Table 4.11). Therefore, universities that have not implemented this type of paediatric block may need to consider implementing one for the benefit of their graduates. It was in only one university where graduates did not feel adequately prepared, although they had a specific block for two years and had a high number of weeks spent in the paediatric clinical block. This may call for the need to develop a competency-based framework to serve as a guideline for the paediatric module in the physiotherapy curriculum across the eight South African universities in order to have consistency in the training of paediatric physiotherapy. The guidelines may include and not limited to the number of patients per student during the clinical block, common paediatric conditions to be taught, and the clinical areas to be covered, including intensive-care units.

Physiotherapy profession: To have a better representation of the male gender in the profession, a study can be conducted to investigate the perceptions and experiences of practising male physiotherapists with regard to gender issues and what could be done to attract more males into the profession. Few community service physiotherapists (Figure 4.8) reported having had the opportunity to attend paediatric workshops. Paediatric physiotherapy workshops, in particular, are scarce and not easily accessible. Thus, the special interest groups in paediatrics need to bring workshops closer to where their members are working in all the provinces of South Africa.

Policy change: To correct the maldistribution of community service physiotherapists, hospitals in rural provinces can look into increasing the number of community service posts per hospital, and allocating posts in community clinics and special schools. The HPCSA

board of Physiotherapy, Podiatry and Biokinetics does not give specific guidelines on how the undergraduate clinical blocks should be structured. It only indicates minimum practical hours students should have accumulated before graduating and the scope of paediatrics. Thus each university sets its own standards and guidelines. This can be viewed as a contributing factor for this great variation in the delivery of the paediatric module amongst the eight universities. The board may consider providing comprehensive guidelines in the field of paediatrics.

Future research: The study can be repeated using a larger sample size with more participation from each university in order to see how the graduates' perception of preparedness to work with children changes over time across the eight universities. To improve participation in the next study, physiotherapy organisations such as SASP and PASA can be approached to assist in distributing the questionnaire to their members from their database.

The study may also present a better reflection of all participants who had the chance to render paediatric services at their workplace from the time they started working. Therefore, the study could be conducted towards the end of the year rather than at the beginning. Moreover, the impact of community service on the perception of preparedness for the workplace can be investigated to see whether the work environment contributes to the perception of adequate preparedness.

The results showed that there were no students who worked in either paediatric or neonatal intensive-care units. Future research is recommended to address the barriers of physiotherapy students not working in paediatric and neonatal intensive-care units. As part of the qualitative research, open-ended questions can be used to find out from the participants and clinical supervisors which topics or conditions they feel should be covered in their undergraduate curriculum and how many hours should be dedicated to paediatrics.

In summary, 30% of the population in South Africa are children, and about 20% of them are reported to suffer from chronic illnesses. Thus, the paediatric module in the physiotherapy curriculum has the responsibility to adequately prepare graduates to manage these paediatric cases at their workplace. The study asked newly qualified graduates whether they perceived their universities to have adequately prepared them to provide physiotherapy paediatric

services at their work. Fifty-seven per cent of these graduates perceived themselves to be adequately prepared. More work still needs to be done by universities to improve their graduates' perception of readiness in paediatrics.

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APPENDICES

Appendix A: Protocol approved

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

05 October 2015
Person No: 0004601V
PAG

Mrs MM Sibuyi
P O Box 42
1390
South Africa

Dear Mrs Sibuyi

Master of Science in Physiotherapy: Approval of Title

We have pleasure in advising that your proposal entitled *Does the undergraduate experiential learning programme in paediatrics adequately prepare students for work place? Perceptions of community service physiotherapists* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix B: Ethics

R14/49 Mrs Makwena Midah Sibuyi

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M150834

NAME: (Principal Investigator)	Mrs Makwena Midah Sibuyi
DEPARTMENT:	Physiotherapy Sefako Makgatho, Witwatersrand, Pretoria, Western Cape, Stellenbosch, Free State, Cape Town and Kwazulu Natal Universities
PROJECT TITLE:	Undergraduate Experiential Learning in Paediatric Physiotherapy and the Self-Perceived Confidence for Work Place
DATE CONSIDERED:	26/08/2015
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Prof Joanne Potterton

APPROVED BY: Professor P Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 04/09/2015

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

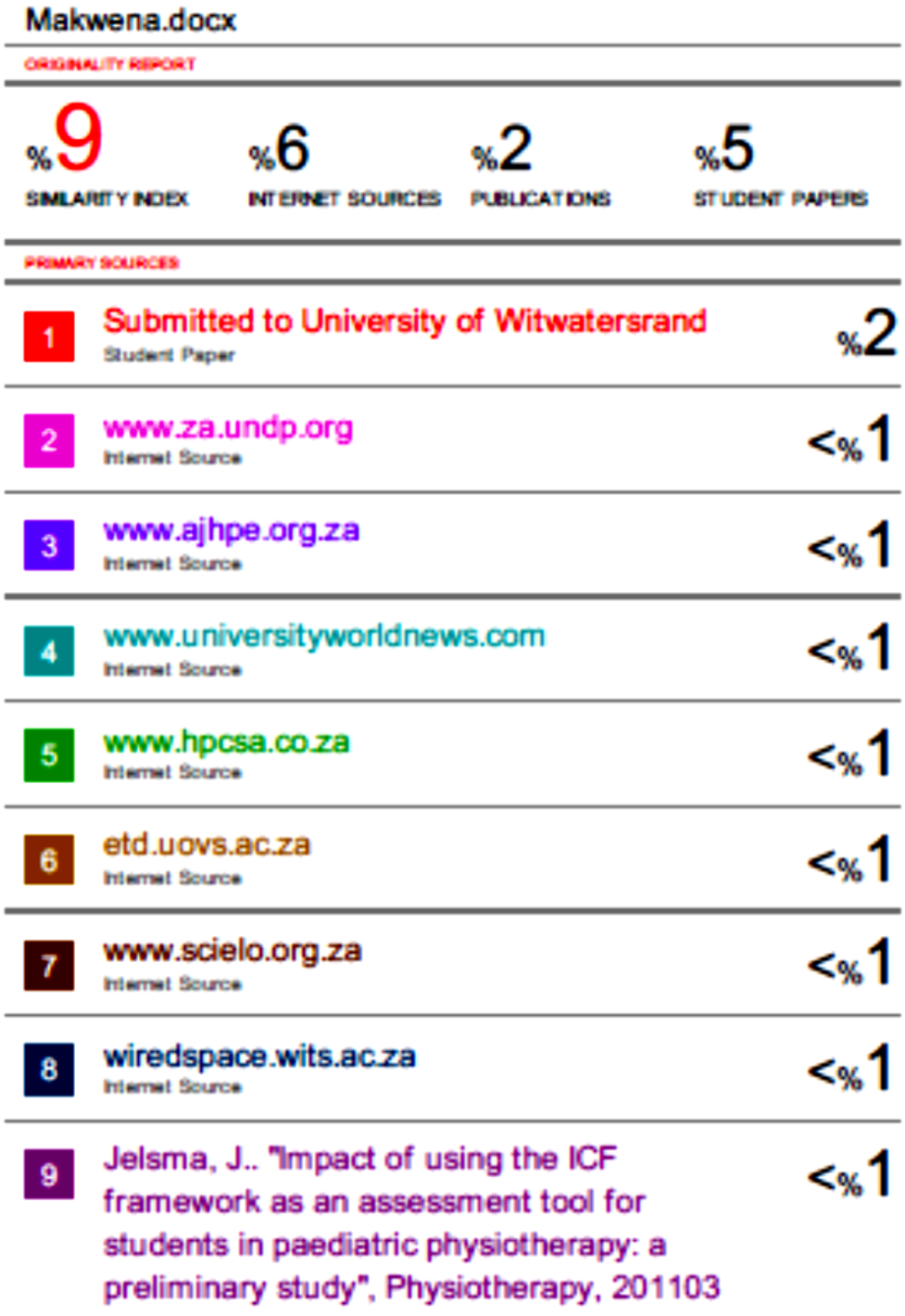
DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix C: Originality report (Turnitin)



Makwena.docx

ORIGINALITY REPORT

%9	%6	%2	%5
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Witwatersrand Student Paper	%2
2	www.za.undp.org Internet Source	<%1
3	www.ajhpe.org.za Internet Source	<%1
4	www.universityworldnews.com Internet Source	<%1
5	www.hpcsa.co.za Internet Source	<%1
6	etd.uovs.ac.za Internet Source	<%1
7	www.scielo.org.za Internet Source	<%1
8	wiredspace.wits.ac.za Internet Source	<%1
9	Jelsma, J.. "Impact of using the ICF framework as an assessment tool for students in paediatric physiotherapy: a preliminary study", Physiotherapy, 201103	<%1

Appendix D: Questionnaire (RedCap)

Confidential

REDCap Questionnaire

Record ID _____

Hello
Please read the questions carefully and tick in the appropiate buttons.At the end of the questionnaire click on the submit button so that your completed questionnaire will be send back to me.Thank you

A.DEMOGRAPHICS

Gender
(Please tick where applicable)

○ Male ○ Female

Age
(Please tick where applicable)

○ Below 25 years ○ Between 25 & 30 years ○ Above 30 years

University qualified
(Please tick where you qualified)

○ UFS ○ Stellenbosch ○ UCT ○ UL ○ UP ○ UWC ○ Wits ○ KZN

Current placement
(Please tick where you are currently working)

○ Hospital ○ Special school ○ Rehabilitation centre

Province
(Please tick the province where you work)

○ Gauteng ○ Limpopo ○ Mpumalanga ○ KwaZulu Natal ○ Free State ○ North West
○ Northern Cape ○ Eastern Cape ○ Western Cape

Hospital level
(Please tick the level of your hospital)

○ Tertiary ○ Regional ○ District

B.UNDERGRADUATE PAEDIATRIC BLOCK (s)

Did you have a specific paediatric block in third year?
(Please tick)

○ Yes ○ No

Number of weeks
(Please tick)

○ 6 ○ 5 ○ 4 ○ 3 ○ 2

Where was the clinical area?
(Please tick)

○ Hospital ○ Special school ○ Clinic

In which area where you working?
(You may tick more than once)

○ Paeds OPD ○ Neonatal ICU ○ Paediatric ICU ○ General wards(medical & surgical)

Did you have specific paediatric block in fourth year?
(Please tick)

○ Yes ○ No

Numbe of weeks
(Please tick)

○ 6 ○ 5 ○ 4 ○ 3 ○ 2

Would you say the block (s) were long enogh?
(Please tick)

○ Yes ○ No

Where was the clinical area?
(Please tick)

○ Hospital ○ Special school ○ Clinic

In which clinical area did you work?
(Please tick)

○ Paeds OPD ○ Neonatal ICU ○ Paediatric ICU ○ General wards e.g.(medical & surgical)

Did you have enough paediatric patients to asess and treat during the block (s)?
(Please tick)

○ Yes ○ No

Conditions that you saw during the block(s) were they similar to conditions you were taught in class?
(Please tick)

○ Yes ○ No

Where did you get supervision from?
(Please tick)

○ Clinical educator ○ Clinical supervisor ○ Lecturer

How often did you receive supervision?
(Please tick)

○ Daily ○ Once per week ○ Twice per week

Means of support
(Please tick)

○ Physical ○ Telephonic ○ Both

Additional to the specific paediatric block(s),did you treat paediatric patients in other blocks?
(Please tick)

○ Yes ○ No

In which other block?

_____
(Please indicate in which block)

C.PAEDIATRIC SERVICE DELIVERY:COMMUNITY SERVICE

Were you placed according to your first choice?
(Please tick)

○ Yes ○ No

Are you the only physiotherapist in the section?
(Please tick)

○ Yes ○ No

So far at work,you had the chance to rotate to paeds?
(Please tick)

○ Yes ○ No

For how long?

_____
(Please indicate in terms of months)

Were you coping with patient work load?
(Please tick)

○ Yes ○ No

How do you identify patients that need your service?
(Please tick)

○ Screening ○ Doctor's referral ○ Both

Are you able to refer to other health professionals?
(Please tick)

○ Yes ○ No

Have you had the chance to attend paedric workshops?
(Please tick)

○ Yes ○ No

Would you say the university adequately prepared you to deliver paedritic services at work?
(Please tick)

○ Yes ○ No

D.LEVEL OF CONFIDENCE

	1= Not at all confident	2-Unsure	3=Confident	4=Extremely confident
Ability to use outcome measures	○	○	○	○
Ability to interact with children	○	○	○	○
Ability to communicate with the child's family	○	○	○	○
Ability to work with other health professionals	○	○	○	○
Ability to make differential diagnosis	○	○	○	○
Ability to educate caregiver	○	○	○	○
Ability to identify appropiate physiotherapy intervention	○	○	○	○
Ability to adapt physiotherapy intervention	○	○	○	○
Ability to advocate for the child's needs	○	○	○	○
Ability to prescribe home exercise programmes	○	○	○	○

Appendix E: Information Sheet

Undergraduate experiential learning in paediatric physiotherapy and the self-perceived confidence for workplace

Good morning

My name is Makwena Sibuyi, and I am currently registered as a postgraduate student with the University of the Witwatersrand for Master of Science degree in physiotherapy.
I would like to invite you to participate in the online questionnaire study. You will receive the link to the RedCap questionnaire from your university. Participation is voluntary, and there will be no risk involved if you choose to withdraw.
I am interested in finding out whether community service physiotherapists feel confident in working with children and if the confidence is associated with your experiential learning opportunities at the university. The questionnaires will be allocated a number for reference; thus, your responses will remain anonymous, and confidentiality will be maintained. As you complete the questionnaire, kindly note that consent is implied. At the end of the questionnaire after completion, please remember to click on the submit button so that your completed questionnaire will be received. The results of the study will be made available to you.

Your valuable contribution is highly appreciated

Thank you

Makwena Sibuyi