

**COMPLETED RESEARCH**

**PROFILING OF PHYSIOTHERAPY PATIENTS AND BARRIERS TO OBTAINING  
OPTIMAL PHYSIOTHERAPY SERVICES AT NKHENSANI HOSPITAL, MOPANI  
DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA.**

By

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MINI-DISSERTATION

Submitted in partial fulfilment of the requirements for the degree of

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## **DEDICATION**

This study is dedicated to, my late father Mr Ronald Godfrey and my mother Mrs Rhulani Margreth Maphosa who cultivated in me love for education. I dedicate this to their unconditional support and guidance. I further dedicate this work to my son Rifumo Maphosa.

Thank you

## **DECLARATION**

I declare that PROFILING OF PHYSIOTHERAPY PATIENTS AND BARRIERS TO OBTAINING OPTIMAL PHYSIOTHERAPY SERVICES AT NKHENSANI HOSPITAL, MOPANI DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA, is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

**MATIMBA JUSTICE MAPHOSA**

Date: 18/11/2021

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- Limpopo department of Health for granting me the permission to conduct the study.
- Turfloop Research Ethics Committee (TREC) for allowing the study to be conducted.

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## **ABSTRACT**

**Background:** The demand of providing physiotherapy services have increased due to the population growth, an increase in number of aging people, accidents and rising cases of chronic diseases. A sudden increase in number of patients seen by physiotherapists is worthwhile for exploration since overcrowding is a concern in many public hospital facilities in South Africa. The purpose for this study was to profile physiotherapy patients and barriers to obtaining optimal physiotherapy services at Nkensani Hospital.

**Methodology:** A quantitative, cross- sectional study was conducted for profiling of physiotherapy patients and barriers to obtaining optimal physiotherapy services at Nkensani Hospital. A simple random sampling was used to sample 398 patients who were receiving physiotherapy services at Nkhensani Hospital. Data was collected using a designed questionnaire that was administered by the researcher to patients who were receiving physiotherapy services at Nkhensani hospital between November 2020 to February 2021. Data was analysed using the statistical package for social sciences (SPSS) version 25.

**Results:** Approximately 46.3% of the participants were males and 53.7% were females. Majority of the participants had Primary education at 55.5%, followed by those who did not attend school at all, tertiary and secondary education level at 23.1%, 11.3% and 10.1% respectively. Most of the participants were unemployed at 81.2%. The patients who required Physiotherapy services were diagnosed with conditions related to Orthopaedic or Musculoskeletal at 52%, followed by Neurological, geriatric, paediatric and cardio/respiratory conditions at 27%, 13%, 7%and 1% respectively.The barriers to obtaining optimal physiotherapy services by patients were lack of family support, lack of support from friends, the use of traditional medicines, the costs of hiring a caregiver, affordability of services and affordability of transport to hospital.

**Conclusion:** The study reveals that orthopaedic or musculoskeletal conditions are the most prevalent conditions. It is recommended that adequate community health education and intervention services be provided and made affordable and accessible to rural communities.

**Key concepts:** Barrier, Physiotherapy services, Physiotherapist, Physiotherapy patients, Optimal.

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## **Definition of concepts**

**Barrier** is defined as an obstacle that prevents access (Oxford Concise Colour Medical Dictionary, 2015). In context of this study barrier refers to the all factors that prevents patients from accessing physiotherapy services e.g. socioeconomic status, awareness of services, financial capacity, staff attitude, waiting time, equipment, transport issue and location of services.

**Physiotherapy services** refers to treatment given by Physiotherapist in the field of Orthopaedics, Neurological rehabilitation, hand therapy, musculoskeletal rehabilitation, healthy lifestyle programs, outreach services, paediatric Physiotherapy Thoracic, Cardio-vascular, Obstetrics, Sports medicine, Intensive care units and general Rehabilitation ( Mbada, Oluwuyi, Oyewole, Odole & Ogundele, 2019) . In the context of this study Physiotherapy services will refer to any form of physiotherapy treatment that is provided by physiotherapist at Nkhensani Hospital.

**Physiotherapist** is a healthcare professional that assesses, diagnoses, treats and works to prevent disease and disability through physical methods such as massage, heat treatment, and exercise rather than by drugs or surgery (SASP, 2019). In the context of this study physiotherapist will apply the same as defined.

**Physiotherapy patients** refer to patients receiving treatment from physiotherapist whether as out- patient or in-patient (SASP, 2019). In the context of this study Physiotherapist patients refers to patients receiving physiotherapy treatment at Nkhensani Hospital.

**Optimal** is defined as the most favourable or satisfactory (Oxford Concise Colour Medical Dictionary, 2015). In the context of this study optimal will refers to satisfactory in term of physiotherapy services.

## **Abbreviations**

AIDS - Acquired Immune Deficiency Syndrome

CD – Compact Disk

CEO - Chief Executive Officer

HIV - Human Immunodeficiency Virus

HPCSA - Health Professions Council of South Africa

IDP- Integrated Development Plan

SASP- South African Society of Physiotherapy

SPSS - Statistical Package for Social Sciences

TB - Tuberculosis

TREC - Turfloop Research Ethics Committee

WCPT - World Confederation for Physical Therapy

WHO - World Health Organization

UK - United Kingdom

PG-Postgraduate



## **1. CHAPTER 1**

### **1.1. Introduction**

The demand to the physiotherapy profession continues to increase, which is due to the increase in number of aging population, population growth, rising incidences of chronic diseases, survivors of accidents and other health related events which lead to physical disability (Dissanayaka & Banneheka, 2014). The challenge of delivering health services equitably to rural population is exacerbated by health workforce misdistribution and fewer services in rural areas. The impossibility of providing everything to everyone means making choices is inevitable (Adams, Jones, Lefmann, and Sheppard, 2015).

The Physiotherapy services are services that are necessary for hospitalized patients (Minghelli, Soares, Guerreiro, Ribeiro, Cabrita, Vitoria, Nunes, Martins, Gomes, Goulart & Santos, 2020) and have an important impact on all individuals by maintaining, restoring, improving movement and health for all the people. (Paul & Mullerpatan, 2015). Physiotherapists play a key part in the acute care and rehabilitation of their clients and the promotion of health in their communities (Adams, Jones, Lefmann & Sheppard, 2015). There is an important need in providing physiotherapy services, which is to identify barriers which prevent patients from receiving optimum Physiotherapy services in order to improve the services (Baaatiema, de-Graft Aikins, Sav, Mnatzaganian, Chan & Somerset, 2017).

The development and implementation of effective programs and rehabilitation procedures requires the data on the people being served and factors affecting the implemented programs (Sharma & Sinha, 2019). This was supported by Levran and Baror (2015), which found that there are factors which may affect the availability and effectiveness of physiotherapy services due to number of physiotherapists, number of clinics and the number of people being served.

Provision of physiotherapy services and the patients receiving physiotherapy services in rural communities is not well described, however physiotherapy workforce shortages and geographic maldistribution in fewer services compared to metropolitan settings is reported (Babur & Liaqat, 2018). Hence this study aims at profiling the Physiotherapy patients and barriers to obtaining optimal Physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa.

## **1.2. Problem statement**

Overcrowding has been a very source of concern in many public hospital facilities in South Africa (Rabie & Klopper, 2015). As a Physiotherapist with 10 years of working experience, an increase in number of patients seen at Physiotherapy section at Nkhensani hospital has been observed. In addition, averages of 180 patients per month were recorded in 2011 whereas averages of 400 patients per month were recorded during the year 2018 and that equate to 3808 yearly (information obtained from Information manager at the institution). In 2011, a patient was seen once per month in one-month period and then in 2018 a patient is seen once per month in a three-month period, which is likely to hinder patient's progress in rehabilitation. Thus, a sudden increase in number of patients seen at physiotherapy section is a worthwhile exploration in this current study. There is not study which has been conducted at Nkhensani hospital to profile the patients receiving physiotherapy services and the type of services available in this hospital. Therefore, the current study aims to profile of patients and physiotherapy services offered to patients at Nkhensani Hospital, Mopani District of Limpopo province, South Africa.

## **1.3 Literature review**

Literature review in the current study was done comprehensively to summarize previous research on provision of physiotherapy services and barriers to obtaining optimal physiotherapy services in hospitals. The review mapped out the scholarly articles, books, and other sources relevant to provision of services and barriers to obtaining services in hospitals. This gave a theoretical base for the current study and helped to determine the nature of the current study. Lastly, the literature review in

the current study acknowledged the work of previous researchers, and in so doing, assures the reader that our work has been well conceived. In chapter 2 of this report, detailed literature review will be presented looking into: what are physiotherapy services, the global profile of physiotherapy patients, the profile of physiotherapy patients in Africa and South Africa, the barriers to obtaining optimal physiotherapy services and public health interventions to improve provision of physiotherapy services and reduce barriers.

#### **1.4 Purpose of the study**

Purpose of study was to profile Physiotherapy patients and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa.

#### **1.5 Aim of the research**

To determine the profile of patients receiving physiotherapy services and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa.

#### **1.6 Objectives of the study**

- To determine the socio-demographic characteristics of patients receiving physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo, South Africa.
- To investigate the conditions (Orthopaedic/musculoskeletal, Neurological, Geriatric, Cardio/respiratory and Paediatric conditions) which physiotherapy patients presents with at Nkhensani hospital, Mopani District of Limpopo, South Africa.
- To describe the physiotherapy services offered to patients at Nkhensani Hospital, Mopani District of Limpopo Province, South Africa.
- To investigate the barriers to obtaining optimal physiotherapy Services at Nkhensani Hospital, Mopani District of Limpopo, South Africa.

### **1.7 Research question**

What is the profile of Physiotherapy patients and the barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa?

### **1.8 Research methodology**

The current study followed a cross-sectional descriptive study design to help address the research question posed in this study and to determine the profile of patients receiving physiotherapy services and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, in Mopani District of Limpopo province, South Africa. The detailed methodology will be presented in Chapter 3 which will include the sampling, data collection processes, description of how reliability and validity of the data was achieved including the data analysis and the measures to minimise bias and analysis

### **1.9 Ethical considerations**

To ensure ethical considerations were taken into account in this study; permission to conduct the study was sought from University of Limpopo's Turfloop Research Ethics Committee and then from the Limpopo provincial department of Health Provincial. Detailed ethical considerations will be described in Chapter 3 below including measures to ensure confidentiality, privacy and anonymity.

### **1.10 Significance of proposed research**

The study hopes to give a profile physiotherapy services received by patients and advice on Department of Health on how to reduce or eliminate barriers contributing to patients not reaching their functional capabilities and higher independence in activities of daily living. This will empower the individual to live an independent and productive life. A diversified spectrum of acute and chronic physical conditions from infancy to old age need physiotherapy services, so that the interest in using physiotherapy services has increased throughout the recent decades, especially in developing countries. Therefore, understanding the profile of patients receiving

physiotherapy services is critical. This study will guide policy-makers in staff establishment and compliment.

### **1.11 Conclusion**

The information presented above provided an overview of this study. The next chapter, which is Chapter 2, describes the literature review which was done to highlight previous research studies conducted across the globe on associated research topic. Chapter 3 will highlight the research methodology employed; Chapter 4 dealt with the presentation and representation of the study's research findings, while Chapter 5 presents a summary of the study and recommendations emanating from the results of this study.

## **2. CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

Literature reviews refers to the summary of existing knowledge on a topic, which can be around the world or locally (Brink, Van der Walt & Van Rensburg, 2018). Under this literature review literature will be reviewed under global, African and south African profile of physiotherapy services. The physiotherapy services available or being offered globally and locally will also be discussed. Lastly, barriers to obtaining physiotherapy services will be discussed. Looking at factors like unavailability of physiotherapy services, knowledge of health workers on scope of physiotherapy, community members roles in advising patients, poor health care seeking behaviour of physiotherapy patients, the use of traditional health practitioners, poor referral practices by health workers and adherence to appointments

### **2.2 Physiotherapy services**

The physiotherapy services offered at public health hospital are institution based, in most cases either at district, regional or tertiary hospital. They are involved in prevention, treatment of diseases and health promotion, to ensure maximum functioning and better quality of life of all individuals in a population (WCPT, 2014). The patients are referred from doctor to Physiotherapy with a referral letter in most



cases with a diagnosis included, this is the similar method to the one used in other countries like India (Shimpi, Writer, Shyam, & Dabadghav, 2014).

The services offered by some countries ranges from Neurological rehabilitation, musculoskeletal rehabilitation, cardiac and pulmonary, hand therapy, healthy lifestyle groups and preventative groups. These were the physiotherapy services in public hospital at rural Australia (Adams, Jones, Lefmann, Sheppard, 2016). According to Adams, Jones, Lefmann, sheppard, (2016), they found that access to out-patient physiotherapy services decreased at public hospital in rural Australia due to increased population and dwindling staff compliment. The demand made physiotherapists to prioritise in-patient services than out-patient services.

The physiotherapy services offered in Ghana were nearly the same with the ones of Australia, only healthy lifestyle groups and preventatives groups were not present (Nketie-Kyere, Aryeetey, Nonvignon, & Aikins, 2017). Whereas in South Africa services that are offered ranges from Orthopaedics, Neurological rehabilitation, hand therapy, musculoskeletal rehabilitation, outreach services, paediatric Physiotherapy Thoracic, Cardio-vascular, Obstetrics, Intensive care units and general rehabilitation.

According to Paul and Mullerpatan (2015), Physiotherapy can play a very important role in prevention of risk factors associated with non-communicable disease which is threat to global health by educating the public about healthy lifestyles and wellness exercises. However some studies found underutilization or unrecognized role of Physiotherapist in cardiopulmonary conditions, health promotion and preventative role of Physiotherapy (Wade, 2016).

### **2.3 The global profile of physiotherapy patients**

The World Confederation of Physical Therapy (WCPT) which is the world statutory body for Physiotherapist recommends direct or patient self-referral to physiotherapist to improve access to Physiotherapy services (WCPT, 2015). Physiotherapy has a key role in public health agenda through the contribution to

prevention of diseases, promotion of good health and quality of life improvements (WCPT, 2018). Patients can direct access Physiotherapy services in almost 50 countries around the world, some of the countries are Brazil, Australia, Netherlands, Sweden and other part of the United States (Middleton, 2016).

According to study by Levran and Baror (2015), 9 % of population in Israel require Physiotherapy services which is considered being high with compared to the average in other countries. Whereas a country like Nederland was at 8.8% which was more of similar when compared to Israel (Mbada, Oluwuyi, Oyewole, Odole & Ogundele, 2019). There are global regulations of one Physiotherapist per 500 people (Hamisu, Onyemelukwe, Eboh, Sharaye, Gerald, Hassan, Fiona, Banda, Oyetunji, Alemu & Shuaib, 2017). The shortage of health care workers is well documented, in Australia it shows that only 20% of physiotherapists were working in rural Areas (Adams, Jones, Lefmann & Sheppard, 2016). There is not much documented statistical records on physiotherapy prevalence world-wide.

#### **2.4 The profile of physiotherapy patients in Africa**

The prevalence of physiotherapy services in countries such as Nigeria for example, is at 7.4%, which is bit low as compared to developed countries like Netherlands and Israel with percentage prevalence of 8.8% and 9% respectively as reported (Mbada, Oluwuyi, Oyewole, Odole & Ogundele, 2019). The reason of low physiotherapy utilization in Nigeria can be accounted by the barriers to obtaining physiotherapy services in rural communities, whereas in South-eastern Nigeria there is unavailability of physiotherapy services and poor knowledge of health workers (Igwesi-Chidobe, 2012). According to Al Fraihi and Latif, (2016), a suitable outpatient services can attract patients for coming to the hospital.

The study that was done in Nigeria indicates that physiotherapy in the African region is still developing, with countries like Nigeria having 2000 practicing physiotherapists, to serve nearly 200 million population, compared to South Africa with 7000 physiotherapists to serve nearly 55 million people (Hamisu,

Onyemelukwe, Eboh, Sharaye, Gerald, Hassan, Fiona, Banda, Oyetunji, Alemu & Shuaib, 2017). A survey done in Cameroon, Uganda, Zimbabwe and South Africa(SA) indicates that there was migration of physiotherapists from poor countries to developed countries with the reason of better remuneration, improved living conditions, safer environment and lack of facilities (Olaleye & Lawal, 2017)

## **2.5 The profile of physiotherapy patients in South Africa**

According to Health Professions Council of South Africa (HPCSA), in 2016 December there was 7449 physiotherapists registered for the population of approximately 56 million. That makes the ratio of physiotherapy currently to be 1 physiotherapist: to 7 518 patients, which are very far from global recommendation of 500 patients per 1 physiotherapist. The evidence of HPCSA statistics shows a severe shortage of Physiotherapist in South Africa. The patients needing physiotherapy treatment can refer themselves directly to physiotherapists in South Africa, but without knowledge of such information patients are mostly not using that chance (Middleton, 2016).

The current model of delivering physiotherapy services in the South African public sector provides a number of barriers in accessing hospital-based physiotherapy services, there is a need to consider other models like home-based physiotherapy services (Cobbing, Hanass-Hancock & Deane, 2014). This was supported by Chetty, Dunpath, Meghnath, Mothalal, Sewmungal, Kunene and Ntshakala (2015) who recommended the evaluation of patient satisfaction and factors that affect people from obtaining quality services in order to improve the standards.

## **2.6 Barriers to obtaining optimal physiotherapy services**

The study that was done in Nigeria indicates that the barriers to obtaining physiotherapy services in rural communities in southeastern Nigeria are unavailability of physiotherapy services and poor knowledge of health workers (Igwesi-Chidobe, 2012). According to Al-Fraih and Latif (2016), a suitable outpatient services can attract patients for coming to the hospital. Language barrier was cited to be barrier where Physiotherapists not being able to communicate effectively with patients can impede on delivery of therapy and compliance to home program (Grandpierre, Milloy, Sikora, Fitzpatrick, Thomas & Potter, 2018).

### *2.6.1 Unavailability of physiotherapy services*

Some studies have indicated underutilisation of Physiotherapy services due to poor communications among doctors and Physiotherapist (Olaleye & Lawal, 2017). Most studies recommend formal training and education during undergraduate programmes about Physiotherapy to other healthcare professionals in order to maximize the use of Physiotherapy services (Karthikeyan & Jones, 2015; Al Mohammedali, O'Dwyer & Broderick, 2016).

Access to public hospitals physiotherapy services has been reported to be a problem due to long waiting hours in the Quebec's, which have negative effect on people to attend for Physiotherapy services (Deslauriers, Raymond, Laliberte, Lavoie, Desmeules, Feldman & Perreault, 2017). The location of services plays a role in service being unavailable, where you find that Physiotherapy services are located in urban areas than in rural areas (Ackerman, Livingstone & Osborne, 2016). That means that people from rural areas will have difficulty in accessing the services in urban areas due to distance travelled and financial problems when considering the socio-economic status (Adams, Jones, Lefmann & Sheppard, 2016).

### *2.6.2 Poor knowledge of health workers on scope of physiotherapy*

The study that was done in India indicated that there was a significant awareness of Physiotherapy services by doctors and high number of referrals were sent to physiotherapy through referral letter writing (Abichandani & Radia, 2014). Whereas in Saudi Arabia the situation was different where in the sense the rate of referral was very low with considerable awareness due to lack of trust between doctors for Physiotherapist (Al-Elisa, Al-Hoqail, Al-Rushed, Al-Harhi, Al-Mass, Al-Harbi, Al-Azzaz, Alghadir & Iqbal, 2016). There were delays in referral pathway that was noted in the study in Nigeria due to awareness of functions of Physiotherapy, which results in complications that would have been perverted through early Physiotherapy interventions (Hamisu, Onyemelukwe, Eboh, Sharaye, Gerald, Hassan, Fiona, Banda, Oyetunji, Alemu & Shuaib, 2017).

### *2.6.3 Community member's roles in advising patients*

There is high awareness of Physiotherapy in countries which are well developed like Japan, United State of America, United Kingdom and Australia, which makes them to have good choices of services they want (Paul & Mullerpatan, 2015). In most communities, culture influences their decision when it comes to choosing for Physiotherapy services or faith healers which might even cause delays on choosing for medical services (Grandpierre, Milloy, Sikora, Fitzpatrick, Thomas & Potter, 2018).

### *2.6.4 Poor health care seeking behaviour of physiotherapy patients*

The cultural beliefs and practices are very important factors to consider because they are likely going to influence patient health-seeking behaviour (Baaatiema, de-Graft Aikins, Sav, Mnatzaganian, Chan & Somerset, 2017). The study also found that cultural practices may force patients to abandon Physiotherapy services for alternative care provided by traditional healers (Baaatiema, de-Graft Aikins, Sav, Mnatzaganian, Chan & Somerset, 2017).

### *2.6.5 Use of traditional health practitioners*

The study that was done in found that it is important to promote awareness in health conditions like stroke, because lack of awareness makes patients to firstly seek help from traditional healers than medical care (Baaatiema, de-Graft Aikins, Sav, Mnatzaganian, Chan & Somerset, 2017). They further found that also patients can also default Physiotherapy services to go for traditional or faith healers, or at times combine the two. This was further supported by Grandpierre, Milloy, Sikora, Fitzpatrick, Thomas and Potter (2018) who found that culture can influence the beliefs, patient's values and the health related practices. The evidence in African study suggests that patient access to Traditional healers and faith as complimentary to physiotherapy services is due to easy access and low cost (Baaatiema, de-Graft Aikins, Sav, Mnatzaganian, Chan & Somerset, 2017).

### *2.6.6 Poor referral practices by health workers.*

The World Confederation of Physical Therapy (WCPT) which is world statutory body for Physiotherapist recommends direct or patient self-referral to physiotherapist to improve access to physiotherapy services (WCPT, 2015). Patients can be able to have direct access to Physiotherapist in almost 50 countries around the world, some of the countries are Brazil, Australia, South Africa, Sweden and other part of the United States (Middleton, 2016). Whereas in Nigeria, India, and Sudan, study shows that physiotherapist depends mostly on referrals from the medical doctor using referral letters (Simon-Ugron, 2017).

Whereas some studies have indicated underutilisation of physiotherapy services due to poor communications among doctors and physiotherapist (Olaleye & Lawal, 2017). Most studies recommend formal training and education during undergraduate programmes about physiotherapy to other healthcare professionals in order to maximize the use of physiotherapy

Services (Karthikeyan & Jones, 2015) and (Al Mohammedali, O'Dwyer & Broderick, 2016).

#### *2.6.7 Adherence to appointments*

A study by Mbada, Oluwuyi, Oyewole, Odole and Ogundele, (2019), identified financial constraint, lack of knowledge about role of Physiotherapy and distance from the health facility as contributing factors from patients not adhering to Physiotherapy appointments. The impact of patient failure to adherence of physiotherapy appointment results in increasing a recovery period of patient and disturbs the workflow in a physiotherapy section (Mbada, Nonvignon, Ajayi, Dada, Awotidebe, Johnson & Olarine, 2013).

#### *2.6.8 Lack of home programs for physiotherapy patients*

Patient- centred approach is the recommend method of approach when it comes to the health care services to be sustainable and improve the health outcomes of the patients (Segan, Briggs, Chou, Connelly, Seneviwickrama, Sullivan, Cicuttini & Wluka, 2018). It was further supported by the study done by Lindback, Enthoven and Oberg (2019), which found out that it very important to involve patient when planning for services in an order to get feedback.

#### *2.6.9 Affordability of services and transport to the hospital*

The cost of physiotherapy service may make the patients not to honour their appointment due to affordability (Gorge, Ziehn & Farin, 2017). The study that was done in Ghana cited physiotherapy cost and transportation cost as barrier to accessing physiotherapy services (Nketia-Kyere, Aryeetey, Nonvignon & Aikins, 2017). This was similar to what was found in Nigeria, that low utilisation of services is due to expensiveness of the services (Olaleye & Lawal, 2017). It was not different to finding in Mthatha general hospital(south Africa) by Ntamo, Buso and Longo-Mbenza (2013), found that

9 out of 10 stroke patient fail to attend outpatient physiotherapy services due to lack of transport money to the hospital.

## **2.7 Public Health interventions to improve provision of physiotherapy services**

The study that was done in India by Doshi, Jiandani, Gadjil and Shetty (2017), recommends an education amongs health care professional about the importants of Physiotherapy on prevent injuries, reducing the risk of cardiac diseases factors and prevent disabilities. They further stressed that this will reduce the underutilisation of physiotherapy services by other institutions and reduce waiting times in hospitals because it would encourage early and effective referral system. This was supported by Long (2019), who indicated that countries(Netherlands, Norway, Sweden and UK) that have direct access to Physiotherapy services have shown reduced waiting times and make patients to be in charge of their condition which makes them to control their acute conditions to becomes chronic conditions.

In Nigeria after a burden of backache a self-management a complex behavioural change intervention was introduced to reduce the burden of backache in the community (Igwesi-Chidobe, Kitchen, Sorinola & Godfrey, 2020). The study which was done in South Africa by Naidoo, Barnes, Mlenzana, mostert and Amosun (2019), show that physical activities have the ability to reduce obesity and improve health outcomes in diseases such as diabetes, arthritis and cardiovascular diseases.



### **3. CHAPTER 3: RESEARCH METHODOLOGY**

#### **3.1. Research approach**

Quantitative research approach was used in this study. Quantitative research approach is defined as a process which is systematic and objective in a way of using numerical data from a selected population in order to generalize the findings to the whole population (Brink, Van der Walt & Van Rensburg, 2018).

#### **3.2. Research design**

The research design for this study was a cross-sectional design. According to Brink, Van der Walt and Van Ransburg, (2018), a cross-sectional study is defined as the study which is non-current in nature and is done at a specific point in time. The information is collected from one population at one time. A cross-sectional was used to determine the profile of patients receiving physiotherapy services and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital In the case of the study, information was collected from patients who were receiving physiotherapy services at Nkhensani Hospital from November 2020 to February 2021 by the researcher and 2 other physiotherapists at the hospital.

#### **3.3. Research setting**

The Physiotherapy section at Nkhensani Hospital (District hospital) which is situated at Mopani district of the Limpopo Province in South Africa was the setting for this study. It is situated in Greater Giyani municipality which is approximately 150 kms north eastern side of Polokwane, with an estimated population of greater Giyani at approximately 247 190 (Source: South African national Census of 2011, 2014). It serves 96 rural villages and 5 informal settlements (Source: Integrated Development Plan (IDP) for Greater Giyani municipality 2011-2013). It has a 26 referral points on the primary health care networks with 26 clinics, 2 health centres and mobile clinics. The prevalent diseases and conditions range from stroke, TB, respiratory tract infections, hypertension, diabetes mellitus, HIV/AIDS, malnutrition, mental illness, teenage pregnancy, trauma and violence.

With the major causes of death ranging from stroke, Diabetes mellitus, hypertension, HIV/AIDS related disease, pneumonia, TB, trauma and violence. Major source delivery challenges ranges from shortage of workforce, funding challenges, poor maintenance of health technology, ineffective clinic services resulting with self-referrals to the hospital. The physiotherapy section renders physiotherapy services for inpatients and outpatients in the hospital.

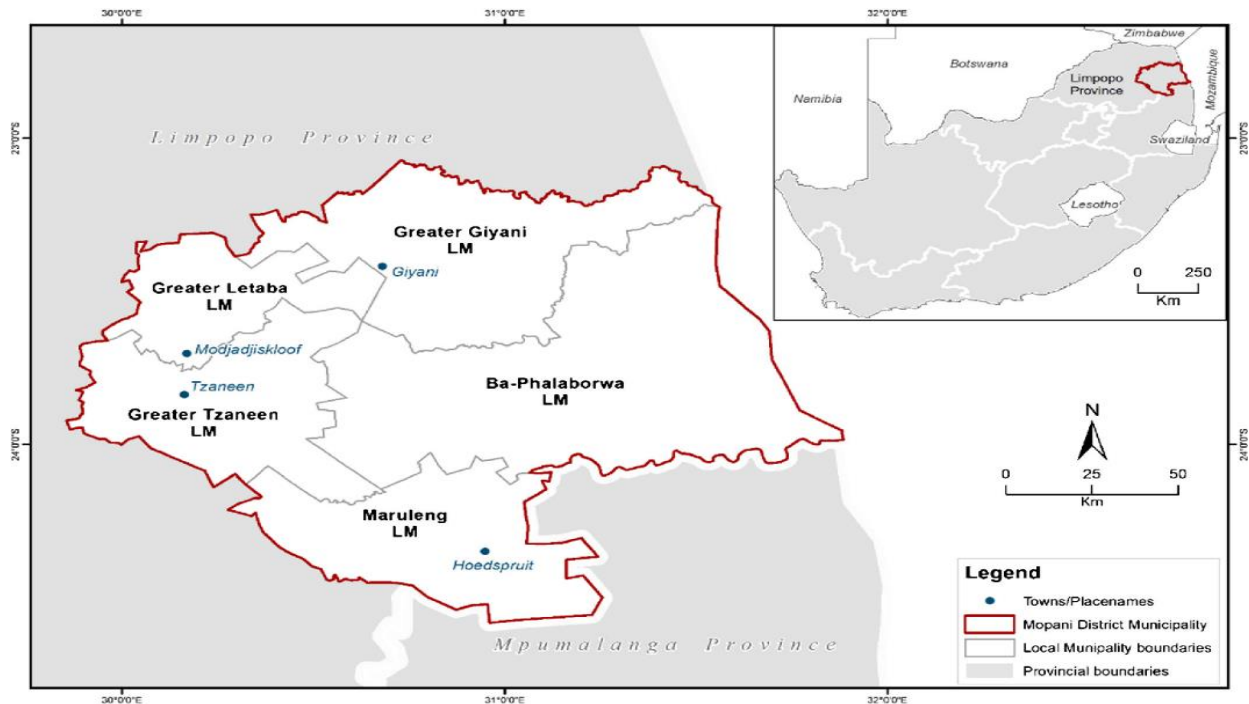


Fig. 1 Map of Mopani district showing the Greater Giyani and Greater Letaba Municipalities

### 3.4. Population and sampling

#### 3.4.1. Population

Population is defined as the whole collection units or objects, from which an sample may be drawn by the researcher and meet the criteria they are interested in studying (A dictionary of epidemiology, 2014). Study population for this study was only patients and their patient files containing physiotherapy progress notes at Nkhensani hospital, which the population size was 3808 for the year 2018 (Obtained through personal communication with the information manager at the hospital.)

### 3.4.2. Sampling technique

Simple random sampling was used to select participants for the study; the sample was selected from patients who came for treatment from November 2020 to February 2021. Simple random sampling is defined as the method where all the participants have an equal chance of being selected in the study (Brink, Van der Walt & Van Rensburg, 2018). The sample was chosen from the patients who were receiving physiotherapy services at Nkhensani hospital from November 2020 to February 2021 (both in and out patient). The randomization was done by allocating numbers to participants then placed in bowl from which the participants were selected randomly.

### 3.4.3. Sample size

Sample size is defined as the mathematical process of deciding, before the study begins on how many subject should be studied (A dictionary of epidemiology, 2014). The sample size in this study was determined from the total population which was obtained from the information manager from the Nkhensani Hospital (Verbal Communication).

n is the sample size

N is the size of total population which is 3808 a year (information obtained from Information manager at the institution)

Z is the 95 % confidence interval

d is the sampling error at 5 %

e is the level of Precision.

Yamane (1967) Formula for sample size

$$\begin{aligned}n &= \frac{N}{1+N(e)^2} \\ &= 3808 / 1 + 3808 (0.05)^2 \\ &= 363\end{aligned}$$

Therefore the sample size was  $363 + 10\%$  of  $363 = 399$ . There was 10 % which was added to the sample size to guard against unforeseen circumstances like non-response, incomplete questionnaire and withdrawal from participating in the study.

#### *3.4.4. Sampling Participants*

Participants who were attending physiotherapy services at Nkhensani hospital from November 2020 to February 2021 were given background about the study. The benefits of the study were well outlined and voluntary participation was used. Those who agreed to participate were given an informed consent form to fill in

##### *3.4.4.1. Inclusion criteria*

The inclusion criteria included all the physiotherapy patients that were attending physiotherapy services at Nkhensani hospital from November 2020 to February 2021(Both in and out patients). The participants were interviewed while filling in the questionnaire by the researcher and 2 other physiotherapist at Nkhensani hospital. Those who were younger than 18 years, the consent were given by parents or caregiver.

##### *3.4.4.2. Exclusion Criteria*

Physiotherapy patients who refused to participate and physiotherapy patients with files not containing physiotherapy progress notes were excluded from the study.

### **3.5. Data collection**

#### *3.5.1. Data management*

Information extracted from the patient's files and physiotherapy statistics was kept confidential and stored in CD then placed on locked cupboard. Confidential information of the patients was accessed for research purpose only by the researcher supervisor and researcher. The participant names of those who participated in the study were not written when collecting the information and no personal identity was revealed during research report writing.

### *3.5.2. Measuring Instrument*

A questionnaire was used to collect data. Questionnaire which was developed based on literature (Hess & Frantz, 2014; Nketie-Kyere, Aryeetey, Nonvignon, & Aikins, 2017; Grandpierre, Milloy, Sikora, Fitzpatrick, Thomas & Potter, 2018; Babur & Liaqat, 2018; ) It was comprised of 3 sections, section A which was demographic data (age, gender, marital status , level of education and employment status), section B was the physiotherapy treatment received and section C were Barriers to obtaining optimal physiotherapy services.

### *3.5.3. Data sources*

Data was collected using a questionnaire, section A of the questionnaire was the participant's demographic characteristics. The questionnaire was administered to patients who received physiotherapy services from November 2020 to February 2021 by the research and other 2 physiotherapist at Nkensani Hospital.

## **3.6. Reliability and validity**

### *3.6.1. Reliability*

Reliability is defined as the degree to which an instrument is consistent to produce same result over time on the same person (Brink, Van der Walt & Van Rensburg, 2018). The questionnaire responses were double checked with the supervisor and expect for consistency of the results. The instrument was also tested in a pilot study that was done in October 2020 before collection of data for the actual study. The participant's responses were checked before handing in, to verify if all the section have been answered before leaving the area.

### *3.6.2. Validity*

Validity is defined as the ability of the instrument to measure what is supposed to measure given the context that is being used (Brink, Van der Walt & Van Rensburg, 2018). In the study, to ensure validity the instrument was tested by conducting a pilot study in October 2020 at Nkhensani Hospital before it was used in the study (participants used for the Pilot study were not included in the study). The reason for using Nkhensani hospital as a pilot site was consideration of the costs to travel to Letaba hospital or Kgapane hospital which are the hospital in Mopani District but far away from the study site.

## **3.7. Data analysis**

Data was captured into Microsoft excel spread sheet and all responses were typed accordingly, then be transferred to statistical package for social sciences (SPSS) software version 25, programme for analysis. The analysis for the results was done with a help of a statistician, who was consulted before data collection. The demographic information of the results is presented using frequency tables, pie-charts, histograms and bar charts. The continuous variable is presented using mean, median and standard deviation. The continuous variable was compared using the T-test, with the level of significance set at 0.05. While the categorical variable was compared using the Chi-squared test.

## **3.8. Ethical considerations**

### *3.8.1. Permission to conduct the study*

The research proposal was presented at Department of Public Health, University of Limpopo then submitted to the School of Healthcare Sciences Research Committee and Faculty of Health Sciences Higher Degree Committee for recommendations, before was submitted to the University of Limpopo, Research and Ethics committee (Turfloop Research Ethics Committee, TREC) for approval. The reference allocated to this study was: TREC/174/2020: PG. The Limpopo department of health also gave approval to conduct the study, both the provincial office and the facility.

### *3.8.2 Informed consent*

Informed consent is defined as the voluntary consent given by subject or responsible proxy (e.g. parent, guardian or hospital CEO) for participation in the study after being informed of purpose, methods, benefits or harm that may occur (A Dictionary of epidemiology, 2014). It should be given without an influence. Participants who were attending for physiotherapy services at Nkhensani hospital were given background about the study conducted. The aim, procedure and benefits of the study were well outlined and voluntary participation was used. Those who agreed to participate were given an informed consent form to complete.

### *3.8.3 Measures to protect participant's confidentiality and privacy*

To ensure confidentiality, Information extracted from the patient's files and physiotherapy statistics was kept confidential and stored in a secured area. Only the researcher and researcher's supervisor had an access to the stored area. The participant names were not written when collecting the information (participants were allocated numbers) and no personal identity was revealed during research report writing.

## **3.9 Institution benefit from the study**

The research hoped the study would benefit the Nkhensani Hospital through planning (financial resources, equipment's to be used and human resources) of physiotherapy services. The Physiotherapy section would also benefit through information which can make the services to be improved, developing interventions towards enhancing optimal outcomes or change the approach of providing Physiotherapy services in order to cater the needs of the patients.

## 4. CHAPTER 4: RESULTS

### 4.1. Introduction

The previous chapter of this study dealt with the methodology used in the current study, which included the research design, study population and method of sampling. This study is about investigating the profile of patients receiving physiotherapy services and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa. Quantitative cross-sectional study design was used for data collection in this study and the current chapter deals with the findings of the study. In this chapter, the results are presented in a form of tables and graphs in order to highlight and interpret all statistical and descriptive associations.

### 4.2 Study population

The study population consisted of a total of (N=398) patients who were interviewed at Nkhensani hospital as they were visiting the hospital to receive physiotherapy services or treatment.

### 4.3 Characteristics of study population

Approximately forty-six percent of the participants were males and the mean age for the participants was 46.6 years with standard deviation of 22.3 and 53.7% were females. There was a statistical significance difference between the age groups ( $p$  value =0.025) and the majority of the participants were in the age group 25 – 54 years at 41.7% followed by those in age group 55 – 64 years, 65 years and above, 0 – 14 years at 19.4%, 17.3% and 13.6% respectively. The least number of participants were in the age group 15 – 24 years at 8%. There was a statistical significance difference between the marital status ( $p$  value =0.008) and more participants were married at 66.1%. Again there was a statistical significance difference between educational status ( $p$  value <0.001) and majority of participants had primary education at 55.5% followed by those who did not attend school at all, tertiary and secondary educational level at 23.1%, 11.3% and 10.1% respectively.



Lastly, there was a statistical significance difference between the employment status ( $p$  value =0.016) and more participants were unemployed at 81.2% as presented in Table 4.1 below.

**Table 4.1** below gives a more detailed review of the characteristics of the study population.

		<b>Both sexes (n=398) n(%)</b>	<b>Male (n=184) n(%)</b>	<b>Female (n=214) n(%)</b>	<b>p-value for trend</b>
<b>Age in years</b>					0.025
	0 – 14	54 (13.6)	31 (16.9)	23 (10.8)	
	15– 24	32 (8.0)	19 (10.3)	13 (6.1)	
	25 – 54	166 (41.7)	81 (44.0)	85 (39.7)	
	55 – 64	77 (19.4)	28 (15.2)	49 (22.9)	
	≥65	69 (17.3)	25 (13.6)	44 (20.6)	
<b>Marital status</b>					0.008
	Married	263 (66.1)	109 (59.2)	154 (72.0)	
	Unmarried	135 (33.9)	75 (40.8)	60 (28.0)	
<b>Educational level</b>					<0.001
	None	92 (23.1)	25 (13.6)	67 (31.3)	
	Primary	221 (55.5)	109 (59.2)	112 (52.3)	
	Secondary	40 (10.1)	26 (14.1)	14 (6.5)	
	Tertiary	45 (11.3)	24 (13.0)	21 (9.8)	
<b>Employment</b>					0.016
	Employed	75 (18.8)	44 (23.9)	31 (14.5)	
	Unemployed	323 (81.2)	140 (76.1)	183 (85.5)	

#### **4.4 The categories of physiotherapy diagnosis made on patients at Nkhensani hospital**

Majority of the patients who required physiotherapy services at Nkhensani hospital from November 2020 to February 2021 were diagnosed with conditions related to orthopaedic or musculoskeletal at 52% followed by those who were diagnosed with conditions in the category of neurology, geriatric and paediatric at 27%, 13% and 7% respectively. The least of patients were diagnosed with conditions related to cardio or respiratory system as presented in Figure 4.1 below.

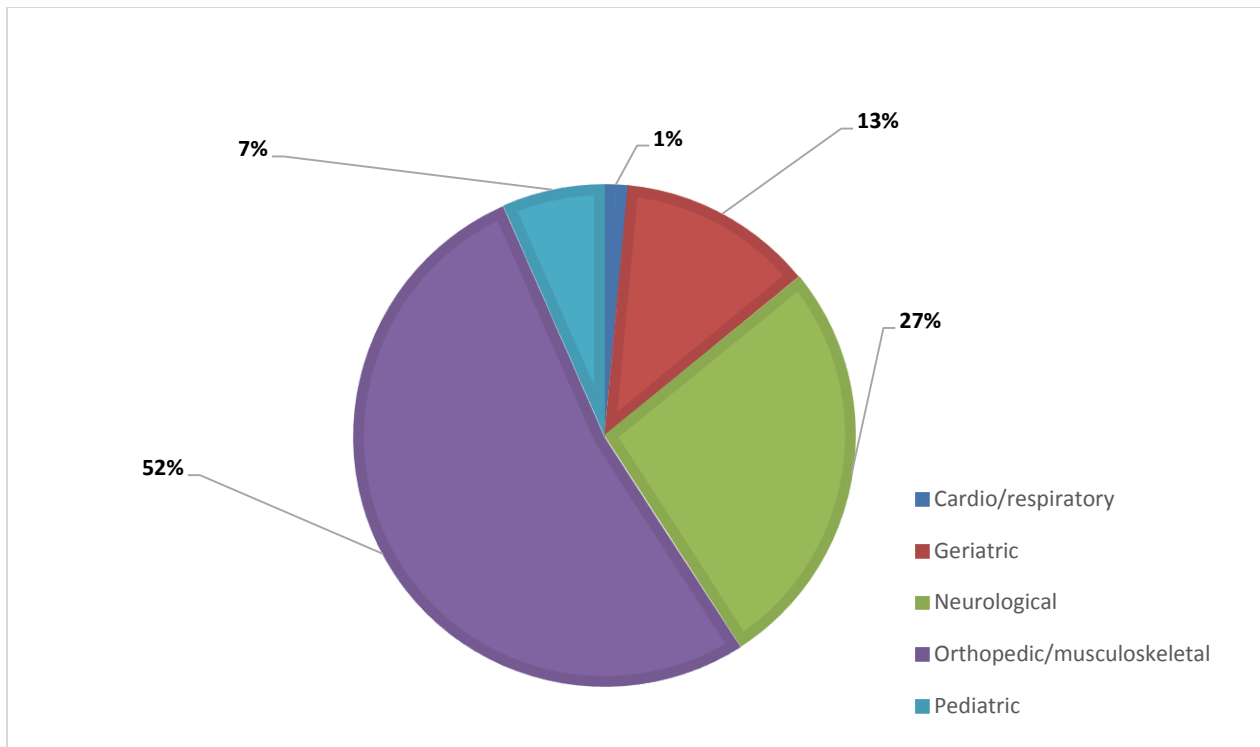


Figure 4.1: Categories of physiotherapy services patients received at Nkhensani hospital

Considering gender, there was a statistical significance difference between diagnosis made on patients requiring physiotherapy services as presented in Table 4.2 below. Male patients were mostly diagnosed with conditions related to orthopaedic or musculoskeletal at 61.1% followed by conditions related to neurology, paediatrics and geriatrics at 27.3%, 7.7% and 2.2% respectively. A similar trend has been seen in female patients but geriatric conditions (21.6%) were more than paediatric conditions (5.6%) as presented in Table 4.2 below.

Considering age groups, majority of patients in the age group 0 – 14 years were diagnosed with conditions related to paediatrics at 44.4 which is justifiable as this is the age group in which we find children. The second most physiotherapy diagnosis in this age group were related to orthopaedic or musculoskeletal followed by neurological conditions and cardio or respiratory conditions at 40.7%, 13% and 1.9% respectively. Physiotherapy diagnosis related to orthopaedic or musculoskeletal were mostly reported in age groups 15 – 24 years, 25 – 54 years and 55 – 64 years at 81.3%, 63.6% and

42.9% respectively. In age group 65 years and above the most physiotherapy diagnosis were related to neurology at 41.2% followed by orthopaedic or musculoskeletal and geriatrics at 32.4% and 25% respectively as presented in Table 4.2.

Table 4.2: Categories of physiotherapy diagnosis made on patients at Nkhensani hospital stratified by gender and age groups

	Categories of physiotherapy diagnosis					<i>P-value</i>
	Cardio/ respiratory	Geriatric	Neurological	Orthopaedic/ musculoskeletal	Paediatric	
	n (%)	n (%)	n (%)	n (%)	n (%)	
<b>Gender</b>						
Males	3 (1.6)	4 (2.2)	50 (27.3)	112 (61.1)	14 (7.7)	<0.000
Females	3 (1.4)	46 (21.6)	56 (26.3)	96 (45.1)	12 (5.6)	
<b>Age group in years</b>						
0 – 14	1 (1.9)	0 (0.0)	7 (13.0)	22 (40.7)	24 (44.4)	<0.000
15– 24	1 (3.1)	0 (0.0)	4 (12.5)	26 (81.3)	1 (3.1)	
25 – 54	3 (1.8)	13 (7.9)	44 (26.7)	105 (63.6)	0 (0.0)	
55 – 64	1 (1.3)	20 (26.0)	23 (29.9)	33 (42.9)	0 (0.0)	
≥65	0 (0.0)	17 (25.0)	28 (41.2)	22 (32.4)	1 (1.5)	

#### 4.5 The categories of physiotherapy treatment patients are receiving at Nkhensani hospital

Majority of the physiotherapy treatments received by patients at Nkhensani hospital during the period of the study were rehabilitation and physical modalities at 57.8% followed by a combinations of rehabilitation, physical modalities, low frequency, cryotherapy and moist heat; rehabilitation, physical modalities and cryotherapy and moist heat; cryotherapy and moist heat and health frequency at 26.4%; 11.1% and 3.5% respectively.

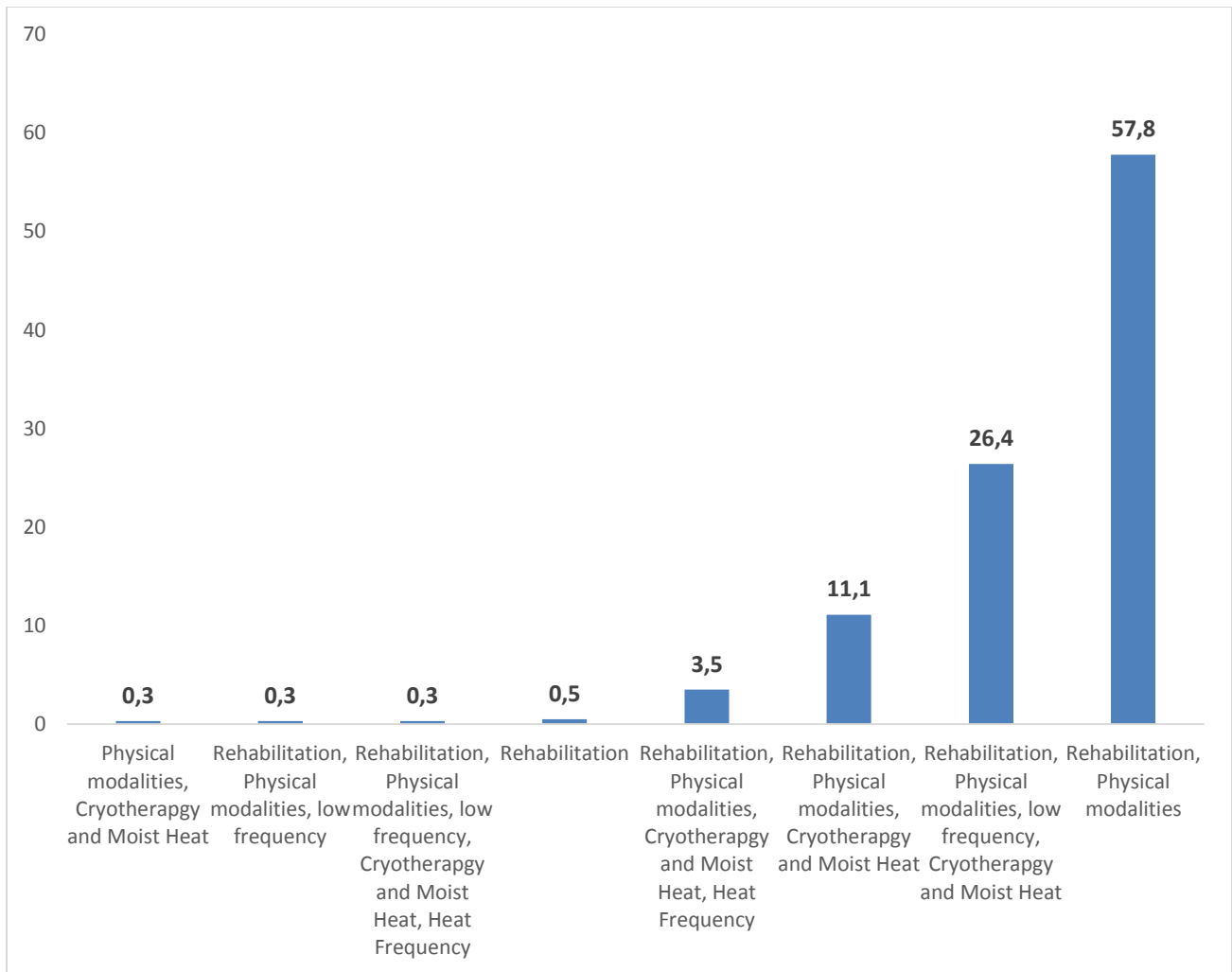


Figure 4.2: Categories of physiotherapy treatments patients received at Nkhensani hospital

The physiotherapy treatments patients received in the current study were grouped into five been the rehabilitation exercises, physical modalities, low frequency currents, high frequency currents, Cryotherapy and moist heat. In Table 4.3 below, the physiotherapy treatments patients received at Nkhensani hospital are presented stratified by age groups. This shows that age group 25 – 54 years had the patient’s highest treatments received in all categories followed by age group 55 – 64 years.

Table 4.3: Categories of physiotherapy treatments patients received at Nkhensani hospital stratified by age groups

Physiotherapy treatments	Overall	Age in years				
		0 – 14	15– 24	25 – 54	55 – 64	≥65
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Rehabilitation exercises		54 (13.6)	32 (8.1)	166 (41.8)	77 (19.4)	68 (17.1)
Physical modalities		53 (13.4)	32 (8.1)	165 (41.7)	77 (19.4)	69 (17.4)
Low frequency currents	107 (26.9)	2 (1.9)	10 (9.4)	51 (47.7)	29 (27.1)	15 (14.0)
High frequency currents	15 (3.8)	3 (1.8)	15 (9.1)	78 (47.3)	41 (24.9)	28 (17.0)
Cryotherapy and moist heat.	165 (41.5)	0 (0.0)	0 (0.0)	10 (66.7)	4 (26.7)	1 (26.7)

#### 4.1.1. Rehabilitation exercises

The rehabilitation exercises patients received were further analysed and it was found that in age group 0 – 14 years' majority of the patients received treatment related to positioning at 44% followed by group exercises; posture; balance and coordination re-education; home program/education; range of motions; breathing exercises; strengthening exercises; and circulatory exercises at 33.9%, 28%, 23.9%, 13.5%, 12%, 10.5%, 9.4% and 8.5% respectively. Amongst age group 15 – 24 years the highest proportion patients received breathing exercises at 16% followed by circulatory exercises and positioning at 13.6% and 10.7% respectively. Circulatory exercises; breathing exercises; strengthening exercises; home program/education; range of motions exercises; posture correction and balance and coordination re-education were in the provided to majority of the patients at 61%, 48%, 43.8%, 41.8%, 41.5%, 35% and 32.1% respectively. The highest treatment provided amongst the patients in age group 65 years and above were group exercises at 25% followed by balance and coordination re-education; posture; strengthening exercises and home program/education at 21.1%, 20%, 19.8% and 17.1% respectively as presented in Table 4.4 below.

Table 4.4: Rehabilitation exercises treatments patients received at Nkhensani hospital stratified by age groups

	Age in years				
	0 – 14	15– 24	25 – 54	55 – 64	≥65
	n (%)	n (%)	n (%)	n (%)	n (%)
Circulatory exercises	5 (8.5)	8 (13.6)	36 (61.0)	7 (11.9)	3 (5.1)
Group exercises	19 (33.9)	2 (3.6)	11 (19.6)	10 (17.9)	14 (25.0)
Strengthening exercises	27 (9.4)	24 (8.3)	126 (43.8)	54 (18.8)	57 (19.8)
Range of motion exercises	23 (10.3)	21 (9.4)	106 (41.5)	41 (18.4)	32 (14.4)
Balance and coordination re-education	26 (23.9)	9 (8.3)	35 (32.1)	16 (14.7)	23 (21.1)
Home program/education	53 (13.5)	32 (8.2)	164 (41.8)	76 (19.4)	67 (17.1)
Posture correction	28 (28.0)	7 (7.0)	35 (35.0)	10 (10.0)	20 (20.0)
Positioning	33 (44.0)	8 (10.7)	17 (22.7)	7 (9.3)	10 (13.3)
Breathing exercises	3 (12.0)	4 (16.0)	12 (48.0)	4 (16.0)	2 (8.0)

#### 4.1.2. Physical modalities

The physical modalities patients received at Nkhensani hospital were further analysed and it was found that in age group 0 – 14 years' majority of the patients received treatment related to postural drainage at 22.2% followed by muscle stretching; passive movements; gait re-education and nebulisation at 21.2%, 20.7%, 15% and 14.3 respectively. A similar trend like in rehabilitation exercises, the age group 25 – 54 years had more patients requiring treatments related to vibrations at 75% followed by strapping; massage; myofascial release; soft tissue mobilisation; passive movements; postural drainage and nebulisation at 48.3%, 45.2%, 44.4%, 38.8%, 34.2; 33.3% and 28.6% respectively.

Table 4.5: Physical modalities treatments patients received at Nkhensani hospital stratified by age groups

	Age in years				
	0 – 14	15– 24	25 – 54	55 – 64	≥65
Neural tissue mobilisation	2 (5.1)	1 (2.6)	15 (35.9)	15 (38.5)	7 (18.0)
	n (%)	n (%)	n (%)	n (%)	n (%)
Soft tissue mobilisation	13 (8.0)	13 (8.0)	72 (44.4)	38 (23.5)	26 (16.1)
Myofacial release	3 (3.6)	6 (7.1)	38 (45.2)	22 (26.2)	15 (17.9)
Massage	4 (3.5)	12 (10.3)	56 (48.3)	28 (24.1)	16 (13.8)
Muscle stretching	36 (21.2)	14 (8.2)	66 (38.8)	31 (18.2)	23 (13.5)
Passive movements	40 (20.7)	17 (8.8)	66 (34.2)	33 (17.1)	37 (19.2)
Strapping	0 (0.0)	1 (5.6)	13 (72.2)	3 (16.7)	1 (5.7)
Nebulisation	1 (14.3)	1 (14.3)	2 (28.6)	2 (28.6)	1 (14.3)
Vibrations	0 (0.0)	1 (25.0)	3 (75.0)	0 (0.0)	0 (0.0)
Postural drainage	2 (22.2)	0 (0.0)	3 (33.3)	3 (33.3)	1 (11.1)
Gait re-education	32 (15.0)	14 (6.5)	88 (41.1)	38 (17.8)	42 (19.6)

#### 4.1.3. Low frequency currents

The treatments related to low frequency currents provided at Nkhensani hospital were interferential therapy and transcutaneous electrical nerve stimulation (TENS). The provision of these treatments increased with increasing age from 2.3% in age group 0 – 14 years for interferential therapy to 47.2% in age group 25 – 54 years then dropped to 26.9% in both age groups 55 – 64 years and 65 years and above. A similar trend has been seen for TENS from 10.5% in age group 15 – 24 years to 47.4% in age group 25 – 54 years then dropped to 31.6% and 10.5% in age groups 55 – 64 years and 65 years and above respectively as presented in Table 5.6 below.

Table 4.6: Low frequency currents treatments patients received at Nkhensani hospital stratified by age groups

	Age in years				
	0 – 14	15– 24	25 – 54	55 – 64	≥65
	n (%)	n (%)	n (%)	n (%)	n (%)
Interferential therapy	2 (2.3)	8 (9.0)	42 (47.2)	24 (26.9)	13 (26.9)
TENS	0 (0.0)	2 (10.5)	9 (47.4)	6 (31.6)	2 (10.5)

#### 4.1.4. High frequency currents

Approximately 3.8% of the patients who visited physiotherapy unit at Nkhensani hospital received treatment related to high frequency current as presented in Figure 4.3 below.

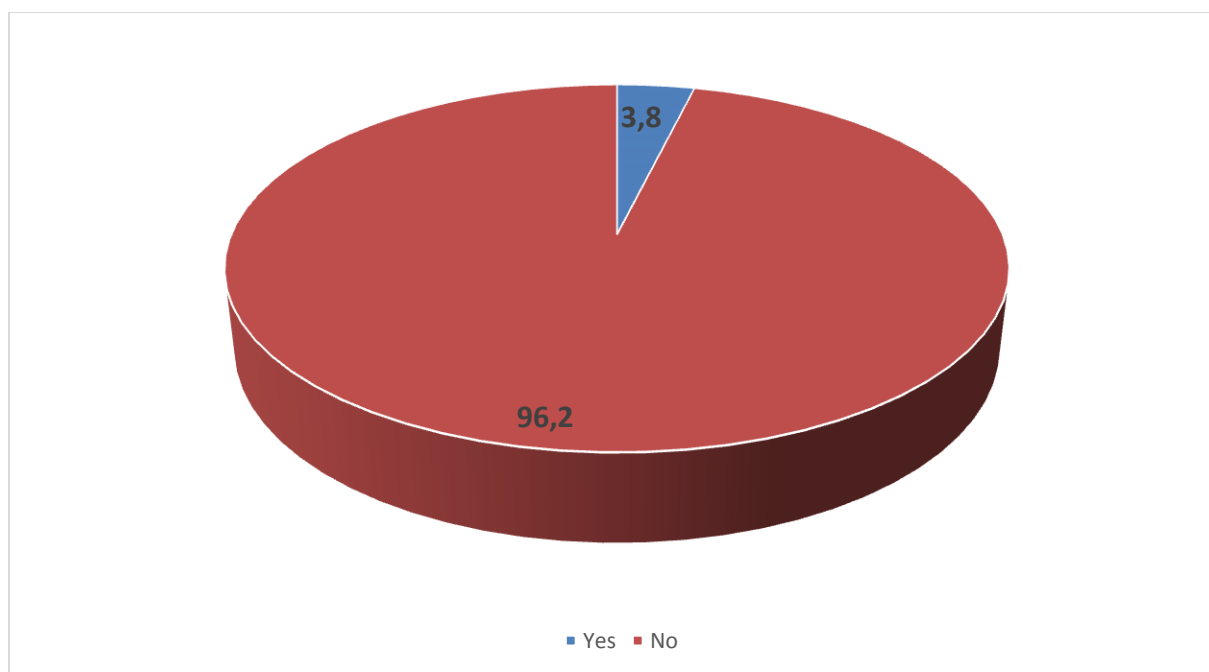


Figure 4.3 High frequency currents treatments

Approximately 67% of the patients who received treatment related to high frequency current at Nkhensani hospital were in age group 25 – 54 years followed by 26.7% and 6.7% in age groups 55 – 64 years and 65 years and above respectively as presented in Table 4.7 below.



Table 4.7: High frequency currents treatments patients received at Nkhensani hospital stratified by age groups

	Age in years				
	0 – 14	15– 24	25 – 54	55 – 64	≥65
	n (%)	n (%)	n (%)	n (%)	n (%)
High frequency currents	0 (0.0)	0 (0.0)	10 (66.7)	4 (26.7)	1 (6.7)

#### 4.1.5. Cryotherapy and moist heat

Cryotherapy which is also known as ice application and moist heat which is called superficial heat have been analysed on how many patients have received them at Nkhensani hospital. The most patients who received the heat therapy which works to increase blood circulation then promotes healing and relaxing of your muscles has been given to most patients in age group 25 – 54 years at 47.8% followed by age group 55 – 65 years and 65 years and above at 24.5% as presented in Table 4.8 below.

Table 4.8: Cryotherapy and moist heat treatments patients received at Nkhensani hospital stratified by age groups

	Age in years				
	0 – 14	15– 24	25 – 54	55 – 64	≥65
	n (%)	n (%)	n (%)	n (%)	n (%)
Heat therapy	3 (1.9)	13 (8.2)	76 (47.8)	39 (24.5)	28 (24.5)
Cold therapy	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)
Wax therapy	0 (0.0)	1 (25.0)	1 (25.0)	2 (50.0)	0 (0.0)

#### 4.6 The barriers to obtaining optimal physiotherapy services by patients at Nkhensani hospital

The barriers to obtaining optimal physiotherapy services by patients were grouped into socio-cultural, economic barriers, treatment barriers, health systems and language barriers. The socio-cultural barrier which was reported by most participants was lack of family support at 74.9% followed by lack of support from friends, the use of traditional medicines, religion and spiritual beliefs at 71.1%, 69.3% 57% and 50.5% respectively as presented in Figure 4.4 below.

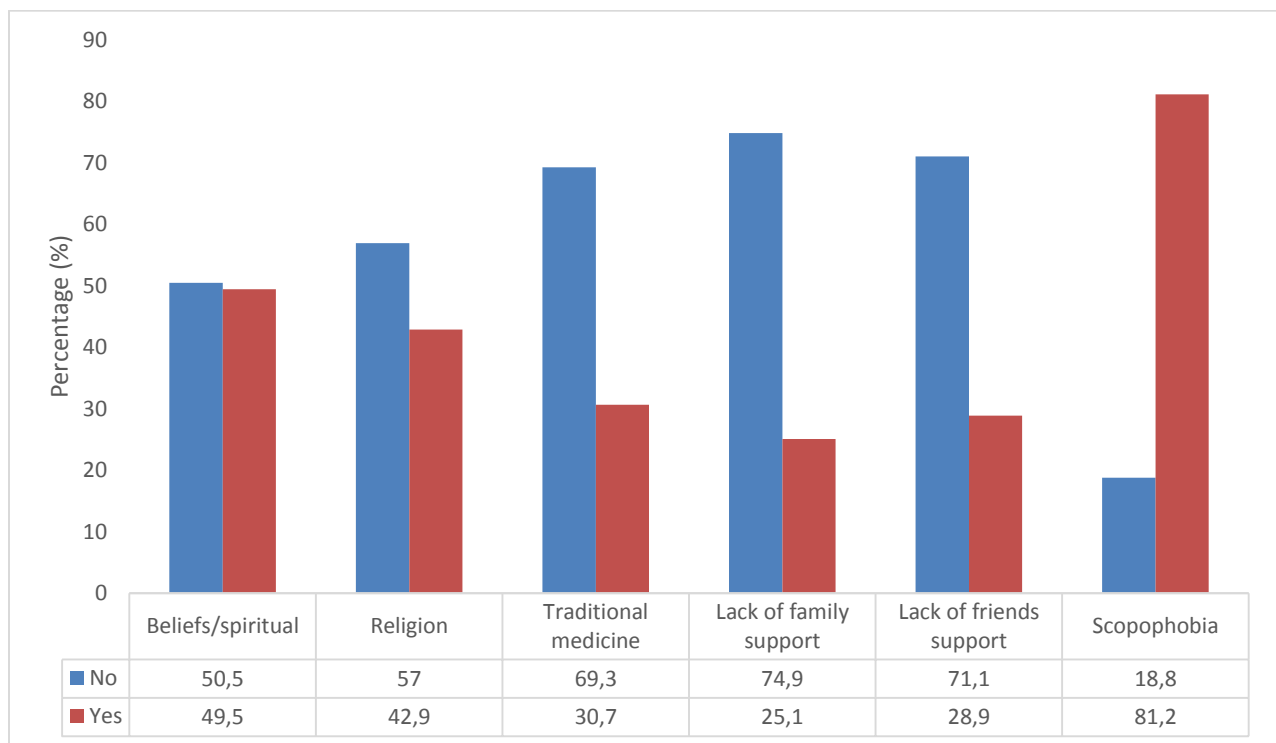


Figure 4.4: Socio-cultural barriers to obtaining optimal physiotherapy services

The economic barrier which was reported by most participants was the costs of hiring a caregiver at 76.9% followed by affordability of services, financial dependence and affordability of transport to hospital at 57%, 46.5% and 26.1% respectively as presented in Figure 4.5 below.

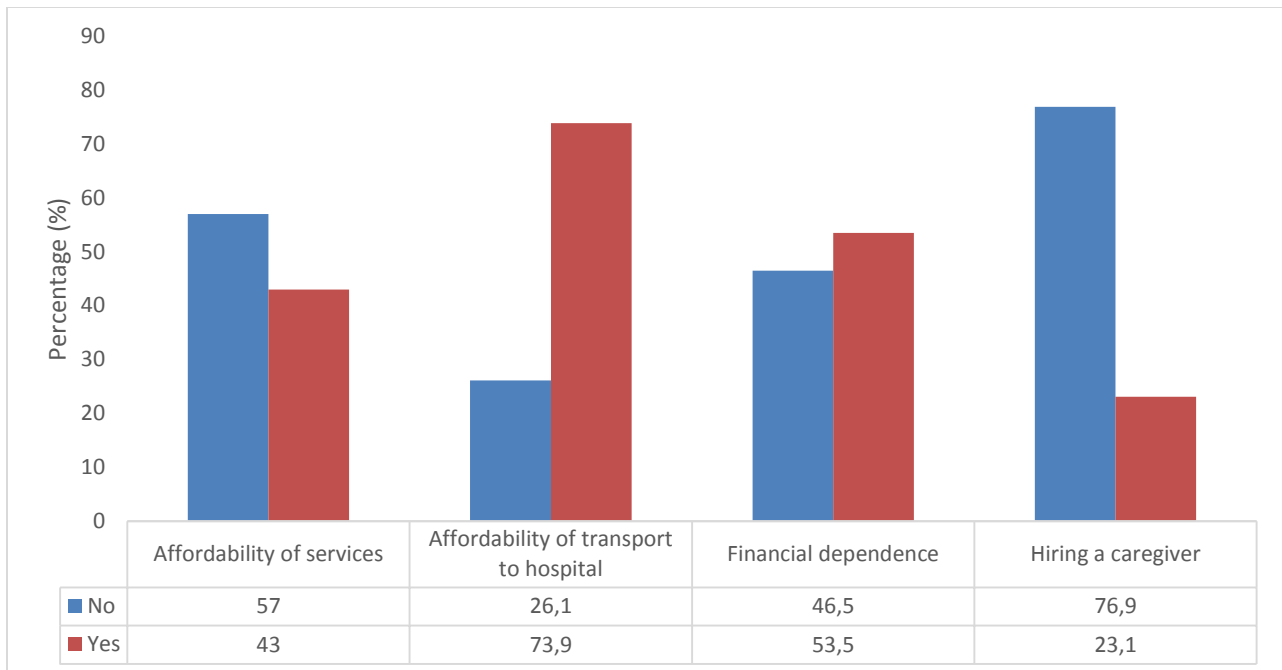


Figure 4.5: Economic barriers to obtaining optimal physiotherapy services

The treatment barrier which was reported by most participants was side effects at 32.9% followed by adherence to treatment at 18.1% as presented in Figure 4.6 below.

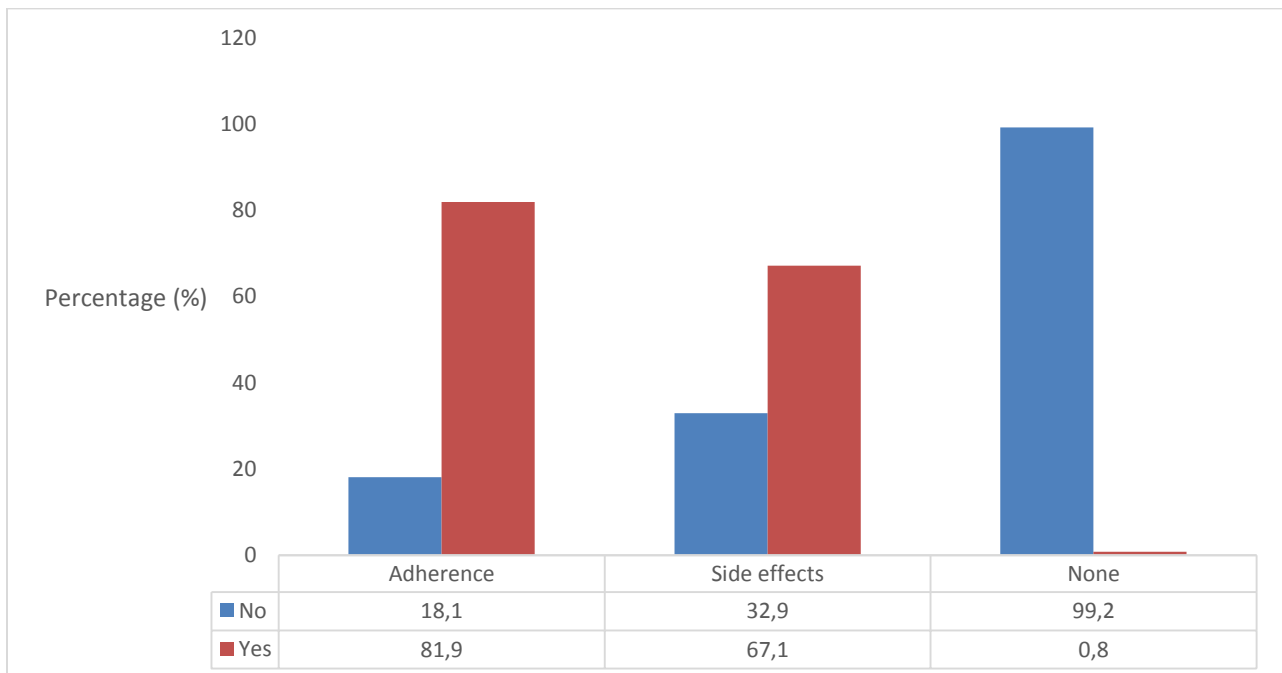


Figure 4.6: Treatment barriers to obtaining optimal physiotherapy services

The health system barrier which was reported by most participants was the attitude of staff at hospital at 68.6% followed by unavailability of services, lack of trained personnel/resources/space at hospital, lack of referral, distance to hospital and long queues at hospital at 61.8%, 43.7%, 41.2%, 31.9% and 4.5% respectively as presented in Figure 4.7 below.

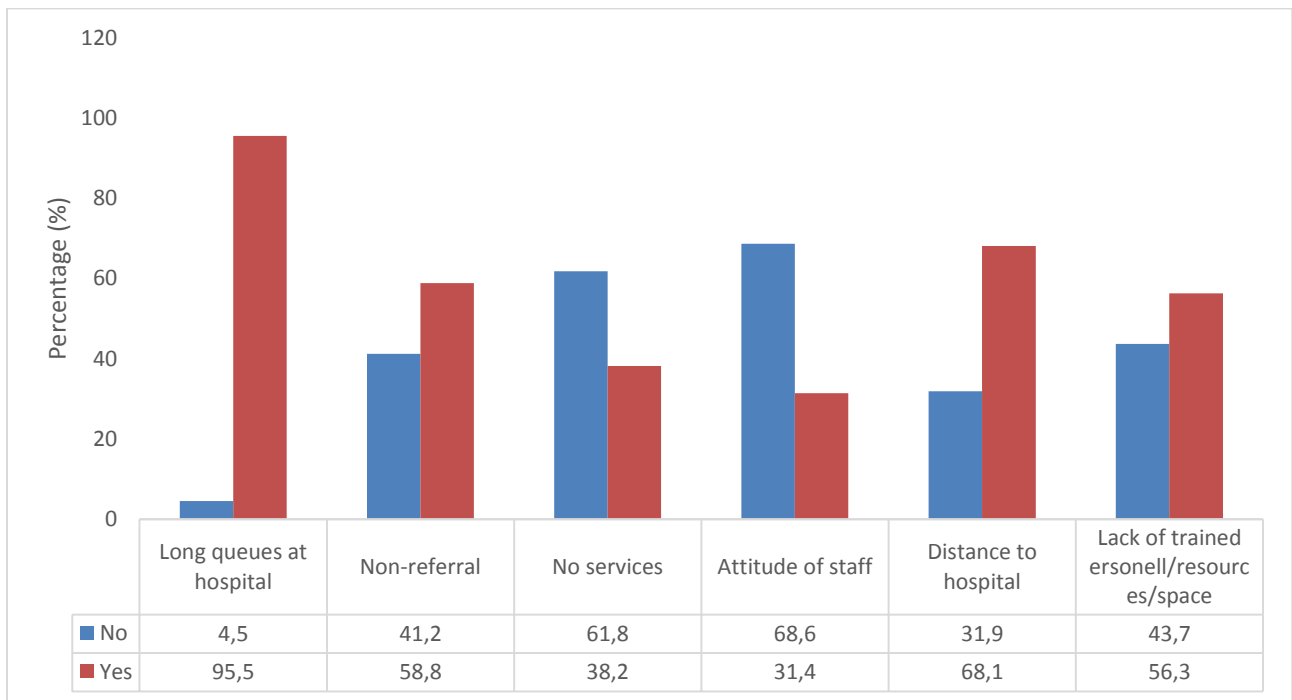


Figure 4.7: Health systems barriers to obtaining optimal physiotherapy services

The participants in the current study reported to be not having much of a problem with language barriers as only 14.1% and 17.6% reported to be having challenges with information instructions and engagement in interventions respectively as presented in Figure 4.8 below.

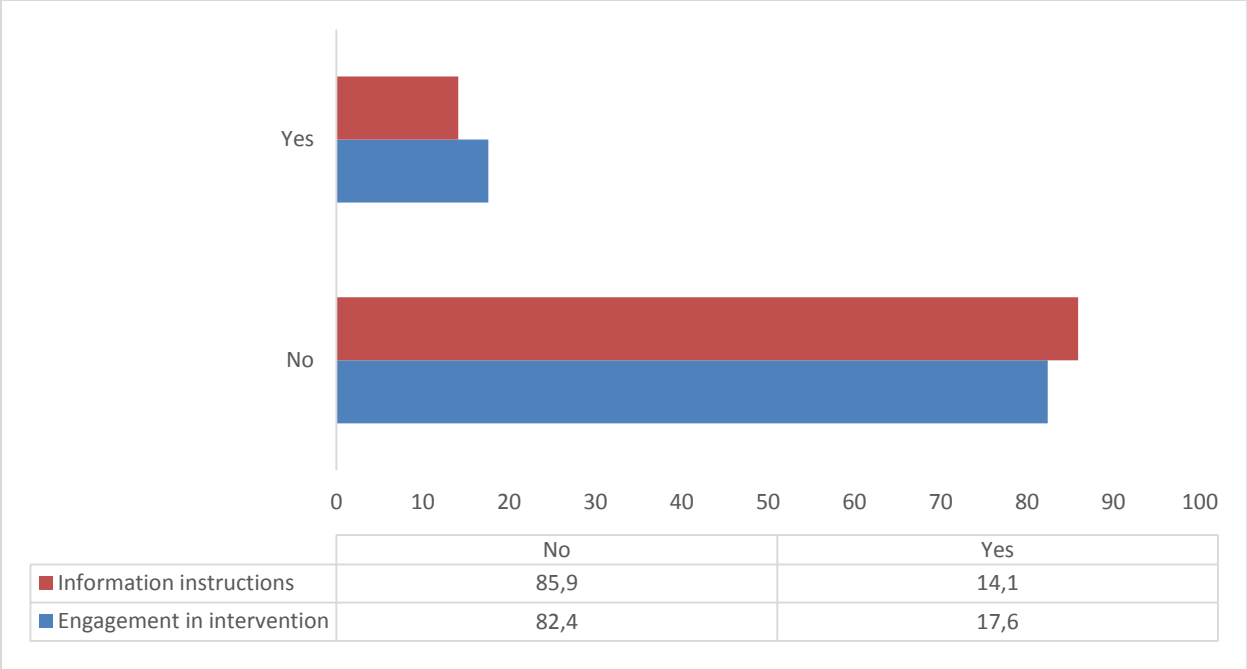


Figure 4.8: Language to obtaining optimal physiotherapy services

## **5. CHAPTER 5: DISCUSSION AND CONCLUSION**

### **5.1. Introduction**

In the previous chapter, the findings of this study were presented and interpreted. In this chapter, the results of this study are discussed and compared to the relevant literature. The chapter is divided into the following sub-sections which are 1) introduction; 2) characteristics of study population; 3) categories of physiotherapy diagnosis made on patients; 4) categories of physiotherapy treatment patients are receiving; 5) barriers to obtaining optimal physiotherapy services by patients; 6) study limitations; 7) conclusion and 8) recommendation.

### **5.2. Characteristics of study population**

The current study findings revealed that the mean age of the participants was 46.6 years and 53.7% were females which differs from the findings of a studies conducted in Zimbabwe (Tadyanemhandu & Manie, 2015) and in a stroke unit in sub-Saharan Africa (Imarhiagbe & Abidakun, 2014). Majority of the participants in the current study were in the age group 25 – 54 years which concurs with findings from a study conducted in Ahmadnagar, India (Rai & Ganvir, 2019). In the current study, there was a statistical significance difference between the marital status ( $p$  value = 0.008) and more participants were married which concurs with a study conducted in a stroke unit in sub-Saharan Africa (Imarhiagbe & Abidakun, 2014). Again there was a statistical significance difference between educational status and majority of participants had primary education at 55.5% which differs from the findings of a study conducted in Brazil (Rodrigues-de-Paula, Lana, Lopes, Cardoso, Lindquist, Piemonte, Correa, Israel, Mendes & Lima, 2018).

### **5.3. Categories of physiotherapy diagnosis made on patients**

The current study findings concur with findings from a study conducted in a European survey (Stephensen, de Kleijn, Matlary, Katzerova, McLaughlin, Ryan, Lobed &EAHAD physiothepists committee, 2019) as majority of the patients who required physiotherapy services were diagnosed with conditions related to orthopaedic/musculoskeletal while few were diagnosed with conditions in the

category of neurology, geriatric and paediatric. Musculoskeletal disorders are characterized by a lack of ease of function and movement, and in men and women, the presentation of these disorders differs (Wolf, Cannada, Van Heest, O'Connor & Ladd, 2015).

Musculoskeletal problems contribute a significant workload to any hospital and massively increases the burden on outpatient clinics. In the current study it was found that musculoskeletal disorders pose a considerable burden on the orthopedic OPD and it concurs with findings from a study conducted in Jeddah, Saudi Arabia (Syed, Azim & Baig, 2019). This is evidence that there is a need to establish pain management and back pain clinics, which will reduce the burden on the orthopedic OPD. This can be coupled with a community awareness campaign which could raise concerns about the healthy lifestyle and occupational safety to avoid orthopedic conditions like back pain, arthritis, and body aches. More males were diagnosed with orthopaedic/musculoskeletal as compared to females in the current study which is supported by findings from Bergovec, Kubat, Smerdelj, Seiwerth, Bonevski and Orlic (2015).

The prevalence of disability due to neurological conditions is escalating worldwide and neurological disorders have significant disability-burden with long-term functional and psychosocial issues, requiring specialized rehabilitation services for comprehensive management, especially treatments tapping into brain recovery 'neuroplastic' processes (Khan, Amatya, Galea, Gonzenbach & Kesselring, 2017). In the current study, neurological conditions were the second most diagnosis made which is in contrary to a report by Kamble, Prashantha, Jha, Netravathi, Reddy and Pal (2016) which reported that the prevalence of psychogenic neurological disorders have been reported to be 1% to 9% among patients attending neurology clinics and those attending specialty clinics of movement disorders, the prevalence has been reported to vary from 2% to 20%.

#### **5.4. Categories of physiotherapy treatment patients are receiving**

Services provided by physiotherapists include examination and assessment, evaluation, interventions and treatments, outcome assessments, health promotion and prevention (Stephensen, de Kleijn, Matlary, Katzerova, McLaughlin, Ryan, Lobed &EAHAD physiothepists committee, 2019). In the current study, the physiotherapy treatments patients received in the current study were grouped into five been the rehabilitation exercises, physical modalities, low frequency currents, high frequency currents, cryotherapy and moist heat. Majority of the physiotherapy treatments received by patients in the current study were rehabilitation and physical modalities which concurs with findings from a study conducted in a European survey (Stephensen, de Kleijn, Matlary, Katzerova, McLaughlin, Ryan, Lobed &EAHAD physiothepists committee, 2019). This involves the muscle strengthening, education, joint range of motion techniques, soft-tissue techniques, taping and manual therapy.

##### *5.4.1. Rehabilitation exercises*

Supervised, hospital-based exercise rehabilitation programs are effective for improving functional status for patients (Regensteiner, Meyer, Krupski, Cranford, Hiatt & Regensteiner, 1997). In the current study, most of rehabilitation exercises received by patients included positioning, group exercises and posture which concurs with findings from a study conducted in Maharashtra state of India as approximately 86% of patients received positioning and 61% received joint mobilization, (Yeole, Chand, Nandi, Gawali & Adkitte, 2015). One of the biggest challenges facing rehabilitation in today's health care environment is to find ways to extend the period of language rehabilitation and provide the needed services in a cost-effective manner (Fink & Schwartz, 2000).

##### *5.4.2. Physical modalities*

Exercise not only makes an individual physically fitter but it also improves all body health and general sense of well-being. Physical activity or exercise can reduce the risk of developing several diseases like type 2 diabetes, cancer and cardiovascular disease (Abou Elmagd, 2016). In the current study, physical modalities patients received included postural drainage, muscle stretching; passive movements; gait re-education



and nebulisation. Postural drainage is an intervention for airway clearance by mobilizing secretions in one or more lung segments to the central airways by placing the patient in various positions so that gravity assists in the drainage process (Hodgin, Nordon-Craft, McFann, Mealer & Moss, 2009; Kisner, Colby & Borstad, 2017). Postural drainage was mostly received by patients in the current study similar to a study in India in which majority of patients who went for chest physiotherapy assessment predominantly focused on vibration, chest manipulation and postural drainage (Chokshi, Alaparathi, Krishnan, Vaishali & Zulfeequer, 2013). In another study conducted in Maharashtra state of India, postural drainage was reported in approximately 25% of the patients (Yeole, Chand, Nandi, Gawali & Adkitte, 2015) and postural drainage was mostly used by physiotherapists working with neonates and adults in ICU in India and Europe (Kisner, Colby & Borstad, 2017) which is similar to the current study. In contrary to the current study, a study in the UK reported has been to be the least common techniques less used and as it has gone out of favour due to the time required to facilitate mucociliary clearance. There are also concerns that the head-down tilt may exacerbate gastro-oesophageal reflux and dyspnoea (Hoo, Daniels, Wildman, Teare & Bradley, 2015).

Among the movement therapy methods, stretching exercises are one of the oldest treatment methods, which improve muscles' circulation and facilitate provision of nutrients to the cells (Ylinen, 2008). In the current study, muscle stretching; passive movements; gait re-education and nebulisation were used by patients more often and this is similar to several studies (Sartor, Hasue, Cacciari, Butugan, Watari & Pássaro et al., 2014; Shahgholian, Jazi, Karimian & Valiani, 2016; Kuo & Hu, 2018.). In a study conducted by Simon, Wikstrom, Grooms, Docherty, Dompier and Kier (2019) therapeutic activities or exercise were the most common Athletic training services followed by neuromuscular re-education, strapping and modalities. This concurs with the current study findings as strapping was least used by patients at Nkhensani hospital.

#### *5.4.3. Low and high frequency currents*

Interferential current therapy (IFC, IFT) is the transcutaneous application of alternating medium frequency electrical current for therapeutic purpose. It is widely used in physical therapy clinics to provide pain relief in variety of conditions (Dalal, Sheth & Vyas, 2014). Currently, pain management mainly consists in the use of pain medications, pain neuroscience education, psychological counselling, exercises, manual therapy, and electrical stimulation (ES). Regarding ES, IFC and transcutaneous electrical nerve stimulation (TENS) have been used to manage chronic pain (de Almeida, da Silva, Júnior, Liebano & Durigan, 2018). In the current study, the provision of IFC and TENS increased with increasing age which concurs with other studies (Yesil, Hepguler, Dundar, Taravati & Isleten, 2018; Dias, Cordeiro, de Sales, dos Santos, Korelo & Wojciechowski, 2021). High frequency currents have been less used in the current study which is similar to a study by Hoo, Daniels, Wildman, Taere and Bradley (2015) in the UK.

#### *5.4.4. Cryotherapy and moist heat*

Heat therapy in the form of deep moist heat or a heating pad is a mild analgesic that has several effects on the human body including increase in local blood flow, mitochondrial biogenesis, improved range of motion, and pain relief. Cold therapy in the form of cold compress, ice pack or ice massage can act as a mild analgesic. The physiological effects of cold therapy include reduced blood flow, reduced metabolic demand, and pain relief. This form of therapy may be useful for patients with chronic pain (Lebert, 2020). In the current study, most patients who received the heat therapy were in age group 25 – 54 years at 47.8% followed by age group 55 – 65 years and 65 years and above at 24.5%. These findings are in contrary to the findings from a study conducted in the United States in which the use of cryotherapy increased significantly in older patients, 65 years and above (Farhangian, Snyder, Huang, Doerfler, Huang & Feldman, 2016).

### **5.5. Barriers to obtaining optimal physiotherapy services by patients**

Increasing access to health services and the introduction of primary health care are the cornerstones of transforming healthcare initiatives in South Africa (Ramklass, 2009). There are many people who continue to live with physical disabilities globally and Africa is not excluded despite the expertise in therapeutic exercises and the available evidence of effectiveness. Access to rehabilitation for people with disability is inadequate, more so in rural communities, with the attendant economic and social implications if the status quo is maintained (Igwesi-Chidobe, 2012). In the current study, the predominant socio-cultural barriers to obtaining optimal physiotherapy services by patients were lack of family support, lack of support from friends, the use of traditional medicines as a significant number of patients visited traditional health facility for their movement/functional and musculoskeletal problems with majority either receiving topical herbs or traditional bone setting as treatment (Igwesi-Chidobe, 2012; Okafor, 2015). Again our study findings concur with the study in Nigeria as health seeking behaviour of rural dwellers is known to be influenced by traditional and cultural beliefs as well as poor perception (Okafor, 2015).

The economic barrier which was reported by most participants in the current study was the costs of hiring a caregiver, affordability of services and affordability of transport to hospital. These findings concur results from a study conducted in Nigeria in which it was reported that the main reasons influencing choice of treatment were mainly affordability and accessibility (Okafor, 2015). Similarly, to the findings of the current study, majority of the respondents in a study conducted in Ghana indicated economic barrier as their main individual barrier to physiotherapy services (Nketia-Kyere, 2015). The treatment barrier which was reported by most participants in the current study was side effects and adherence to treatment which concurs with findings from a study in Ghana as patients with low medication adherence level were about 21 times the odds of defaulting on accessing physiotherapy services five times or more as compared to those with medium adherence level (Nketia-Kyere, 2015). The health system barrier which was reported by most participants was the unavailability of services and lack of trained personnel/resources/space at hospital which is similar to findings from other studies as

lack physiotherapy services were reported (Igwesi-Chidobe, 2012; Hanna, Lyons, Parker, Stokes & Wojkowski, 2019). Language barriers were reported in the current study as contributing to access to physiotherapy services which is similar to a study conducted in Kwa Zulu Natal, South Africa (Aderibigbe & Chima, 2019).

### **5.6. Limitations of the study**

The limitations of the study was that, it was conducted during Covid 19, where the lockdown regulations affected the study through physiotherapy staff rotations, amount of time spent with participants and the social distancing space. Social distancing meant that we needed much space less than the Nkhensani physiotherapy department for participant sit while waiting for their time. These meant that less time was supposed to be spent with the participant which compromises the quality of information collected. The physiotherapy staff rotations gave a limit to the questionnaires to be completed in a day, the study needed more time due to number of physiotherapist on a daily basis.

### **5.7. Conclusion**

In conclusion, the current study revealed that most physiotherapy diagnosis were related to orthopaedic or musculoskeletal followed by those who were diagnosed with conditions in the category of neurology, geriatric and paediatric while conditions related to cardio or respiratory system made the least of the diagnosis. Majority of the physiotherapy treatments received by patients at Nkhensani hospital from November 2020 to February 2021 were rehabilitation and physical modalities followed by a combinations of rehabilitation, physical modalities, low frequency, cryotherapy and moist heat; rehabilitation, physical modalities.

The barriers to obtaining optimal physiotherapy services by patients were lack of family support, lack of support from friends, the use of traditional medicines, the costs of hiring a caregiver, affordability of services and transport to hospital. Lastly, the health system barrier which was reported by most participants was the unavailability of services and lack of trained personnel/resources/space at hospital and language barriers.

## **5.8. Recommendations**

Based on the findings of the current study, it is recommended that adequate community health education and intervention services be provided and made affordable and accessible to rural communities. Physiotherapists in Nkhensani hospital lack training and autonomy, preventing them from acquiring advanced roles particularly cardiorespiratory physiotherapy that requires specialised knowledge and skills. The current delivery of the service is limited to acute interventions, and is based on limited, unstructured referral from physicians depriving the patients from the service. There is a need to establish pain management and back pain clinics, which will reduce the burden on the orthopedic OPD. Lastly, a community awareness campaign would raise concerns about the healthy lifestyle and occupational safety to avoid orthopedic conditions like back pain, arthritis, and body aches.

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**APPENDIX A: CONSENT FORM**

**PROFILING OF PHYSIOTHERAPY PATIENTS AND BARRIERS TO OBTAINING  
OPTIMAL PHYSIOTHERAPY SERVICES AT NKHENSANI HOSPITAL, MOPANI  
DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA.**

I have understood the aims and objectives of the proposed study and I was granted opportunity to ask any questions prior to the study. The aim and objectives of the study are sufficiently clear to me. I have not been forced to participate in study.

I understand that participation in this study is voluntary and that I may withdraw from it at any time without any harm.

I know that this study have been approved by the Turfloop Research Ethics Committee (TREC), University of Limpopo (Turfloop Campus). I am fully aware that the results of the study will be used for scientific purposes and may be published. I agree to this, provided my privacy and confidentiality will be maintained.

I hereby give consent to participate in this study.

Signature of participant / Guardian .....

Date.....Place.....

Witness.....

---

**Statement by the Researcher**

I will maintain privacy and confidentiality as promised.

Name of the researcher ..... signature .....

Date.....

**APPENDIX B: LETTER TO REQUEST PERMISSION FOR DATA COLLECTION**

Maphosa MJ  
P.O Box 3232  
Giyani  
0826  
18 October 2019

The Head of Department  
Department of health  
Limpopo Provincial Government  
Private bag x 9316  
Polokwane  
0700

**Re: Request of permission to conduct research at Nkhensani hospital.**

I Maphosa Matimba Justice, currently doing master’s in public health at the University of Limpopo. I hereby request permission to conduct a research study at Nkhensani hospital, which is a requirement in order to complete my studies. The title of the proposed research is PROFILING OF PHYSIOTHERAPY PATIENTS AND BARRIERS TO OBTAINING OPTIMAL PHYSIOTHERAPY SERVICES AT NKHENSANI HOSPITAL, MOPANI DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA.

The main purpose for the study is to determine the profile of patients receiving physiotherapy services and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo province, South Africa. The method of data collection will be a questionnaire and reviewing of the participants files.

Findings of the study will benefit both the institution and the department, and results will be made available to the institution.

Yours positive response will be highly appreciated.

Yours Faithfully

.....

Mr Maphosa MJ  
Cell: 0723547267

.....

Date

**APPENDIX C: DATA COLLECTION TOOL**  
**Questionnaire**

**Section A : Demographic data**

1. Age(in years)

2. Gender  Male  
 Female

3. Marital Status  Married  
 Unmarried  
 Divorced

4. Level of Education  Primary  
 Secondary  
 Tertiary  
 None

5. Employment status  Employed  
 Unemployed

6. Residential address

7. Diagnosis

## Section B (kinds of treatment received)

Treatment/ technique received		Yes	No
	Circulatory exercise		
	Passive movements		
	positioning		
	Posture correction/re-education		
	Muscle stretching		
	Postural drainage		
	Gait re-education		
	Group exercises		
	Balance and co-ordination re-education		
	massage		
	Wax therapy		
	Heat therapy		
	Cold therapy		
	TENS		
	Ultrasound		
	Interferential therapy		
	Neural tissue mobilisation		
	Myofacial release		
	Stairs climbing		
	Nebulisation		
	Strengthening exercise		
	Strapping		
	Range of motion exercises		
	Neural tissue mobilisation		
	Home program/ Education		
	Soft tissue mobilisation		
	Breathing exercise		
	percussions		
	vibrations		

### Section C: (Barriers to obtaining optimal physiotherapy services)

<b>Socio-cultural barriers:</b>		<b>Yes</b>	<b>No</b>
	Beliefs/spiritual treatment		
	Religion		
	Use of Traditional medicine		
	Lack of family support		
	Lack of friends' support		
	People seeing me in condition		
<b>Economic barriers:</b>			
	Affordability of services		
	Affordability of transport to hospital		
	Financial dependence		
	Hiring a caregiver		
<b>Treatment barrier:</b>			
	Adherence		
	Side effects		
	None		
<b>Health Systems Barriers</b>			
	Long queues at hospital		
	Non-referral		
	No services		
	Mistreatment by staff		
	Distance to hospital		
	Attitude of physiotherapist towards patients		
	Lack of trained personnel		
	Lack resources for equipment's		
	Lack space for such services		
<b>Language barrier</b>			
	Engagement in intervention		
	Information instruction		

## APPENDIX D: Approval from Turfloop Research Ethics Committee (TREC)



**University of Limpopo**  
Department of Research Administration and Development  
Private Bag X1106, Sovenga, 0727, South Africa  
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

**TURFLOOP RESEARCH ETHICS COMMITTEE**  
**ETHICS CLEARANCE CERTIFICATE**

**MEETING:** 12 August 2020

**PROJECT NUMBER:** TREC/174/2020: PG

**PROJECT:**

**Title:** Profiling of Physiotherapy Patients and Barriers to Obtaining Optimal Physiotherapy Services at Nkhensani Hospital, Mopani District of Limpopo Province, South Africa  
**Researcher:** MJ Maphosa  
**Supervisor:** Dr E Maimela  
**Co-Supervisor/s:** Dr TS Ntuli  
**School:** Health Care Sciences  
**Degree:** Master of Public Health

**PROF P MASOKO**  
**CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE**

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

**Note:**

- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
- ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
- iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

## APPENDIX E: Approval from Limpopo Department of Health



**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

### Department of Health

Ref : LP-2020-09-005  
Enquires : Ms PF Mahllokwane  
Tel : 015-293 6028  
Email : [Kurhula.Hlomane@dhsd.limpopo.gov.za](mailto:Kurhula.Hlomane@dhsd.limpopo.gov.za)

Matimba Maphosa


#### PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Profiling of Physiotherapy patients and barriers to obtaining Optimal Physiotherapy services at Nkhensani Hospital Mopani

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
  - a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
  - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
  - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
  - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
  - e. The approval is only valid for a 1-year period.
  - f. If the proposal has been amended, a new approval should be sought from the Department of Health
  - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated

  
Head of Department

  
Date

Private Bag X9302 Polokwane  
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.  
Website: <http://www.limpopo.gov.za>

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## APPENDIX F: Approval from Nkhensani Hospital



# LIMPOPO

PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH  
NKHENSANI DISTRICT HOSPITAL

Private Bag X9581  
Giyani, 0826

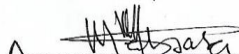
Tel: (015) 811 7300  
Fax: (015) 812 2461

Ref: S5/1/6/2  
Enq: Mathebula K.D  
Date: 29 October 2020

TO: Matimba Justice Maphosa  
University of Limpopo

RE: REQUEST FOR PERMISSION TO CONDUCT THE RESEARCH STUDY ON  
PROFILING OF PHYSIOTHERAPY PATIENTS AND BARRIERS TO OBTAINING  
OPTIMAL PHYSIOTHERAPY SERVICES AT NKHENSANI DISTRICT HOSPITAL

1. It is with pleasure to inform you that your request for the aforementioned study has been approved at Nkhensani District Hospital.
2. The approval of your research study is subject to the following conditions:
  - 2.1 During the course of your research study, hospital services should not be disrupted.
  - 2.2 Upon completion of your study you should be prepared to assist in the interpretation of the study findings/recommendations.
  - 2.3 After completion of the study, it is mandatory that the findings should be submitted to the Department of Health to serve as a resource.
  - 2.4 If the proposal has been amended, a new approval should be sought from the Department
3. You should liaise with the Office of the Chief Executive Officer (CEO) as and when you intend to start research study.
4. Your cooperation is always appreciated

  
CHIEF EXECUTIVE OFFICER

29/10/2020  
DATE:



## APPENDIX G: Evidence of language editing



University of Limpopo  
School of Languages and Communication Studies  
Department of Linguistics, Translation and Interpreting  
Private Bag X1106, Sovenga, 0727, South Africa  
Tel: (015) 268 3707, Fax: (015) 268 2868. email: [kubayi@yahoo.com](mailto:kubayi@yahoo.com)


25 June 2021

Dear Sir or Madam,

### **SUBJECT: EDITING OF MINI-DISSERTATION**

This is to certify that the mini-dissertation for Master of Public Health by Maphosa MJ titled "Profiling of physiotherapy patients and barriers to obtaining optimal physiotherapy services at Nkhensani Hospital, Mopani District of Limpopo Province, South Africa" has been copy-edited, and that unless further tempered with, I am content with the quality of the work on terms of its adherence to editorial principles of consistency, cohesion, clarity of thought and precision.

Kind Regards

  
Prof SJ Kubayi (DLitt et Phil-Unisa)  
Associate Professor  
SATI Membership No. 1002606

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