BARRIERS AND FACILITATORS REGARDING PATIENT ADHERENCE TOWARDS PHYSIOTHERAPY REHABILITATION PROGRAMS IN THE MANAGEMENT OF OSTEOARTHRITIS IN NAIROBI, KENYA.

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A thesis submitted in partial fulfilment of the requirements for the award of the degree of a Master's of Science in Physiotherapy (Thesis) at the Department of Physiotherapy, University of the Western Cape.

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November 2020

KEYWORDS

Adherence

Compliance

Exercises

Osteoarthritis

Patients

Physiotherapy

Physiotherapists

Rehabilitation

Therapeutic alliance

ABSTRACT

Reduced adherence levels have been demonstrated by some patients affected with Osteoarthritis. Therefore, this study **aimed** at exploring the barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya. The **objectives of the study** were to determine the clinical profile of patients with osteoarthritis on physiotherapy rehabilitation programs, to explore the patient-reported barriers and facilitators towards physiotherapy rehabilitation programs and exploring physiotherapists' perceptions of patient adherence towards physiotherapy rehabilitation programs. The **study setting** was at the Kenyatta National Hospital physiotherapy clinic in Nairobi, Kenya. The **study design** was a partial mixed sequential dominant status-qualitative design. The **research instruments** used were 114 data capture sheets that were identified through consecutive sampling procedure and use of Cochrane's formula and purposive sampling method to come up with 138 participants who filled in the AIMS2 questionnaires to establish the clinical profile of the participants. One on one interviews were conducted to 9 participants to explore patient-reported barriers and facilitators towards rehabilitation programs and 7 physiotherapists' to discover their perceptions of patient adherence towards physiotherapy rehabilitation programs. For **analysis,** the Statistical Package for Social Sciences version 25 was used where descriptive statistics examined the distribution of cases in the form of frequencies and percentages. Inferential statistics were carried out to investigate the degree of association between ordinal variables using spearman's correlation. The interviews were recorded and transcribed verbatim and themes generated using thematic content analysis. The **results** in the quantitative phase indicated that females (n=101) accounted for the majority at 73.2%, and the most common age group affected with osteoarthritis (n=16) was between 50-59 (42.8%) years. The majority of participants within the ages of 50-59 years (n=25) were mobile though tasks that required walking longer distances and performing strenuous work were a challenge. Themes emerging in the qualitative phase were financial constraints and commitments as significant barriers to patient adherence. Support from the families and physiotherapists' was a major theme that contributed to patient compliance with physiotherapy rehabilitation programs. **Conclusion and recommendation:** Physiotherapists should incorporate patient education while implementing physiotherapy rehabilitation programs. Also, the government of Kenya should consider having the national health insurance fund to cater for the cost of outpatient care.

DECLARATION

I declare that **"*Barriers and facilitators regarding patient adherence to physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya*"** is my work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

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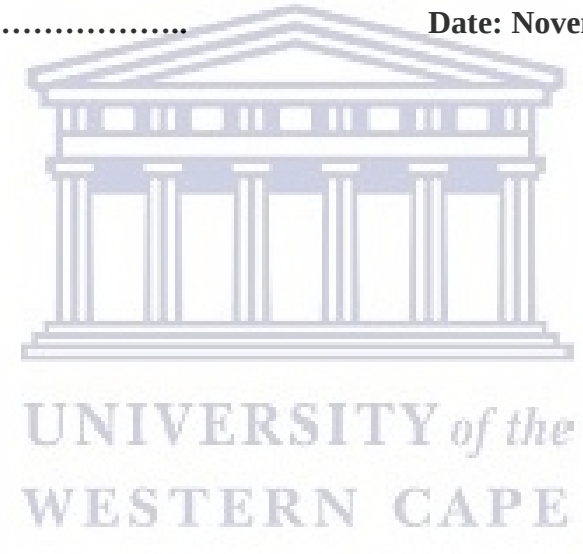
Signature…….. **Date: November, 2020.**



DEDICATION

To my father, Mr. W. W. Goss, for the unwavering support, he has continually accorded me in pursuit of my education and the constant encouragement to forge ahead in my career path.

ACKNOWLEDGMENT

My sincere appreciation and thanks go to Jehovah God for enabling me to achieve the goal of pursuing my education. I wish to thank my supervisors, first, Prof. Nondwe Mlenzana, for her guidance throughout this journey and words of encouragement shared with me. Second, Dr. Nassib Tawa for providing clarity and hope when I was uncertain of the direction I was taking in my studies. I am forever grateful for the contribution he has made towards the progression of my career.

To the UWC fraternity, in particular, the Physiotherapy Department for the input they gave that aided in refining my research study.

To Dr. Patrick Kibwana, the Chief Officer of Health, Makueni County, for permitting me to pursue my education as well as the encouragement he has extended continuously to me. Also, Dr. Joseph Gachini, who recommended my release from work despite the shortage of staff at my place of employment.

To the Kenyatta National hospital for allowing me to conduct my study at the institution's Physiotherapy Department. In particular are my colleagues at the department; Rose, Winnie, Gerald, and Antony for the unwavering support they accorded me. I also would like to thank the Government of Kenya through the National Commission for Science, Technology, and Innovation for providing authorization to carry out the study in Kenya.

Finally, I thank my family and friends for being there for me throughout this journey. Thank you for your prayers, and may Jehovah's favor be upon you.

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CHAPTER ONE:
INTRODUCTION

1.0 Introduction to the chapter

This chapter presents the background information of osteoarthritis condition. The risk factors, clinical features, diagnosis of osteoarthritis are discussed as well as treatment interventions used in the management of the condition globally and in the Kenyan setting. Furthermore, the problem statement, the aim, and objectives of the study, the definition of terms, and the general outline of the whole thesis are highlighted.

1.1 Background information

Osteoarthritis (OA) is currently the most common chronic musculoskeletal condition that is degenerative (Braghin, Libardi, Junqueira, Nogueira - Barbosa, & de Abreu, 2017). The condition causes disability that arises from pain and loss of function, which affects the quality of life and increases the probability of further morbidity (WHO, 2013). The prevalence and incidence of OA amplify with age, and with the aging of the populace, both are expected to get higher (Ng, Heesch, & Brown, 2012). OA affects 240 million people globally, about 10% of men and 18% of women over 60 years of age (Nelson, 2017). OA is a common form of arthritis in the United States (US). The US recent estimates indicate the prevalence of clinical hip, hand, or knee joint OA to have increased from 21 million adults in 1995 to 27 million adults over a decade (Johnson & Hunter, 2014). In the United Kingdom, a third of people over 45 years have sought treatment for osteoarthritis, and projections indicate that by 2035, this proportion could nearly double as a result of increasing levels of obesity and an aging population (Wainwright, Immins, & Middleton, 2016). In Australia, OA is the leading cause of chronic pain, disability and early retirement due to poor health with approximately 2 million people affected while in the European Union member states OA prevalence was shown to vary from 2.8% in Romania to 18.3% in Hungary (Mobasheri & Batt, 2016). Despite overwhelming reports on the rising prevalence of musculoskeletal diseases, data from Africa is underestimated and consequently limited. A systematic review carried out in South Africa to approximate the prevalence of arthritis in Africa reported on the restriction of data in this regard and questioned the reliability of the available information (Usenbo, Kramer, Young, & Musekiwa, 2015). In developing countries like Kenya, a study on the patterns of the knee, hip, and hand osteoarthritis evaluated the spectrum of

rheumatic diseases in the region and showed that osteoarthritis is the most popular (Nour, Oyoo, Joshi, Otsyeno, & Muriithi, 2015).

Obesity, age, gender, genetics, and diet are the risk factors associated with OA, while the joint level factors include joint injury, joint malalignment, and abnormal loading to the joints (Johnson & Hunter, 2014). Clinical evidence has suggested that some risk factors that are modifiable like obesity can be slowed down by weight management and steering clear of an inactive way of life (Mobasheri & Batt, 2016). With obesity, there is increased mechanical loading on the joint and poor muscle tone resulting in loss of joint protection. (Vincent & Watt, 2018). Also, age is one of the strongest predictors of OA. Aging leads to a failure to clear damaged cells that accumulate in tissues causing tissue damage (Vincent & Watt, 2018).

Concerning gender, most types of osteoarthritis affect women more who account for 60% of people with OA (Mobasheri & Batt, 2016). Besides this, differences in bone strength, alignment, pregnancy, ligament laxity, and neuromuscular strength in women predispose them to OA (Johnson & Hunter, 2014**).** OA also has genetic and shared environmental determinants in the family, such as physical activity, dietary intake, and occupation (Suri, Morgenroth, & Hunter, 2012). In addition, repetitive joint use was associated with the development of OA. Hip OA was associated with prolonged lifting and standing, while knee OA was associated with squatting and kneeling. Hand OA was associated with persons performing increased manual deftness (Palazzo et al., 2016).

The prime symptom of osteoarthritis is pain that is sporadic and is worse during the night and after weight-bearing activities (Bijlsma, Berenbaum, & Lafeber, 2011). Patients with OA also experience joint stiffness, joint instability, and bone enlargement (Ashkavand, Malekinejad, & Vishwanath, 2013). Also, Bijlsma et al. (2011) reported that loss of function and movement is common in OA patients. The loss of function is accompanied by a sensation of crackling called crepitus, mostly experienced at the end range of motion.

X-ray studies have reported a loss of joint space as a pointer to the structural progression of OA disease, while MRI studies rely on cartilage loss as diagnostic tests for the condition (Johnson & Hunter, 2014). MRI allows assessment of the affected joint in three dimensions, and at a high resolution; thus, it is more sensitive in detecting early structural changes (Glyn-Jones et al.,

2015). A computerized tomography scan provides a three-dimensional image and a contrast agent to visualize the bone and cartilage. Ultrasonography has the merit of allowing visualization of the movement of tissues and the ability to assess synovium, particularly in the knees and hands (Bijlsma et al., 2011).

Osteoarthritis manifests in a majority of the joints of the human body. The involvement of the joints of the upper extremities includes hand OA that occurs in women and often presents at the time of menopause (Vincent & Watt, 2014). These distorted joints directly cause disability and often lead to functional limitations because of trouble in handling heavy objects, manipulating small items, and difficulty in performing self-care activities (Pérez-Mármol et al., 2017). Repetitive use of the upper limbs seen commonly in those using wheelchairs or crutches affects the elbow joint and is responsible for pain and limited joint range of motion (Morrey, 2018). A different type of OA is ankle/foot osteoarthritis, which is an incapacitating condition much rarer than the other joint OA types. Previous joint trauma or ligamentous laxity is a significant cause (Robinson & Keith, 2016). Osteoarthritis manifestation in the hip is another common type of the condition affecting the joint and adjoining structures causing pain, disability, and reduced quality of life (Bennell, 2013). Furthermore, knee OA is the most common type of joint OA affecting the medial knee compartment because of a high percentage of loading in this section, while spine OA is a result of degeneration of the intervertebral discs and loss of water content (Kauffman & Haydt, 2014).

The goal of OA treatment is to prevent the progression of the disease, control symptoms, reduce disability, and improve the quality of life of affected patients (Brakke, Singh, & Sullivan, 2012). Current OA management falls into non-pharmacological, pharmacological, and surgical interventions in line with the National Institute for Health and Care Excellence (NICE) guidelines (Vincent & Watt, 2018). Regarding medical interventions, weak opioids and narcotic analgesics are prescribed when the use of NSAIDs is ineffective or contraindicated to the patient (Bijlsma et al.,2011). In contrast, surgery is by and large held in reserve as a last alternative in the management of OA symptoms that are refractory to other intervention approaches (Jackson & Hunter, 2014). Joint debridement, joint fusion, joint distraction, osteotomy, and joint replacement are common surgical interventions (Iolascon et al., 2017). These repair strategies may result in the formation of fibrocartilage, which may improve the patients' symptoms over

time but is still prone to degeneration in the long run (Vincent & Watt, 2018). Therefore, rehabilitation remains an important element in the management of osteoarthritis for improving symptoms, maximizing function, and participation in daily activities (Davis, 2012). Besides, a progressive rehabilitation program might delay disease progression providing many years of pain-free activity and improved quality of life (Brakke et al., 2012). Physiotherapy is a generally used intervention that reduces the pain and disability associated with OA. Studies have shown that physiotherapy rehabilitation has moderate to high effectiveness in improving physical function of persons affected with osteoarthritis (Bunting, Withers, Heneghan, & Greaves, 2020). Modalities available to the clinician include manual therapy, aquatic therapy, electro-physical agents, exercise programs, taping, and orthotics in the management of Osteoarthritis (Brakke et.,al 2012).

Previous research has identified symptom relief and improvement, positive exercise experience, health care professional and social support to influence adherence to physiotherapy rehabilitation programs (Moore, Holden, Foster, & Jinks, 2020). Therefore, to ensure physiotherapy treatment is effective, it has to be followed thoroughly through active participation by the patient (Bishop et.,al 2015). Patients with osteoarthritis are prone to reduce their physical activity levels as a consequence of pain.The onus, therefore, is on the physiotherapists to design useful action plans to enable the patients to begin and maintain their physiotherapy rehabilitation regimen (Triggs, 2017). Non-adherence to treatment creates challenges for health care professionals and the patients because it harms expected outcomes (DiMatteo, Haskard-Zolnierek & Martin, 2012). Also, the patient's knowledge of the disease and their perception may be linked to compliance with physical therapy programs both positively and negatively (Papandony et al., 2017). Reasons given by some patients affected with osteoarthritis based on the knowledge they have about OA regarding adhering or failing to adhere to their programs included perceived symptom severity, attitude towards osteoarthritis and co-morbidities, ability to fit in the exercise program in their daily schedules, and prior experience with other treatments (Ng et al., 2012).

Patient adherence to rehabilitation programs in the management of OA has been under-researched in Africa. This proposed study will seek to identify the existing barriers and facilitators regarding patient adherence towards rehabilitation services of patients with osteoarthritis in Nairobi, Kenya.

1.2 Problem statement

With the growing aging population in Kenya, there is an increase in the number of patients having osteoarthritis (Nour et al., 2015). The patients go through a physiotherapy rehabilitative process to manage the condition. Physiotherapy rehabilitation is believed to bring about positive effects on pain reduction and improved function in patients suffering from osteoarthritis. In Kenya, physiotherapy rehabilitation programs entail the provision of regular physiotherapy services at outpatient clinics where exercise, electrophysical modalities, application of manual therapy, use of orthotics, and education on home-based exercise programs are implemented. The affected patients have reported positive results as they undergo physiotherapy, as well as findings from numerous studies in the world. However, from the researcher's experience and discussions with colleagues, a number of the patients eventually exhibit non-compliance and inconsistencies with their physiotherapy rehabilitation programs after some time. Therefore, evaluations have become difficult, thus affecting expected treatment outcomes. The issues have necessitated the researcher to desire to conduct a study identifying the existing barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs amongst patients affected by osteoarthritis in Kenya, as the previous studies cannot be generalized to the global population.

1.3 Aim of study

This study aimed to explore the barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi County, Kenya.

1.4 Objectives

- To determine the clinical profile of patients with osteoarthritis receiving physiotherapy rehabilitation programs at the Kenyatta National Hospital physiotherapy clinic.
- To explore the patient-reported barriers and facilitators towards physiotherapy rehabilitation programs.
- To explore physiotherapists' perceptions of patient adherence towards physiotheraqpy rehabilitation programs.

1.5 Research Questions

- What is the clinical profile of patients with osteoarthritis receiving physiotherapy rehabilitation programs at the Kenyatta National Hospital physiotherapy clinic?

- What are the patient-reported barriers and facilitators towards physiotherapy rehabilitation programs?
- What are the physiotherapists' perceptions of patient adherence towards physiotherapy rehabilitation programs?

1.6 Significance of study

Adherence to rehabilitation programs is believed to have a direct effect on treatment outcomes for both the patient and physiotherapist, as shown in global studies. In the Kenyan setting, patients encounter barriers and facilitators that affect their adherence to physiotherapy rehabilitation programs during their course of treatment. Physiotherapists being principal in the rehabilitation process are important in the study to share their views. The reason being they are believed to be aware of the challenges the patients' encounter. This study will aid in shedding more light on the existing barriers and facilitators affecting adherence to physiotherapy rehabilitation programs that may be unique to this target population. The recommendations arising are envisioned to assist physiotherapists in Kenya to better understand the factors that affect adherence levels of patients affected with osteoarthritis on physiotherapy rehabilitation programs and come up with action plans to mitigate the problem in future. The findings are also believed to assist policy makers identify strategies that would improve adherence level of the patients on physiotherapy rehabilitation programs.

1.7 Definition of key terms

Adherence is the active voluntary involvement of the patient in the planning and implementation of treatment (Moore, 2020).

Barriers are obstacles or factors related to the patient, clinician, and health facility that are thought to influence patient adherence to treatment (Jack, McLean, Moffett, & Gardiner, 2010).

Debridement is the removal of damaged tissue from a wound (Jackson & Hunter, 2014).

A facilitator is likened to a strategy that may assist in overcoming barriers (Jack et al., 2010).

Hemiarthroplasty is a surgical procedure that involves replacing half of the hip joint (Vincent & Watt, 2018)

Osteoarthritis is the degeneration of joint cartilage and the underlying bone (WHO, 2013).

Osteotomy is the surgical cutting of a bone to shorten, lengthen or change its alignment (Jackson & Hunter, 2014).

Physiotherapists are specialists in the promotion of mobility in those affected by injury or disease (Seed et al., 2009).

Rehabilitation is the action of restoring an individual's health or normal life through training and therapy after an illness (Palazzo, 2016).

Total joint arthroplasty is a surgical technique in which parts of an arthritic joint are removed and replaced with a ceramic device called a prosthesis (Jackson & Hunter, 2014).

1.8 Abbreviations

ACL: Anterior cruciate ligament

FAST: Fitness Arthritis Senior Trial

HOA: Hand osteoarthritis

KNH: Kenyatta National Hospital

KNHNE: Korean National Health and Nutrition Examination

NHIF: National Hospital Insurance Fund

NHS: National Health Service

NICE: National Institute for Health and Care Excellence

NSAIDs: Nonsteroidal anti-inflammatory drugs

OA: Osteoarthritis

SPO: Structure, Process, Outcome

WHO: World Health Organization

1.9 Thesis outline

Chapter One: This chapter provides an overview of the background information concerning osteoarthritis, the risk factors, clinical features, diagnosis, and treatment interventions. Also highlighted are the problem statement, the aim, and objectives of the study. The definition of terms and abbreviations used in the study concludes the chapter.

Chapter two presents a review of existing literature on the barriers and facilitators that affect patients with osteoarthritis adherence levels for both clinic and home-based physiotherapy rehabilitation programs. There is further discussion on the impact of the therapeutic alliance on patient adherence towards the programs to end the chapter.

Chapter three describes the conceptual framework and research methods used in the study. The study setting is described thoroughly. The quantitative and qualitative phases have their study design, study population, and the sample explained. Also, the procedures followed in quantitative and qualitative data collection, and analysis of the study are presented. Finally, the ethical considerations that were observed in this study are elaborated.

Chapter four presents the results for the quantitative and qualitative phases. The quantitative results are presented as descriptive statistics in the form of frequencies and percentages. A form of inferential statistics, Spearman's correlation, used to measure the degree of association between ordinal variables is illustrated. Themes supported by quotations from participants' interviews present the qualitative results.

Chapter five discusses the application of the conceptual framework to the study findings and current research findings in comparison to other global studies that have been conducted on the barriers and facilitators affecting patient adherence to rehabilitation programs. The strengths and limitations of the study are highlighted. After that, the conclusion and recommendations are outlined.

CHAPTER TWO:
LITERATURE REVIEW

2.0 Introduction

This chapter presents an overview of the studies that have been conducted exploring the global prevalence of osteoarthritis. The various rehabilitation interventions utilized in osteoarthritis management in the global and Kenyan setting have been discussed. The barriers and facilitators to patient adherence to the clinic and home-based physiotherapy rehabilitation programs are also expounded. Also, the importance of the therapeutic alliance on patient compliance has been explained.

2.1 Prevalence of Osteoarthritis

Osteoarthritis is the most common form of arthritis in the musculoskeletal group of disorders. The WHO scientific group on rheumatic diseases estimated that 10% of the world's population who are 60 years or older have significant clinical problems that are associated with OA (Pereira et al., 2011). The prevalence rate of OA reported in epidemiological studies varies because the approximations rely on the definition of cases. These may sometimes be radiographic, clinical, or pathological OA, joint or joints involved, and the population sampled whether in developed or in developing countries (Palazzo et al., 2016). For example, some studies have suggested that the prevalence of OA at other joints in the body differed among races; hence, findings among Caucasians could not be compared to other groups (Iidaka et al., 2016). The global burden of disease study conducted by the WHO reported the worldwide prevalence of radiographically confirmed symptomatic knee and hip OA to be estimated at 3.8% and 0.85%, respectively (Cross et al., 2014). Besides this, a meta-analysis reported by Pereira et al., (2011) identified an overall prevalence of radiographic knee OA to be 35% that increases with age (Kobayashi, Pappas, Fransen, Refshauge, & Simic, 2016). In the United States, the Framingham Osteoarthritis study found that 6.8% and 19% of adults exhibited radiographic hand and knee OA, correspondingly. Also, the prevalence of symptomatic hand OA was reported to be 26% and 13% in men and women, individually (Palazzo et al., 2016). Similarly, in the Johnston County Osteoarthritis Project, both hip and knee OA had a prevalence of 28% of African American and Caucasian men and women (Johnson & Hunter, 2014). In the United Kingdom, the prevalence of OA at different joints was 23.9%, 10.9%, and 43.3% for the knee, hip, and hand separately. The prevalence of knee OA showed a gender difference between women and men at 27.3% and 21%

(Green et al., 2014). In Canada, 4.5 million Canadians aged 15 years and above were reported to have arthritis, and it is believed that by 2031, approximately 7 million Canadians could have OA. The disabled population-health 2008 survey established in France reported that the prevalence of OA ranges from 12.3% to 21.6%. The disease is more widespread in women than men, and it increases with age from 40 to 50 years (Palazzo et al., 2016). In addition, a national survey in the Netherlands; the Zoetermeer survey reported that 10-20% of patients less than 40 years of age showed radiographic changes of OA in the hands or feet and 75% of women aged between 60 to 70 years had radiographic hand OA in the distal interphalangeal joints (Palazzo et al., 2016). In Asia, the fifth Korean National Health and Nutrition Examination (KNHNE) survey found differences in symptomatic OA frequencies at the hip, knee, and spine by sex: 0.1%, 4.5%, and 5.5% in men 0.2%, 19% and 16% in women (Nelson, 2017). In Africa, information on the prevalence of osteoarthritis is still inadequate in spite of the growing prevalence of musculoskeletal conditions (Symmons, Mathers & Pfleger, 2014). A study carried out in South Africa to estimate the burden of osteoarthritis in Africa, emphasized the lack of information regarding the prevalence of the condition (Usenbo et al., 2015).

2.2 Rehabilitation Strategies.

Conservative treatment is the first-line approach in the management of osteoarthritis that includes the use of rehabilitative interventions. Physiotherapy rehabilitation is an active process whereby those affected by disease or injury realize their best possible physical, social, and mental potential. The strategy is an important element in the management of osteoarthritis for improving symptoms, maximizing function, and participation in daily activities (Davis, 2012). Modalities available to the clinician include electrical stimulation, manual therapy, aquatic therapy, electrophysical agents, taping, and orthotics (Brakke, Singh, & Sullivan, 2012). In Kenya, Physiotherapists have incorporated exercise therapy, electrophysical agents, manual therapy and orthotics as part of their rehabilitation programs which are highlighted as follows:

2.2.1 Manual therapy

Manual therapy is a hands-on technique that involves manipulation and mobilization of soft tissue to alleviate pain symptoms. The International Federation of Orthopedic Manipulative Physical Therapists defined manipulation and mobilization as skilled passive movements applied to joints and related soft tissue at varying speeds of therapeutic movement to restore motion, function, and reduce pain. Manual therapy procedures such as soft tissue stretches are used

together with accessory and physiological movements and manipulation in people with OA to improve their function (Abbott et al., 2013).

2.2.2 Aquatic therapy or hydrotherapy

Aquatic therapy involves the performance of exercises underwater in heated pools. This physiotherapy intervention is more common in developed nations in contrast to low income countries. Hydrotherapy assists in accelerating muscle strength and active mobilization of soft tissue in the presence of pain. Hydrotherapy is believed to have a positive effect on patients with OA (Lim, Tchai & Jang, 2010). Hydrostatic forces reduce an individual's weight and give relief to painful joints (Escalante, Saavedra, García-Hermoso, Silva, & Barbosa, 2010). Hydrotherapy allows the performance of closed chain exercises that are painful with weight-bearing joints (Dias et al., 2017). A study comparing aquatic therapy to gym-based therapy reported high compliance rates for aquatic therapy to gym-based therapy. The study suggested assessing the patients' preference for the type of therapy desired as it likely influences compliance rates (Brakke et al., 2012).

2.2.3 Exercise programs

Exercise programs are a significant component in the management of osteoarthritis that is majorly incorporated in the Kenyan setting. All patients affected with osteoarthritis generally have exercises prescribed to help in the alleviation of symptoms that are a result of the condition. According to Escalante et al. (2010), exercises assist in improving functional limitations that interfere with the performance of day to day activities. Aerobic exercises have also been found to be useful in patients with hip and knee OA by increasing their aerobic capacity, which was limited due to physical inactivity (Ng et al., 2012). Moderate aerobic exercise programs three times a week for 30 minutes has been recommended to promote health benefits to the hip and knee joints (Nelson, 2017). A systematic review of conservative interventions for hand OA showed that patients who performed exercises had gains in handgrip strength though the study was of moderate quality; thus, the findings provided moderate support for exercise use (Valdes & Marik, 2010).

2.2.4 Orthotics

The use of orthotics to provide joint stability in patients with osteoarthritis who experience unsteadiness is usually recommended to allow functionality. Bennell (2013) stated that patients

should be advised on joint protection devices based on their functional outcomes and aggravating factors. Clinical guidelines have recommended the use of appropriate footwear in hip and knee OA patients though this recommendation is based on expert opinion (Simonsen et al., 2012). Heel raises can be used to improve joint congruency and pelvic obliquity in cases of leg length discrepancy though there is no evidence so far supporting their use (Bennell, 2013). In the carpometacarpal joint affected by OA, wearing a splint to immobilize the joint of the thumb can improve hand function, lower pain levels, and delay or avoid surgery (Thiele, Nimmo, Rowell, Quinn & Jones, 2009). The application of taping has been accepted in the management of knee OA, particularly Kinesio taping technique despite lack of clinical evidence on its use (Parreira, Costa, Hespanhol, Lopes & Costa, 2014). Furthermore, some studies have encouraged clinicians to use Kinesio taping by posting positive results (Wageck, Nunes, Bohlen, Santos, & de Noronha, 2016). Campolo et al. (2013) reported a decline in pain in patients with patella femoral OA due to Kinesio taping application. A similar study by Vithoulkaa et al. (2010) showed that Kinesio taping could increase the turning force produced by the quadriceps muscle in women with knee OA, hence beneficial.

2.2.5 Electrophysical agents and modalities

The use of electrotherapeutic agents like laser therapy and thermal agents is used in OA management. Hochberg et al. (2012) reported that the American College of Rheumatology clinical guidelines recommended instructing patients on the use of thermal agents as a self-management strategy. These thermal agents include heat packs, electrical heat pads, and hot water baths (Iolascon et al., 2017). A study to evaluate the effect of heat application on pain, stiffness, and quality of life on patients with knee OA concluded positively on the effects of heat on pain and function. There was also an improvement in the quality of life (Yildirim, Filiz, Ulusoy, & Bodur, 2010).

2.3 Patient adherence to treatment

Patient adherence in health care is the point at which an individual follows health care counsel and attends clinic appointments as advised. Patient adherence is affected by different factors that are distinct to developed and developing countries. Poor adherence to treatment has been noted across many healthcare disciplines. Adherence is the point at which a person's behavior matches up with agreed recommendations from a healthcare professional (Peek, Sanson-Fisher, Mackenzie, & Carey, 2016). In the field of physiotherapy, adherence to treatment could be

related to appointment attendance, performing prescribed exercises, accurate performance of exercises, or doing more or less than is required (Jack et al., 2010). Patient adherence is of importance in physiotherapy because it may lead to possible savings in treatment costs and prevent co-morbidities (Kanavaki, 2017). A study in Saudi Arabia that was conducted to determine the indicators to adherence among female patients showed that 40% of the patients were adherent to a physiotherapy program, while 60% were not (Al-Eisa, 2010). In Africa, more so South Africa's Eastern Cape province, poor attendance among stroke patients was observed by physiotherapists as a serious problem that affected rehabilitation outcomes (Ntamo, Buso, & Longo-Mbenza, 2013). Kenya currently is experiencing a lack of information to patient adherence rates to treatment. Identifying these barriers may help the physiotherapists identify the patients at risk of non-adherence, hence come up with methods of reducing the impact of these barriers (Jack et al., 2010).

2.4 Barriers and facilitators to patients' adherence towards rehabilitation services

There are barriers and facilitators towards adherence to treatment that can be patient related, clinician related or instigated by the environment. Patients' adherence towards health care is affected by numerous factors such as an individual's physical capacity to exercise, previous exercise history, the health care team, features of the disease and socio-economic factors (Moore et al., 2020). Physiotherapists encounter situations where patients fail to show any positive changes to the condition they are affected with despite being on treatment (Gill et al., 2014). The lack of intended treatment outcomes may lead the physiotherapists to believe the treatment is not effective. However, had the patients' behavioral responses to their condition and treatment been noted, then poor adherence to treatment may be noticed (Pisters, Veenhof, de Bakker, Schellevis, & Dekker, 2010). Adherence to clinic-based programs has been linked to the clinic environment, the timing of appointments, the content of the rehabilitation program, and the patients' mindset towards treatment (Petursdottir 2010). Moore et al. (2020) reported that an increase in pain during exercise was a barrier to adherence. A study that was carried out to determine the barriers to exercise treatment adherence in patients with knee OA discovered that a patient's discomfort to pain, exercise difficulty, and forgetfulness contributed to non-compliance with treatment (Kaka & Maharaj, 2017). Clinicians need to understand the patients' beliefs and experience about pain and utilise action plans that reduce the fear of pain (Teo et al., 2020). Patients should be advised that the presence of pain does not hinder one from participating in the exercise

program. Instead, it leads to a reduction of symptoms and improved (McLean et al., 2010). Physiotherapists' should encourage the patients to start the exercise gently then gradually adopt to moderate then later high-intensity levels of activity in order to contradict the fears held that movement could cause more damage (Jack et al., 2010).

History of low physical activity was identified as a barrier to physiotherapy rehabilitation programs (Marks, 2012). For patients with low physical activity, the physiotherapists' are advised to set up the action and coping plans that have to be agreed upon between them and the patients to comply with rehabilitation programs (Triggs, 2017).

In addition, depression, helplessness, and anxiety also contribute to non-adherence to treatment (Jack et al., 2010). Physiotherapists are advised to be sensitive to patients exhibiting such emotions and ensure that the pain is managed, which may reduce the anxiety and depression that is pain-related (Moore, 2020). Besides, emphasizing the significance of exercise is effective in offsetting negative thoughts and low mood and at the same time improving function (Jack et al., 2010).

Bennell (2014) said that low levels of family or social support affected patient adherence to rehabilitation. The clinical guidelines of the National Health Service (NHS) emphasized the importance of family education in the treatment of patients with osteoarthritis Support and positive feedback from the physiotherapist, good patient-physiotherapist relationship, and the patient's wish to be accompanied by someone during rehabilitation would improve adherence in this regard (Petursdottir, Arnadottir, & Halldorsdottir, 2010).

Bennell, (2014) identified the weather as an environmental factor influencing patient compliance. There is increased level of pain experienced during cold seasons and reduction of pain when it is warm. Other barriers included family needs, work schedules, lack of time, transportation, and financial constraints (Petursdottir et al., 2010). Physiotherapists need to be aware of the difficulties experienced by the patients and design rehabilitation programs that are tailored to patients' situations (Jack et al., 2010). Also, Rivera-Torres, Fahey, and Rivera (2019) reported associated facilitators that aided in patients' adherence towards treatment to include higher socioeconomic and educational levels, better physical ability, fewer depressive symptoms, supervised programs, and better cognitive ability.

2.5 Patients' adherence to home-based exercise programs

Home-based programs or patients' self-management interventions are patient-centered and designed to promote active participation to improve patients' health. Self-management interventions are taught by the physiotherapist to the patient at the clinical setting. Afterward, implementation of the program is to be carried out at the patient's home. Home-programs are a vital element in good quality care for patients suffering from chronic diseases (Iverson, Hammond & Betteridge, 2010). Home-based programs form an important of physiotherapy as patients spend more time away from their physiotherapists in clinics and hospitals (Peek, Sanson-Fisher, Mackenzie, & Carey, 2016). The health professional has to provide the patient with information about the condition, its symptoms, treatment, and self-management strategies (Zhang, 2010). These programs consist of self-management techniques and behavioral change coping mechanisms (Bennell, 2013). Successful self-management is dependent on the alliance between the patient and physiotherapist that will assist the patient in obtaining skills and self-belief to cope with their condition (Peek et al., 2016). Home-based rehabilitation programs are usually unsupervised by physiotherapists. Therefore, it is unknown if the patients perform their prescribed exercises to obtain a therapeutic benefit or sustaining them long enough to self-manage their condition (Bollen, Dean, Siegert, Howe, & Goodwin, 2014). Patient adherence has a definite, direct link to treatment outcomes. Therefore, physiotherapists should question their patients about their adherence levels when prescribing home programs (Peek et al., 2016). Besides, attention should be focussed on explaining home rehabilitation programs and following up on the patients by the physiotherapists (Chan & Can, 2010). The best exercise program should be set up through personalized advice, which factors in individual needs (Bijlsma et al., 2011). Patients are more compliant with their programs if they are knowledgeable about their condition and are aware that failure to comply with their programs would result in further deterioration of the disease (Palazzo, 2016).

2.6 Effect of the therapeutic alliance on patients' adherence to care.

A positive association between the physiotherapy clinician and the patient has a significant impact on the adherence level of the patients and subsequent treatment outcomes. The alliance requires time and effort between the health care provider and patient, with communication playing a vital role in the foundation of the relationship. The therapeutic alliance is defined as the collaboration between the clinician and patient and agreement on treatment goals (Pinto et al.,

2012). Physiotherapy involves the active engagement of the patient and physiotherapist to achieve the preferred outcomes (Josephson, Woodward-Kron, Delany, & Hiller, 2015). In the field of physiotherapy, most interventions are used in the long term; thus, patients' adherence to treatment is essential in achieving successful clinical outcomes (WHO, 2003). An excellent therapeutic alliance may encourage patients to adhere to their rehabilitation programs and is partly determined by how the clinician and patient communicate (Ferreira et al., 2013). According to Martin and Sahlstrom (2010), the approach the physiotherapist uses in responding to the patients' physical performance can have implications for patients' learning and future performance as well as the relationship between the therapist and patient. Patient satisfaction with physiotherapy can be influenced by an interaction between the therapist and patient that may involve more physical contact and active involvement by the patient (Kidd, Bond, & Bell, 2011). Therapeutic alliance facilitates agreement on the physiotherapy intervention to be used and generates an affective bond between the physiotherapists and the patients (Moore et al., 2020). Adherence to physiotherapy programs is considerably high when clinicians give the patients positive feedback, ask about their progress, monitor their exercise programs regularly, and encourages them to do their home programs (Kanavaki et al., 2017).. In the patient-centered care model, the health-care event is an equivalent affiliation between the patient and clinician. This patient-centered interaction augments the therapeutic alliance and improves patient satisfaction with the treatment (Bennell, 2013). Hall et al., (2012) reported that patients who had a good relationship with their physiotherapists were more prone to attend their appointments and complete their rehabilitation programs. The patients derive more benefit from treatment when they are in a positive relationship with their clinician. The few studies that have sought patients' opinions on what is of significance in a therapeutic encounter had communication emerging as a recurring theme in terms of listening, explaining and instructing (Kidd et al., 2011). In a qualitative study exploring patients' judgments of patient-centered physiotherapy, communication, confidence, knowledge, professionalism, and expertise are dimensions that the patients expressed as a message to clinicians about their preference in the clinical partnership (Kidd et al., 2011).

Awareness of patient differences based on socio-demographic characteristics is vital for clinicians to fulfill patients' expectations and needs (Peersman et al., 2013). Petursdottir et al., (2010) said that a range of factors could influence adherence in patients with OA to their

treatment. These include personal attributes, their physical and social environment. Nonetheless, strategies have been put in place to curb non-compliance to rehabilitation programs in people with OA.

2.7 Proposed strategies to promote patient adherence

Various barriers have influenced patient adherence. Thus, steps have been taken to come up with strategies that would assist in improving compliance with treatment. In the context of patient adherence, a strategy is a solution to a problem. Several strategies may be used to assist in patient adherence. To begin with, improving the nature of the relationship between the physiotherapist and patient is important. This will help in tailoring the physiotherapy rehabilitation program to suit the needs of each patient and enhance supervision to facilitate adherence to the programs (Moore et al., 2020). A clear description of the exercise program assists to maintain motivation (Rivera-Torres, Fahey, & Rivera, 2019). Mark (2012) reported that professional care, giving positive feedback and encouragement assists in improving adherence levels among patients.

Secondly, goal setting and putting up the action and coping plans have to be in consensus between the physiotherapist and patient to be beneficial (Jansons, Robins, Haines, & O'Brien, 2018). In setting the goals to ensure adherence, the physiotherapist should be aware of how the patient was before getting the condition, establish goals and time frames to achieve this, analyze the current state of the patient, select appropriate goals at each time frame and formulate results and feedback (Stevenson & Roach, 2012). Third, organizing rehabilitation programs that include support and social contact is another approach to help in patient adherence (Jack et al., 2010). Group-based rehabilitation programs in the communities may provide patients with social interaction and encouragement to continue their programs. Besides, involving partners and family members in the rehabilitation process to encourage and motivate the patient may help (Petursdottir et al., 2010).

Also, approaches used by health professionals to interact with patients during assessment and treatment are essential in the exchange of information and increases clarity leading to improved adherence to rehabilitation programs (Oliveira et al., 2015). Furthermore, patient adherence is also enhanced through their participation because they have to support their health service, or else the clinician would not be able to gain the desired outcomes of treatment (Gill et al., 2014).

A study to determine the effects of a home-based exercise program on adherence and health outcomes in patients with knee osteoarthritis found that there was an improvement in exercise adherence and mastery of the prescribed exercises (Lee, Lee, & So, 2016). In line with this, for adherence to work, patient motivation is required. Motivation in the clinical setting is the patient's probability of sticking to a particular plan (Moore et al., 2020). DiMatteo et al. (2012) reported that it is vital that patients are motivated so that they commit to their programs. Also, physiotherapists should consider long-term monitoring and reviews of their patients with osteoarthritis to improve adherence. Telerehabilitation is a strategy that has been positively identified as a technique to encourage patients to comply with their programs. In a study that aimed to explore patients with knee osteoarthritis perceptions of exercise therapy delivered through the telephone by physiotherapists, most reported that the strategy worked quite well, and it was acceptable to most of the patients who could not attend clinic sessions due to a variety of factors (Lawford, Delany, Bennell, & Hinman, 2018).

CHAPTER THREE:
METHODOLOGY

3.0 Introduction

The chapter describes the conceptual framework, research methods and setting used in the study. An elaboration of the study design, study population, and sample for the quantitative and qualitative phases comprises the chapter. Also, the principal researcher gives a presentation of the procedures followed in the phases of quantitative and qualitative data collection, and analysis of the study. Finally, the chapter concludes with a highlight of the ethics considerations observed in this study.

3.1 Conceptual framework

3.1.1 The Donabedian conceptual model

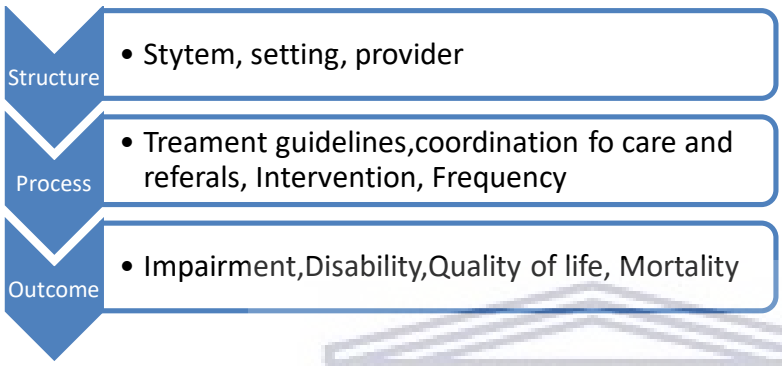
The Donabedian conceptual model, presented in 1966, provides a framework for assessing health services and evaluating the quality of care (Donabedian, 1988). Information about the quality of care comes from three categories: structure, process, and outcomes. The structure is the set-up in which care is delivered, which includes hospital buildings, staff, financing, and equipment. The process is the interactions between patients and service providers throughout the delivery of health care. Outcomes refer to the result of healthcare on the health status of the patients. The three-part dimension makes quality assessment possible if the structure influences the process, which in turn affects the outcome (Liu, Singer, Sun, & Camargo, 2011). Donabedian model was chosen for this study as it is commonly used in health care, and allowed the researcher to conceptualize the mechanisms that may contribute to patient adherence after receiving rehabilitation treatment. The focus was on all three dimensions and how they influence each other.

Several studies have been carried out globally based on the donabedian model. In Egypt, Zaky (2007) studied the opinion of Egyptian women regarding the quality of reproductive care based on the donabedian model. In Kenya, Agha (2009) compared the quality of family planning services in his study between government and private sections. He reported that the quality of health care is more desirable in the private sections as compared to the government sections concerning structure, patients' satisfaction, and interpersonal interaction.

3.1.2 SPO model

The **structur**e includes the setting of healthcare, which is not easily altered while the **process** is what is done in giving care, and **outcome**s is the effect of care on the patient. This is illustrated in figure 2.1 below.

Figure 3.1 SPO model



In this study, the Donabedian framework was applied to examine the quality of rehabilitation care concerning how the three categories interact with each other and the effect they have on patients with osteoarthritis adherence levels to physiotherapy rehabilitation programs. The structure comprised of the hospital, physiotherapy clinic, physiotherapists, and the qualifications of the clinicians attending to the patients. The process examined the interactions between the patients and physiotherapists with a concentration on delivery of treatment, patient education, and the therapeutic alliance and their effect on patient adherence. The outcome examined the effect of the rehabilitation process on patients and its effect on adherence to programs prescribed. Table 3.1 is an illustration of the dimensions in the study and how they were measured.

Table 3.1 Dimensions and measurements utilizing the SPO model

Dimension	Measurement
Structure	
▪ Hospital setting ▪ Physiotherapy clinic setting ▪ Physiotherapy treatment areas and gymnasium ▪ Physiotherapy clinicians ▪ Physiotherapy clinicians qualifications	- Direct observation - Direct inquiry
Process	
- The therapeutic alliance between patient and physiotherapy clinician. - Delivery of treatment. - Patient education	- One on one interviews
Outcome	
- Effect of physiotherapy rehabilitation process to the patients and subsequent adherence levels to the programs.	- One on one interviews

3.1 Methodological framework

The principal researcher conducted this study in conformity with the mixed methods study (GRAMMS) guidelines (O'Cathain, Murphy, & Nicholl, 2008). This methodological framework aided in providing direction and structure to the study. In this study, the researcher highlights the guidelines in the methodology. The GRAMMS guidelines emphasize the need to justify the use of mixed methods, the purpose, priority, and sequence of the research methods used. Sampling, data collection and analysis of each research method was highlighted and the point of integration in the study. Finally, any limitation experienced by the researcher of one method to the other was outlined.

3.2 Study design

The principal researcher for this study employed both quantitative and qualitative research methods. This combination provided a better understanding of the research problem and is a

way of producing robust study findings (Creswell & Clark, 2007). The researcher used a partial mixed sequential dominant status-qualitative design, and the primary purpose in the study was to help select the best participants from the quantitative phase and placed a priority on the qualitative phase (Creswell, 2007). This study commenced with the quantitative phase, followed by the qualitative phase. The quantitative phase aided in determining the clinical profile of patients with osteoarthritis receiving rehabilitation services. The researcher derived the clinical profile of the patients from a data capture sheet and a standardized questionnaire. The focus was on the impact of arthritis pain on the functional abilities of patients with osteoarthritis. The diversity of the patients' clinical profile was crucial as it helped in identifying and exploring the different barriers and facilitators to the rehabilitation programs experienced by the patients in the second phase. The researcher conducted the second phase (qualitative study) after completing data analysis for the first phase (quantitative study). The end of the quantitative phase and beginning of the qualitative phase was the point of integration in the study. The qualitative phase focused on identifying and exploring the barriers and facilitators regarding patient adherence to rehabilitation programs. The researcher conducted this phase by carrying out one on one interviews with the patients. Afterward, physiotherapists with vast experience in the treatment of osteoarthritis were also interviewed to give their views on patient adherence to rehabilitation programs.

3.3 Study setting and site

This study was purposively carried out at the Kenyatta National Hospital (KNH) in Nairobi, Kenya. The KNH was selected because it is the primary teaching and referral facility, which offers generalized and specialized care across all medical and surgical disciplines in East and Central Africa. The hospital is located in the west of the upper hill in Nairobi County, which doubles up as Kenya's administrative capital city. The KNH is located about 3.5 kilometers from Nairobi city's Central Business District (CBD) and 2.5 kilometers from the Wilson Airport. The hospital being a teaching facility undertakes in the training of medical students from the University of Nairobi and the Kenya Medical Training College, whose campuses are located next to the hospital. The hospital is also adjacent to The Nairobi hospital, which is one of the major private hospitals in Kenya. The KNH has over six thousand staff and a bed capacity of two thousand and sixty three. The hospital admissions are carried out daily in different wards with a reported number of approximately one hundred admissions. The KNH has two emergency wards

to cater for emergency cases in the event of a disaster. The emergency wards accommodate around one hundred patients. The hospital serves residents of the entire country as it is a referral facility.

The physiotherapy clinic is the leading site where the study took place. The physiotherapy department has over sixty physiotherapists employed at the hospital. Eight physiotherapists are deployed at the physiotherapy outpatient clinic who attend to approximately eighty patients in a day. Most of the physiotherapists' have specialized training in orthopedics and manual therapy. The KNH physiotherapy outpatient clinic is the largest physiotherapy department in the East and Central Africa region. The physiotherapy department has a rehabilitation gymnasium as well as a separate area designated for electrotherapeutic modalities for managing various musculoskeletal conditions.

3.4 Quantitative phase

3.4.1 Study population

The study population involved all patients with Osteoarthritis receiving rehabilitation services at the Kenyatta National Hospital Physiotherapy clinic in Nairobi, Kenya. The patients were those who had been receiving rehabilitation care a year before the commencement of the study. The daily patient attendance at the clinic is approximately eighty patients, and the monthly average is over one thousand six hundred patients. The monthly attendance for patients presenting with osteoarthritis is about one hundred and twenty, with repeat appointments given during the month.

3.4.2 Sampling and recruitment

This study used a consecutive sampling procedure in the first stage of the quantitative phase which was a record review, whereby the researcher sampled all files of patients affected by Osteoarthritis on rehabilitation programs a year before the commencement of the study. The information collected was recorded on a data capture sheet. The researcher required a large sample frame to come up with a profile for the patients with osteoarthritis, and a pool of participants for the second stage of the quantitative phase where a survey was done that utilized the AIMS2 questionnaire.

Current global studies place the prevalence of osteoarthritis at 10% (Pereira et al., 2011). The monthly attendance of patients with generalized osteoarthritis is approximately one hundred and twenty at the Kenyatta National Hospital's Physiotherapy department. In this study, Cochrane's

formula was used in the second stage of the quantitative phase to calculate an ideal sample size given a desired level of a confidence interval, a margin of error, and the estimated prevalence of osteoarthritis in the population (Charan & Biswas, 2013). Purposive sampling method was then utilized from the sampling frame derived in the first stage of the quantitative phase because the sample population was to include patients affected by all joint-specific types of osteoarthritis to capture the desired sample size.

Cochrane's equation:

$$\frac{(t)2 \times p \times (1-p)}{(d)2}$$

Where t – Standard deviation 95 C.I (true population value) = 1.96

p – Prevalence (0.1)

d – Margin of error 0.05

$$\frac{(1.96)2 \times 0.1 \times (1-0.1)}{(0.05)2} = 138$$

The researcher undertook the recruitment of participants from the records of patients affected with osteoarthritis at the Physiotherapy department. The purpose of the study was explained to willing participants, which included no risks anticipated in the study or any benefits to participants. Participation was voluntary, and confidentiality was highly maintained by not disclosing any information to unauthorized parties. Also, all data sets were in a format where personal information was not identified, and no unauthorized parties had access to the data. After that, the researcher and an assistant distributed the information sheets, consent forms, and questionnaires to willing participants. All participants had to sign the consent forms before participating in the study. Participants were allowed to ask any questions about the study, which were addressed by the researcher and the assistant. All these procedures took place at KNH-Physiotherapy department.

3.4.3 Data Variables

The study variables assessed in the quantitative phase were:

Independent variables

- Gender whether male or female
- Age of participants in the study

- Marital status

Dependent variables

- Arthritis pain
- Mobility
- Walking and bending
- Hand and finger function
- Arm function
- Self-care tasks

3.4.4 Inclusion criteria

In this study, the principal researcher included all patients with osteoarthritis conversant in English and Swahili to participate. The use of both languages is because English is the official language of communication for everyday interactions in education, business, and all other sectors of the city's operations, and Swahili is the national language in Nairobi, Kenya. The researcher considered patients with osteoarthritis receiving rehabilitative services a year before the study commencing at the Kenyatta National Hospital physiotherapy clinic as they were representative of persons with osteoarthritis in Nairobi County, Kenya.

3.4.5 Exclusion criteria

The principal researcher excluded patients affected with osteoarthritis receiving rehabilitative care less than a year to the commencement of this study. Also, patients with rheumatoid arthritis, septic arthritis, gout arthritis, and ankylosing spondylitis were not allowed to participate in the study.

3.4.6 Data collection instruments

In this study, a data capture sheet was to be used to extract information from patient records a year before the commencement of the study. The instrument comprised of participants demographics, osteoarthritis joint affected, whether the joints or areas affected were more than one (bilateral osteoarthritis), number of physiotherapy appointments, past medical treatment for osteoarthritis, whether the patient was referred to another health care professional and adherence level. The merits of using the data capture sheet in this study were that there was no harm to the subjects, the records provided a sampling frame for the study, and there was a probability of it being free from recall bias. Demerits of this study were the probability of missing information

and the quality of data being out of control of the researcher. Therefore, the researcher had to carry out a pilot study on twenty patient folders to establish what information can be included and excluded from the data capture sheet before the beginning of data collection.

In addition, the researcher and assistant administered a standardized questionnaire – the arthritis impact measurement scale 2 (AIMS2) to participants. The questionnaire had sections that sought to assess the impact of osteoarthritis on patients' functional abilities in their daily lives. The sections covered demographic data, level of arthritis pain, mobility level, walking and bending activities, hand and finger function, arm function, self-care tasks, household tasks, social activity, and work. Nine sections used the Likert scale of rating ranging from 1 (severe) to 5 (none), 1 (all days) to 5 (no days), 1 (always) to 5 (never), and 1 (paid work) to 6 (retired). Both instruments aided in establishing the clinical profile of the participants.

3.4.7 Piloting

The researcher conducted a pilot study at the KNH outpatient Physiotherapy Clinic. Due to the distinct nature of secondary data, the pilot could not be carried out at any other health institution as each hospital has its data elements in patients' records. Therefore, it was prudent for the researcher to have a pilot study conducted at the primary study setting and site. Thirty folders of patients presenting with osteoarthritis were randomly selected to determine whether the information in the data capture sheet was available in the records. The pilot study allowed the researcher to make changes concerning additions and retraction of information in the data capture sheet. Consequently, this led the researcher to omit questions on the number of physiotherapy appointments, past medical treatment for osteoarthritis, whether the patient was referred to another health care professional and adherence level. The reason being the information could not be extracted from the patient records as it was missing or not indicated. This was a limitation the principal researcher experienced during this phase of the study.

A pilot study of the questionnaires was also conducted at the KNH Outpatient Physiotherapy Clinic. The pilot involved a random selection of ten patients presenting with osteoarthritis. The participants in the pilot study did not take part in the actual study as their purpose was to determine clarity of questions and the duration of time used to fill in the questionnaire. The nature of the study was explained to the participants, and they were issued with information

sheets and consent forms to sign. The participants reported that the questions were well understood, and they took approximately 25-30 minutes to fill in the questionnaire.

Piloting of the interview guides was also conducted. Two participants from each group of the patients and physiotherapists were selected to take part in the interviews. This was to ensure there was clarity and relevance to the study in the questions being asked. Participants understood the questions well and articulated the issues well. The participants did not take part in the actual study.

3.4.8 Validity and reliability of the AIMS2 questionnaire

Validity refers to the extent to which an instrument measures what it is intended to measure, while reliability is the ability of an instrument to produce consistent results more than once when the measurement is repeated (Sarantakos, 2012). In a study carried out in Canada reviewing the measures of disability, the AIMS2 questionnaire was reported to have a Cronbach alpha value of 0.74-0.96 that was tested among patients with osteoarthritis after a previous review was done by Meenan et al.,1992 (Gignac, Cao, McAlpine, & Badley, 2011). The content validity of the questionnaire was assessed by the supervisors to determine whether the content area being measured was adequately covered. Construct validity was guaranteed by ensuring the items in the questionnaire covered the objective in the study of determining the clinical profile of patients affected with osteoarthritis.

3.4.9 Data collection procedure

Following ethical approval from the University of the Western Cape's Ethics Committee, the researcher sought authorization to carry out the study from the Kenyatta National Hospital – University of Nairobi Ethics Committee and the National Commission for Science, Technology, and Innovation in Kenya. Afterward, clearance and registration of the study were obtained from the Kenyatta National Hospital Administration. Approval was sought from the head of the physiotherapy department to allow the compilation of data from the records to the data capture sheets. The researcher undertook to train a research assistant who assisted during the data collection process. The research assistant helped in the identification of participants from the patients' records who were receiving rehabilitation care for osteoarthritis a year before the study commencing. Patient files with osteoarthritis as the clinical diagnosis were one hundred and ninety two, but the researcher recorded information from one hundred and fourteen patient files

on to the data capture sheets. In the second phase of the quantitative study, the principal researcher and the assistant explained the purpose of the study to willing participants. After that, information sheets and consent forms were distributed to participants who had to sign the consent forms before taking part in the study. Afterward, the questionnaires were distributed to the participants. The researcher and assistant were readily available to address any issues about the questionnaires and to collect the filled in questionnaires. After two weeks, one hundred and forty five questionnaires were received, which was more than the sample size, one hundred and thirty eight (n=138) that underwent analysis.

3.4.9.1 Data analysis of data capture sheets

The principal researcher performed a preliminary analysis of the quantitative data derived from the data capture sheets. The reason was to check for errors, outliers, and testing for normality before the commencement of data analysis with the statistical package for social sciences (SPSS) version 25. The data capture sheet had a demographic section as well as elements on osteoarthritis joint affected and osteoarthritis joint involvement. The remaining data elements were absent from most of the patients' files and hence, were omitted during the preliminary analysis. The data was found not to have any errors and outliers both in the data capture sheets. This allowed the principal researcher to proceed with data analysis. The data elements from the data capture sheets were analyzed to establish a profile of the study participants.

3.4.9.2 Data analysis of AIMS2 questionnaire

The principal researcher performed a preliminary analysis of the quantitative data of the AIMS2 questionnaire. The reason was to check for errors, outliers, and testing for normality before the commencement of parametric analysis with the statistical package for social sciences (SPSS) version 25. The AIMS2 questionnaire had a demographic section. The remainder of the questionnaire had sections on arthritis pain, mobility level, walking and bending, hand and finger function, arm function, self-care tasks, household tasks, social activity, and work. These were all on a Likert scale that ranged from 1(severe) to 5 (none), 1 (all days) to 5 (no days), 1 (always) to (never), and 1 (paid work) to 6 (retired). Data analysis was carried out on 7 sections leaving out sections on household tasks, social activity and work as they had no strong basis on the functional ability of the patients with osteoarthritis but more on their participation restrictions on their day to day lives.

The data was found not to have any errors and outliers both in the questionnaire. This allowed the principal researcher to proceed with data analysis. Afterward, descriptive statistics were employed to analyze the categorical variables (age, gender, marital status) of respondents in the form of frequencies and percentages to come up with socio-demographic characteristics of the participants. Also, the researcher further analyzed sections of the standardized questionnaire using descriptive statistics in the form of frequencies and percentages to produce the clinical profile of the participants. The sections included arthritis pain, mobility level, walking and bending, hand and finger function, arm function, and self-care tasks. Inferential statistics were to be carried out to investigate the linear relationship and measure the strength between two continuous variables using Pearson's coefficient of correlation. However, since most of the variables did not satisfy the assumptions of Pearson's correlation by being ordinal variables and failing the normality tests, Spearman's correlation, an alternative, was used to measure the degree of association between two variables. The correlation was between age and arthritis pain, a correlation between mobility level and walking and bending, and a correlation between hand and finger function and arm function. In this study, the data in the questionnaire was on a Likert scale. Therefore, due to the overlapping of items, the data were merged to allow for better analysis and interpretation.

3.5 Qualitative phase

In this study, the qualitative phase comprised of two groups; the patients and the physiotherapists.

3.5.1 Study population group one

The study population involved all patients with osteoarthritis receiving rehabilitation services at the Kenyatta National Hospital physiotherapy clinic in Nairobi, Kenya. The population included a minimum of 5 participants and no maximum number to allow for adequate collection of data.

3.5.2 Sampling group one

Participants in this phase were purposively selected to take part in the study. The researcher derived the participants from the sample frame in the quantitative phase.

3.5.3 Inclusion criteria group one

The principal researcher included patients with osteoarthritis able to communicate in English and Swahili to participate in the study. The use of both languages is because Nairobi County is the capital city of Kenya; thus, English is the official language of communication for everyday

interactions in education, business, and all other sectors of the city's operations and Swahili is the national language. The participants were allowed to choose which language they felt was best suited for them before the interviews began. The researcher considered patients with osteoarthritis receiving rehabilitative services at the Kenyatta National Hospital physiotherapy clinic for the past year as they were representative of persons with osteoarthritis in Nairobi County, Kenya. Participants in this phase had taken part in the quantitative phase.

3.5.4 Exclusion criteria group one

The researcher in this study excluded patients presenting with osteoarthritis who were receiving rehabilitative care less than a year before the commencement of the study from participating. Also, patients with rheumatoid arthritis, septic arthritis, gout arthritis, and ankylosing spondylitis did not participate in the study.

3.5.5 Data collection instruments

In this study, the researcher utilized interviews with probes conducted at a convenient time for participants at the physiotherapy department. Interview guides were used by the researcher, who trained a research assistant to take notes during the interviews. The interview guides were in English and Swahili language. An audio tape recorder was used to capture information that was left out during note-taking.

3.5.6 Data collection procedure

The principal researcher obtained all ethical clearances from the University of the Western Cape's Ethics Committee, the University of Nairobi - Kenyatta National Hospital Ethics Committee, the National Commission for Science, Technology, and Innovation in Kenya and the Kenyatta National Hospital Administration. The researcher and assistant explained the purpose of the study to participants. After that, the information sheets with more detailed information about the study and consent forms were distributed to those willing to participate to sign. The participants were allowed to ask questions about the study that was addressed by the researcher and the assistant. The researcher collected data through interviews with arrangements made with participants on the best suited time and day of their convenience at the physiotherapy department's corporate service office. The reason was that most participants came from different areas in the city; thus the physiotherapy department was an appropriate location. Before an interview began, the office was inspected to ensure there would be no disruptions and ensure quality recordings. The staff at the department was also made aware of the corporate office being

in use to minimize disruptions. The researcher welcomed each participant to the interviews and did a recap on the purpose of the study. Participants were made aware of the use of an audio recorder, and permission was sought for its use. The research assistant was present during the interviews to take notes and observe and record facial cues. There was an audio tape recorder, pens, and notebooks used to record the interviews and taking of notes. The interviews varied in terms of time, taking between 20-45 minutes due to the participants' diverse responses.

The researcher conducted the interviews by use of interview guides, which had open-ended questions and probes that aided in obtaining the necessary information. English and Swahili language were used based on participants' preferences. The interviews were conducted until the point of saturation, whereby the participants' responses became similar. After each interview, the researcher debriefed the participants. Additional information given after the interview was written down. The recorded interviews were then played back to each participant to verify and seek clarification on issues discussed. The researcher and assistant later merged the information from the audiotape recorder and notes taken.

3.5.7 Data analysis

The principal researcher employed the Braun and Clark stages of thematic analysis, done in 6 phases. The phases are familiarization with the data, producing codes, searching for themes in the codes, reviewing the themes, defining and naming the themes, and producing the final results. Analysis began with the recorded interviews being transcribed verbatim to produce manuscripts. A comparison was made with the notes taken during the interviews to verify accuracy. The researcher generated codes that may have recurring patterns. Themes and categories were derived from the generated codes. Transcripts were read through several times by the researcher, with the emphasis on the emergence of new themes and reviewing existing themes. Notes were made throughout the reading of the transcripts. The researcher grouped themes into broader categories so that similar categories were reduced to come up with one. After the deviation of themes, an independent researcher was then asked to read through the transcripts and generate themes, thus increasing the credibility and dependability of the categorizing. Comparisons between the lists of the researcher and an independent researcher were made.

3.5.1.1 Study Population group two

The second study population involved physiotherapists working at the Kenyatta National Hospital and providing rehabilitation services to patients with osteoarthritis.

3.5.1.2 Sampling group two

Participants in this phase were purposively selected to take part in the study. No definite number of participants was chosen to allow the collection of data to the point of saturation.

3.5.1.3 Inclusion group two

The researcher included physiotherapists who had a history of working at the outpatient physiotherapy clinic of the Kenyatta National Hospital and were employees of the institution. The physiotherapists were to have a history of managing patients affected by osteoarthritis. They were required to have five years' experience in practice and be conversant with English and Swahili language. The use of both languages is because Nairobi County being the capital city of Kenya uses English as the official language of communication for everyday interactions in education, business, and all other sectors of the city's operations and Swahili as the national language.

3.5.1.4 Exclusion criteria group two

In this study, the researcher excluded physiotherapists not having a history of managing persons presenting with osteoarthritis. Also, physiotherapists, who had never worked at the Outpatient Physiotherapy department, did not participate in the study.

3.5.1.5 Data collection instruments

The researcher conducted interviews with probes at a convenient time for the participants at the physiotherapy department. Interview guides were used by the researcher, who trained a research assistant to take notes during the interviews. An audio tape recorder was used to capture information that may have been left out during note-taking.

3.5.1.6 Data collection procedure

The researcher performed the data collection process after all ethics clearances had been obtained. The ethics clearances were from the University of the Western Cape's Ethics Committee, the Kenyatta National Hospital - University of Nairobi Ethics Committee, and the National Commission for Science, Technology, and Innovation in Kenya. The researcher explained the purpose of the study to the participants. After that, the information sheets with more detailed information about the study and consent forms were distributed to those willing to

participate to sign. The participants were allowed to ask questions about the study, which was addressed by the researcher and the assistant. Data was collected through interviews with arrangements made with participants on the best suited time and day of their convenience at the physiotherapy department's corporate service office. The reason being that most participants worked at the outpatient physiotherapy department; thus, it was an appropriate location. Before an interview began, the office was inspected to ensure there would be no disruptions and to guarantee quality recordings. The rest of the staff at the department was also made aware of the corporate office being in use to minimize disruptions. The researcher welcomed each participant to the interviews, and a review of the purpose of the study communicated. Participants were made aware of the use of an audio recorder, and permission was sought for its use. The research assistant was present during the interviews to take notes and observe and record facial cues. There was an audio tape recorder, pens, and notebooks that were used to record the interviews and taking of notes. The interviews varied in terms of time, taking between 30-50 minutes due to the participants' diverse responses.

The researcher conducted the interviews by use of interview guides, which had open-ended questions and probes that aided in obtaining the necessary information. The English language was used to conduct the interviews as all participants preferred the language. The interviews were conducted until the point of saturation, whereby participants' responses became similar. The researcher then debriefed each participant at the end of every interview. Additional information given after the interview was written down. The recorded interviews were then played back to each participant to verify and seek clarification on issues discussed. The researcher and assistant then merged the information from the audiotape recorder and notes taken.

3.5.1.7 Data analysis

The researcher carried out an analysis of the data using the Braun and Clark stages of thematic analysis in 6 phases. The phases include familiarization with the data, producing codes, searching for themes in the codes, reviewing the themes, defining and naming the themes, and producing the final results. Data analysis began with the recorded interviews being transcribed verbatim to produce manuscripts. The researcher then compared notes taken during the interviews to verify accuracy. The generation of codes that may have a recurring pattern was carried out. Themes and categories were then derived from the generated codes. Transcripts were

read through several times by the researcher, with the emphasis on the emergence of new themes and reviewing existing themes. The assistant made notes throughout the reading of the transcripts. The researcher then grouped themes into broader categories so that similar categories were reduced to come up with one. After deriving themes, an independent researcher was asked to read through the transcripts and generate themes, thus increasing the credibility and dependability of the categorizing. After that, a comparison was made between the lists of the researcher and an independent researcher.

3.5.1.8 Trustworthiness

Trustworthiness is important in qualitative research. Researchers are to ensure the rigor of qualitative designs without sacrificing the relevance of qualitative research (Egon et al., 1982). Trustworthiness entailed four techniques, i.e., credibility, transferability, confirmability, and dependability, and was used in this study to ensure the accuracy of this study's findings.

- Guba & Lincoln (1994) defined credibility as confidence in the truth of the research findings. In this study, the researcher ensured credibility through the use of field notes, transcripts, and peer debriefing. To support the description of the context, views from participants to confirm the accuracy of information were used, thus enhancing credibility.
- To ensure transferability, a clear description of the research methodology used was provided to allow the study to be repeated for future studies (Egon et al., 1982). In this study, this was achieved using a description of participants' characteristics and appropriate excerpts from participants.
- Confirmability is the extent to which the findings of a study are shaped by the respondents and not the researcher's motivation or interest (Guba & Lincoln, 1994). The use of probes during questioning, together with member checking, helped to ensure confirmability.
- Dependability is related to the consistency of findings (Egon et al., 1982). In this study, the researcher strived to achieve this by use of an in-depth methodological description to allow the study to be repeated for future research.

3.6 Ethics considerations and dissemination of findings

The principal researcher sought and obtained approval to conduct the study from the University of Western Cape's Ethics Committee before the commencement of the research. Ethical clearance was then acquired from the Research and Ethics Committees of Kenyatta National

Hospital – University of Nairobi. Afterward, approval was sought from the National Commission of Science, Technology, and Innovation for a research permit to conduct the study in Kenya, which the researcher forwarded to the Biomedical Research Ethics Committee of the University of the Western Cape for record-keeping. The researcher then obtained authorization and had the study registered at the Kenyatta National Hospital administration to be able to carry out the study at the hospital's physiotherapy clinic. Confidentiality of all participants was ensured by not disclosing any information to unauthorized parties. All data sets were in a format where personal information was not identified, and no unauthorized parties had access to the data. Information sheets were given to the participants and relevant parties to thoroughly inform them about the study with regards to its value and benefits, and clarity on the study was verbally provided to the participants. Those taking part in the study began by reading and signing information sheets and informed consent forms. The participants were allowed to withdraw from the study at any stage without any negative consequences. The hard copies of collected data were stored in a locked filing cabinet in the researcher's possession, and unauthorized parties did not have access to the data. Variables were generalized to reduce identifiability, and the precision of other variables was reduced to make them less identifiable. Soft copies were stored in computer files, which were password protected and only accessible to the researcher and assistant. In the use of hard drives, secure systems were set up to protect the information in instances that may require the transfer of data between the researcher and the assistant. The dissemination of findings will be through a research document.

CHAPTER FOUR:
RESULTS

4.0 Chapter Introduction

This chapter comprises the results of the study in two sections. Section A presents the quantitative data that corresponds to the first objective of the study. In contrast, section B presents the qualitative data that relates to the second and third objectives of the study. In section A, the results are presented in the form of descriptive and inferential statistics (correlation between variables with scatter plots). Section B presents the results of the qualitative phase in thematic content. Study participants were given cryptograms (PT1-7 and PA1-9) to preserve anonymity and confidentiality. Several themes and sub-themes emerged from the one on one interviews of the two sets of groups that will be discussed separately to meet the objectives of the study. The findings of the study are presented in a narrative form to illustrate the themes and sub-themes. Participants' views that were observed to be relevant to the discussion had their quotes highlighted and presented in italics and inverted commas (") to distinguish them from the rest of the literature. Abbreviation points (…) have been used to indicate information from participants deemed irrelevant to the discussion. The researcher presents the findings under the following objectives:

- To determine the clinical profile of patients with osteoarthritis on physiotherapy rehabilitation programs at the Kenyatta National Hospital physiotherapy clinic.
- To explore the patient-reported barriers and facilitators towards physiotherapy rehabilitation programs.
- To explore physiotherapists' perceptions of patient adherence towards physiotherapy rehabilitation programs.

4.1 Section A: Quantitative Results

4.1.1 Socio-demographic characteristics of study participants (n=138)

The principal researcher, together with the assistant, undertook to distribute 150 questionnaires, of which 145 were received. One hundred and thirty eight questionnaires were filled in correctly, accounting for a response rate of 96.7%. The findings showed that females accounted for (n=101) 73.2% of the sample population while males were (n=37) 26.8%. The most common age group was 50-59 (42.8%) years. The majority of the sample population was married at (n=98) 71%. These results are presented in Table 4.1.1 below:

Table 4.1.1: Demographic frequency table (n=138)

Variables	Frequency (n)	Percentages (%)
Age group (n=138)		
40-49 years	33	24%
50-59 years	59	43%
60-69 years	30	22%
70-79 years	16	11%
Gender (n=138)		
Male	37	27%
Female	101	73%
Marital status (n=138)		
Married	98	71%
Separated	10	7%
Divorced	3	2%
Widowed	15	11%
Never married	12	9%

4.1.2 Profile of study participants (n=114)

This study gathered 114 data capture sheets from patients' records, which were used to derive information to come up with the profile of the study participants receiving rehabilitation treatment a year before the commencement of the study. Females accounted for the majority of the sample at (n=89) 78% while men constituted (n=25) 22%. Spine osteoarthritis was the most prevalent (n=78) 68%, whereas most participants were only affected by osteoarthritis in one joint (n=85) 75%. The results are shown in Table 4.1.2 below:

Table 4.1.2 Profile of study participants (n=114)

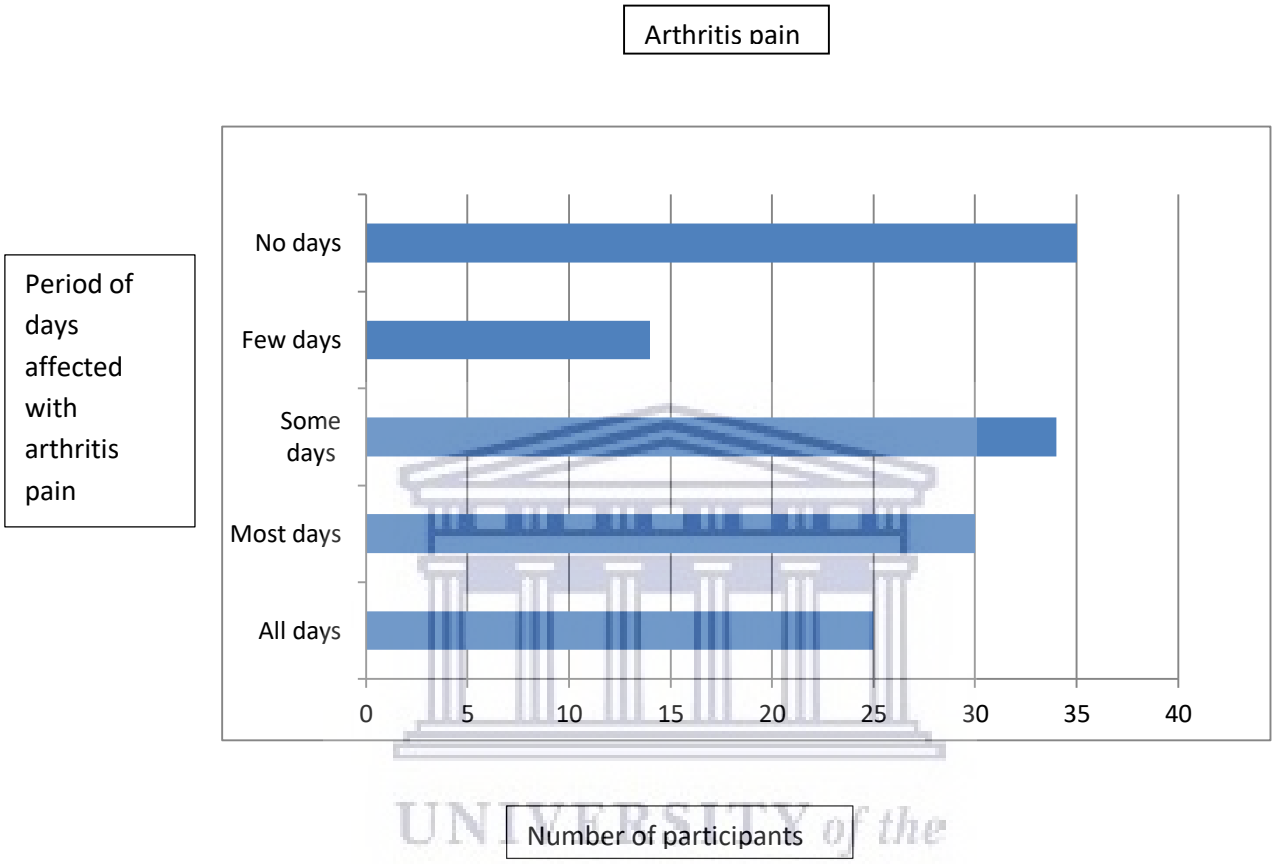
Variables	Frequency (n)	Percentages (%)
Gender		
Male	25	22%
Female	89	78%
Osteoarthritis joint affected		
Spine	78	68%
Knee	14	12%
Knee and spine	12	11%
Hip and spine	3	3%
Shoulder	2	2%
Shoulder and spine	2	2%
Hip and knee	1	1%
Knee and ankle	1	1%
Osteoarthritis joint involvement		
Unilateral osteoarthritis	29	25%
Bilateral osteoarthritis	85	75%

4.1.3 Functional ability of the study participants (n=138)

The remaining sections of the AIMS2 questionnaire sought to determine the clinical profile of the study participants based on their functional abilities. The sections that underwent analysis comprised of arthritis pain, mobility level, walking and bending, hand and finger function, arm function, as well as self-care tasks. The remaining sections on household tasks, social activity and work were not included as they had a stronger basis on participation restriction on the day to day lives of the participants. The researcher summarized the results of the sections due to overlapping responses. The findings are illustrated on the bar graphs and tables below:

4.1.3.1 Arthritis pain section

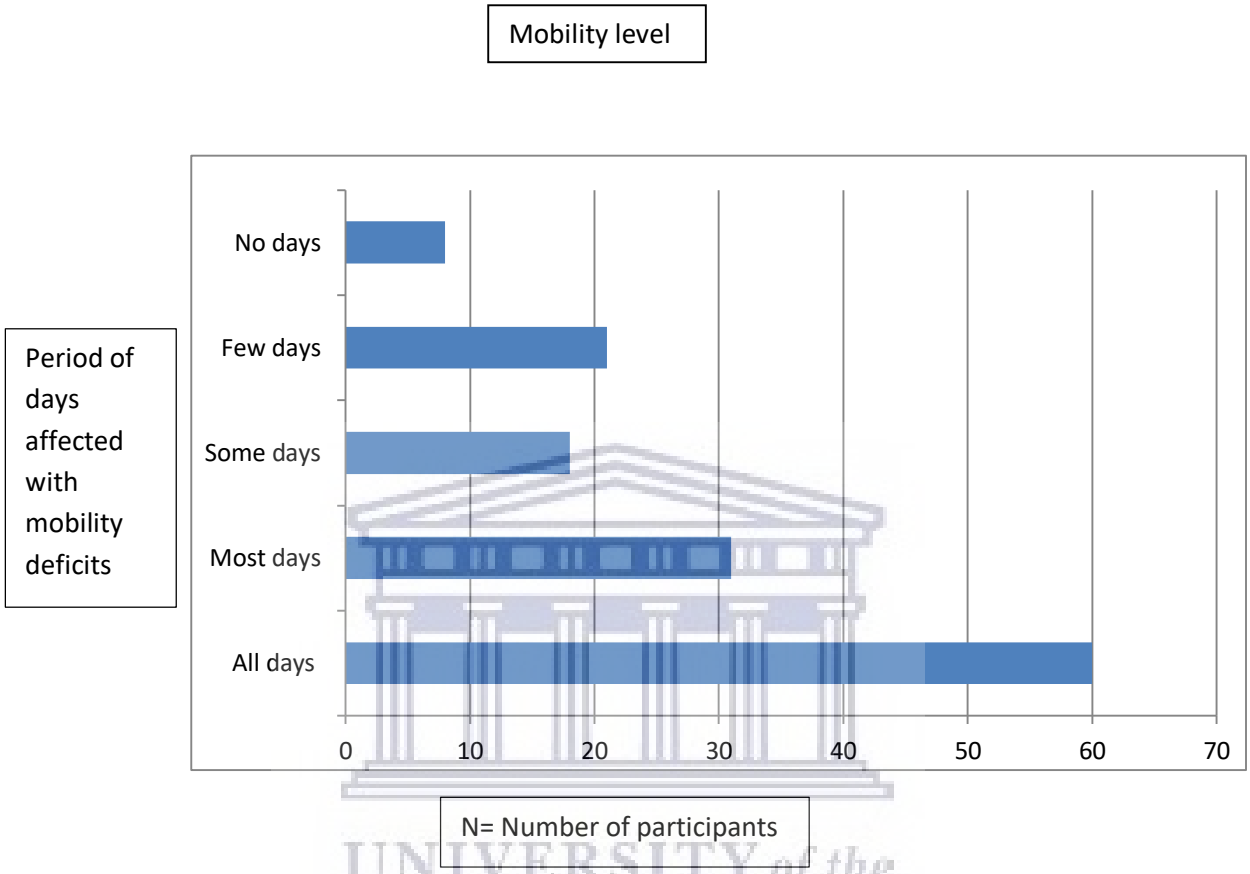
Figure 4.1.1: Arthritis pain experienced **in the past month (n=138)**



Most of the participants reported that in a month they did not experience arthritis pain symptom (n=35). This was a unique response because despite the participants not having pain they still attended their physiotherapy rehabilitation programs. This depicts other underlying reasons that this particular group of participants possessed that made them adherent to their physiotherapy rehabilitation programs despite having no pain that needs to be researched on further.

4.1.3.2 Mobility Section

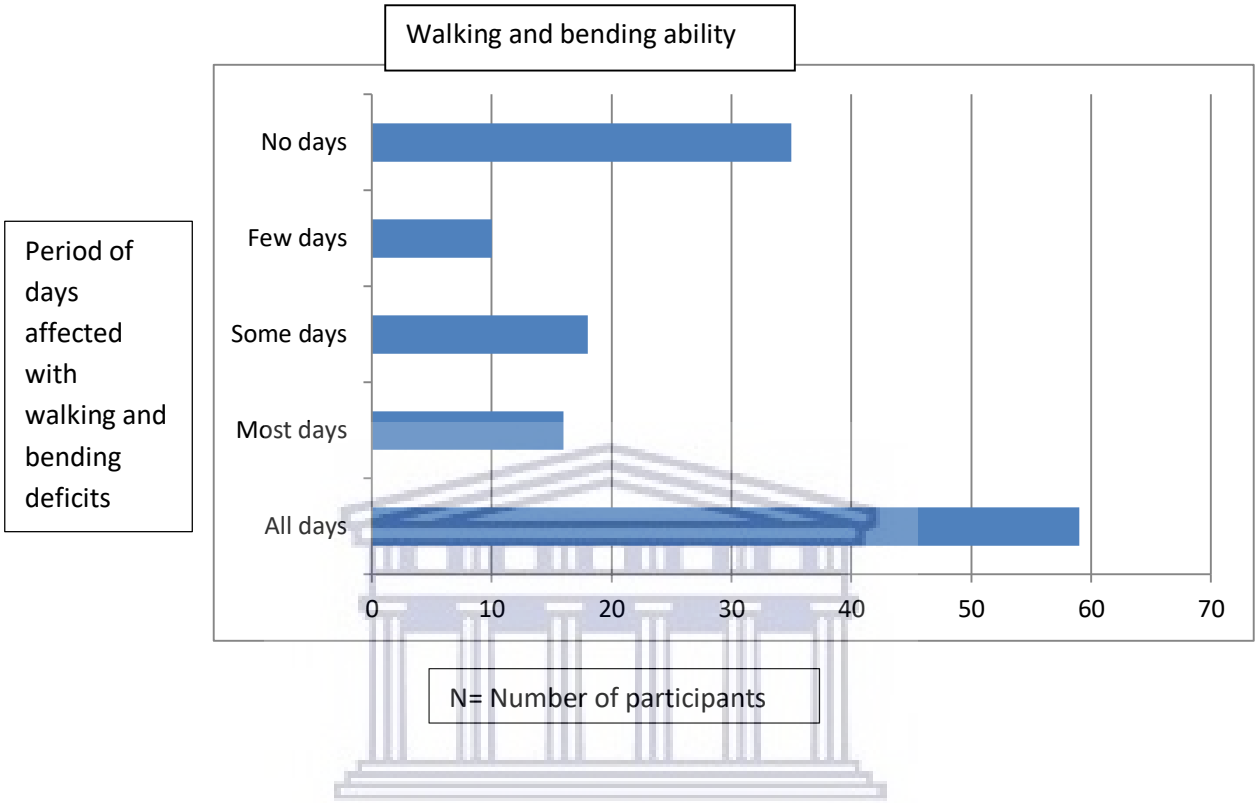
Figure 4.1.2: Mobility level in the past month (n=138)



Most participants were mobile (n=60) in the study. They reported they were able to move around in relation to driving or using public transportation and performing errands around the neighborhood. This could be attributed to the reduction of symptoms experienced when individuals affected with osteoarthritis are active.

4.1.3.3 Walking and bending section

Figure 4.1.3: Walking and bending ability in the past month (n=138)



Despite the participants being mobile, most of them still had challenges in walking and bending (n=58) that had a negative bearing on their functional abilities. Of importance is walking long distances, using stairways, bending and lifting proved to be difficult to the group of participants in all days of the month. Majority had to get assistance from someone or use an assistive device to aid in walking. These activity requires the use of weight bearing joints. Majority of the participants in the study had osteoarthritis in the weight bearing the results can be attributed to this.

4.1.3.4 Hand and finger function

Table 4.1.3: Hand and finger function ability in the past month (n=138)

Variable	Frequency (n)	Percentages (%)
All days (1)	131	94.9
Most days (2)	2	1.4
Some days (3)	1	0.7
Few days (4)	2	1.4
No days (5)	2	1.4

Majority of the participants (n=131) were able to perform fine movements that required use of the hand and fingers. These were turning a bottle lid or opening the door. The study findings showed that there was a low number of participants who has osteoarthritis in the joints of the hand and fingers hence contributing to the findings shown.

4.1.3.5 Arm function

Table 4.1.4: Arm function ability in the past month (n=138)

Variable	Frequency (n)	Percentages (%)
All days (1)	124	89.9
Most days (2)	4	2.9
Some days (3)	6	4.3
Few days (4)	1	0.7
No days (5)	3	2.2

Majority of the participants (n=124) were able to perform arm function tasks like reaching over an overhead shelf. In this study, there were participants who had osteoarthritis affecting the joints of the upper limbs but were able to manage their condition as they engaged with their day to day activities.

4.1.3.6 Self-care tasks section

Table 4.1.5 Self-care tasks ability in the past month (n=138)

Variable	Frequency (n)	Percentages (%)
Always (1)	3	2.2
Very often (2)	3	2.2
Sometimes (3)	1	0.7
Almost never (4)	1	0.7
Never (5)	130	94.2

Most of the participants (n=130) were able to carry out tasks related to self care such as showering, grooming without much assistance from others thus the participants' functional ability was good despite the osteoarthritis symptoms experienced.

The researcher then undertook to compare the age of the study participants with experience of arthritis pain using cross-tabulation. The results are as shown in Table 4.1.6 below:

Table 4.1.6 Cross-tabulation of age with arthritis pain (n=138)

Arthritis pain frequency with age.					
Variable	All days (1)	Most days (2)	Some days (3)	Few days (4)	No days (5)
Age					
40-49	4	5	8	1	15
50-59	12	16	13	7	11
60-69	1	7	8	5	9
70-79	8	2	5	1	0

The results showed that a majority of participants (n=13) in the age group of 50-59 years had an experience of arthritic pain some days within a month. This is an age group when the onset of

degenerative changes in the bones leading to osteoarthritis is prevalent. With the early symptoms of osteoarthritis experienced, pain is a major factor.

Afterward, the researcher compared the age of participants to their mobility level, and the results are shown in Table 4.1.7:

Table 4.1.7 Cross-tabulation of age with mobility (n=138)

Mobility frequency with age					
Variable	All days (1)	Most days (2)	Some days (3)	Few days (4)	No days (5)
Age					
40-49	18	6	3	5	1
50-59	25	13	9	7	5
60-69	12	8	5	3	2
70-79	5	4	1	6	0

A majority of participants (n=25) in the age group of 50-59 years were actively mobile all days in a month. This age group, according to the study also has high prevalence of Osteoarthritis. Of importance to note is the age group of 70-79 years had a low number of participants who were actively mobile. This low number could be attributed to advanced aged combined with severe degeneration of the condition.

Also, the researcher compared the age of study participants to their functional capabilities in walking and bending. The results are as shown in Table 4.1.8:

Table 4.1.8 Cross-tabulation of age with walking and bending (n=138)

Walking and bending frequency with age					
Variable	All days (1)	Most days (2)	Some days (3)	Few days (4)	No days (5)
Age					
40-49	17	3	5	2	6
50-59	24	8	7	6	14
60-69	8	5	5	2	10
70-79	1	0	1	0	5

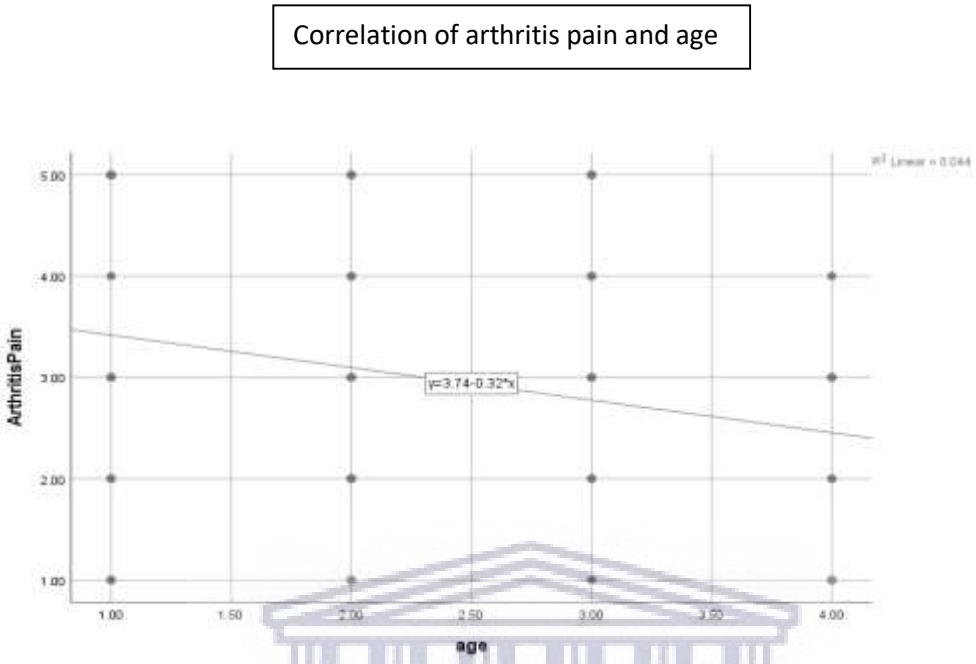
The results showed that participants (n=24) of the age group 50-59 years had walking and bending deficits. Activities that required the participants to walk long distances bend or stoop was a challenge in the 50-59 years age group with some requiring use of assistive devices to walk.

Inferential statistics were then employed using Spearman's Correlation (rho), a non-parametric test used to measure the strength and direction of the association between two ranked variables. The researcher correlated arthritis pain against age, mobility against walking and bending, and hand and finger function against arm function.

After that, the researcher ran Spearman's Correlation to assess the relationship between arthritis pain and age, using a sample of 138 participants. There was a negative correlation between arthritis pain and age, which was statistically significant, rho = -0.179, p = 0.035. The results describe a pattern in the relationship between arthritis pain and age but may not represent causation between the two variables.

The results are demonstrated in a scatter plot on figure 4.1.4 below:

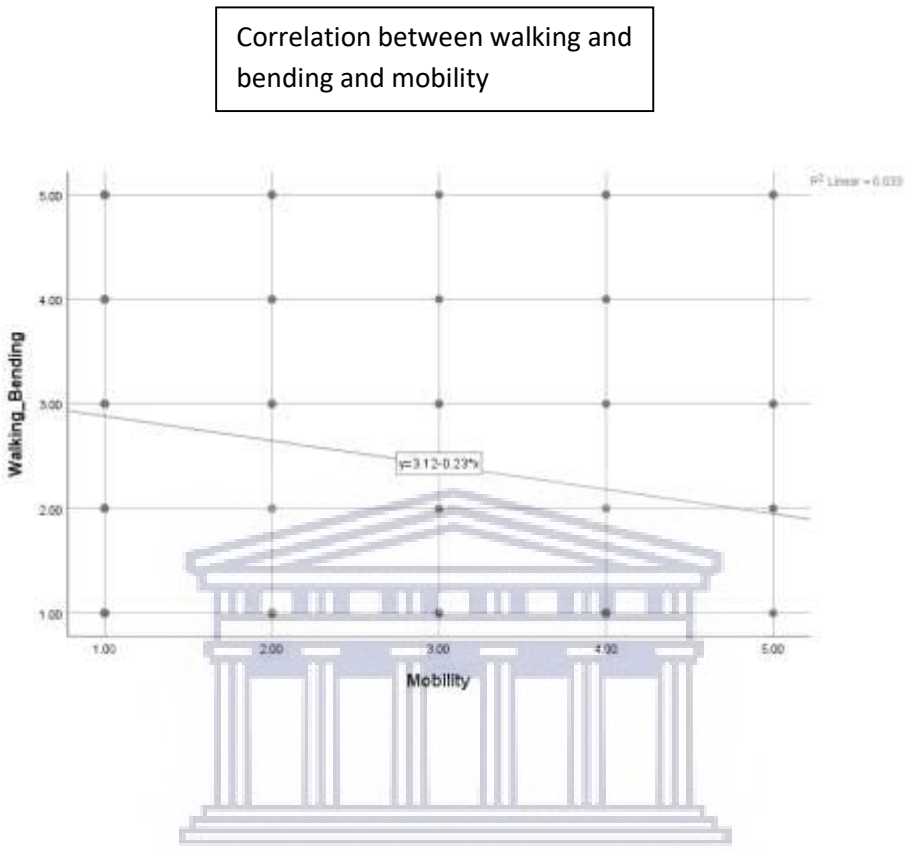
Figure 4.1.4 Correlation between arthritis pain and age



The researcher then sought to find out if there was a correlation between mobility function and walking and bending function. Spearman's correlation was carried out to determine if a relationship existed between the two ordinal data using a sample of 138 participants. There was a negative correlation between mobility and walking and bending function, which was statistically significant, rho = -0.213, p = 0.012. The results may not represent a causation relationship between the two variables but describes a pattern that exists.

The results are illustrated in the scatter plot on figure 4.1.5 below:

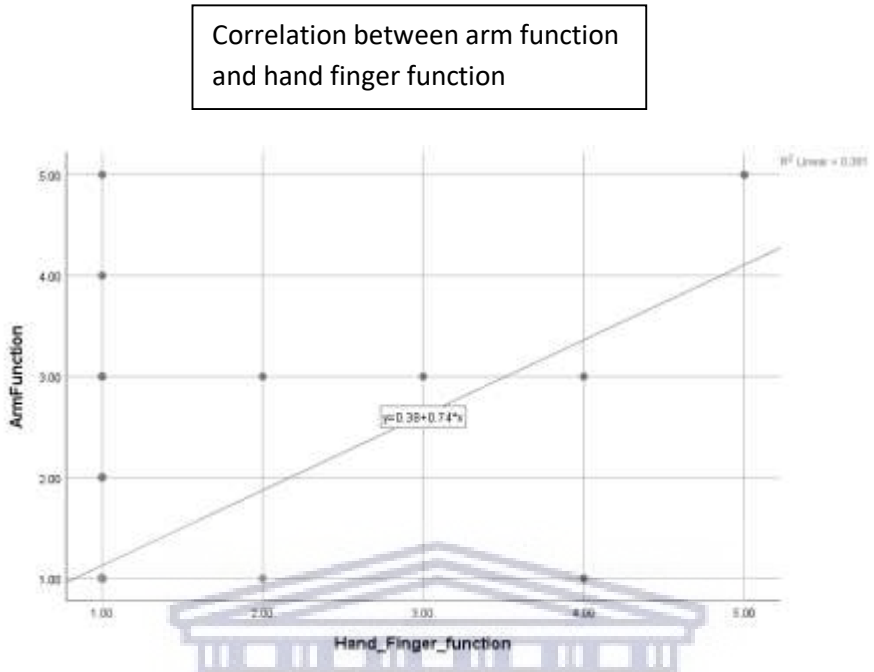
Figure 4.1.5 Correlation between walking and bending and mobility function



Afterward, the researcher sought to discover if there was a correlation between hand and finger function and arm function. Spearman's Correlation was run to establish whether a relationship existed using a sample size of 138 participants. There was a positive correlation between hand and finger function and arm function, which was statistically significant rho = 0.489, p = 0.001. This is interpreted to mean that both variables move in the same direction and have an effect on each other.

The results are depicted in the scatter plot on figure 4.1.6

Figure 4.1.6 Correlation between Arm function and hand and finger function



Summary of the clinical profile of the patients

The principal researcher deduced based on the results highlighted above, that the sample population was dominated by a female populace. The most common age group affected with Osteoarthritis was between 50-59 years. The results of the whole sample population showed that arthritis pain and its effects were not experienced on any days in the previous month by the majority of respondents. This may be attributed to the participants probably incorporating self-management interventions in their home exercise programs to mitigate the pain experience. A good number of the participants were mobile and able to carry out their day to day activities though tasks that required walking longer distances and performing strenuous work was a challenge. In the study, most of the participants were able to perform tasks that required use of their upper extremities as well as duties that related to their personal grooming and hygiene.

4.2 Section B: Qualitative results.

4.2.1 Socio-demographic characteristics

The researcher purposively selected 25 study participants to be interviewed on different days. Fifteen participants were to participate in the patient semi-structured interviews and ten physiotherapists for the semi-structured interviews. However, only nine study participants; eight

females (88.9%) and one male (11.1%) showed up for the patient interviews and seven study participants; five males; (71.4%) and two females (28.6%) for the physiotherapists' interviews.

Table 4.2.1a demonstrates further the demographic characteristics of participants who took part in the one on one interviews for the patients, which includes age, gender, marital status, type of osteoarthritis, and the number of years affected with osteoarthritis.

Table 4.2.1b presents the profile of physiotherapists who had experience in the provision of rehabilitation services to the patients affected with osteoarthritis. The study sample of the participants was by age, gender, and the number of years providing rehabilitative care to patients with osteoarthritis.

Table 4.2.1a Demographic features of study participants (patients)

Participant code	Age	Gender	Marital status	Type of osteoarthritis	Years affected with osteoarthritis
PA1	48	Female	Separated	Spine	2years
PA2	59	Female	Married	Spine & knee	5years
PA3	40	Female	Never married	Hip	6years
PA4	56	Female	Separated	Knees	9years
PA5	65	Male	Married	Spine	5years
PA6	56	Female	Married	Knees	8years
PA7	44	Female	Married	Spine	2years
PA8	61	Female	Married	Spine	4years
PA9	52	Female	Married	Spine	3years

Table 4.2.1b Demographic characteristics of study participants (Physiotherapists)

Participant code	Age	Gender	Years in practice
PT1	35	Male	11years
PT2	37	Male	13years
PT3	45	Female	22years
PT4	30	Male	7years
PT5	30	Male	6years
PT6	32	Female	9years
PT7	40	Male	16years

PA – Patient PT- Physiotherapist

4.2.2 Development of themes (patient interviews)

In this study, themes were predetermined based on available literature on the barriers and

facilitators experienced by patients with osteoarthritis towards adherence to rehabilitation services. Some of the predetermined themes included:

(a) Pain (barrier)
(b) Financial problems (barrier)
(c) Weather (barrier)
(d) Work commitments (barrier)
(e) Support from family, clinicians (facilitator)
(f) Positive patient-therapist relationship (facilitator)
(g) Effective communication (facilitator)

This study also elicited some new insights from both groups of the respondents. Table 4.2.2 below is an illustration of the themes and sub-themes that emerged from the discussions captured from the patients' interviews.

Table 4.2.2 Themes and sub-themes from patient interviews

THEMES	SUB-THEMES
FINANCIAL CONSTRAINTS (barrier)	- Lack of money - Use of the national government health insurance fund
PAIN INTENSITY (barrier)	- Increase in pain
COMMITMENTS/ENGAGEMENTS (barrier)	- Work commitments - Social commitments
RUNDOWN GYMNASIUM EQUIPMENT (barrier)	- Upgrading of gymnasium machines
IMPROVED HEALTH STATUS (facilitator)	- Pain relief - Progress with the rehabilitation program
SUPPORT/ENCOURAGEMENT (facilitator)	- Family - Physiotherapists - Fellow patients - Friends

4.2.2.1 Financial constraints (barrier)

Analysis of the data brought forth two sub-themes from the central theme of financial constraints. The emerged sub-themes are discussed below:

- **Lack of money**

Some respondents reported having financial problems that affected their adherence to clinic-based exercise programs. A financial constraint was concerning payment that had to be made to the hospital for patients to receive the services. Also, the participants stated that they sometimes lacked money for transport to reach the clinic and go back home. Some participants' responses included:

"*Sometimes I may lack fare to come for the attendance then when I call the doctor it is pushed to the next time" (PA1)*

".....you know sometimes you want to come but you cannot because you do not have money to pay and the receipt is needed to prove you have paid….I just stay at home" (PA4)

"I exhausted my health insurance to cater for other medical bills…now I'm forced to pay from my pocket which is expensive" (PA6)

- **Use of the National government health insurance fund**

The National Health Insurance Fund (NHIF) is a medical cover run by the Kenyan government to assist the citizenry in receiving medical services at government-operated hospitals. Most participants in the study were members of NHIF but were unable to use the cover as it only catered for diagnostic tests. The NHIF only supports outpatient services for the citizens who are part of the civil service workforce. The result is a majority of Kenyan citizens who do not work for the civil service, have to pay money to receive rehabilitative care at the hospital. Participants stated:

"The government should improve the NHIF cover, it is only used partially when you do an X-ray or scan. After you have been referred for physiotherapy that is your own pocket" (PA1)

"If only they allowed us to use the NHIF then I wouldn't have these problems of coming here to pay" (PA5)

"If people can allow the use of NHIF card regardless of the job you do, that will ease things. I

cannot use my NHIF so raising the amount sometimes it is a problem……" (PA8)

4.2.2.2 Pain intensity – increased pain (barrier)

Participants reported periods of pain flare-ups that are characteristic of osteoarthritis. They perceived an increase in pain to be a hindrance to them attending their treatment sessions at the clinic. Performing their home-based exercise programs was also interrupted because of the pain. Views shared by respondents included:

"At times I wake up feeling not so good that I cannot get out of bed so I end up missing the session. When the pain is too much I cannot get out of bed….." (PA3)

"Sometimes when you feel pain you want to rest. When you rest you will say let me wait for the pain to ease" (PA6)

"The pain is so bad at times particularly when it's cold I can't come for treatment" (PA7)

4.2.2.3 Commitments/ engagements (barrier)

Work commitments were also a barrier to participants' clinic attendance. Getting consent from employers during official work hours to go to the hospital for treatment was a challenge for some. Also, performing exercises at home was interrupted because of working late hours as well as other social engagements to attend. The respondents stated:

"…there is a lot of work in the office, by the time you reach the house it is going to nine, ten, so there is no time….." (PA2)

"…when you are exercising at home; there are days when you do not exercise; you have to go to a wedding, and your time is interrupted…" (PA6)

"…getting permission from my workplace is also a challenge, you may want to come to the hospital but may not come when you have no permission…." (PA8)

4.2.2.4 Rundown gymnasium equipment (barrier)

Participants highlighted the state of exercise equipment utilized at the clinic's gymnasium. Most

equipment were said to have been run down, making it difficult and uncomfortable to use, thus preventing them from doing their exercises while at the clinic. There was a general need for the gymnasium to be upgraded to keep up with modernity. Some respondents stated:

"The gym equipment are not working well, others are faulty especially the bicycle gives me pain when I sit on it"

"...you find there are many bicycles there broken down or only one working...and there is that pulley system that needs some upgrading...." (PA5)

"The equipment is old and limited for use. You know when the equipment is modernized, it is more comfortable to use and motivates you. Like now those things for cycling, they are so uncomfortable..." (PA6)

4.2.2.5 Improved health status (facilitator)

Improved health status resonated well among the study participants who were receiving rehabilitation services at the clinic. The researcher classified this theme into two sub-themes:

- **Pain relief**

  To be pain-free was a motivation among participants that ensured they were adhering to their exercise programs. Exercise performance results in a reduction of pain in osteoarthritis cases. Respondents' belief in rehabilitation as an intervention in managing their condition drove them to continue complying with their treatment sessions at home.

Participants said:

"...what has motivated me is because when I do them, I spend a day with less pain or without pain after the exercises...." (PA1)

"I really enjoy doing my exercises; I'm in less pain and more fit..." (PA2)

"...the exercises help me; they relieve the pain, so I get more relieved after the exercises..." (PA8)

- **Progress with the rehabilitation programs**

Positive results have been reported and observed regarding rehabilitation as a management strategy in patients with osteoarthritis. Rehabilitation exercise programs continue to be important in managing osteoarthritis. In this study, respondents attested to experiencing a reduction of symptoms from the time they began their programs to their current disposition. The positive responses from the treatment enabled participants to continue with their exercise programs. Participants reported that:

"…the progress I have been making, and every day when I wake up, I feel I can do something that I could not do like the previous day that is a motivation for me…" (PA3)

"I have improved so much after my physiotherapy. I can't compare how I felt before and now..." (PA5)

"…after getting services here, my condition has gotten better, so that has motivated me…" (PA8)

4.2.2.6 Support/encouragement (Facilitator)

Support was an important theme that emerged as an enabler to the respondents adhering to their exercise programs. The researcher categorized three sub-themes under the support theme; support from family, support from therapists, and support from fellow patients and friends.

- **Support from family**

Attaining support from family is an essential facilitator in ensuring patients adheres to the clinic-based and home-based exercise programs. Osteoarthritis is a chronic condition that requires long term rehabilitation. Therefore, family support is essential in encouraging the individual to maintain performing their exercises to experience a better quality of life.

In the study, several participants reported that having support from their family members gave them the impetus to continue going for treatment at the clinic and performing their exercises at home. Support also presented in the form of financial aid, in that family members bore the cost of treatment for the participants. Samples of the responses were:

"…when I had this problem it became a family concern, so they encourage me a lot, yes. The

first time when I used to come, I was in a lot of pain, so my daughter used to come with me…." (PA2)

"…my family members are quite supportive and they are eager for me to get well fast, so they keep pushing and encouraging me to come to the sessions…" (PA3)

"…in fact when I come home every time my grandson tells me to go exercise and asks how I am doing so far and how strong have I become, this motivates me…"(PA4)

"…yeah they have been very supportive, they know of my condition and when I want to come for treatment and do not have funds they provide it…." (PA5)

- **Support from physiotherapists**

A positive therapeutic alliance between the patients and clinicians is a significant booster in maintaining adherence to treatment. A good interaction and communication skill between the therapist and patient was crucial in the study as it reflected on the patients' willingness to continue their programs, especially at the clinic. Respondents stated:

"My therapist has been good to me; he gives me advice on how to manage my condition and is very encouraging" (PA1)

"They are the best, they have encouraged me even when I want to give up they tell me no, do not give up. We are together in this process…." (PA2)

"They do encourage me because there is a time I was heartbroken, and they told me don't worry, we are going to manage the condition" (PA8)

- **Support from fellow patients and friends**

The rehabilitation programs, most of the time, employ group therapy in clinical settings. Group therapy fosters an environment where the patients can encourage each other as they exercise. Some of the participants shared views concerning encouragement from fellow patients on rehabilitation programs. Support was also received from workmates and friends away from the clinic. Some of the views sampled included:

"…when I'm with my colleagues they tell me to show them the exercises I was taught, then I show them and everyone gets encouraged…." (PA2)

"I meet people in the gym, I see them with the same problem, and they motivate me. When you are not doing something properly, someone shows you how to do it." (PA4)

"I can walk and go round the estates with my lady friends, so sometimes we walk together…" (PA7)

4.2.3 Development of themes (Physiotherapists interviews)

The study elicited several themes and sub-themes from the one on one interview that explored the physiotherapists' perceptions of patients' adherence to rehabilitation programs. The participants gave their views on what they observed as barriers to patient adherence towards rehabilitation programs, strategies to counter non-adherence, and the effect of patient non-adherence to the rehabilitation programs for both the patients and clinicians. The barriers and facilitators or strategies to patient adherence towards rehabilitation programs, as shared by the respondents, are illustrated in Table 4.2.3 below.

Table 4.2.3: Themes and sub-themes from physiotherapists' interviews

THEMES	SUB-THEMES
FINANCIAL CONSTRAINTS (barrier)	- Lack of money
COMMITMENTS / ENGAGEMENTS (barrier)	- Work commitments
LACK OF PROPER EDUCATION(barrier)	- Poor delivery of instructions - Lack of communication
DISTANCE TO FACILITY (barrier)	- Location of facility - Status of facility
PATIENT EDUCATION (strategy)	- Print outs of exercise programs - Application of technology
SUPPORT/ENCOURAGEMENT (strategy)	- From the family

4.2.3.1 Financial constraints (barrier)

- **Lack of money**

Financial constraints were an overriding theme in the study that affected patients' adherence to rehabilitation programs at the hospital clinic. Physiotherapy clinicians have to attend to patients affected with osteoarthritis for several sessions to achieve positive outcomes. The number of sessions is observed to have financial implications on patients as they have to pay for treatment sessions. To add on, some of the patients come from areas far away from the hospital; thus, transportation costs pile up on their finances interfering with their clinic attendance. Participants had this to say:

"...our society being in a third world is slow, and so patients are not able to attend to their sessions because of the financial issues....." (PT2)

"...some of the patients are not working, are not well up, they still have these problems, they have to come to the clinic twice or thrice in a week, and they cannot afford this..." (PT5)

"...the other element of the adherence is financial issues and transport because most of these patients cannot operate on their own. They need to be in the company of family members of which they could be strained financially...." (PT7)

4.2.3.2 Commitments/ engagements (barrier)

- **Work commitments**

The majority of the patients receiving rehabilitative care at the hospital were either employed or self-employed. Participants felt that work commitments were a hindrance to patients' adherence level to the clinic and home-based exercise programs. They perceived that the patients were sometimes unable to honor their clinic appointments due to work engagements or being unable to get authorization from their employers to go to the clinic. Home-based programs were also affected due to working long hours and arriving home late and tired hence unable to comply with the program. Participants had this to say:

"…in our African or global setting, people are very busy where we work 8-5p.m therefore when they get home, they are tired and cannot do the exercises…" (PT1)

"…some patients are still employed, and some of their employers are strict when it comes to follow up on the clinics. …" (PT5)

"Most of these patients don't honor their appointments because of work. They get tied up and miss their appointments (PT7)

4.2.3.3 Lack of appropriate patient education

Physiotherapists in the study perceived a lack of appropriate patient education on their part to affect patient adherence levels. They believed that since the patients do not understand the condition and the management thereof, then complying is still a problem. The need to communicate to the patients on the importance of rehabilitation was perceived as key to fostering adherence. Two sub-themes came out of the theme and were intertwined. These were:

- **Poor delivery of instructions and lack of communication**

Poor delivery of instructions and lack of communication ranged from explaining the frequency of appointments patients were to adhere to and education on the type of exercises to be performed. Lack of this led to the patients not taking their appointment attendance seriously and not accurately performing the exercises. Some participants said that:

"…therapists' issues can be cases like poor instructions. I did not tell them clearly when their next session is due or I gave them instructions of exercises to do that did not make sense…" (PT1)

"…if the patient is not well educated on the importance of therapy and the rehabilitation process, they might just lose interest in the middle of the treatment, which is not very nice…." (PT6)

"If you do not educate a patient plus their partners, then you end up not achieving much. If there is no patient education on the first day you encounter the patient, there will be lack of seriousness." (PT7)

4.2.3.4 Distance to the facility (barrier)

This theme had two sub-themes that the researcher merged due to overlapping concepts. These were:

(a) Location of facility

(b) Status of facility

Kenyatta National Hospital is Kenya's teaching and referral facility located in the country's capital city. The hospital handles a vast array of cases in the country, and the physiotherapy clinic is no exception. Participants noted that quite a number of the patients came from far-flung areas to attend their rehabilitation sessions. The large influx of patients is observed at the hospital despite the country having other government county and sub-county hospitals with specialized clinics to cater to the citizens. There is a belief among the patients that the facility being a referral institution is the only place they can receive quality treatment. Due to this, some are not able to be consistent with their programs at the clinic as a result of a lack of money for transport because of the long-distance. Below is a sample of participants' views:

"We deal with a high number of patients from within the city and outside since the facility is a referral hospital. So there are challenges for those coming from far (PT2)

"...people have to move from their localities which are at a far distance to assess the services, which is a challenge..." (PT5)

"Most of our patients believe that this is where they need to be treated. So a patient who is very far will opt to come for therapy probably once a month or once in two months, and this is not really encouraged."(PT6)

4.2.3.5 Patient education (strategy)

The importance of educating patients before the commencement of treatment was a theme that reverberated among most participants. Respondents felt that discussing the whole rehabilitative process with the patients first was crucial so that they understand what they are affected with and be active players on their management. Also, discussing the plan of management, what the patients' and clinicians' expectations are, and outcomes of treatment were essential. Some

participants had this to say:

"Patient education is something we need to improve on to get the patient and myself on the same page for good outcomes..(PT1)

"...do very nice patient education for the patients to know the benefits of coming to the clinic like every day, what are the benefits of doing my exercises..." (PT5)

"...you educate them, you explain yourself, you explain your aims, where you are, where you are planning to go. That is only possible if you and the patient sat together and discuss and forge ahead..." (PT7)

Patient education had two sub-themes emanating. These were:

- Utilization of exercise program printouts

The use of printed pamphlets that had pictures of exercises was reported by participants as an aid that would help the patients better adhere to their exercises at home. Participants believed that the images on the pamphlets would enable the patients to perform the exercises correctly hence improve adherence. Participants had this to say:

"...better yet print out these programs so they know I'm supposed to be doing these exercises, they will have a tangible memory of what they should do. Those are wonderful ways of patient adherence approach..." (PT1)

"....yeah the fliers do help them especially when giving the home programs (PT4)

"...we try to give them fliers so that they observe what is in the flyer and repeat in case they forgot the routine..." (PT6)

- Application of technology

In this study, participants suggested modern-day technology as a facilitator to patient compliance. Mobile phone applications that had exercise programs tailor-made for each patient were views shared as well as recording the type of exercises to be done. Also, participants

reported that the setting of alarms to remind the patients the time to perform their home exercises is advised. Samples of suggestions made were:

"…take a video of them doing that exercise, and you tell them like in the evening do this exercise so when they go back home and look at their phones, they will know this is the exercise I'm supposed to do." (PT1)

"…they can also set an alarm for morning or before they sleep to remind them that it is exercise time…" (PT3)

"There are mobile applications for exercises that I use with my patients to help them with their programs. They are helpful" (PT5)

4.2.3.6 Support/ encouragement (strategy)

Participants shared that the patients needed to get support from their families to comply with their clinic-based and home-based exercise programs. According to the clinicians, adherence to home-based rehabilitation programs would be fostered more if family members monitored what the patients were to do while away from the clinic and encourage them. Participants stated:

"We do encourage family to accompany patients to their physiotherapy sessions. It allows us to educate them all on things to do at home. It kind of motivates the patients…"(PT3)

"…the elderly ones usually come with their children or relatives, so we try to let their relatives watch as we demonstrate and give the exercises, and we make sure the relative is following up from home…" (PT6)

*"…we need to encourage patients and family members because this patient is in pain…so they need somebody to give them the morale, to keep supporting them. So the support they need is very good from family members…" (*PT*7)*

4.2.3.7 Effect of non-adherence to rehabilitation programs.

(a) To the patient

- Poor treatment outcomes

The respondents gave their views on the effect of non-adherence to treatment experienced by the patients under their care. Most of them reported that there was an unsatisfactory outcome to treatment by the patients who were not consistent with their exercise programs. Poor treatment outcomes necessitated them to give more sessions than was anticipated to meet the set objectives. An increase in the number of treatment sessions further led to financial implications on the patients. Some of the views shared include:

"…to the patient the biggest thing to them I think is poor outcomes…if they are not getting any better, they have to get more sessions of physiotherapy so it is a costly affair as well" (PT1)

"…patients who do not adhere to the program stay longer in the department within the treatment period, we also find negative financial implications to the patients here." (PT2)

"…the patient does not adhere to what you agreed to do, so we end up getting not good results…" (PT5)

(b) To the Physiotherapist

- Frustration/ Demotivation

Poor treatment outcomes as a result of patient non-adherence led most of the participants to feel demotivated as they did not achieve the set goals agreed upon between them and their patients at the beginning of the rehabilitation programs. Clinicians reported that prolonged patient clinic attendance due to an increase in their appointments led them to grapple with an increase in the number of patients to attend to as they had new cases daily, which could be frustrating. Respondents had this to say:

"…you can imagine having seen a patient for six months and there is no improvement…it is frustrating." (PT1)

"It is very frustrating because we keep going two steps forward, three steps back, so that's a setback to healing of this patient" (PT3)

"as a therapist of course you feel abit demotivated to look at the patient because you have set goals for this particular patient…" (PT6)

CHAPTER FIVE:
DISCUSSION, CONCLUSION, AND RECOMMENDATION.

5.0 Introduction

In this chapter, the discussion highlights the study objectives and results in line with existing global literature. The researcher emphasizes the results of the qualitative phase of the study. The purpose is because the study design adopted was mixed methods with a partial mixed sequential dominant status-qualitative design. The chapter also discusses the application of the conceptual framework on the study findings. Also, a summary of the study, as well as the strengths and limitations encountered during the study, are highlighted. The chapter finalizes with the conclusion and recommendations based on the findings.

5.1 Clinical profile of patients affected with Osteoarthritis

The first objective in this study sought to determine the clinical profile of patients affected with osteoarthritis on rehabilitation programs in Nairobi County, Kenya. The clinical profile comprised of the participants' socio-demographic characteristics, activity, and functional performance. In this study, results showed that the sample population was dominated by a female populace, most of whom were married. This is in line with global studies that have identified the female gender having osteoarthritis than the male (Nelson, 2017). One of the reasons for this is that females tend to have more weight than their male counterparts predisposing them to osteoarthritis due to overloading of the weight bearing joints of the body.

Also, the most popular age group in this study affected with osteoarthritis was between 50-59 years. The results were similar to a study carried out among Vietnamese patients with arthritis to assess their health-related quality of life using the AIMS2 questionnaire. The findings showed that the majority of participants were women aged between 50-59 years and married (Vo, Duong, Vu, Pham, & Vo, 2018). The similarity in the age group of 50-59 years may be due to the possibility of individuals being in the active phase of their lives before retirement for those in active employment before the beginning of a sedentary life in the higher age groups. In addition, the similarities may probably be due to the nature of the research designs incorporated in the methodologies. In this study, mixed designs were used with the quantitative phase of data collection using a standardized questionnaire that required the integration of a cross-sectional design. The study carried out by Vo et al. (2018) in Vietnam utilized a cross-sectional study design to come up with the profile of study participants. Also, both sample populations had

similar characteristics since the population under study had to be affected by osteoarthritis. However, a study conducted in Spain that looked into the clinical profile, level of affection, and therapeutic management of osteoarthritis patients in primary care concluded that osteoarthritis involvement was among females who were more than 65 years of age (Carou, Fernández, Díaz, & Santos, 2015). There is a disagreement between the findings of this study and the study by Carou et al. (2015). The dissimilarity could be attributed to the study in Spain having a study population of participants derived from fourteen health centers from several autonomous regions, while the study in Kenya had a study population from one autonomous region. Consequently, a larger sample size was utilized by Carou et al. (2015), which was one thousand, four hundred, and thirty-four participants compared to the sample size used in this study, which was one hundred and thirty-eight participants. Furthermore, the characteristics of participants from both studies were different, which may have contributed to dissimilarity in the findings between the two studies.

In this study, the researcher sought activity and functional capabilities of participants that included mobility, walking and bending, arm function, hand and finger function as well as self-care tasks. The reason being the study included participants that were affected by all types of joint-specific osteoarthritis. However, global studies that have been employed by other researchers using the AIMS2 questionnaire include study participants with one joint-specific type of osteoarthritis to measure their functional abilities. Therefore, in this study concerning the performance of tasks using the upper extremities and hands to produce fine motor skills, the results revealed that most of the respondents were able to perform tasks that necessitated the use of their upper limbs and hands. The results were in contrast to a study carried out to compare the burden of disease, the measure of pain, and health-related quality of life among HOA patients using the AIMS2 questionnaire. The findings concluded that the participants had high levels of pain, thus affected the performance of tasks that required the use of their hands, such as personal grooming and hygiene (Slatkowsky-Christensen, Mowinckel, & Kvien, 2009). There is a notable disagreement between the findings of the two studies. First, the study in Kenya had a study population that included participants with all forms of joint-specific osteoarthritis. However, the study by Christensen et al. (2009) included a study population that had participants who were only affected by hand osteoarthritis; thus, the majority would report difficulties in performing activities that required the use of their hands. Second, there were significant differences in the

characteristics of the study participants. The study conducted by Christensen et al. (2009) had female participants in comparison to this study that had both genders taking part in the study.

5.2 Barriers and facilitators regarding adherence to rehabilitation programs.

In this study, the second and third objectives elicited views from patients and physiotherapists on the barriers and facilitators to patient adherence towards physiotherapy rehabilitation programs.

5.2.1 Financial Constraints

Kenya is a third world country that has its share of teething problems that affect the country. Some of the problems include a low socioeconomic status among most citizens and a public health care system that is grappling to cater to the people. Furthermore, the country still grapples with a high percentage of people who require access to health care due to various conditions. In this study, the principal researcher discovered that financial implications were a barrier to patient adherence towards physiotherapy rehabilitation programs. Some of the participants expressed difficulties in maintaining consistency with their programs due to a lack of money. The lack of money experienced was in concurrence with a study by Moore et al., 2020 which stated that patient adherence to physiotherapy programs is affected by financial constraints. Financial constraints range from lack of money to pay for treatment lack of health insurance to ensure access to treatment. This is a common issue in developing nations and has had repercussions on the productivity levels of these nations because a section of the workforce is ailing and unable to meet their health needs. The findings were also in agreement with a systematic review carried out by Jack et al. (2010), who also identified socio economic constraints as a barrier to patient adherence towards treatment. It was reported that health costs for chronic conditions such as osteoarthritis overburden families who are then forced to prioritize on needs that are important. This is a common phenomenon in developing nations more so African countries where families are forced to sell their livelihood to cater for healthcare costs. This in the long run is not feasible as the families end up lacking funds for health care and other basic needs. Therefore, the agreement in the study findings with global evidence is attributed to the nature of osteoarthritis requiring long term rehabilitative care, thus leading to a financial burden to those affected globally.

5.2.2 Pain intensity

Pain is one of the major symptoms of osteoarthritis. The pain can reach excruciating levels,

which in turn has been observed to lead to depressive symptoms among the patients affected with the condition. Some of the patients who took part in this study reported that episodes of pain led them not to honor their appointments for the physiotherapy rehabilitation programs. Participants also added that increased pain made them not perform their home-based physiotherapy programs as well. The findings were in line with a study that sought to determine the barriers to exercise treatment adherence in patients with knee OA. The study discovered that a patient's discomfort to pain contributed to non-compliance with treatment (Kaka & Maharaj, 2017). Some patients believe that the physiotherapy rehabilitation programs exacerbated their pain levels thus reduced their adherence level. Teo et al.,(2020) further reported that an increase in pain during exercise was a barrier to adherence. This is an observation that is common among patients with osteoarthritis who tend to avoid performing prescribed exercises due to the fear of pain. The agreement observed among these studies implies that osteoarthritis pain symptom is a major impediment to physiotherapy rehabilitation programs that are experienced by all those affected globally irrespective of the diversity of the population. There is need to educate the patients on the importance of physiotherapy rehabilitation programs in relieving the pain symptom to improve on adherence.

5.2.3 Commitments

In this study, work commitments proved to be a barrier toward patient adherence to the clinic and home-based physiotherapy rehabilitative programs. The principal researchers observed that the majority of the participants were in either formal or informal employment. The operating work schedules for the majority of those employed are from morning to early evening. Patients reported that getting authorization from their employers to attend their physiotherapy rehabilitation programs was not always fruitful. Productivity demands from employers led some of the participants not to have time to even adhere to their home-based physiotherapy rehabilitation programs due to working late hours. The findings were in concurrence with Jack et al. (2010), who reported that work plans and a lack of time affected adherence to treatment. With the economic demands placed on the people globally to be productive, the work environment continues to subject individuals to longer working hours. Persons affected with osteoarthritis are not exempt from this. They clearly do not have time allocated for their treatment on occasion thus this affects their adherence levels negatively even when not intended. Therefore, the agreement between the two studies shows that global trends involving work commitments

continue to have adverse effects on patient adherence to physiotherapy rehabilitation programs.

5.2.4 Rundown gymnasium equipment

In this study, the physiotherapy gymnasium was an important location of the physiotherapy rehabilitation programs. The gymnasium is equipped with various exercise equipment. The patients affected with osteoarthritis have their programs implemented in the physiotherapy gymnasium. The participants in this study encountered problems while using the gymnasium equipment. They reported to the principal researcher that the state of some of the machines was rundown. The participants' thus avoided going to the gymnasium to perform their exercises because of the discomfort experienced when using the physiotherapy gymnasium equipment. Papandony et al., (2017) stated that adherence to clinic-based physiotherapy rehabilitation programs had been linked to the clinic environment. A clean, well equipped modernized physiotherapy clinic with professional staff increases patient adherence levels. Brakke et al., (2012) added on to this when they said that higher levels of adherence had been reported for patients who perceive the clinic atmosphere to be comfortable. In this study, some of the participants were not able to enjoy the clinic atmosphere because it was not conducive hence were not adherent to their physiotherapy rehabilitation programs. Therefore, the global findings show dissimilarity between them and the main study augmenting the importance of a conducive clinical environment to foster patient adherence towards physiotherapy rehabilitation programs in Kenya.

5.2.5 Improved health status

Osteoarthritis is a degenerative disease that is chronic and leads to disability and reduced quality of life. Therefore, physiotherapy rehabilitative care in osteoarthritis management aims to improve the overall health status of persons affected by the condition. In this study, the patients reported an overall improvement in their health status. Improved health status was achieved through the performance of exercises demonstrated and taught to the patients by the physiotherapists. The exercises aided in the reduction of pain symptoms. This finding was in agreement with a study by Gay, Eschalier, Levyckyj, Bonnin, & Coudeyre, (2017) which indicated that patients who engage in regular exercise are also less likely to experience progressive osteoarthritis symptoms. Furthermore, Jansons et al., (2018) added that engaging in exercise programs leads to a reduction of symptoms and improved function. Improved health status motivated some of the patients to adhere to their physiotherapy rehabilitation programs.

The similarities in the findings for the current and global studies show that rehabilitation programs are incorporated utilizing similar treatment protocols such as exercises have similar results across the world populations.

5.2.6 Support

A support system for the patient and motivation from the physiotherapist are important in fostering adherence to rehabilitation programs. Also, the patients' wish to be accompanied by a relative or friend during rehabilitation improves adherence. In this study, support from the clinicians, family, and other persons affected with the same condition were strategies reported by the patients to improve on adherence to exercise programs. Participants elaborated that their families provided the needed support in terms of finances, accompanying them to the clinic and supervising their home exercise programs. In the physiotherapy clinic, group exercise programs were also conducted in the gymnasium, which proved to be a form of motivation for the participants. Given this, Moore et al.,2020 reported that the patient's wish to be accompanied by someone during rehabilitation would improve adherence. Furthermore, a study by Jack et al. (2010) found that organizing rehabilitation programs that comprise support and social contact is another approach to help in patient adherence. Also, Bennell, (2014) reported that group-based rehabilitation programs in the communities might provide the patients with social interaction and encouragement to continue their programs as well as the involvement of partners and family members in the rehabilitation process to motivate the patient may help in sustaining adherence. Therefore, the participants in this study, Moore et al. (2001), Jack et al. (2010), and Bennell, (2014) agree on the need for a support system for the patients on physiotherapy rehabilitation programs to improve adherence.

5.2.7 Appropriate patient education

Continuous patient education is an important aspect in the management of persons affected with osteoarthritis due to the chronic nature of the condition. Appropriate education ensures the patients can have a clearer understanding of the condition and how to manage the symptoms of osteoarthritis so as to adhere to their physiotherapy rehabilitation programs and enjoy a better quality of life. Clinicians in this study reported a lack of proper education contributed to non-adherence. At the same time, they advocated for intensive patient education so that the non-compliance rate observed is reduced. Patient education is to be facilitated by providing printed leaflets that demonstrate the type of exercises to be performed as well as the use of mobile

applications of exercise programs. Furthermore, the physiotherapists suggested the use of diaries to help the patients remember when to perform their home exercise programs. The proposition was in concurrence with Zhang (2010), who stated that the health professional has to provide the patient with information about the condition, its symptoms, treatment, and self-management strategies. Providing verbal and written instruction and checking patients' ability to remember instructions given may improve exercise adherence as well as a clear description of the exercise program to maintain motivation (Rivera-Torres et al., 2019). These global findings are in concurrence with the views shared by the participants. The outcome from the studies shows that the clinical profile of patients affected with osteoarthritis is analogous around the world. Thus, the patients may benefit from the strategies that are being utilized in other populations.

5.3 Conceptual framework

In this study, the Donabedian framework was applied to examine the quality of physiotherapy rehabilitation programs. An observation of the SPO model interaction with each other and the effect they have on patients with osteoarthritis adherence levels to physiotherapy rehabilitation programs was noted. The structure comprised of the hospital, physiotherapy clinic, physiotherapists, and the qualifications of the clinicians attending to the patients. The process examined the interactions between the patients and physiotherapists with a concentration on delivery of treatment, patient education, and the therapeutic alliance and their effect on patient adherence. The outcome examined the effect of the physiotherapy rehabilitation program on patients affected with osteoarthritis adherence levels.

In this study, with regard to the structure component in the SPO model, the hospital setting as a whole was conducive. The hospital is a referral facility with clinicians who are specialists to provide specialized treatment in various health disciplines hence handles a high patient load. The physiotherapy clinic was not exempt from this as the patients receiving physiotherapy services came from various parts of the city and neighboring counties. Most of the physiotherapists at the outpatient clinic had an added speciality of having the skills and knowledge of treating musculoskeletal disorders. However, the physiotherapy gymnasium faced some challenges in that some of the equipment that the patients required to assist them in performing their exercise programs was faulty and reported to be outdated. This had a negative effect on their adherence level as some reported opting not to attend their session if it was primarily scheduled for an

exercise treatment session on a particular day.

In the process component, there was good delivery of treatment and this was reinforced by a positive therapeutic alliance between the physiotherapists and the patients that came out in the study findings. Some of the patients who took part in the study reported that they received encouragement and support from their physiotherapists to be consistent with attendance to their physiotherapy rehabilitation programs and home based physiotherapy program. This enabled them to adhere to their physiotherapy rehabilitation programs. However, the physiotherapists believed that patient education on their part needs to be enhanced fully to improve the adherence levels. They reported that it is an essential pillar of management in physiotherapy practice that involves informing the patient about their condition, the management process and the importance of adhering to it so that the patients understand and comply with their physiotherapy rehabilitation programs.

In this study, the general outcome of the physiotherapy rehabilitation programs was an improved health status experienced by the patients. There was reduction in pain and an improvement of functional capabilities as reported by the participants. This encouraged the patients to continue adhering to their programs both under supervision of their physiotherapists and at home with support from family.

The Donabedian framework in this study has highlighted how the structure, process and outcome have interacted to examine the quality of physiotherapy rehabilitation programs. There were challenges observed in the structure with regard to the physiotherapy gymnasium having faulty and outdated exercise equipment. In the process category, patient education was a pillar of management that needed to be practiced extensively to improve patients' adherence to physiotherapy rehabilitation programs. Despite these challenges, there was a positive outcome reported by the participants affected with osteoarthritis regarding the effect of physiotherapy rehabilitation programs. Therefore, the Donabedian framework was appropriate for this study as it has shed light to the recommendations that require action plans on the need for the structure and process components to be improved.

5.4 Summary of the study

The purpose of the current study was to explore the barriers and facilitators regarding patient adherence towards rehabilitation services in the management of osteoarthritis in Nairobi, Kenya.

In order to accomplish this, the study first had to determine the clinical profile of patients affected by osteoarthritis. Second, the principal researcher had to explore patient-reported barriers and facilitators towards rehabilitation programs as well as explore physiotherapists' perceptions of patient adherence towards rehabilitation programs. The study considered the literature on the prevalence of osteoarthritis, conservative management of the condition, and the barriers and facilitators regarding patient adherence to clinic-based and home-based rehabilitation programs.

Researchers have stated that osteoarthritis is a common musculoskeletal condition that affects the aging populace leading to functional disability and low quality of life. Women account for the majority of those affected globally. Global studies have reported conservative treatment as the first-line approach in the management of osteoarthritis that involves the use of physiotherapy interventions of which exercise programs are a significant component in rehabilitation. Researchers have reported positive results concerning the use of conservative treatment in managing the symptoms of osteoarthritis. Despite this, poor adherence to rehabilitation programs is still observed. Health researchers have identified barriers and facilitators that affect adherence to rehabilitation programs unique to each population worldwide. Barriers reported affecting patient adherence includes pain, adverse weather conditions, commitments, and financial constraints, to mention. The facilitators identified that affect patient adherence include support and a positive relationship between the clinician and patient.

A mixed-methods approach was used to meet the objectives of this study. The quantitative phase results indicated a high prevalence of osteoarthritis among women in the study population, with the most popular age group being between 50-59 years that is consistent with existing literature. Also, a majority of the participants within the age group of 50-59 years were mobile and able to carry out their day to day activities. However, tasks that required walking longer distances and performing strenuous work were a challenge. Also, the participants were able to perform tasks that required the use of their upper extremities without difficulty.

The qualitative phase that utilized one on one interviews to meet the aim of the study had participants who were patients affected with osteoarthritis receiving rehabilitation programs at the clinic and on home exercise programs. In addition, physiotherapists attending to the patients shared their perceptions of patient adherence. There were overriding themes between the two groups of participants concerning barriers and facilitators to patient adherence. These were

financial constraints, commitments, and support. Also of importance among physiotherapy clinicians as a facilitator to adherence was the need to improve on patient education regarding osteoarthritis and the management process.

5.5 Strength of the study

The mixed-method design enabled the principal researcher to obtain a pool of participants from the quantitative phase to take part in the qualitative phase, which was the main focus of the entire study. Also, this is assumed to be the first study to be carried out in the African continent thus the findings have a form of originality and creates a foundation for future research to be conducted in other African countries and developing countries in the world. The use of the Donabedian framework demonstrated the relationship of the SPO model in the context of the study which was directly utilised in the research to achieve its purpose.

5.6 Limitations of the study

The principal researcher had to rely on literature from global studies that were out dated because of paucity of novel information regarding patients affected with osteoarthritis adherence levels towards physiotherapy rehabilitation programs. Information available could not accord the researcher a chance to carry out a critical analysis because there is a probability that with advancements in the field of health, there could be new information regarding patient adherence levels that are not yet documented.

The principal researcher's first study objective was to determine the clinical profile of patients affected with osteoarthritis by the use of data capture sheets and a standardized questionnaire. However, the use of secondary data collection that required important information such as the number of clinic appointments, the management of the patients' by other health care professionals, and adherence level to be derived from patient records was not achieved. The reason being that most of the data was not available in the patient files. Besides this, through the use of the questionnaire, the data collected was subjected to bias and misreporting by participants.

The use of the AIMS2 questionnaire also led the principal researcher to omit analysing sections such as household tasks, social activity and work as they had no strong bearing on the clinical profile of the participants despite there being data entry on the three elements. It was also difficult for the researcher to obtain studies that utilized the AIMS2 questionnaire in determining

the clinical profile of persons affected with osteoarthritis. Most global studies that utilized the AIMS2 questionnaire focussed on one joint specific type of osteoarthritis and its effect on participants' functional abilities.

Furthermore, during the qualitative phase of the study, in the first interview process, data was collected from participants affected with osteoarthritis who were available during the duration of data collection to take part in the patient interviews. The number of participants was low because most willing participants could communicate effectively in their local dialects as compared to the Kenyan national languages of English and Swahili. Kenya has 42 tribes with 42 dialects so it was not feasible to translate the interview guides in all these dialects and the principal researcher is from one dialect as well. The researcher had to rely on the participants who met the criteria with regard to the two languages.

In this study, there were no interviews conducted to participants who had defaulted in their appointments. The participants who missed the interviews could probably have been experiencing other challenges compared to the other respondents who availed themselves for the study. Therefore, there is a need to follow up on the participants who defaulted in the study. In the second interview process, participants who were physiotherapists skilled in the management of musculoskeletal conditions were low. Their contribution was vital in this study thus the principal researcher had to rely on the available number.

5.7 Recommendations

The recommendations are based on the study findings, which will be valuable in improving patient adherence to rehabilitation services. Given the experiences shared by the participants, the following recommendations are made:

(a) Health care providers

- Patient education regarding osteoarthritis and the management should be discussed with the patients to improve awareness regarding the condition. Education can be disseminated through the use of printed pamphlets in simplified language to allow the patients to understand the content. Patient caretakers and relatives should also be involved in the educative process to understand better what their relations are affected with and support them better.
- Demonstrations on the type of exercises the patients should perform are to be carried out by the physiotherapists with the patients replicating on the same.

- Physiotherapists are advised to have diaries to record the patients seen on rehabilitation programs daily at the clinic. Patients who miss their appointments would be easily identified, and efforts would then be made to discover why they are not adhering to treatment.
- Also, patients on home programs should be instructed to perform the exercises they do away from the clinical setting. Accurate performance of exercises and being able to remember the exercises are pointers to adherence. On the other hand, poor memory is an indicator of non-compliance with the home exercise programs.
- Physiotherapists are encouraged to improve on record-keeping allowing for better evaluation of the treatment interventions used and if they are useful.

(b) Policy

- The government of Kenya should consider permitting the national health insurance fund to cater for the outpatient services of the citizens to ease the financial burden the patients encounter while assessing treatment.
- The government should ensure that upgrading the gymnasium equipment at the Kenyatta National Hospital physiotherapy gymnasium since this is a referral facility. It should be a matter of priority so that the patients have a modernized environment for their clinic-based programs, hence fostering adherence to treatment.

References

Abbott JH, Robertson MC, Chapple C, Pinto D, Wright AA, Leon de la Barra S, et al., (2013) Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee: a randomized controlled trial. 1: clinical effectiveness. Osteoarthritis & Cartilage. 21: 525–534.

Agha S, Do M. The quality of family planning services and client satisfaction in the public and private sectors in Kenya. International Journal of Quality in Health care. 2009; 21:87-96.

Al-Eisa, E. (2010). Indicators of adherence to physiotherapy attendance among Saudi female patients with mechanical low back pain: A clinical audit. *BMC Musculoskeletal Disorders*, *11*. https://doi.org/10.1186/1471-2474-11-124

Ashkavand, Z., Malekinejad, H., & Vishwanath, B. S. (2013). The pathophysiology of osteoarthritis. *Journal of Pharmacy Research*, *7*(1), 132–138. https://doi.org/10.1016/j.jopr.2013.01.008

Bennell, K. (2013). Physiotherapy management of hip osteoarthritis. *Journal of Physiotherapy*, *59*(3), 145–157. https://doi.org/10.1016/S1836-9553(13)70179-6

Bijlsma, J. W., Berenbaum, F., & Lafeber, F. P. (2011). Osteoarthritis: an update with relevance for clinical practice. *Lancet*, *377*. https://doi.org/10.1016/S0140-6736(11)60243-2

Bollen, J. C., Dean, S. G., Siegert, R. J., Howe, T. E., & Goodwin, V. A. (2014). A systematic review of measures of self-reported adherence to unsupervised home-based rehabilitation exercise programmes, and their psychometric properties. *BMJ Open*, *4*(6). https://doi.org/10.1136/bmjopen-2014-005044

Braghin, R. de M. B., Libardi, E. C., Junqueira, C., Nogueira - Barbosa, M. H., & de Abreu, D. C. C. (2017). Exercise on balance and function for knee osteoarthritis: A randomized controlled trial. *Journal of Bodywork and Movement Therapies*, *22*(1), 76–82. https://doi.org/10.1016/j.jbmt.2017.04.006

Brakke, R., Singh, J., & Sullivan, W. (2012). Physical Therapy in Persons With Osteoarthritis. *PM and R*, *4*(5 SUPPL.), S53–S58. https://doi.org/10.1016/j.pmrj.2012.02.017

Bunting, J. W., Withers, T. M., Heneghan, N. R., & Greaves, C. J. (2020). Digital interventions for promoting exercise adherence in chronic musculoskeletal pain: A systematic review and meta-analysis. *Physiotherapy*. https://doi.org/10.1016/j.physio.2020.08.001

Castaño Carou, A., Pita Fernández, S., Pértega Díaz, S., & de Toro Santos, F. J. (2015). Clinical Profile, Level of Affection and Therapeutic Management of Patients With Osteoarthritis in Primary Care: The Spanish Multicenter Study EVALÚA. *Reumatología Clínica (English Edition)*, *11*(6), 353–360. https://doi.org/10.1016/j.reumae.2015.03.007

Chan, D., & Can, F. (2010). Patients' adherence/compliance to physical therapy home exercises. *Fizyoterapi Rehabilitasyon*, *21*(3), 132–139.

Creswell, J. W., & Ssp, N. (2007). *An Introduction to Mixed Methods Office of Qualitative and Mixed Methods Research*.

Creswell JW, Clark P, V. L., Creswell, J. W. J. W., Plano Clark, V. L. V. L., Clark, V. L. P. P., & Plano Clark, V. L. V. L. (2007). Designing and Conducting Mixed Methods Research. In *Saga*. https://doi.org/10.1111/j.1753-6405.2007.00096.x

Davis, A. M. (2012). Osteoarthritis year in review: Rehabilitation and outcomes. *Osteoarthritis and Cartilage*, *20*(3), 201–206. https://doi.org/10.1016/j.joca.2012.01.006

Gay, C., Eschalier, B., Levyckyj, C., Bonnin, A., & Coudeyre, E. (2017). Motivators for and barriers to physical activity in people with knee osteoarthritis: A qualitative study. *Joint Bone Spine*. https://doi.org/10.1016/j.jbspin.2017.07.007

Gignac, M. A. M., Cao, X., McAlpine, J., & Badley, E. M. (2011). Measures of disability: Arthritis Impact Measurement Scales 2 (AIMS2), Arthritis Impact Measurement Scales 2-Short Form (AIMS2-SF), the Organization for Economic Cooperation and Development (OECD) Long-Term Disability (LTD) Questionnaire, EQ-5D, World Hea. *Arthritis Care and Research*, *63*(SUPPL. 11), 308–324. https://doi.org/10.1002/acr.20640

Gill, L., Cassia, F., Cameron, I. D., Kurrle, S., Lord, S., Fairhall, N., … Langron, C. (2014). Exploring client adherence factors related to clinical outcomes. *Australasian Marketing Journal*, *22*(3), 197–204. https://doi.org/10.1016/j.ausmj.2014.08.006

Glyn-Jones, S., Palmer, A. J. R., Agricola, R., Price, A. J., Vincent, T. L., Weinans, H., & Carr, A. J. (2015). Osteoarthritis. *The Lancet*, *386*(9991), 376–387. https://doi.org/10.1016/S0140-6736(14)60802-3

Green, J. A., Hirst-Jones, K. L., Davidson, R. K., Jupp, O., Bao, Y., MacGregor, A. J., … Clark, I. M. (2014). The potential for dietary factors to prevent or treat osteoarthritis. *Proceedings of the Nutrition Society*, *73*(2), 278–288. https://doi.org/10.1017/S0029665113003935

Hendrick, P., Mani, R., Bishop, A., Milosavljevic, S., & Schneiders, A. G. (2013). Therapist

knowledge, adherence and use of low back pain guidelines to inform clinical decisions–a national survey of manipulative and sports physiotherapists in New Zealand. *Manual therapy*, *18*(2), 136-142.

Iidaka, T., Muraki, S., Akune, T., Oka, H., Kodama, R., Tanaka, S., … Yoshimura, N. (2016). Prevalence of radiographic hip osteoarthritis and its association with hip pain in Japanese men and women: The ROAD study. *Osteoarthritis and Cartilage*, *24*(1), 117–123. https://doi.org/10.1016/j.joca.2015.07.017

Iolascon, G., Gimigliano, F., Moretti, A., de Sire, A., Migliore, A., Brandi, M. L., & Piscitelli, P. (2017). Early osteoarthritis: How to define, diagnose, and manage. A systematic review. *European Geriatric Medicine*, *8*(5–6), 383–396. https://doi.org/10.1016/j.eurger.2017.07.008

Jack, K., McLean, S. M., Moffett, J. K., & Gardiner, E. (2010). Barriers to treatment adherence in physiotherapy outpatient clinics: A systematic review. *Manual Therapy*, *15*(3), 220–228. https://doi.org/10.1016/j.math.2009.12.004

Jansons, P. S., Robins, L., Haines, T. P., & O'Brien, L. (2018). Barriers and enablers to ongoing exercise for people with chronic health conditions: Participants' perspectives following a randomized controlled trial of two interventions. *Archives of Gerontology and Geriatrics*, *76*(February), 92–99. https://doi.org/10.1016/j.archger.2018.02.010

Johnson, V. L., & Hunter, D. J. (2014). The epidemiology of osteoarthritis. *Best Practice and Research: Clinical Rheumatology*, *28*(1), 5–15. https://doi.org/10.1016/j.berh.2014.01.004

Josephson, I., Woodward-Kron, R., Delany, C., & Hiller, A. (2015). Evaluative language in physiotherapy practice: How does it contribute to the therapeutic relationship? *Social Science and Medicine*, *143*, 128–136. https://doi.org/10.1016/j.socscimed.2015.08.038

Kaka, B., & Maharaj, S. S. (2017). Factors affecting adherence to exercises treatment among knee osteoarthritis patients attending physiotherapy treatment. *Physiotherapy*, *103*, *Suppl*, e32. https://doi.org///doi.org/10.1016/j.physio.2017.11.193

Kauffman, T. L., & Haydt, R. (2014). Chapter 24 - The geriatric spine. In T. L. Kauffman, R. Scott, J. O. Barr, & M. L. Moran (Eds.), *A Comprehensive Guide to Geriatric Rehabilitation (Third Edition)* (pp. 164–170). https://doi.org///doi.org/10.1016/B978-0-7020-4588-2.00024-3

Kidd, M. O., Bond, C. H., & Bell, M. L. (2011). Patients' perspectives of patient-centredness as

important in musculoskeletal physiotherapy interactions: A qualitative study. *Physiotherapy*, *97*(2), 154–162. https://doi.org/10.1016/j.physio.2010.08.002

Kobayashi, S., Pappas, E., Fransen, M., Refshauge, K., & Simic, M. (2016). The prevalence of patellofemoral osteoarthritis: a systematic review and meta-analysis. *Osteoarthritis and Cartilage*, *24*(10), 1697–1707. https://doi.org/10.1016/j.joca.2016.05.011

Lawford, B. J., Delany, C., Bennell, K. L., & Hinman, R. S. (2018). "I was really sceptical...But it worked really well": a qualitative study of patient perceptions of telephone-delivered exercise therapy by physiotherapists for people with knee osteoarthritis. *Osteoarthritis and Cartilage*. https://doi.org/10.1016/j.joca.2018.02.909

Lee, F. K. I., Lee, T. F. D., & So, W. K. W. (2016). Effects of a tailor-made exercise program on exercise adherence and health outcomes in patients with knee osteoarthritis: A mixed-methods pilot study. *Clinical Interventions in Aging*, *11*, 1391–1402. https://doi.org/10.2147/CIA.S111002

Liu, S. W., Singer, S. J., Sun, B. C., & Camargo, C. A. (2011). A conceptual model for assessing quality of care for patients boarding in the emergency department: Structure-process-outcome. *Academic Emergency Medicine*, *18*(4), 430–435. https://doi.org/10.1111/j.1553-2712.2011.01033.

Marks, R. (2012). Knee osteoarthritis and exercise adherence: a review. *Current aging science*, *5*(1), 72-83.

Mobasheri, A., & Batt, M. (2016). An update on the pathophysiology of osteoarthritis. *Annals of Physical and Rehabilitation Medicine*, *59*(5–6), 333–339. https://doi.org/10.1016/j.rehab.2016.07.004

Moore, A. J., Holden, M. A., Foster, N. E., & Jinks, C. (2020). Therapeutic alliance facilitates adherence to physiotherapy-led exercise and physical activity for older adults with knee pain: a longitudinal qualitative study. *Journal of Physiotherapy*, *66*(1), 45–53. https://doi.org/10.1016/j.jphys.2019.11.004

Morrey, B. F. (2018). 76 - Primary Osteoarthritis of the Elbow (B. F. Morrey, J. Sanchez-Sotelo, & M. E. Morrey, Eds.). *Morrey's the Elbow and Its Disorders (Fifth Edition)*, pp. 722–730. https://doi.org///doi.org/10.1016/B978-0-323-34169-1.00076-0 "

Nelson, A. E. (2017). Osteoarthritis year in review 2017: Clinical. *Osteoarthritis and Cartilage*, 1–7. https://doi.org/10.1016/j.joca.2017.11.014

Ng, N. T. M., Heesch, K. C., & Brown, W. J. (2012). Strategies for managing osteoarthritis. *International Journal of Behavioral Medicine*, *19*(3), 298–307. https://doi.org/10.1007/s12529-011-9168-3

Nour, H., Oyoo, G., Joshi, M., Otsyeno, F., & Muriithi, I. (2015). Patterns of knee, hip and hand osteoarthritis in Kenyatta National Hospital. *East African Orthopaedic Journal*, *8*(2), 60–63. https://doi.org/10.4314/eaoj.v8i2.

Ntamo N P, Buso, D., & Longo-Mbenza, B. (2013). Factors affecting poor attendance for outpatient physiotherapy by patients discharged from Mthatha General Hospital with a stroke. *SA Journal of Physiotherapy*, *69*(3), 19–24.

O'Cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of Health Services Research and Policy*, *13*(2), 92–98. https://doi.org/10.1258/jhsrp.2007.007074

Oliveira, V. C., Ferreira, M. L., Pinto, R. Z., Filho, R. F., Refshauge, K., & Ferreira, P. H. (2015). Effectiveness of Training Clinicians' Communication Skills on Patients' Clinical Outcomes: A Systematic Review. *Journal of Manipulative and Physiological Therapeutics*, *38*(8), 601–616. https://doi.org/10.1016/j.jmpt.2015.08.002

Palazzo, C., Nguyen, C., Lefevre-Colau, M. M., Rannou, F., & Poiraudeau, S. (2016). Risk factors and burden of osteoarthritis. *Annals of Physical and Rehabilitation Medicine*, *59*(3), 134–138. https://doi.org/10.1016/j.rehab.2016.01.006

Papandony, M. C., Chou, L., Seneviwickrama, M., Cicuttini, F. M., Lasserre, K., Teichtahl, A. J., … Wluka, A. E. (2017). Patients' perceived health service needs for osteoarthritis (OA) care: a scoping systematic review. *Osteoarthritis and Cartilage*, *25*(7), 1010–1025. https://doi.org/10.1016/j.joca.2017.02.799

Peek, K., Sanson-Fisher, R., Mackenzie, L., & Carey, M. (2016a). Interventions to aid patient adherence to physiotherapist prescribed self-management strategies: A systematic review. *Physiotherapy (United Kingdom)*, *102*(2), 127–135. https://doi.org/10.1016/j.physio.2015.10.003

Peek, K., Sanson-Fisher, R., Mackenzie, L., & Carey, M. (2016b). Interventions to aid patient adherence to physiotherapist prescribed self-management strategies: A systematic review. *Physiotherapy (United Kingdom)*, *102*(2), 127–135. https://doi.org/10.1016/j.physio.2015.10.003

Peersman, W., Rooms, T., Bracke, N., Van Waelvelde, H., De Maeseneer, J., & Cambier, D. (2013). Patients' priorities regarding outpatient physiotherapy care: A qualitative and quantitative study. *Manual Therapy*, *18*(2), 155–164. https://doi.org/10.1016/j.math.2012.09.007

Pereira, D., Peleteiro, B., Araújo, J., Branco, J., Santos, R. A., & Ramos, E. (2011). The effect of osteoarthritis definition on prevalence and incidence estimates: A systematic review. *Osteoarthritis and Cartilage*, *19*(11), 1270–1285. https://doi.org/10.1016/j.joca.2011.08.009

Pérez-Mármol, J. M., García-Ríos, M. C., Ortega-Valdivieso, M. A., Cano-Deltell, E. E., Peralta-Ramírez, M. I., Ickmans, K., & Aguilar-Ferrándiz, M. E. (2017). Effectiveness of a fine motor skills rehabilitation program on upper limb disability, manual dexterity, pinch strength, range of fingers motion, performance in activities of daily living, functional independency, and general self-efficacy in hand osteoart. *Journal of Hand Therapy*, *30*(3), 262–273. https://doi.org/10.1016/j.jht.2016.12.001

Petursdottir, U., Arnadottir, S. A., & Halldorsdottir, S. (2010). Facilitators and Barriers to Exercising Among People With Osteoarthritis: A Phenomenological Study. *Physical Therapy*, *90*(7), 1014–1025. https://doi.org/10.2522/ptj.20090217

Pinto, R. Z., Ferreira, M. L., Oliveira, V. C., Franco, M. R., Adams, R., Maher, C. G., & Ferreira, P. H. (2012). Patient-centred communication is associated with positive therapeutic alliance: A systematic review. *Journal of Physiotherapy*, *58*(2), 77–87. https://doi.org/10.1016/S1836-9553(12)70087-5

Pisters, M. F., Veenhof, C., de Bakker, D. H., Schellevis, F. G., & Dekker, J. (2010). Behavioural graded activity results in better exercise adherence and more physical activity than usual care in people with osteoarthritis: A cluster-randomised trial. *Journal of Physiotherapy*, *56*(1), 41–47. https://doi.org/10.1016/S1836-9553(10)70053-9

Rivera-Torres, S., Fahey, T. D., & Rivera, M. A. (2019). Adherence to Exercise Programs in Older Adults: Informative Report. *Gerontology and Geriatric Medicine*, *5*, 233372141882360. https://doi.org/10.1177/2333721418823604

Robinson, A. H. N., & Keith, T. (2016). Osteoarthritis of the ankle. *Orthopaedics and Trauma*, *30*(1), 59–67. https://doi.org/10.1016/j.mporth.2015.11.003

15&h=VtCQWGHc2F/JBASUEwVUtbA+cEA0a8V+KY7Vx80xIHDQyw/saKEbjx+T7XusZPcF7aypT3+PjMK+t3mhJrMG9g=

Stevenson, J. D., & Roach, R. (2012). The benefits and barriers to physical activity and lifestyle interventions for osteoarthritis affecting the adult knee. *Journal of Orthopaedic Surgery and Research*, *7*(1), 1–7. https://doi.org/10.1186/1749-799X-7-15

Suri, P., Morgenroth, D. C., & Hunter, D. J. (2012). Epidemiology of Osteoarthritis and Associated Comorbidities. *PM and R*, *4*(5 SUPPL.), S10–S19. https://doi.org/10.1016/j.pmrj.2012.01.007

Teo, P. L., Bennell, K. L., Lawford, B. J., Egerton, T., Dziedzic, K. S., & Hinman, R. S. (2020). Physiotherapists may improve management of knee osteoarthritis through greater psychosocial focus, being proactive with advice, and offering longer-term reviews: a qualitative study. *Journal of Physiotherapy*, *66*(4), 256–265. https://doi.org/10.1016/j.jphys.2020.09.005

Triggs, F. (2017). Strategies for increasing adherence to exercise in patients with knee osteoarthritis: a literature review. *Physiotherapy*, *103*(November 2015), e51. https://doi.org/10.1016/j.physio.2017.11.003

Usenbo, A., Kramer, V., Young, T., & Musekiwa, A. (2015). Prevalence of arthritis in Africa: A systematic review and meta-analysis. *PLoS ONE*, *10*(8), 1–19. https://doi.org/10.1371/journal.pone.0133858

Vincent, T. L., & Watt, F. E. (2014). Osteoarthritis. *Medicine (United Kingdom)*, *42*(4), 213–219. https://doi.org/10.1016/j.mpmed.2014.01.010

Vincent, T. L., & Watt, F. E. (2018). Osteoarthritis. *Medicine (United Kingdom)*, 187–195. https://doi.org/10.1016/j.mpmed.2017.12.009

Vo, T. Q., Duong, K. N. C., Vu, O. T. N., Pham, A. T., & Vo, N. X. (2018). An assessment of an adapted version of the arthritis impact measurement scales short-form questionnaire to determine health-related quality of life in Vietnamese patients with arthritis. *Journal of Clinical and Diagnostic Research*, *12*(6), LC79–LC84. https://doi.org/10.7860/JCDR/2018/36954.11709

Wainwright, T. W., Immins, T., & Middleton, R. G. (2016). A cycling and education programme for the treatment of hip osteoarthritis: a quality improvement study. *International Journal of Orthopaedic and Trauma Nursing*, *23*, 14–24. https://doi.org///doi.org/10.1016/j.ijotn.2016.02.004

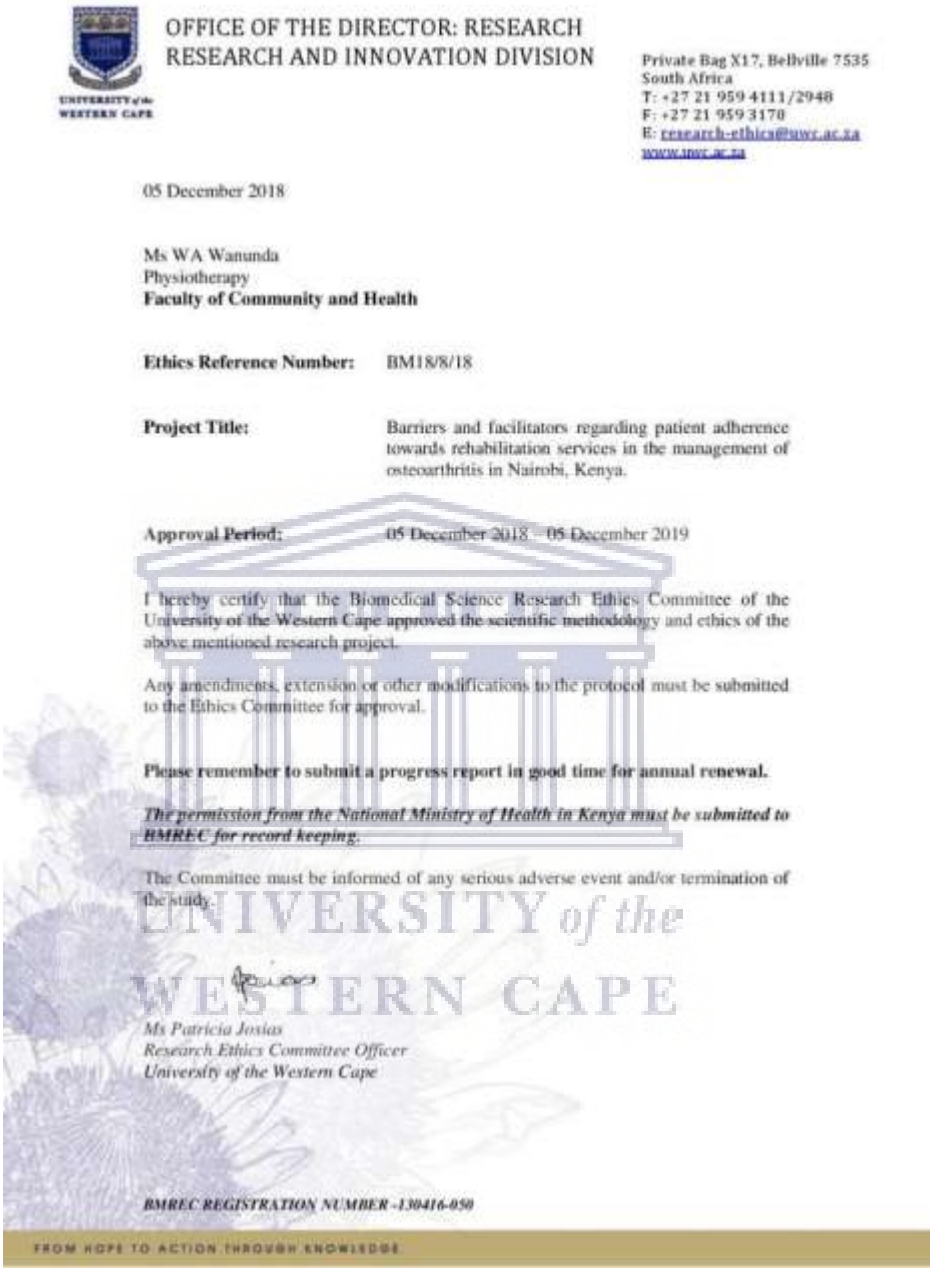
WHO. (2013). Osteoarthritis. *World Health*, *12*(Osteoarthritis in Priority Medicines for Europe

and the World 2013 Update), 6–8. Retrieved from http://www.who.int/medicines/areas/priority_medicines/Ch6_12Osteo.pdf?ua=1

Yildirim, N., Filiz Ulusoy, M., & Bodur, H. (2010). The effect of heat application on pain, stiffness, physical function and quality of life in patients with knee osteoarthritis. *Journal of Clinical Nursing*, *19*(7–8), 1113–1120. https://doi.org/10.1111/j.1365-2702.2009.03070.

Zaky HH, Khattab HA, Dina Galal MM. Assessing the Quality of Reproductive Health Services in Egypt via Exit Interviews. Maternal and child Health Journal. 2007; 11:301-306.

APPENDIX A: ETHICAL APPROVAL LETTER BMREC-UWC



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05 December 2018

Ms WA Wanunda
Physiotherapy
Faculty of Community and Health

Ethics Reference Number: BM18/8/18

Project Title: Barriers and facilitators regarding patient adherence towards rehabilitation services in the management of osteoarthritis in Nairobi, Kenya.

Approval Period: 05 December 2018 – 05 December 2019

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

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

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

The permission from the National Ministry of Health in Kenya must be submitted to BMREC for record keeping.

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

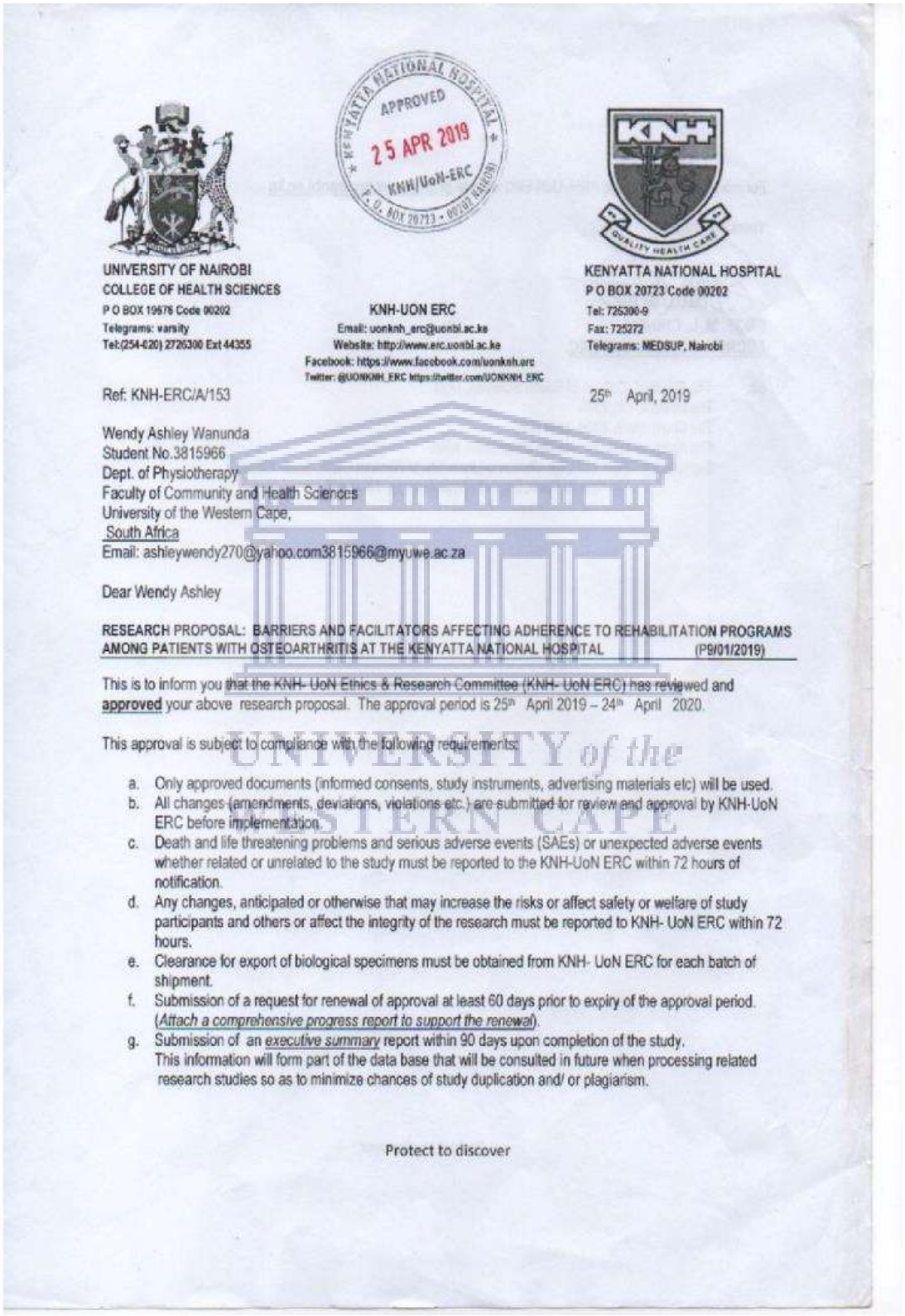
UNIVERSITY of the
WESTERN CAPE

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

BMREC REGISTRATION NUMBER -130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE

APPENDIX B: ETHICAL CLEARANCE KNH-UON ERC



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25th April, 2019

Wendy Ashley Wanunda
Student No.3815966
Dept. of Physiotherapy
Faculty of Community and Health Sciences
University of the Western Cape,
South Africa
Email: ashleywendy270@yahoo.com3815966@myuwe.ac.za

Dear Wendy Ashley

RESEARCH PROPOSAL: BARRIERS AND FACILITATORS AFFECTING ADHERENCE TO REHABILITATION PROGRAMS AMONG PATIENTS WITH OSTEOARTHRITIS AT THE KENYATTA NATIONAL HOSPITAL (P9/01/2019)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 25th April 2019 – 24th April 2020.

This approval is subject to compliance with the following requirements:

a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
g. Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover

For more details consult the KNH- UoN ERC website http://www.erc.uonbi.ac.ke

Yours sincerely,

PROF. M. L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
The Director, CS, KNH
The Chairperson, KNH- UoN ERC
The Assistant Director, Health Information, KNH
Supervisors: Prof. Nondwe Mlenzana (University of Western Cape, South Africa)
Dr. Nassib Tawa, Dept of Physiotherapy, JKUAT

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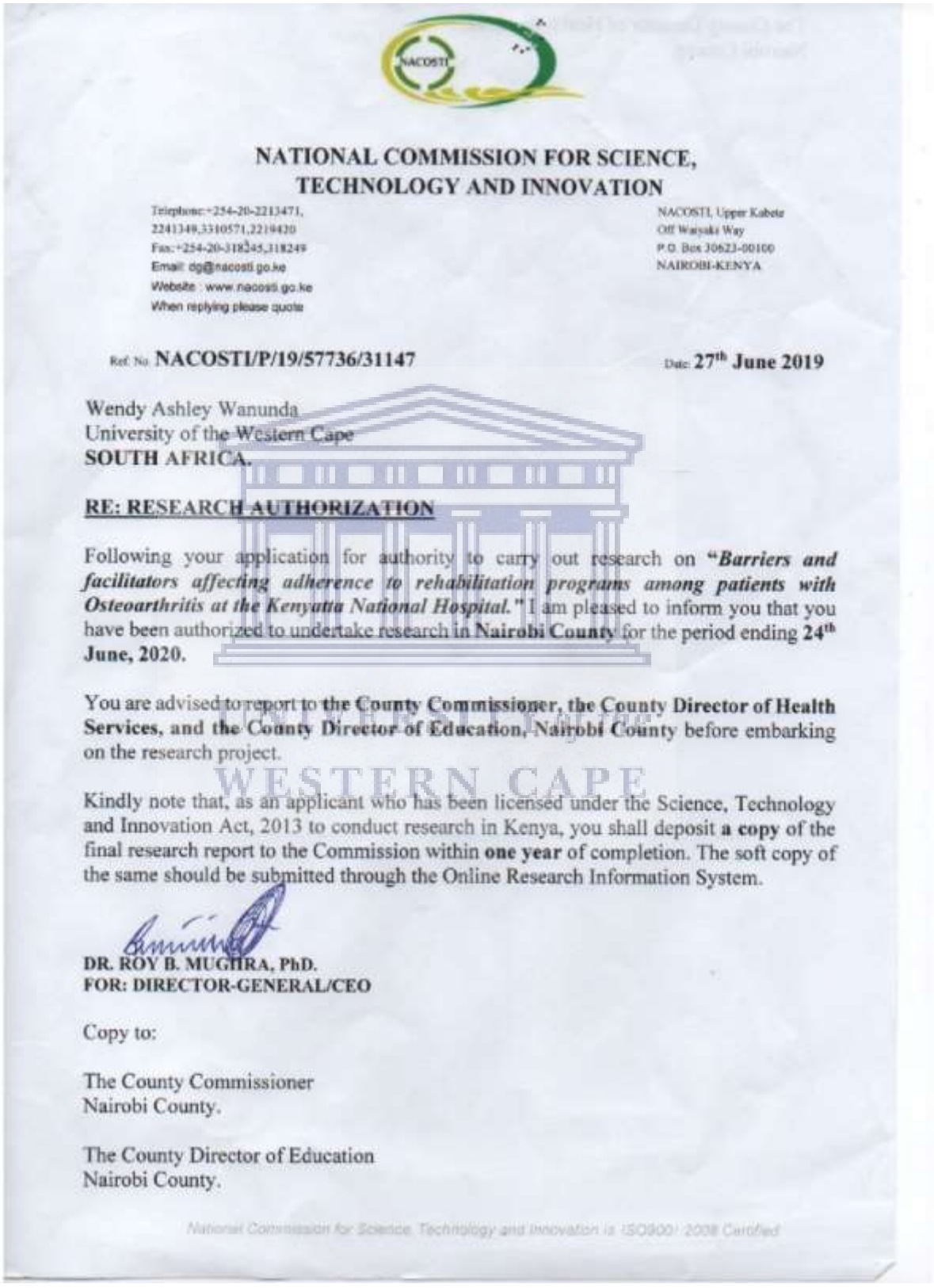
APPENDIX C: ETHICAL CLEARANCE NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/57736/31147**

Date: **27th June 2019**

Wendy Ashley Wanunda
University of the Western Cape
SOUTH AFRICA.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Barriers and facilitators affecting adherence to rehabilitation programs among patients with Osteoarthritis at the Kenyatta National Hospital."*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **24th June, 2020.**

You are advised to report to **the County Commissioner, the County Director of Health Services, and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. ROY B. MUGHIRA, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

The County Director of Health Services
Nairobi County.

APPENDIX D1: Information sheet (patients questionnaires) English version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail:nmlenzana@uwc.ac.za

INFORMATION SHEET

Project Title: Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya.

What is this study about?

This is a research project being conducted by Wendy Ashley Wanunda pursuing a Master's degree in Physiotherapy at the University of the Western Cape, South Africa. We are inviting you to participate in this research project because you are affected by osteoarthritis. The purpose of this research project is to explore the barriers and facilitators to patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis. The information sought in the study will help shed more light on the positive and negative factors that affect patient adherence to rehabilitation programs.

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

You will be asked to fill in a questionnaire either in the presence of the researcher or later at your convenience. This should take about 40minutes of your time to fill. The questionnaire will have questions regarding pain, activity limitations and participation restrictions brought about by osteoarthritis.

Would my participation in this study be kept confidential?

The researcher undertakes to protect your identity and the nature of your contribution. To ensure your anonymity, data collected will not contain information that personally identifies you. Codes will be placed on the collected data and through an identification key the researcher will be able

to link each participant to the data. Only the researcher will have access to the identification key. To help protect your confidentiality, your answers will be locked in a filing cabinet and using password-protected computer files. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

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

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the barriers and facilitators to patient adherence towards rehabilitation services in osteoarthritis management. We hope that, in the future, other people might benefit from this study so as to have improved patient compliance to clinic and home based rehabilitation programs and better treatment outcomes.

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

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

What if I have questions?

If you have any questions about the research study itself, please contact:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Email address: ashleywendy270@yahoo.com
Cell number: +254 711 241 298 / +27 78 570 3802

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

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

This research has been approved by the University of the Western Cape's Biomedical Research Ethics Committee (BMREC)
REFERENCE NUMBER: 18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX D2: Information sheet (patients questionnaires) Swahili version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail: nmlenzana@uwc.ac.za

MAELEZO KWA WAGONJWA

Kichwa Cha Utafiti: Vikwazo na Viwezeshaji Vya Uzingatiaji wa Mgonjwa kwa Huduma za Urekebishaji Au Ukarabati wa Ugonjwa Wa Mifupa Unaoathiri Maungo (Osteoarthritis), Nairobi, Kenya.

Utafiti Huu Unahusu Nini?

Huu ni mradi wa utafiti unaofanywa na Wendy Ashley Wanunda kwa ajili ya shahada ya Digrii Masters ya Matibabu ya Viungo (Physiotherapy) katika Chuo Kikuu cha Western Cape, Afrika Kusini. Tunakualika kushiriki katika utafiti huu kwa sababu unaathiriwa na ugonjwa wa mifupa unaoathiri maungo (osteoarthritis). Madhumuni ya mradi huu wa utafiti ni kuchunguza vikwazo na viwezeshaji za wagonjwa kuzingatia huduma za ukarabati au urekebishaji katika usimamizi wa ugonjwa wa mifupa unaoathiri maungo (osteoarthritis).. Maelezo yanayopatikana katika utafiti huu yatasaidia kuongeza mwanga zaidi juu ya mambo mazuri na mabaya yanayoathiri usingatiaji wa mgonjwa kwenye mipango ya ukarabati.

Je, Nitaulizwa Kufanya Nini Ikiwa Nitakubali Kushiriki?

Utaulizwa kujaza fomu ya maswali ukiwa mbele ya mtafiti au baadaye kwa mapenzi yako. Hii inapaswa kuchukua karibu dakika 40 ya wakati wako kujaza. Jarida hili litakuwa na maswali kuhusu maumivu, mapungufu ya shughuli na vikwazo vya ushiriki vinavyotokana na osteoarthritis.

Je! Ushiriki Wangu Katika Utafiti Huu Utahifadhiwa Siri?

Mtafiti atahakikisha kulinda utambulisho wako na asili ya mchango wako. Ili kuhakikisha kutokujulikana kwako, habari zilizokusanywa hazitakuwa na habari ambazo hukutambua binafsi

kwa jina lako. Alama Fulani zitawekwa kwenye habari zilizokusanywa na kwa njia ya fulani ya utambulisho mtafiti ataweza kuunganisha kila mshiriki kwenye habari. Mtafiti ndiye atakavyokuwa na alama hiyo ya kutambua habari. Ili kusaidia kulinda siri yako, majibu yako yatafungiwa kwenye kabati za siri na kwa kompyuta zilizohifadhiwa na nenosiri. Ikiwa tunaandika ripoti au makala kuhusu mradi huu wa utafiti, utambulisho wako utahifadhiwa kwa kiwango kikubwa iwezekanavyo.Kwa mujibu wa mahitaji ya kisheria na / au viwango vya kitaaluma, tutawafunulia habari zinazofaambayo tunapata kuhusu kutokujali au kuwa na madhara kwa wewe au wengine kwa watu binafsi na / au mamlaka. Katika tukio hili, tutawajulisha kuwa tunapaswa kuvunja usiri ili kutimiza wajibu wetu wa kisheria kutoa taarifa kwa mamlaka zilizochaguliwa.

Je, Kuna Hatari Gani Za Utafiti Huu?

Ushirikiano wote wa binadamu na kuzungumza juu ya nafsi au wengine hubeba kiasi fulani cha hatari. Tutaweza kupunguza hatari kama hizo na kuchukua hatua haraka ili kukusaidia ikiwa unakabiliwa na usumbufu wowote, kisaikolojia au vinginevyo wakati wa mchakato wa ushiriki wako katika utafiti huu. Ikiwa ni lazima, rufaa sahihi itafanywa kwa mtaalamu mzuri kwa msaada zaidi au kuingilia kati.

Je, Kuna Faida Gani Za Utafiti Huu?

Utafiti huu haujabuniwa kukufadhili wewe binafsi, lakini matokeo yanaweza kumsaidia mtafiti kujifunza zaidi kuhusu vikwazo na wasaidizi wa kuzingatia huduma za ukarabati katika usimamizi wa osteoarthritis. Tunatarajia kwamba, baadaye, watu wengine wanaweza kufaidika na utafiti huu ili waweze kufuata ufuatiliaji wa mgonjwa wa mipango ya kliniki na ukarabati wa nyumbani na matokeo bora ya matibabu.

Je, Ni Lazima Niwe Katika Utafiti Huu Na Ninaweza Kuacha Kushiriki Wakati Wowote?

Ushiriki wako katika utafiti huu ni kwa hiari kabisa. Unaweza kuchagua kutoshiriki. Ikiwa unaamua kushiriki katika utafiti huu, unaweza kuacha kushiriki wakati wowote. Ikiwa unachagua kushiriki katika utafiti huu au ikiwa unachaacha kushiriki wakati wowote, hutaadhibiwa au kupoteza faida yoyote ambayo unastahili.

Je! Kama Nina Maswali?

Ikiwa una maswali yoyote kuhusu utafiti yenyewe, tafadhali wasiliana na:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Anwani ya barua pepe: ashleywendy270 @ yahoo.com
Nambari ya kiini: +254 711 241 298 / +27 78 570 3802

Iwapo uko na maswali yoyote kuhusu utafiti huu na haki zako kama mshiriki wa utafiti au unataka kutoa ripoti tatizo lolote uliyoyoona kuhusiana na utafiti, tafadhali wasiliana na:

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

Utafiti huu umeidhinishwa na Kamati ya Maadili ya Utafiti wa Biomedical Research (BMREC) ya Chuo Kikuu cha Western Cape.

NAMBARI YA REFERENCE: BM18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX D3: Information sheet (patients interviews) English version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-959 1217
E-mail:nmlenzana@uwc.ac.za

INFORMATION SHEET

Project Title: Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya.

What is this study about?

This is a research project being conducted by Wendy Ashley Wanunda pursuing a Master's degree in Physiotherapy at the University of the Western Cape, South Africa. We are inviting you to participate in this research project because you are affected by osteoarthritis. The purpose of this research project is to explore the barriers and facilitators to patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis. The information sought in the study will help shed more light on the positive and negative factors that affect patient adherence to rehabilitation programs.

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

You will be asked to take part in a one on one interview with the researcher. The interview will be scheduled at a time and place that is convenient for you at the hospital. The researcher will be assisted by a research assistant who will take notes during the interview and use a tape recorder for recording. Each interview will take approximately 45-60 minutes. The researcher will use some written questions to guide you through the interview.

Would my participation in this study be kept confidential?

The researcher will undertake to protect your identity and the nature of your contribution. The audio-taped data collected will not contain information that personally identifies you. Codes will

be placed on the collected data that will be linked to an identification key only known to the researcher. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

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

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the barriers and facilitators to patient adherence towards rehabilitation services in osteoarthritis management. We hope that, in the future, other people might benefit from this study so as to have improved patient compliance to clinic and home based rehabilitation programs and better rehabilitation outcomes. This will then lead to an improvement in activity and participation restrictions and overall better quality of life to the affected patients.

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

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

What if I have questions?

This research is being conducted by Wendy Ashley Wanunda, a Master's student in Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Email address: ashleywendy270@yahoo.com
Cell number: +254 711 241 298 / +27 78 570 3802

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

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

UNIVERSITY OF THE WESTERN CAPE
ADDITIONAL GUIDANCE FOR SPECIFIC ISSUES

Audio taping/Videotaping/Photographs/Digital Recordings

This research project involves making ***audiotapes*** of you. This is because the research assistant may not be able to write everything during the interview. After the interview, data will be kept in a safe place having locked filing cabinets and storage areas, using identification codes only on data forms, and using password-protected computer files**.**

___ I agree to be audiotaped during my participation in this study.

___ I do not agree to be audiotaped during my participation in this study.

This research has been approved by the University of the Western Cape's Biomedical Research Ethics Committee (BMREC).

REFERENCE NUMBER: 18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX D4: Information sheet (patients interviews) Swahili version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail: nmlenzana@uwc.ac.za

MAELEZO KWA WAGONJWA IKO NA AUDIO

Kichwa Cha Utafiti: Vikwazo na Viwezeshaji Vya Uzingatiaji wa Mgonjwa kwa Huduma za Urekebishaji Au Ukarabati wa Ugonjwa Wa Mifupa Unaoathiri Maungo (Osteoarthritis). Nairobi, Kenya.

Utafiti Huu Unahusu Nini?

Huu ni mradi wa utafiti unaofanywa na Wendy Ashley Wanunda kwa ajili ya shahada ya Digrii Masters ya Matibabu ya Viungo (Physiotherapy) katika Chuo Kikuu cha Western Cape, Afrika Kusini. Tunakualika kushiriki katika utafiti huu kwa sababu unaathiriwa na ugonjwa wa mifupa unaoathiri maungo (osteoarthritis). Madhumuni ya mradi huu wa utafiti ni kuchunguza vikwazo na viwezeshaji za wagonjwa kuzingatia huduma za ukarabati au urekebishaji katika usimamizi wa ugonjwa wa mifupa unaoathiri maungo (osteoarthritis).. Maelezo yanayopatikana katika utafiti huu yatasaidia kuongeza mwanga zaidi juu ya mambo mazuri na mabaya yanayoathiri usingatiaji wa mgonjwa kwenye mipango ya ukarabati.

Je, Nitaulizwa Kufanya Nini Ikiwa Nitakubali Kushiriki?

Utaulizwa kushiriki kwenye mahojiano ya moja kwa moja na mtafiti. Mahojiano yatapangwa kwa wakati na mahali ambavyo ni rahisi kwako katika hospitali. Mtafiti atasaidiwa na msaidizi wa utafiti ambaye atachukua maelezo wakati wa mahojiano na kutumia rekodi ya tepi kwa kurekodi. Kila mahojiano itachukua muda wa dakika 45-60. Mtafiti atatumia maswali yaliyoandikwa ili kukuongoza kupitia mahojiano.

Je! Ushiriki Wangu Katika Utafiti Huu Utahifadhiwa Siri?

Mtafiti atahakikisha kulinda utambulisho wako na asili ya mchango wako. Ili kuhakikisha kutokujulikana kwako, habari zilizokusanywa hazitakuwa na habari ambazo hukutambua binafsi kwa jina lako. Alama Fulani zitawekwa kwenye habari zilizokusanywa na kwa njia ya fulani ya utambulisho mtafiti ataweza kuunganisha kila mshiriki kwenye habari. Mtafiti ndiye atakaykuwa na alama hiyo ya kutambua habari. Ili kusaidia kulinda siri yako, majibu yako yatafungiwa kwenye kabati za siri na kwa kompyuta zilizohifadhiwa na nenosiri. Ikiwa tunaandika ripoti au makala kuhusu mradi huu wa utafiti, utambulisho wako utahifadhiwa kwa kiwango kikubwa iwezekanavyo.Kwa mujibu wa mahitaji ya kisheria na / au viwango vya kitaaluma, tutawafunulia habari zinazofaambayo tunapata kuhusu kutokujali au kuwa na madhara kwa wewe au wengine kwa watu binafsi na / au mamlaka. Katika tukio hili, tutawajulisha kuwa tunapaswa kuvunja usiri ili kutimiza wajibu wetu wa kisheria kutoa taarifa kwa mamlaka zilizochaguliwa.

Je, Kuna Hatari Gani Za Utafiti Huu?

Ushirikiano wote wa binadamu na kuzungumza juu ya nafsi au wengine hubeba kiasi fulani cha hatari. Tutaweza kupunguza hatari kama hizo na kuchukua hatua haraka ili kukusaidia ikiwa unakabiliwa na usumbufu wowote, kisaikolojia au vinginevyo wakati wa mchakato wa ushiriki wako katika utafiti huu. Ikiwa ni lazima, rufaa sahihi itafanywa kwa mtaalamu mzuri kwa msaada zaidi au kuingilia kati.

Je, Kuna Faida Gani Za Utafiti Huu?

Utafiti huu haujabuniwa kukufadhili wewe binafsi, lakini matokeo yanaweza kumsaidia mtafiti kujifunza zaidi kuhusu vikwazo na wasaidizi wa kuzingatia huduma za ukarabati katika usimamizi wa osteoarthritis. Tunatarajia kwamba, baadaye, watu wengine wanaweza kufaidika na utafiti huu ili waweze kufuata ufuatiliaji wa mgonjwa wa mipango ya kliniki na ukarabati wa nyumbani na matokeo bora ya matibabu.

Je, Ni Lazima Niwe Katika Utafiti Huu, Na Ninaweza Kuacha Kushiriki Wakati Wowote?

Ushiriki wako katika utafiti huu ni kwa hiari kabisa. Unaweza kuchagua kutoshiriki. Ikiwa unaamua kushiriki katika utafiti huu, unaweza kuacha kushiriki wakati wowote. Ikiwa unachagua kushiriki katika utafiti huu au ikiwa utaaacha kushiriki wakati wowote, hautaadhibiwa au kupoteza faida yoyote ambayo unastahili.

Je! Kama Nina Maswali?

Ikiwa una maswali yoyote kuhusu utafiti yenyewe, tafadhali wasiliana na:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Anwani ya barua pepe: ashleywendy270 @ yahoo.com
Nambari ya kiini: +254 711 241 298 / +27 78 570 3802

Iwapo uko na maswali yoyote kuhusu utafiti huu na haki zako kama mshiriki wa utafiti au unataka kutoa ripoti tatizo lolote uliyoyoona kuhusiana na utafiti, tafadhali wasiliana na:

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

UNIVERSITY OF THE WESTERN CAPE

MWONGOZO KWA MAMBO HUSUSA

Kuandika sauti / Videotaping / Picha / Kumbukumbu za Digitali

Mradi huu wa utafiti unahusisha kufanya sauti za sauti zako. Hii ni kwa sababu msaidizi wa utafiti hawezi kuandika kila kitu wakati wa mahojiano. Baada ya mahojiano, habari itahifadhiwa

mahali salama ikiwa imefungiwa kwa kabati na maeneo ya hifadhi, kwa kutumia nambari za kitambulisho tu kwa fomu za habari, na kutumia faili za kompyuta zinazohifadhiwa nenosiri.

___ Ninakubali kuwa na sauti wakati wa ushiriki wangu katika utafiti huu

___ Sikubali kuwa na sauti wakati wa kushiriki kwangu katika utafiti huu.

Utafiti huu umeidhinishwa na Kamati ya Maadili ya Utafiti wa Biomedical Research (BMREC) ya Chuo Kikuu cha Western Cape.

Nambari ya REFERENCE: 18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX D5: Information sheet (physiotherapists interviews) English Version

UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-959 1217
E-mail:nmlenzana@uwc.ac.za

INFORMATION SHEET

Project Title: Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya.

What is this study about?

This is a research project being conducted by Wendy Ashley Wanunda pursuing a Master's degree in Physiotherapy at the University of the Western Cape, South Africa. We are inviting you to participate in this research project because you are a physiotherapy clinician experienced in managing patients affected by osteoarthritis. The purpose of this research project is to explore the barriers and facilitators to patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis. The information sought in the study will help shed more light on the positive and negative factors that affect patient adherence to rehabilitation programs.

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

You will be asked to take part in a one on one interview with the researcher. The interview will be scheduled at a time and place that is convenient for you at the physiotherapy clinic. The researcher will be assisted by a research assistant who will take notes during the interview and use a tape recorder for recording. Each interview will take approximately 45-60 minutes. The researcher will use some written questions to guide you through the interview.

Would my participation in this study be kept confidential?

The researcher will undertake to protect your identity and the nature of your contribution. The audio-taped data collected will not contain information that personally identifies you. Codes will

be placed on the collected data that will be linked to an identification key only known to the researcher. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

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

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the barriers and facilitators to patient adherence towards rehabilitation services in osteoarthritis management. We hope that, in the future, other people might benefit from this study so as to have improved patient compliance to clinic and home based rehabilitation programs and better rehabilitation outcomes. This will then lead to an improvement in activity and participation restrictions and overall better quality of life to the affected patients.

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

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

What if I have questions?

This research is being conducted by Wendy Ashley Wanunda a Master's student in Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Email address: ashleywendy270@yahoo.com
Cell number: +254 711 241 298 / +27 78 570 3802

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

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

UNIVERSITY OF THE WESTERN CAPE

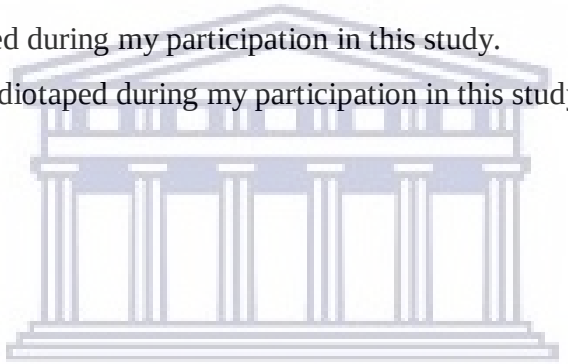
ADDITIONAL GUIDANCE FOR SPECIFIC ISSUES

Audio taping/Videotaping/Photographs/Digital Recordings

This research project involves making ***audiotapes*** of you. This is because the research assistant may not be able to write everything during the interview. After the interview, data will be kept in a safe place having locked filing cabinets and storage areas, using identification codes only on data forms, and using password-protected computer files**.**

___ I agree to be audiotaped during my participation in this study.

___ I do not agree to be audiotaped during my participation in this study.



This research has been approved by the University of the Western Cape's Biomedical Research Ethics Committee (BMREC)

REFERENCE NUMBER:18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX D6: Information sheet (physiotherapists interviews) Swahili version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail: nmlenzana@uwc.ac.za

MAELEZO KWA WATAALAMU

Kichwa Cha Utafiti: Vikwazo na Viwezeshaji Vya Uzingatiaji wa Mgonjwa kwa Huduma za Urekebishaji Au Ukarabati wa Ugonjwa Wa Mifupa Unaoathiri Maungo (Osteoarthritis). Nairobi, Kenya.

Utafiti Huu Unahusu Nini?

Huu ni mradi wa utafiti unaofanywa na Wendy Ashley Wanunda kwa ajili ya shahada ya Digrii Masters ya Matibabu ya Viungo (Physiotherapy) katika Chuo Kikuu cha Western Cape, Afrika Kusini. Tunakualika kushiriki katika utafiti huu kwa sababu umetibu kwa miaka wagonjwa ambao wameathiriwa na ugonjwa wa mifupa unaoathiri maungio (osteoarthritis). Madhumuni ya mradi huu wa utafiti ni kuchunguza vikwazo na viwezeshaji za wagonjwa kuzingatia huduma za ukarabati au urekebishaji katika usimamizi wa ugonjwa wa mifupa unaoathiri maungio (osteoarthritis). Maelezo yanayopatikana katika utafitihuu yatasaidia kuongeza mwanga zaidi juu ya mambo mazuri na mabaya yanayoathiri usingatiaji wa mgonjwa kwenye mipango ya ukarabati.

Je, Nitaulizwa Kufanya Nini Ikiwa Nitakubali Kushiriki?

Utaulizwa kushiriki kwenye mahojiano ya moja kwa moja na mtafiti. Mahojiano yatapangwa kwa wakati na mahali ambavyo ni rahisi kwako katika hospitali. Mtafiti atasaidiwa na msaidizi wa utafiti ambaye atachukua maelezo wakati wa mahojiano na kutumia rekodi ya tepi kwa kurekodi. Kila mahojiano itachukua muda wa dakika 45-60. Mtafiti atatumia maswali yaliyoandikwa ili kukuongoza kupitia mahojiano.

Je! Ushiriki Wangu Katika Utafiti Huu Utahifadhiwa Siri?

Mtafiti atahakikisha kulinda utambulisho wako na asili ya mchango wako. Ili kuhakikisha kutokujulikana kwako, habari zilizokusanywa hazitakuwa na habari ambazo hukutambua binafsi kwa jina lako. Alama Fulani zitawekwa kwenye habari zilizokusanywa na kwa njia ya fulani ya utambulisho mtafiti ataweza kuunganisha kila mshiriki kwenye habari. Mtafiti ndiye atakaykuwa na alama hiyo ya kutambua habari. Ili kusaidia kulinda siri yako, majibu yako yatafungiwa kwenye kabati za siri na kwa kompyuta zilizohifadhiwa na nenosiri. Ikiwa tunaandika ripoti au makala kuhusu mradi huu wa utafiti, utambulisho wako utahifadhiwa kwa kiwango kikubwa iwezekanavyo.Kwa mujibu wa mahitaji ya kisheria na / au viwango vya kitaaluma, tutawafunulia habari zinazofaambayo tunapata kuhusu kutokujali au kuwa na madhara kwa wewe au wengine kwa watu binafsi na / au mamlaka. Katika tukio hili, tutawajulisha kuwa tunapaswa kuvunja usiri ili kutimiza wajibu wetu wa kisheria kutoa taarifa kwa mamlaka zilizochaguliwa.

Je, Kuna Hatari Gani Za Utafiti Huu?

Ushirikiano wote wa binadamu na kuzungumza juu ya nafsi au wengine hubeba kiasi fulani cha hatari. Tutaweza kupunguza hatari kama hizo na kuchukua hatua haraka ili kukusaidia ikiwa unakabiliwa na usumbufu wowote, kisaikolojia au vinginevyo wakati wa mchakato wa ushiriki wako katika utafiti huu. Ikiwa ni lazima, rufaa sahihi itafanywa kwa mtaalamu mzuri kwa msaada zaidi au kuingilia kati.

Je, Kuna Faida Gani Za Utafiti Huu?

Utafiti huu haujabuniwa kukufadhili wewe binafsi, lakini matokeo yanaweza kumsaidia mtafiti kujifunza zaidi kuhusu vikwazo na wasaidizi wa kuzingatia huduma za ukarabati katika usimamizi wa osteoarthritis. Tunatarajia kwamba, baadaye, watu wengine wanaweza kufaidika na utafiti huu ili waweze kufuata ufuatiliaji wa mgonjwa wa mipango ya kliniki na ukarabati wa nyumbani na matokeo bora ya matibabu. Hii itaboresha kushiriki na maisha bora kwa wagojwa wanaohadhiriwa.

Je, Ni Lazima Niwe Katika Utafiti Huu Na Ninaweza Kuacha Kushiriki Wakati Wowote?

Ushiriki wako katika utafiti huu ni kwa hiari kabisa. Unaweza kuchagua kutoshiriki. Ikiwa unaamua kushiriki katika utafiti huu, unaweza kuacha kushiriki wakati wowote. Ikiwa

unachagua kushiriki katika utafiti huu au ikiwa unachaacha kushiriki wakati wowote, hutaadhibiwa au kupoteza faida yoyote ambayo unastahili.

Je! Kama Nina Maswali?

Utafiti huu unafanywa na Wendy Ashley Wanunda, kwa ajili ya shahada ya Digrii Masters ya Matibabu ya Viungo (Physiotherapy) katika Chuo Kikuu cha Western Cape, Afrika Kusini. Ikiwa una maswali yoyote kuhusu utafiti yenyewe, tafadhali wasiliana na:

Wendy Ashley Wanunda
19537-00202
Nairobi, Kenya.
Anwani ya barua pepe: ashleywendy270 @ yahoo.com
Nambari ya kiini: +254 711 241 298 / +27 78 570 3802

Iwapo uko na maswali yoyote kuhusu utafiti huu na haki zako kama mshiriki wa utafiti au unataka kutoa ripoti tatizo lolote uliyoyoona kuhusiana na utafiti, tafadhali wasiliana na:

Prof. Nondwe Mlenzana
Physiotherapy Department
University of the Western Cape
Private Bag X17
Bellville 7535
nmlenzana@uwc.ac.za

Prof A. Rhoda
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

UNIVERSITY OF THE WESTERN CAPE

MWONGOZO KWA MAMBO HUSUSA

Kuandika sauti / Videotaping / Picha / Kumbukumbu za Digitali

Mradi huu wa utafiti unahusisha kufanya sauti za sauti zako. Hii ni kwa sababu msaidizi wa utafiti hawezi kuandika kila kitu wakati wa mahojiano. Baada ya mahojiano, habari itahifadhiwa mahali salama ikiwa imefungiwa kwa kabati na maeneo ya hifadhi, kwa kutumia nambari za kitambulisho tu kwa fomu za habari, na kutumia faili za kompyuta zinazohifadhiwa nenosiri.

___ Ninakubali kuwa na sauti wakati wa ushiriki wangu katika utafiti huu

___ Sikubali kuwa na sauti wakati wa kushiriki kwangu katika utafiti huu.

Utafiti huu umeidhinishwa na Kamati ya Maadili ya Utafiti wa Biomedical Research (BMREC) ya Chuo Kikuu cha Western Cape.

Nambari ya REFERENCE: BM18/8/18

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX E1: Consent form (patients) English version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail:nmlenzana@uwc.ac.za

CONSENT FORM

Title of Research Project: Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya.

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

Participant's name……..

Participant's signature……

Date……

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Wendy Ashley Wanunda
University of the Western Cape
Private Bag X17, Bellville 7535
Cell: +254711241298/ +27 63 116 1194
Email: 3815966@myuwc.ac.za / ashleywendy270@yahoo.com
Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX E2: Consent form (patients) Swahili version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail:nmlenzana@uwc.ac.za

FORM YA KUKUBALI YA WAGONJWA

Kichwa Cha Utafiti: Vikwazo na Viwezeshaji Vya Uzingatiaji wa Mgonjwa kwa Huduma za Urekebishaji Au Ukarabati wa Ugonjwa Wa Mifupa Unaoathiri Maungo (Osteoarthritis). Nairobi, Kenya.

Nimeelezewa kuhusu utafiti huu katika lugha ambayo ninayielewa. Maswali yangu kuhusu utafiti yamejibiwa. Ninaelewa nini ushiriki wangu utahusisha na nimekubali kushiriki katika uchaguzi wangu mwenyewe bila kusurutishwa. Ninaelewa kuwa utambulisho wangu hautafunuliwa kwa mtu yeyote na nitaweza kujiondoa kwenye utafiti wakati wowote bila kutoa sababu na bila hofu ya matokeo mabaya au kupoteza faida.

Jina la Mshiriki ....

Saini ya Mshiriki .....

Tarehe……

Iwapo una maswali yoyote kuhusu utafiti huu au unataka kuripoti matatizo yoyote uliyo kabili kuhusiana na utafiti, tafadhali wasiliana na mratibu wa utafiti:

Jina ya Mratibu wa Utafiti: **Wendy Ashley Wanunda**

University of the Western Cape

Private Bag X17, Bellville 7535

Cell: +254711241298/ +27 63 116 1194

Email: 3815966@myuwc.ac.za / ashleywendy270@yahoo.com

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX E3: Consent form (physiotherapists) English version

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542 Fax: 27 21-959 1217
E-mail: nmlenzana@uwc.ac.za

CONSENT FORM

Title of Research Project: ***Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs in the management of osteoarthritis in Nairobi, Kenya.***

The study has been described to me so that I understand what I have to do, and I agree to participate in the above research study. I understand that my name will not be used in any form and that I may stop participating in the study anytime I choose without giving a reason and that I will not be punished in any way for stopping.

Participant's name……..
Participant's signature…….
Date……

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Wendy Ashley Wanunda
University of the Western Cape
Private Bag X17, Bellville 7535
Cell: +254711241298/ +27 63 116 1194
Email: 3815966@myuwc.ac.za / ashleywendy270@yahoo.com

Biomedical Research Ethics Committee (BMREC) Administration Research Office, New Arts Building,C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX E4: Consent form (physiotherapists) Swahili version

UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail:nmlenzana@uwc.ac.za

FORM YA KUKUBALI YA MTAALAMU

Kichwa Cha Utafiti: Vikwazo na Viwezeshaji Vya Uzingatiaji wa Mgonjwa kwa Huduma za Urekebishaji Au Ukarabati wa Ugonjwa Wa Mifupa Unaoathiri Maungo (Osteoarthritis). Nairobi, Kenya.

Nimeelezwa kuhusu utafiti huu ili nielewekile ninachohitaji kufanya, na nakubali kushiriki katika utafiti huu. Ninaelewa kuwa jina langu halitatumiwa kwa namna yoyote na kwamba nitaacha kushiriki katika utafiti wowote wakati ninapochagua bila kutoa sababu na kwamba sitaadhibiwa kwa njia yoyote ya kuacha.

Jina la Mshiriki.....

Saini ya Mshiriki.....

Tarehe……

Iwapo una maswali yoyote kuhusu utafiti huu au unataka kuripoti matatizo yoyote uliyo kabili kuhusiana na utafiti, tafadhali wasiliana na mratibu wa utafiti:

Jina ya Mratibu wa Utafiti: Wendy Ashley Wanunda

University of the Western Cape

Private Bag X17, Bellville 7535

Cell: +254711241298/ +27 63 116 1194

Email: 3815966@myuwc.ac.za / ashleywendy270@yahoo.com

Biomedical Research Ethics Committee (BMREC) Administration
Research Office, New Arts Building, C-Block, Top Floor, Room 28, University *of the* Western Cape, Private Bag X17, 7535

APPENDIX F1: Data Capture Sheet

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2542Fax: 27 21-9591217
E-mail:nmlenzana@uwc.ac.za

Data Collection/Capture Sheet

Participant code number:

TITLE: Barriers and facilitators regarding patient adherence towards physiotherapy rehabilitation programs among patients with osteoarthritis in Nairobi, Kenya.

Data to be collected on paper: Yes ☐ No ☐

Data to be entered directly into computer spread sheet Yes ☐ No ☐

Data Elements to be collected:

Demographic data

Age: _____

Gender: _____

Marital status: _____

Occupation:_____

Data elements from database

Osteoarthritis joint affected:

Shoulder ☐

Elbow ☐

Hand ☐

Hip ☐

Knee ☐

Ankle ☐

Spine ☐

Bilateral osteoarthritis: Yes ☐ no ☐

Data collected by (printed name and signature): _____

Date Data collected: _____

APPENDIX F2: Questionnaire AIMS2 (English version)

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542 Fax: 27 21-9591217

E-mail: nmlenzana@uwc.ac.za

ARTHRITIS IMPACT MEASUREMENT SCALES 2 (AIMS2) (ADAPTED)

Instructions: Please answer the following questions about your health. Most questions ask about your health during the past month. There are no right or wrong answers to the questions and most can be answered with a simple check (X). Please answer every question.

Demographic data

Please provide the following information about yourself:

1. Age?

   40-49 (1) _____

   50-59 (2) _____

   60-69 (3) _____

   70-79 (4) _____

2. Gender?

   Male (1) _____

Female (2) _____

3. What is your current marital status?

Married (1) _____

Separated (2) _____

Divorced (3) _____

Widowed (4) _____

Never married (5) _____

4. What is the type of joint specific osteoarthritis you are affected with? _____

5. How many years have you had arthritis?_____

Please check (X) on the most appropriate answer for each question.

These questions refer to ARTHRITIS PAIN.

Severe	Moderate	Mild	Very Mild	None
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

6. How would you describe the arthritis pain you usually have? _____ _____ _____ _____ _____

	All Days	Most Days	Some Days	Few Days	No Days
	(1)	(2)	(3)	(4)	(5)

7. How often did you have severe pain from your arthritis? _____ _____ _____ _____ _____
8. How often did you have pain in two or more joints at the same time? _____ _____ _____ _____ _____
9. How often did your morning stiffness last more than one hour from the time you woke up? _____ _____ _____ _____ _____
10. How often did your pain make it difficult for you to sleep? _____ _____ _____ _____ _____

These questions refer to MOBILITY LEVEL.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

11. How often were you physically able to drive a car or use public transportation? _____ _____ _____ _____ _____
12. How often were you out of the house for at least part of the day? _____ _____ _____ _____ _____
13. How often were you able to do errands in the neighborhood? _____ _____ _____ _____ _____
14. How often did someone have to assist you to get around & outside your home? _____ _____ _____ _____ _____
15. How often were you in a bed or chair for most or all of the day? _____ _____ _____ _____ _____

These questions refer to WALKING AND BENDING.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

16. Did you have trouble doing vigorous activities such as running, lifting heavy objects, or participating in strenuous sports? _____ _____ _____ _____ _____
17. Did you have trouble either walking several blocks or climbing a few flights of stairs? _____ _____ _____ _____ _____
18. Did you have trouble bending, lifting or stooping? _____ _____ _____ _____ _____
19. Did you have trouble either walking one block or climbing one flight of stairs? _____ _____ _____ _____ _____
20. Were you unable to walk unless assisted by another person or by a cane, crutches, or walker? _____ _____ _____ _____ _____

These questions refer to HAND AND FINGER FUNCTION.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

21. Could you easily write with a pen or pencil? _____ _____ _____ _____ _____
22. Could you easily button a shirt or blouse? _____ _____ _____ _____ _____
23. Could you easily turn a key in a lock? _____ _____ _____ _____ _____
24. Could you easily tie a knot or a bow? _____ _____ _____ _____ _____

25. Could you easily open a new jar of food?_____ _____ _____ _____ _____

These questions refer to ARM FUNCTION.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

26. Could you easily wipe your mouth with a napkin? _____ _____ _____ _____ _____

27. Could you easily put on a pullover sweater? _____ _____ _____ _____ _____

28. Could you easily comb or brush your hair? _____ _____ _____ _____ _____

29. Could you easily scratch your low back with your hand? _____ _____ _____ _____ _____

30. Could you easily reach shelves that were above your head? _____ _____ _____ _____ _____

These questions refer to SELF-CARE TASKS.

Always	Very Often	Sometimes	Almost Never	Never
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

31 Did you need help to take a bath or shower? _____ _____ _____ _____ _____

32. Did you need help to get dressed? _____ _____ _____ _____ _____

33. Did you need help to use the toilet? _____ _____ _____ _____ _____

34.Did you need help to get in or out of bed?_____ _____ _____ _____ _____

These questions refer to HOUSEHOLD TASKS.

Always	Very Often	Sometimes	Almost Never	Never
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

35. If you had the necessary transportation, could you go shopping for groceries without help? _____ _____ _____ _____ _____
36. If you had kitchen facilities, could you prepare your own meals without help? _____ _____ _____ _____ _____
37. If you had household tools and appliances, could you do your own housework without help? _____ _____ _____ _____ _____
38. If you had laundry facilities, could you do your own laundry without help? _____ _____ _____ _____ _____

These questions refer to SOCIAL ACTIVITY.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

39. How often did you get together with friends or relatives? _____ _____ _____ _____ _____
40. How often did you have friends or relatives over to your home? _____ _____ _____ _____ _____
41. How often did you visit friends or relatives at their homes? _____ _____ _____ _____ _____
42. How often were you on the telephone with close friends or relatives? _____ _____ _____ _____ _____

43. How often did you go to a meeting of a
church, club, team or other group? _____ _____ _____ _____ _____

These questions refer to WORK.

Paid work	House work	School work	Unemployed	Disabled	Retired
(1)	(2)	(3)	(4)	(5)	(6)

DURING THE PAST MONTH...

44. What has been your
main form of work? _____ _____ _____ _____ _____ _____

If you answered unemployed, disabled or retired, please skip the next five questions.

All Days	Most Days	Some Days	Few Days	No Days
(1)	(2)	(3)	(4)	(5)

DURING THE PAST MONTH...

45. How often were you unable to
do any paid work, housework
or school work? _____ _____ _____ _____ _____

46.On the days that you did work, did you feel that your family or friends understood the effects of your arthritis as you would like? _____ _____ _____ _____

47. How often did you have to work
a shorter day? _____ _____ _____ _____ _____

48. On the days that you did work,
how often were you unable to do
your work carefully & accurately _____ _____ _____ _____ _____

49. On the days that you did work,
how often did you have to change
the way your paid work, housework
or school work is usually done? _____ _____ _____ _____ _____

Thank you for completing this questionnaire AIMS

APPENDIX F3: Questionnaire AIMS2 (Swahili version)

UNIVERSITY OF THE WESTERN CAPE

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Tel: +27 21-959 2542 Fax: 27 21-9591217
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ARTHRITIS IMPACT MEASUREMENT
SCALES 2 (AIMS2) (ADAPTED)

Maelekezo: Tafadhali jibu maswali yafuatayo kuhusu afya yako. Maswali mengi huuliza kuhusu afya yako mwezi uliopita. Hakuna majibu sahihi au yaisio sahihi kwa maswali na wengi wanaweza kujibu kwa hundi rahisi (X). Tafadhali jibu maswali yote.

Data ya idadi ya watu

Tafadhali toa maelezo yafuatayo kuhusu wewe mwenyewe:

1. Umri:	(1)	(2)	(3)	(4)
	40-49	50-59	60-69	70-79
	_____	_____	_____	_____

2. Jinsia:	(1)	(2)
	Kiume	Kike
	_____	_____

3. Hali yako ya sasa ya ndoa ni gani?

(1)	(2)	(3)	(4)	(5)
Ndani ya ndoa	Nimetengana	Nimetalika	Mjane	Sijawahi kuolewa
____	____	____	____	____

4. Aina gani ya ugonjwa wa maungio (osteoarthritis) maalum unaathiriwa nayo? _____

5. Je, umekuwa na ugonjwa wa yabis au arthritis kwa miaka mingapi? _____

Tafadhali piga (X) jibu sahihi zaidi kwa kila swali.
(Maswali haya yanahusu uchungu wa ugojwa wa yabisi au ARTHRITIS)

	(1)	(2)	(3)	(4)	(5)
6. Je, unaweza kuelezea maumivu ya ugonjwa wa arthritis unayokuwa nayo:	Siku Zote	Siku nyingi	Siku zingine	Siku chache	Hakuna Siku
	____	____	____	____	____
7. Ni mara ngapi ulikuwa na maumivu makali sana kutoka kwa arthritis yako?	____	____	____	____	____
8. Ni mara ngapi ulikuwa na maumivu viungo viwili au zaidi kwa wakati mmoja?	____	____	____	____	____
9. Ni mara ngapi ugumu wako wa asubuhi ulikaa zaidi ya saa moja kutoka wakati umeamka?	____	____	____	____	____
10. Mara ngapi maumivu yako yanafanya iwe vigumu kwa wewe kulala	____	____	____	____	____

Maswali haya yanarejea uwezo wa KUTEMBEA AU KUFANYA MAMBO

KATIKA MWEZI ULIOPITA..	(1)	(2)	(3)	(4)	(5)
11. Ni mara ngapi ulikuwa na uwezo wa kuendesha gari au usafiri wa umma?	Siku zote	Siku nyingi	Siku zingine	Siku chache	Hakuna Siku
	____	____	____	____	____

12. Ni mara ngapi ulikuwa nje ya nyumba kwa angalau sehemu ya siku? ____ ____ ____ ____ ____

13. Ni mara ngapi ulivyoweza kufanya kazi katika ujirani? ____ ____ ____ ____ ____

14. Ni mara ngapi mtu alisaidia wewe kutembea karibu na nje ya nyumba yako? ____ ____ ____ ____ ____

15. Ni mara ngapi umeketi sana au kuwa kitandani kwa masaa marefu ? ____ ____ ____ ____ ____

Maswali haya yanarejelea KUTEMBEA NA KUINAMA

KATIKA MWEZI ULIOPITA...

	(1)	(2)	(3)	(4)	(5)
16. Je umekuwa na shida kufanya shughuli kama vile kukimbia, kuinua vitu vizito, au kushiriki katika michezo migumu	Siku zote	Siku nyingi	Siku zingine	Siku chache	Hakuna siku
	____	____	____	____	____
17. Je, umekuana na shida kutembea hatua kadhaa au kupanda ngazi kadhaa?	____	____	____	____	____
18. Je, umekuwa na shida ya kuinua vitu, au kuinama?	____	____	____	____	____
19. Je, umekuana na shida kutembea vitalu kadhaa au kupanda ngazi kadhaa ?	____	____	____	____	____

20. Je, ungeza kutembea

bila kusaidiwa na mtu mwingine au kwa mkongojo, au kigari ?	____	____	____	____	____

Maswali haya yanarejea matumizi ya KIGANJA VIDOLE

KATIKA MWEZI ULIOPITA….

21. Je! Unaweza kuandika kwa urahisi na kalamu au penseli?	(1) Siku zote	(2) Siku nyingi	(3) Siku zingine	(4) Siku chache	(5) Hakuna Siku
	____	____	____	____	____
22. Je, unaweza kufunga kifungo cha shati au blausi kwa urahisi?	____	____	____	____	____
23. Je! Unaweza kutumia Kwa urahisi ufunguo kwenye mlango?	____	____	____	____	____
24. Je, unaweza kuunganisha kwa urahisi fundo (tie) au upinde (bow tie)?	____	____	____	____	____
25. Je! Unaweza kufungua mkebe mpya wa chakula kwa urahisi?	____	____	____	____	____

Maswali haya yanarejea matumizi ya MKONO

KATIKA MWEZI ULIOPITA..	(1) Siku zote	(2) Siku nyingi	(3) Siku zingine	(4) Siku chache	(5) Hakuna Siku
26. Je, unaweza ukitumia kitambaa? Kufuta Kinywa chako kwa urahisi	____	____	____	____	____
27. Je, unaweza kufaa sweater au fulana kwa					

urahisi? ____ ____ ____ ____ ____

28. Je! Unaweza kuchana nywele kwa urahisi? ____ ____ ____ ____ ____

29. Je, unaweza kujikwara mgongo ukitumia mkono wako? ____ ____ ____ ____ ____

30. Je! Unaweza kufikia kwa urahisi kabati zikiwa juu ya kichwa chako? ____ ____ ____ ____ ____

Maswali haya yanarejea MAMBO UNAYOWEZA KUJIFANYIA

KATIKA MWEZI ULIOPITA..	(1)	(2)	(3)	(4)	(5)
31. Je unahitaji Msaada kuoga?	Siku zote ____	Siku nyingi ____	Siku zingine ____	Siku chache ____	Hakuna siku ____
32. Je! Unahitaji msaada ili uvae?	____	____	____	____	____
33. Je! Unahitaji msaada kutumia choo?	____	____	____	____	
34. Je! Unahitaji usaidizi wa kuingia ndani na kutoka kwenye kitanda?	____	____	____	____	____

Maswali haya yanarejea KAZI ZA NYUMBA

KATIKA MWEZI ULIOPITA..	(1)	(2)	(3)	(4)	(5)
35. Ikiwa ungekuwa na Usafiri unaohitajika, je ungeweza kwenda sokoni au dukani bila msaada?	Siku zote ____	Siku nyingi ____	Siku zingine ____	Siku chache ____	Hakuna Siku ____

36. Ikiwa ungekuwa na vifaa vya jikoni, unaweza kuandaa chakula chako mwenyewe bila msaada?	____	____	____	____	____
37. Ikiwa ungekuwa na vifaa vya nyumbani je! ungeweza kufanya kazi zako za nyumbani bila msaada?	____	____	____	____	____
38. Ikiwa ungekuwa na vifaa vya kufulia, je, ungeweza kusafisha mwenyewe bila msaada?	____	____	____	____	____

Maswali haya yanarejea MAHUSIANO YA JAMAA NA MARAFIKI

KATIKA MWEZI ULIOPITA..	(1)	(2)	(3)	(4)	(5)
39. Ni mara ngapi ulipata Kuwa pamoja na marafiki au jamaa?	Siku zote ____	Siku nyingi ____	Siku zingine ____	Siku chache ____	Hakuna Siku ____
40. Ni mara ngapi ulikuwa Na marafiki au jamaa nyumbani kwako?	____	____	____	____	____
41. Ni mara ngapi uliwatembelea marafiki au jamaa katika nyumba zao?	____	____	____	____	____
42. Ni mara ngapi ulipikia marafiki au jamaa simu?	____	____	____	____	____
43. Ni mara ngapi ulienda kwenye mkutano wa kanisa, klabu, timu au kikundi kingine?	____	____	____	____	____

Maswali haya yanarejea KAZI

KATIKA MWEZI ULIOPITA..	(1)	(2)	(3)	(4)	(5)
44. Umekuwa ukifanya kazi gani?	Siku nyingi ____	Siku zingine ____	Siku chache ____	Siku Siku ____	Hakuna Siku ____
45. Ni mara ngapi wewe haukuweza kufanya kazi yoyote ya kulipwa, kazi za nyumbani au kazi ya shule?	____	____	____	____	____
46. Katika siku ambazo ulifanya kazi, umehisi kwamba familia yako au marafiki walielewa madhara ya ugonjwa wa arthritis kama vile ungependa?	____	____	____	____	____
47. Ni mara ngapi ulilazimika kukatisha kufanya kazi:	____	____	____	____	____
48. Siku ambazo ulifanya kazi, mara ngapi wewe haukuweza kufanya kazi yako kwa makini na usahihi:	____	____	____	____	____
49. Siku ulizofanya kazi, ni mara ngapi ulipaswa kubadilisha njia yako ya kazi ya kulipwa, kazi za nyumbani au kazi ya shule hufanyika kawaida?	____	____	____	____	____

Asante kwa kujibu maswali haya AIMS2

APPENDIX G1: Interview guide (patients) English version

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INTERVIEW GUIDE FOR PATIENTS

1. You have been receiving rehabilitation services for the management of your condition. Tell me the impact it has had in relation to your activities of daily life.

2. Tell me, how your rehabilitation program has been implemented from the beginning until now.

   I. Your assessment
   II. Rehabilitation plans
   III. Your goals
   IV. Treatment sessions discussed and agreed upon with your therapist
   V. Education of home program and implementation
   VI. Expected rehabilitation outcomes
   VII. Involvement of a family member throughout your rehabilitation process

3. How would you describe your relationship with your attending physiotherapist?

   I. Do you feel your therapist is friendly? Why?
   II. Do you feel your therapist is not engaging? Why do you feel this is so?
   III. Does your therapist take time to explain to you the techniques in your rehabilitation program? If yes how? If no what do you feel could be the reason?

4. Please tell me of your experience of interaction and communication with your attending physiotherapist.

I. Is it good? Could you tell me of one instance to collaborate this?
II. Is it bad? What happened?

5. Could you tell me in detail what helps you attend your rehabilitation sessions at the clinic with regard to;
   I. Support from your family.
   II. Your therapist's attitude towards you and the rehabilitation process.
   III. Tell me about the treatment environment.
   IV. Let us talk about financial support.

6. Please tell me of any home based rehabilitation programs you have been receiving?
   I. If yes what does the program entail?
   II. If no why are you not on one that you are entitled to?

7. Please share with me any barriers that you may have experienced with adhering to rehabilitation programs in hospital and at home.

8. Please share with me any motivating factors you have experienced with your self-care rehabilitation programs at home?

9. Please share with me what changes can be put in place to further improve your adherence to clinic based and self care home rehabilitation programs?

APPENDIX G2: Interview guide (patients) Swahili version

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MWONGOZO WA MAHOJIANO KWA WAGONJWA

1. Umekuwa ukipokea huduma kwa ajili ya ugojwa huu. Nieleze jinsi huduma hii imeadhiri maisha yako siku baada ya nyingine

2. Nieleze jinsi programmu ya ukarabati au kurekebisha hali yako imetekeleswa tangu mwanzo hadi sasa

   I. Vile ilikadiriwa/ilipimwa au kujulikana kabisa
   II. Mipangilio ya kurekebisha au kutibu
   III. Malengo yako ya usoni)
   IV. Maelezo na miafaka ya vikao vya tiba mlio fikia pamoja na Daktari wako
   V. Kuelimishwa juu ya jinsi unaweza kutekelza mipango ya tiba ukiwa Nyumbani
   VI. Matazamio ya urekebishaji wa hali yako
   VII. Kuhusishwa kwa washiriki wa familia katika mipango yote ya urekebishaji

3. Je! Uhusiano wako na daktari wako ukoje?)

   I. Unahisi dakatari wako ni mwenye urafiki? Kwa nini?
   II. Unahisi daktari wako si mwenye kukuhuzisha sana? Kwa nini unahisi hivyo?
   III. Je! daktari wakouchukua nafasi ya kukueleza mbinu za urekebishaji wa hali yako? Kama jibu ni ndio, yeye ufanyaje hivo?
   IV. Kama sivyo unahisi sababu ni nini?

4. Tafadhali nieleze unayo pitia unapokuwa na kuongea na daktari wako?

    I. Fafanua na aangalao kisa kimoja
    II. Je! ni mabaya? Ni yapi yalitendeka?

5. Nieleze, ni nini ukuchochea kuhudhuria vikao vya tiba katika clinic kuhusu:

    I. Msaada kutoka kwa familia yako
    II. Mtazamo wa dakatari au mtaalamu juu yako na mchakato wa ukarabati.
    III. Mazingira ya matibabu
    IV. Usaindisi wa kifedha

6. Tafadhali nieleze kuhusu mipango yoyote ya kurekebisha hali yako wa nyumbani ulikuwa ukipokea

    I. Mpango unahusisha nini?
    II. Kwa nini hauko kwa mpango ambayo una haki kuwa ndani?

7. Tafadhali shiriki na mimi vikwazo vyovyote ambavyo unaweza kuwa na uzoefu nazo kuhusiana na kuzingatia programu za ukarabati katika hospitali na nyumbani.
8. Tafadhali shiriki na mimi mambo yoyote yanayo tia moyo uliyapata na mipango yako ya kujirekebisha nyumbani?
9. Tafadhali shiriki na mimi mabadiliko gani yanaweza kuanzishwa ili kuboresha uzingatiaji wako kwenye programu za kliniki za kujitegemea za ukarabati wa nyumbani?

APPENDIX G3: Interview guide (physiotherapists) English version

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INTERVIEW GUIDE FOR PHYSIOTHERAPISTS.

1. There are different patients presenting with osteoarthritis receiving rehabilitation services in the physiotherapy clinic. Could you mention the joint specific types of osteoarthritis that you have managed? Which has been the most prevalent of these?
2. Please tell me what your rehabilitation process to these patients entails?
    I. Assessment
    II. Plan
    III. Intervention
    IV. Evaluation
    V. Review
3. Explain to me your opinion on rehabilitation as an intervention in the management of patients with osteoarthritis.
4. Having had vast experience in the field of physiotherapy in the management of these patients, some still do not comply with their programs at the clinic. Why do you think this is happening?
5. What measures have been taken by you to try and overcomes these challenges?
6. Adherence to home rehabilitation programs is also a challenge to some of the patients with the condition. What do you feel can be done to help the patients comply with these programs?
7. What has been the effect of patient non adherence to rehabilitation programs?
    I. To the patient
    II. To you as the therapist
8. How would you describe the level of interaction between you and your patient?

I. Do you take time to explain and educate the patients on the importance of the exercise programs they should perform

II. Are you readily available for them to give advice when they are away from the clinical setting?

9. What strategies/ facilitators can you add on to counter non adherence to rehabilitation services observed by some of the patients with osteoarthritis?

APPENDIX G4: Interview guide (physiotherapists) Swahili version

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MWONGOZO WA MAHOJIANO KWA DAKTARI/MTALAAMU (PHYSIOTHERAPISTS)

1. Kuna wagonjwa mbalimbali wanao ugonjwa wa yabisi kavu aina ya osteoarthritis wanaopata huduma za ukarabati au urekebishaji katika kliniki ya physiotherapy. Je, unaweza kutaja aina maalum za osteoarthritis ya kiungo ambazo umeshughulika nazo? Ni ipi ambayo imeenea zaidi?

2. Tafadhali nieleze mchakato wako wa ukarabati kwa wagonjwa hawa unahusisha nini?

I. Tathmini

II. Mpango

III. Kuingilia kati

IV. Kupima

V. Mapitio

3. Nieleze maoni yako juu ya ukarabati kama njia ya kuzaudia wagonjwa wanaogua osteoarthritis.

4. Baada ya kuwa na uzoefu mkubwa katika uwanja wa physiotherapy katika usimamizi wa wagonjwa hawa, wengine bado wanakosa kuzingatia programu zao katika kliniki. Kwa nini unafikiri hii inatokea?

5. Ni hatua gani zilizochukuliwa na wewe kujaribu na kushinda changamoto hizi?

6. Kuzingatia mipango ya ukarabati wa nyumbani pia ni changamoto kwa baadhi ya wagonjwa wenye hali hiyo. Unahisi ni nini kinaweza kusaidia wagonjwa kuzingatia programu hizi?

7. Ni nini imekuwa athari za kutokuzingatia programu za ukarabati?

I. Kwa mgonjwa

II. Kwa wewe kama mtaalamu

8. Unaweza kuelezea kiwango gani cha ushirikiano kati yako na mgonjwa wako?

I. Je, unachukua muda wa kueleza na kuelimisha wagonjwa umuhimu wa mipango ya zoezi wanayopaswa kufanya

II. Je, unapatikana kwa urahisi kwao kutoa ushauri wakati wao wako mbali na mazingira ya kliniki?

9. Ni mikakati gani / wasaidizi ambao unaweza kuongeza juu ya kukabiliana na wasiwasi kwa huduma za ukarabati ambazo zimeonekana na baadhi ya wagonjwa wenye