

**A STUDY TO IDENTIFY THE PHYSIOTHERAPY REFERRAL PRACTICES OF
SOUTH AFRICAN MEDICAL PRACTITIONERS IN BLOEMFONTEIN FOR
MUSCULOSKELETAL PATIENTS**

by

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This mini dissertation is submitted in accordance with the requirements for the fulfilment for
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DECLARATION

I, Alida Maria Janse van Rensburg, student number: 1996021869 hereby declare that all work submitted in this mini-dissertation for an MSc degree in Sport Physiotherapy at the University of the Free State is my independent effort and does not involve plagiarism. This mini-dissertation has not previously been submitted for a degree at any university or faculty.

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Alida Maria Janse van Rensburg

Date: 10 July 2017

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ABSTRACT

Background. The burden of Musculoskeletal disorders (MSD) are a great concern globally. To address this global problem effective MSD management including appropriate referrals to physiotherapist and other health professionals are essential. Limited knowledge regarding the practices of medical practitioners referrals for patients with MSD exist globally. An improved comprehension of medical practitioner referral practices to physiotherapy are essential because of the growing burden of MSD internationally and the impact on both the patient population and the South African health system.

Aim. The aim of this study was to identify the physiotherapy referral practices that South African medical practitioners in Bloemfontein follow, for individuals living with MSD.

Method. A mixed methods approach was utilised, implementing a semi structured questionnaire, designed with the assistance of an expert panel. The questionnaire was completed by 49 participants who were given a choice between completing the questions themselves, telephonically or in person. Interviews done telephonically and in person were recorded and open-ended questions were transcribed verbatim. The quantitative data was analysed with the assistance of the Department of Biostatistics at the University of the Free State. The qualitative data was analysed by the researcher.

Results. Results showed that medical practitioner musculoskeletal referrals to physiotherapy vary and multifaceted factors have an influence on their referral practices. Medical practitioners tend to be unsure about the specific role physiotherapists play in the management of individuals living with MSD. Medical practitioners gained most of their knowledge regarding physiotherapy during their postgraduate experience. A need for improved relationships and communication between medical practitioners and physiotherapists were evident.

Conclusions. All participating medical practitioners had an awareness regarding the physiotherapy profession and involvement in the management of individuals living with MSD. Medical practitioners regularly refer individuals suffering from MSD to physiotherapy, but their referral practices should be enhanced in terms of evidence based practice and the use of specialized physiotherapy services provided by physiotherapists. In order to decrease the burden of MSD awareness should be created and change should be advocated between all medical practitioners and physiotherapists and further research is necessary regarding referral practices of medical practitioners to all members of the inter professional medical team.

Keywords. “Musculoskeletal problems”, “musculoskeletal patient referrals to physiotherapy”, “physiotherapist role”, “musculoskeletal patient referrals to allied health professionals” and “the burden of musculoskeletal diseases”.

NOMENCLATURE

Allied health professionals: Tertiary qualified health professionals, other than doctors and nurses, who aim to restore optimal physical, sensory, psychological, cognitive and social function. They are allied to each other and their patients (Turnbull, Grimmer-Somers & Kumar, 2009).

Clinical reasoning: The application of the process of decision making, involving critical-thinking, by which health-care professionals collect and analyse patient information and identify potential actions to potentially improve the bio-psychosocial conditions of patients under their care (Vallente, 2016).

Content validity: A judgment by a carefully selected group of experts confirming that the measure used will effectively collect appropriate data correlating with the detailed proposal of a study (Trochim, 2006).

Cost-effective treatment: The least expensive treatment option when the relative costs and outcomes (effects) of two or more treatment techniques for a specific condition are compared (Phillips, 2009).

First-line practitioners: A person able to make an independent diagnosis and treat a condition, provided it falls within his / her scope of practice. Should the condition fall outside of their scope of practice, the practitioner will refer. The practitioner is autonomous in professional decision-making. It is acknowledged that with “first line practitioner status” come accountability and legal responsibilities (SASP, 2012).

General practitioner: A medical practitioner whose treatment is not focussed on a specific medical specialty but instead includes a variety of medical problems in patients of all ages for periodic health examinations, early detection of diseases and prevention of complications when diseases are already in existence. Also commonly referred to as a family doctor (Reid, Mash & Thigiti, 2010).

Health related quality of life: The mental, physical, social and general health aspects influencing a patient's quality of life. Important aspects to be considered under these broader categories are vitality, pain and cognitive functioning (Wilson & Cleary, 1995).

Inter professional medical team: A team with members from various medical health care professionals, who coordinate and collaborates the expertise of each profession, to provide holistic patient care (Cooley, 1994).

Non-communicable diseases (NCD): Chronic, slow progressing, 1-infectious diseases. Examples of NCD are cardiovascular diseases, cancers, chronic respiratory diseases and type II diabetes mellitus (World Health Organization, 2015).

Medical officer: A medical practitioner with the appropriate qualification to be registered with the Health Professions Council of South Africa (HPCSA) who has completed one year of community service, practicing in the primary care setting under supervision of a medical specialist, providing health services to civilians and/ or military personal (Reid et al. 2010).

Medical practitioners: A person trained and licensed to practice the science of medicine, which includes clinical examination, diagnosis and treatment of individuals to manage their health (Hogan, 2009).

Medical specialists are doctors who have completed advanced education and clinical training in a specific area of medicine (their specialty area) and who is seen as the lead clinician in the specific area of medicine (Reid et al. 2010).

Musculoskeletal disorders or disease: Injuries disorders or diseases of the muscles, nerves, tendons, osteal, osteo-articular, cartilage, an disorders of the nerves, tendons, and supporting structures of the body that are caused, precipitated or exacerbated by sudden onset or prolonged exposure to physical factors such as repetition, force, or awkward posture (NIOSH, 2012).

Medical referral: An act of sending or directing a patient for a second opinion or therapy to a specialist or subspecialist with specific or greater expertise, because the patient has a condition that the primary or referring health professional feels another health professional could address more effectively .

Referral practice: The Oxford dictionary explains practice as the actual application or use of an idea, belief, or method, as opposed to theories relating to it and/or criteria for it, referral practice could therefore be explained as the presentation of the theoretical medical referral (2010).

Referral criteria: The principle or standard by which a judgement is made to refer a patient for a procedure or to a health professional (Stevenson, 2010).

LIST OF ACRONYMS

BMI	- Body Mass Index.
GDP	- Gross Domestic Product.
HPCSA	- Health Professions Council of South Africa.
HRQOL	- Health Related Quality of Life.
ICF	- The International Classification of Functioning, Disability and Health.
IFOMPT	-The International Federation of Orthopaedic Manipulative Physical Therapists.
IPMT	- Inter Professional Medical Teams.
MSD	- Musculoskeletal Disorders or Diseases.
NCD	- Non-communicable Diseases
NGO	- Non-governmental Organisation.
OMT	- Orthopaedic Manipulative Therapy.
USA	- United States of America.
WHO	- World Health Organization.

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CHAPTER 1

Introduction

Musculoskeletal disorders (MSD) are the most common cause of severe chronic pain and physical disability, with a global prevalence having an impact on millions of individuals (Woolf & Pfleger, 2003).

Dr Brundtland, Director-General of the World Health Organization (WHO) stated that 'although the diseases causing death attract much of the public's attention, MSD are the foremost cause of morbidity globally, instigating an immense financial burden on health systems and causing a considerable influence on health-related quality of life' (Agel, Akesson & Amadio, 2003:1). This latter statement highlights the crises of the burden of MSD identified by the WHO and the fact that effective management of MSD should receive urgent attention (Agel et al. 2003).

1.1 Significance and justification of the study represented:

MSD are the leading group of conditions globally, that cause pain and debilitation for individuals, which could lead to the individual's inability to work and limit the quality of their lives (McClatchey, 2004). MSD consist of a variety of conditions with a spectrum of different pathophysiology, which are associated with one another anatomically, due to the consequence of pain and physical dysfunction experienced by the individual (Woolf & Pfleger, 2003).

Due to the improved treatment of communicable diseases internationally which will increase populations' mortality age the incidence of individuals living with MSD is increasing (McClatchey, 2004). An increase in global road traffic accidents, are expected to lead to a further increase in the number of individuals suffering with MSD because of the damage these injuries cause to the musculoskeletal system (McClatchey, 2004). The burden of MSD will thus escalate further because of the latter two facts (McClatchey, 2004). A further increase in the burden of MSD will lead to a noticeable increase of health-care expenses, causing strain on global health care systems (McClatchey, 2004; Agel et al. 2003; Paul, 2005). MSD are thus a significant and an increasing problem, which affects

international populations, resulting in an urgent need to identify potential resolutions for the expanding problem this group of diseases/conditions present (McClatchey, 2004).

A proposed model of care to address the burden of MSD is to involve inter-professional medical teams (IPMT), who could offer integrated patient-centred care (Keswani, Koenig, and Bozic, 2016). Depending on the unique needs of the individual living with MSD, to perform ideal health care, the member of the inter-professional team who could manage the individual best, should be utilized first (Cooley, 1994). Informal discussions between four general practitioners, practicing at Menlynmed, which is an interdisciplinary medical centre in Pretoria, and the researcher identified a lack of awareness regarding appropriate referrals for patients living with MSD to physiotherapy¹. The medical practitioners acknowledged that they were unsure about the indications and/or the appropriate referral practices for individuals living with different MSD to physiotherapy¹.

The latter indication of uncertainty regarding appropriate referrals of individuals living with MSD is concerning, because of the increasing problem of MSD globally, and the fact that proficient referrals between IPMT members are essential to address MSD effectively.

Research to identify the current referral system between IPMT members and the efficiency thereof, is important to ensure effective health care for a growing population of individuals living with MSD. This study describes one aspect of the IPMT managing individuals living with MSD, namely the referral practices of South African medical practitioners referring patients living with MSD to physiotherapists in Bloemfontein. This particular study aimed to increase the understanding regarding inter-professional referral practices of individuals living with MSD, specifically between medical practitioners and physiotherapists.

The intention of the study was to identify whether there is a need to improve the referral practices of medical practitioners to physiotherapy for individuals living with MSD. Another possible consequence of this study is that it could recognise the suitable adaptations needed, concerning medical practitioner referral practices for individuals living with MSD to

¹ Personal communication with medical practitioners at Menlynmed, Private practice, Pretoria. Date: March 2015.

physiotherapy. Results of this study could thus potentially improve the management of MSD in South Africa.

1.2 Research Problem

The global burden MSD is a great concern (WHO, 2013). To address the latter global problem effective MSD management, including appropriate referrals to physiotherapist and other health professionals are essential. Limited knowledge regarding the practices of medical practitioner's referrals for patients with MSD exists. There is a lack of comprehension regarding medical practitioner referral practices to physiotherapy, which affects the management of the growing burden of MSD internationally. During a comprehensive literature review, no sources confirming the appropriate referral practices for individuals living with MSD to IPMT members or physiotherapy could be identified, within the South African context. Poor management of MSD could have a negative impact on both the South African patient population and the South African health system. This study was done to identify the physiotherapy referral practices that South African medical practitioners in Bloemfontein follow, for individuals living with MSD to improve the effective management of patients with MSD.

1.3 Research Question

What are the referral practices of medical practitioners in Bloemfontein, when referring individuals living with MSD to physiotherapy?

1.4 Research Aim

The main aim of this study is to identify the physiotherapy referral practices that South African medical practitioners in Bloemfontein follow, specifically for individuals living with MSD.

1.5 Research Objectives

In relation to medical practitioners who refer individuals living with musculoskeletal conditions to physiotherapy, the specific objectives of the study were to:

- Gain knowledge regarding the referral practices used by medical practitioners who refer individuals living with MSD to physiotherapists;
- Determine different influences which have an effect on referrals;

- To identify strategies to improve or maintain referral practices of medical practitioners to physiotherapy for individuals living with MSD, in order to ensure optimal care and wellbeing of these MSD individuals;
- Determine the awareness amongst South African medical practitioners of the role that physiotherapists play in the management of individuals living with MSD.

1.6 Outline of the mini-dissertation

The mini-dissertation is structured in the following way:

Chapter 1 provides a brief introduction to the research questions and an overview of the research problem. The following chapter reports on the relevant studies regarding the referral practices of medical practitioners in developed and developing countries worldwide.

Chapter 3 presents the methodology and the research design, while the results of the study will be highlighted in Chapter 4.

Chapter 5 will present an in depth discussion regarding the results followed by Chapter 6 where a conclusion of the study's findings will be provided.

CHAPTER 2

A literature review of medical practitioner referral practices for individuals living with MSD

Introduction

This chapter offers a discussion based on relevant literature sources, arguing the significance of research regarding medical practitioner's referral practices for individuals living with MSD to physiotherapy. The literature review illustrates a paucity of relevant literature sources regarding international and South African medical practitioner referral practices to physiotherapy for individuals living with MSD. The literature will then highlight the increased burden of MSD and the effect this has internationally, which in turn emphasizes the urgency for research to assist with effective and appropriate referral and management of individuals living with MSD. Thereafter evidence to support physiotherapy management as an effective treatment of individuals living with MSD will be provided. An explanation of the role of the physiotherapist, as part of the IPMT managing individuals living with MSD will follow. Finally, the literature review will demonstrate the complex influences, which affect the referral practices of medical practitioners.

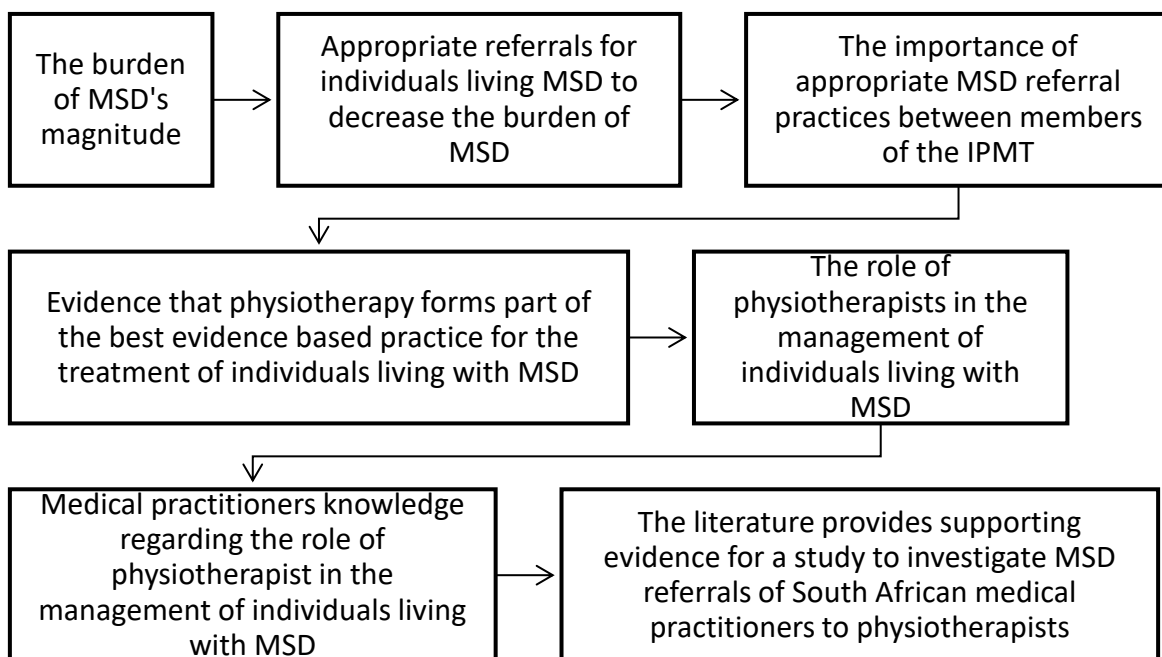


Figure 2.1: An outline of the literature review

2.1 Literature search approach:

A comprehensive literature search was performed using the following search engines: Cochrane Library; MEDLINE; PEDro; Pubmed and Science Direct. Key words used during the

conducting of the search were “Musculoskeletal problems”, “musculoskeletal patient referrals to physiotherapy”, “physiotherapist role”, “musculoskeletal patient referrals to allied health professionals” and “the burden of musculoskeletal diseases”.

The literature search was conducted between February 2013 to February 2016.

2.2 The burden of MSD:

MSD includes various injuries and diseases of the musculoskeletal system with different pathophysiology (McClatchey, 2004). The WHO identified the most prominent of the 150 MSD's affecting patients globally to be osteoporosis, rheumatoid arthritis, osteoarthritis, joint diseases, spinal disorders, low back pain, and severe trauma (McClatchey, 2004; Paul, 2005). The pain and physical dysfunction caused by MSD could potentially be disabling, resulting in individuals' inability to work and also limit their quality of life (McClatchey, 2004). MSD are the leading group of conditions causing pain and disability in developed world populations, causing a similar morbidity pattern in developing world populations (Paul, 2005). The latter has a considerable impact on global society's health and their quality of life, imposing a huge financial burden on health care systems and needs to be addressed with absolute urgency (Paul, 2005). Burden of MSD is viewed as the impact musculoskeletal conditions have on society and the individual calculated by the extensive financial strain on healthcare systems globally and the morbidity caused by these diseases (WHO, 2017). The WHO measures the burden of MSD on societies by implementing the effect of these disorders utilising a time- based measure, in terms of quality-adjusted life years (QALYs) or disability-adjusted life years (DALYs), both of which calculate the amount of years lost due to time lived in states of less than full health due to MSD (WHO, 2017). One could only appreciate the urgency of research and action necessary in the field of MSD, if the magnitude of the international increasing burden MSD is understood. This section will therefor discuss and explain the global and South African burden of MSD.

Limited research about MSD management leads to a lack of appreciation and understanding of MSD by members of the IPMT (Agel et al. 2003). The WHO identified this latter mentioned gap in the knowledge of MSD as the greatest hindrance regarding appropriate MSD management (Agel et al. 2003). In order to address the identified discrepancy of information regarding MSD, the WHO completed a comprehensive review and report called

“The Burden of Musculoskeletal Disorders at the Start of the New Millennium”, in collaboration with the Bone and Joint Decade Initiative 2000-2010 (Paul, 2005). The Burden of Musculoskeletal Disorders at the Start of the New Millennium report describes a variety of disorders, from nonspecific aches and pains to extensive rheumatoid arthritis (McClatchey, 2004; Paul, 2005). This WHO report provides extensive statistical evidence exposing the magnitude of MSD and the effect thereof globally (McClatchey, 2004; Paul, 2005).

The most significant statistics supporting the burden of MSD for the coming years are: Eighty percent of the global population reported low(er) back pain at some time during their life (Agel et al. 2003).

Internationally, approximately 1.7 million hip fractures were reported in 1990 and the expected number is predicted to exceed 6 million by 2050 (Agel et al. 2003).

Forty percent of people above the age of 70 years suffer from osteoarthritis of the knee globally (Agel et al. 2003).

Mobility limitation affects 80% of patients with osteoarthritis and 25% of these patients are unable to perform their daily activities (Agel et al. 2003).

Within a decade of the onset of rheumatoid arthritis, 51% to 59% of patients diagnosed with the disease will terminate their employment due to the condition’s disabling effects (Agel et al. 2003).

The WHO report on the burden of MSD provides an outline of the magnitude of the problem caused by MSD and a baseline against which the effectiveness of applicable interventions could be measured objectively in future (McClatchey, 2004).

The WHO findings are of even greater significance for developing countries like South Africa, where there is a scarcity of resources and the effective management of NCD has incredible challenges (Gcelu &Kalla, 2015; Bradshaw, Levit, &Steyn, 2011). In South Africa, the resolution for the burden of MSD has to compete with diseases such as tuberculosis, HIV and malaria, which leads to underfunded and neglected management of individuals living with MSD (Gcelu &Kalla, 2015). Another factor magnifying the importance of the appropriate management of individuals living with MSD within the South African context is

the ratio of medical practitioners to those living with MSD in the general population (Gcelu &Kalla, 2015). The ratio of medical practitioners is 0.8 for every thousand patients compared to developed countries for example the United Kingdom (2.81 medical practitioners per 1000 patients), Canada (2.07 medical practitioners per 1000 patients) and Germany (3.89 medical practitioners per 1000 patients) (The World Bank, 2016). The ratio between medical practitioners and individuals living with MSD is therefore more significant compared to developed countries, which results in delayed patient care and challenges regarding MSD management (Gcelu &Kalla, 2015). Integrating qualified allied health professionals to manage and address MSD effectively, in order to resolve the ratio problem between medical practitioners and the high number of individuals living with MSD, is therefore essential in South Africa. The urgency of research to decrease the burden of MSD in combination with the lack of research done in the field of MSD management is already clear as illustrated above, especially in the South African context. The gap in the research regarding IPMT management of individuals living with MSD previously explained, strongly supports a study regarding medical practitioner's referral practices for individuals living with MSD, to physiotherapists.

Understanding the link between MSD and other non-communicable diseases (NCD) is important to address the burden of MSD (Agel et al. 2003). The WHO includes among NCD malignant and other neoplasms, diabetes mellitus, endocrine disorders, neuropsychiatric disorders, sense organs diseases, cardiovascular, respiratory, genitourinary, skin, musculoskeletal, congenital abnormalities, and oral conditions as a subsection of diseases (Bonilla-Chacín &Vásquez, 2012). Not only is MSD classified as one of the NCD, but there is also a strong association that exists between chronic MSD (osteoarthritis, low back pain, osteoporosis and gout) and other NCD (Bonilla-Chacín &Vásquez, 2012). Obesity and physical inactivity, stress and smoking are significant risk factors for developing chronic conditions such as MSD (Bonilla-Chacín &Vásquez, 2012). Because of the strong association between MSD and NCD, the WHO stated that a more comprehensive NCD prevention and control programme could potentially prevent chronic MSD, and a global strategy to achieve this is a matter of urgency (Agel et al. 2003).

Recent projections predict that by 2020 the leading escalation in NCD will occur in Africa (Lim, Vos & Flaxman, 2012). Over a third of individuals attending a clinic in Cape Town South Africa had MSD not due to trauma or previous injury; this is a higher figure than reported in community-based studies in the United States of America (USA) (24%), Mexico (17%) and the Philippines (16%) (Parker & Jelsma, 2010). These statistical facts together with the previously discussed burden of MSD should make the management of NCD in South Africa a priority for government and policy makers (Lim et al. 2012).

In the South African context, effective management of NCD faces incredible challenges (Bradshaw et al. 2011; Gcelu & Kala, 2015). These challenges includes inequalities in income, unemployment, lack of education, the lack of human resources and the lack of health professionals with specialized knowledge to manage non- communicable diseases (Bradshaw et al. 2011; Gcelu & Kalla, 2015). The above literature regarding NCD, specifically MSD, therefore provides a good argument in support of the combination of disease prevention and control programmes for NCD in a South African context. Most studies available regarding the course and prognosis of musculoskeletal conditions and the influence of other NCD on MSD are from developed countries (Agel et al. 2003). Considering the above-mentioned facts, it is imperative to investigate the referral practices of South African medical practitioners for individuals with MSD to physiotherapists to improve the management of NCD and address the burden of MSD.

2.3 Referral practices for individuals living with MSD:

In the previous section, literature was provided to substantiate the burden of MSD. One of the proposed care models to address the burden of MSD effectively is the application of an IPMT (Keswani et al. 2016). Little information exists regarding the effectiveness of this IPMT care model in the management of MSD globally (Agel et al. 2003). Appropriate management, including correct referral practices to manage individuals living with MSD are important, according to the literature (Malaviya, 2006; Woolf & Pflieger, 2003). During a comprehensive literature review, no sources confirming the appropriate referral practices for individuals living with MSD to IPMT members or physiotherapy could be identified, within the South African context.

A Cochrane review regarding professional interventions for medical practitioners on the management of MSD, concluded that little information exists to explain the existing practice for patient referrals within clinical pathways, especially for individuals living with MSD (Tzortziou Brown, Underwood & Mohamed, 2016). The latter Cochrane review included 30 studies, which assessed a variety of professional interventions by medical practitioners practicing as GPs, with the intention to improve the management of individuals living with MSD (Tzortziou Brown et al. 2016). Freburger, Carey & Holmes (2005) also confirmed the lack of studies to investigate referrals from medical practitioners to physiotherapists in the USA). The above-mentioned studies indicate a lack of research regarding appropriate referrals or referral practices for individuals living with MSD, strongly indicating the need for more research in the field of MSD patient referrals.

Not only is the research regarding the appropriate referral practices of individuals living with MSD scarce, but the research results for these referral practices and the management of individuals living with MSD are also dissimilar. For example: Tzortziou Brown et al (2016) compared 11 studies that assessed general practitioner interventions on osteoporosis, lower back pain, osteoarthritis, shoulder pain and other musculoskeletal conditions (which were not specified in the study). These latter studies reported that there is uncertainty regarding the most effective combination of management interventions that should be implemented for the treatment of MSD (Tzortziou Brown et al. 2016). Tzortziou Brown et al (2016) stated that medical practitioners use a multifaceted interventions approach, which includes MSD patient assessment and education, referrals for imaging and prescription of analgesia for MSD management (Tzortziou Brown et al. 2016). The latter multifaceted interventions by medical practitioners do not clearly indicate appropriate referrals for MSD to physiotherapy, highlighting a gap of information in the literature.

In Australia the management guidelines for individuals living with acute neck pain and acute lower back pain follows a similar approach, but general practitioners treat them differently (Michaleff, Harrison & Britt, 2012). The Australian guidelines for medical practitioners to treat neck and back pain patients include no routine imaging, patient education, reassurance and analgesia (Michaleff et al. 2012). The study by Michaleff et al (2012) presents the existence of inconsistencies in medical practitioner referral practices, but does

not reflect on medical practitioner referral practices for individuals living with MSD to allied health professionals. The latter again supports the fact that a lack of information regarding what appropriate referral practices to allied health professionals exists. Michaleff et al (2012) did however report that patients with acute neck pain were more frequently referred to allied health professionals, mostly physiotherapists, for manual therapy, rehabilitation and treatment, than patients with lower back pain. The higher levels of referrals for individuals living with neck pain to specialists, for further investigation and to physiotherapy for manual therapy and exercises suggests a lack of confidence in the management of neck pain (Michaleff et al. 2012). In comparison, acute back pain patients mostly received medication, advice, education and reassurance from medical practitioner (Michaleff et al. 2012). Michaleff et al (2012) concluded that the difference between referrals for neck and back pain might reflect medical practitioners' indecision in the management of MSD and suggested that there is a great need to explain the difference between the referral practices for individuals living with MSD to improve the management thereof. Michaleff et al (2012) also asserted that more research regarding referral practices for individuals living with MSD could improve the comprehension of referral dynamics between medical practitioners and allied health professionals (Michaleff et al. 2012). An improved understanding of referral practices amongst IPMT members, including their clinical reasoning when an individual living with MSD are referred, could ensure appropriate referrals and management of individuals living with MSD (Michaleff et al. 2012).

Numerous researchers indicate and confirm a lack of international and national research regarding the appropriate referral practices for patients living with MSD, which motivates research in the field of MSD management (Agel et al. 2003; Tzortziou Brown et al. 2016; Freburger et al 2005; Michaleff et al. 2012). Research improving the understanding of the appropriate referral practices for individuals living with MSD to allied health professionals, could improve the effective management of MSD and could potentially decrease the burden thereof.

2.4 The importance of appropriate musculoskeletal referral practices between members of the IPMT:

The urgent need for research and effective MSD management has been highlighted by the lack of literature regarding referrals for individuals living with MSD, and by the magnitude of

the effect MSD are having on the global population. This study will focus on the IPMT health care model to address the burden of MSD. Appropriate MSD referral practices within the IPMT context is an important aspect in the management of the burden of MSD. This section will argue why medical practitioner referral practices for MSD to physiotherapy is an important focus point in MSD research.

Despite the fact that physiotherapists are viewed as first line practitioners, the first member of the IPMT consulted by individuals living with MSD in most health care systems is traditionally the medical practitioner (Foster, Hartvigsen & Croft, 2012). Individuals living with MSD prefer to consult medical practitioners prior to consulting other health care professionals, to rule out the possibility that serious pathology is the cause of their pain (Foster, et al. 2012). Medical practitioners therefore act as gatekeepers in the health care system, responsible for appropriate access or referrals to IPMT members (Foster, et al. 2012). Considering the research done by Foster et al (2012) and the estimation of the growing societal burden related to MSD discussed in section 2.2, appropriate medical practitioner referrals of individuals living with MSD appear to be crucial. Medical practitioner referral practices for patients living with MSD to physiotherapy are of further concern because of their role as gatekeepers (Clemence & Seamark, 2003). Accurate adaptations or improvement to care pathways for patients with MSD is only possible if information regarding the current medical referral practices is available (Foster, et al. 2012).

A study conducted in the United Kingdom describing referrals of individuals living with MSD as fragmented, often difficult, confusing, less efficient and expensive also supports research investigating medical practitioner referral practices for individuals living with MSD (Petrides & Saw, 2013).

The aim of any IPMT involved in the treatment of MSD is to provide comprehensive healthcare, ensuring the most favourable health related quality of life (HRQOL) for each patient (Mitchell, Tieman & Shelby-James, 2008). HRQOL includes the mental, physical, social and general health aspects influencing an individual's quality of life (Wilson & Cleary, 1995). Important aspects to be considered under these broader categories are vitality, pain and cognitive functioning (Wilson & Cleary, 1995). HRQOL is thus affected when an

individual suffers from MSD.

Members of the IPMT should address the patient's needs individualistically and holistically (Wilson & Cleary, 1995). The holistic approach considers each patient's physical and bio-psychosocial requirements and not only symptomatic or biological aspects, thus ensuring optimal wellbeing and HRQOL as a result (Wilson & Cleary, 1995). The International Classification of Functioning, Disability and Health (ICF) are a conceptual framework and classification system, which applies the latter described bio-psychosocial and integrative approach (Escorpizo & Bemis-Dougherty, 2015). The ICF was designed by the WHO in 2001 and explains the impact of a health condition on an individual's functioning, in a comprehensive manner (Escorpizo & Bemis-Dougherty, 2015). The ICF is a universal framework, which could be applied as the global standard to describe and measure health and disability for individuals living with MSD (Escorpizo & Bemis-Dougherty, 2015). Implementation of the ICF as a reference framework can play a primary role within the rehabilitation-of-disability process of MSD (Escorpizo & Bemis-Dougherty, 2015). Using the ICF, medical practitioners could refer, rehabilitate and manage individuals living with MSD more appropriately, and thus ensure proper allocation of resources (Escorpizo & Bemis-Dougherty, 2015). HRQOL and the implementation of the ICF framework are important aspects to take into consideration within the IPMT for the appropriate management of individuals living with MSD.

To provide optimal health care for individuals living with MSD and to address the global burden of MSD, it is essential that the IPMT member who is able to address the individual living with MSD unique needs the best, should be utilised first (Wilson & Cleary, 1995). Thus, individuals living with MSD should be referred to the most suitable IPMT member to provide HRQOL promptly and appropriately. The ICF framework could play an important role to ensure the appropriate referral process by medical practitioners for individuals living with MSD to physiotherapists and other members of the IPMT.

Furthermore, to ensure appropriate referrals and management of individuals living with MSD, the specific roles and scope of practice of health professionals should be clear to all members of the IPMT (Mitchell et al. 2008) (This will be discussed in more detail under

section 2.6.). To conclude, due to the robust evidence of the burden of MSD, appropriate referrals for the effective management of individuals living with MSD to IPMT members to ensure HRQOL in a global and South African context are important. Existing literature does not adequately explain what appropriate referral practices for individuals living MSD involve and illustrate the lack of researched-based knowledge on this topic. Consequently, this study regarding the referral practices of medical practitioners to physiotherapists in Bloemfontein, South Africa is justified.

2.5 Physiotherapy treatments as part of the best evidence based practice for the management of specific MSD

Despite the fact that appropriate referrals for individuals living with MSD are essential, as previously explained, it is still unclear at this point, what the evidence is to suggest that physiotherapy treatment is the best evidence based MSD treatment option. It is also still unclear whether medical practitioner referral practices for individuals living with MSD are following the best evidence-based practice. This section therefore will explore literature to confirm physiotherapy treatment as part of the best evidence-based practice for certain individuals living with MSD. It will also provide literature regarding the influence of evidence-based practice on the referral practices of medical practitioners, for individuals living with MSD.

Best evidence-based practice medicine is explained as the meticulous, clear, and thoughtful use of the present best scientific evidence when deciding about the medical care of an individual (Sackett, Rosenberg & Gray, 1996). Evidence-based practice also means integrating the clinician's expertise with the best available external clinical evidence from research (Sackett et al. 1996). The clinician's expertise is the skill and judgement that individual clinicians obtain through clinical experience and clinical practice (Sackett et al. 1996). From the latter statements, the importance of implementing evidence-based practice to resolve the burden of MSD could be concluded, as it suggests the best and most efficient practice to address a medical problem according to recent relevant research (Sackett et al. 1996).

Evidence based practice supports physiotherapy treatment as an effective treatment option

for musculoskeletal, geriatric, neurological, orthopaedic and some paediatric disorders (Moseley, Herbert & Sherrington, 2002; Woolf & Pfleger, 2003), as well as for the treatment of several different MSD with different pathophysiology (Woolf & Pfleger, 2003). Some examples of conditions supported by evidence-based practice will now be discussed. Firstly, a study by Cuesta-Vargas, Gonzalez-Sanchez & Casuso-Holgado (2006) showed improved quality of health in patients who received physiotherapy for chronic low back pain, chronic neck pain and osteoarthritis. It is therefore in the best interest of patients with the latter conditions to be referred for physiotherapy treatment by their medical practitioners (Gurden, Moreli & Sharp, 2012). Bassel & Hudson (2012) illustrated that physiotherapy and/or occupational therapy treatment were the most appropriate options for patients with systemic sclerosis. Despite the fact that evidence-based practice for sclerotic patients suggested referral to physiotherapy and/or occupational therapy, evidence from this study indicated that referrals for sclerotic patients by medical practitioners were not in accordance with the best evidence-based practice. A study conducted in the United Kingdom by Cottrell, Roddy & Foster (2010) stated that evidence advocated physiotherapy exercises can improve functioning and decrease symptoms of pain as part of an effective treatment plan for chronic knee pain. Similar to Bassel & Hudson (2012), Cottrell et al (2010) found that most general practitioners believed that patients with chronic knee pain should be referred for physiotherapy treatment, but in practice, they only referred two thirds of these patients. The reasons or causes for medical practitioners not following evidence-based practice were not identified in the latter study (Cottrell et al. 2010).

The evidence therefore indicates that despite physiotherapy being an appropriate evidence based option for the treatment of an individual with a specific MSD, patients were not referred correctly by medical practitioners for management thereof. The flawed referral practices of medical practitioners in accordance to evidence-based practice are an important aspect to take into consideration when investigating medical practitioners' referral practices. Kooijman, Swinkels & van Dijk, (2013) presented another study advocating physiotherapy as an appropriate treatment option for the treatment of MSD, in this case shoulder patients. Treatment guidelines for patients with shoulder syndromes advocate that the general practitioners should apply a "wait - and - see" approach before referring these patients to physiotherapy (Kooijman et al. 2013). The wait-and-see approach

implies that general practitioners only consider referring to a physiotherapist if medical treatment fails. According to Kooijman et al (2013), patients in the Netherlands with shoulder syndromes are often referred after the first consultation with their general practitioner, which goes against the current guideline, because theoretically this could result in higher medical expenses for the patient. The above mentioned referral practices were thus also not in accordance with the best evidence based practice as suggested by the available literature (Kooijman et al. 2013). In conclusion, it is clear that literature provides various examples of physiotherapy being an evidence-based option for the effective treatment of different MSD's, but the challenge remains to understand why the referral practices of medical practitioners diverge from the best evidence based practice for MSD. It is therefore necessary to identify whether the referral practices of South African medical practitioners for patients with MSD are in line with the best evidence-based practice.

2.6 The role of the physiotherapist in the IPMT for individuals living with MSD

One component of addressing the global burden of MSD is interventions utilised by physiotherapists as explained in section 2.5. As previously mentioned, medical practitioners in the traditional health care system are responsible for appropriate access or referrals of individuals living with MSD to physiotherapists (Foster, et al. 2012). Appropriate referral practices for individuals living with MSD, will only be possible if the specific roles and scope of practice of physiotherapists are clear to medical practitioners (Mitchell et al. 2008). As the knowledge of medical practitioners regarding the role of physiotherapists in the treatment of MSD might influence the referral practices for these individuals; this section will focus on how available literature defines the role of the physiotherapist for individuals living with MSD. Examples of available online descriptions, provided by physiotherapy institutions, to assist medical practitioners in familiarising themselves with the role of physiotherapists in the management of individuals living with MSD are presented in table 2.1.

Table 2.1: Definitions to explain the role of the physiotherapist in the IPMT for individuals living with MSD

Institution	Definitions to explain the role of the physiotherapist in the IPMT for individuals living with MSD
The World Confederation for Physical Therapy (WCPT, 2016)	The role of physiotherapists as primary healthcare professionals involved in the assessment, diagnosis, treatment and prevention of dysfunction and impairment of movement in people of all ages and within a variety of conditions.
The Chartered Society of Physiotherapy in the United Kingdom (CSP, 2016)	<p>The profession helps to encourage development and facilitate recovery, enabling people to stay in work while helping them to remain independent for as long as possible.</p> <p>Physiotherapy is a science-based profession and takes a ‘whole person’ approach to health and wellbeing, which includes the patient’s general lifestyle.</p> <p>At the core is the patient’s involvement in their own care, through education, awareness, empowerment and participation in their treatment. You can benefit from physiotherapy at any time in your life. Physiotherapy helps with back pain or sudden injury, managing long-term medical condition such as asthma, and in preparing for childbirth or a sporting event. (CSP, 2016)</p>
The South African Society of Physiotherapy (SASP) (SASP, 2016)	<p>Physiotherapy improves your physical condition by restoring normal body functions and prevents disability that may arise from disease, trauma or injury.</p> <p>Your physiotherapist has a thorough understanding of how the body works gained from many years of rigorous academic study and practical experience. Physiotherapy encompasses posture, balance and movement, knowledge of diseases, injury and the healing process.</p>

	<p>A qualified physiotherapist is a trained medical practitioner and you do not need to be referred by a doctor to see a physiotherapist.</p> <p>Physiotherapy is concerned with assessing, treating and preventing human and animal movement disorders, restoring normal function or minimising dysfunction and pain in adults and children with physical impairment, to enable them to achieve the highest possible level of independence in their lives; preventing recurring injuries and disability in the workplace, at home, or during recreational activities and promoting community health for all age groups.</p> <p>Physiotherapists use skilled evaluation, skilled hands on therapy such as mobilisation, manipulation, massage and acupuncture; individually designed exercise programmes, relaxation techniques, sophisticated equipment, hydrotherapy and biofeedback, specialised electrotherapy equipment, heat, ice and traction to relieve pain and assist healing and recovery, suitable walking aids, splints and appliances, patient education (SASP, 2016)</p>
The Health Professions Council of South Africa (HPCSA, 2016)	<p>The role of physiotherapists is summarised as:</p> <ol style="list-style-type: none"> 1. Care and Rehabilitation of illness, injury and impairment/disability in the following Stages: Acute Sub-acute Chronic Final 2. Restoration to functional ability 3. Health promotion and disease prevention through education (HPCSA, 2007) <p>Although the above-mentioned literature describes physiotherapy broadly,</p>

	<p>it fails to give a precise explanation of the specific roles and specialized skills that physiotherapists have to address a variety of medical disorders including MSD. Furthermore, the above-mentioned professional bodies do not illustrate criteria or give indications of when to refer patients with specific needs for physiotherapy treatment. The paucity of clear information regarding physiotherapy roles could influence appropriate musculoskeletal and other referrals from medical practitioners to physiotherapy. Taking into consideration the vague description of the role of physiotherapists managing individuals living with MSD as discussed, medical practitioners might have insufficient information available and lack comprehension regarding the specific role of physiotherapists and/ or appropriate referral practices for individuals living with MSD to physiotherapy. The latter could potentially result in ineffective management of individuals living with MSD. To conclude, the role of the physiotherapist and the knowledge of medical practitioners regarding the skills of physiotherapist thereof should be taken in consideration when investigating medical practitioner referral practices for individuals living with MSD in the South African context.</p>
<p>The International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT, 2015)</p>	<p>Orthopaedic Manual Physical Therapy is a specialised area of physiotherapy / physical therapy for the management of neuro-musculoskeletal conditions, based on clinical reasoning, using highly specific treatment approaches including manual techniques and therapeutic exercises.</p> <p>Orthopaedic Manual Physical Therapy also encompasses, and is driven by, the available scientific and clinical evidence and the biopsychosocial framework of each individual patient.</p>

Physiotherapy as part of the IPMT has developed as an essential therapeutic treatment option with defined scientifically based protocols, contributing to important medical and rehabilitation components in the treatment of individuals living with MSD (Odebiyi, Amazu & Akindele, 2010). In the USA, the role of physiotherapists treating individuals living with MSD is growing, due to the increasing number of literature in support of physiotherapists

being important members of the IPMT responsible for the primary care of individual living with MSD (Ojha, Snyder & Davenport, 2014). The previously mentioned literature supports physiotherapy as an important medical science in the management of MSD, and medical practitioner's knowledge regarding the specific role, scope and/or referral criteria for physiotherapy, especially regarding MSD is essential.

2.7 Medical practitioner's understanding of the physiotherapist's role in the treatment of individuals living with MSD

Section 2.6 indicated that the role of physiotherapists for managing MSD specifically is vague. In this section, it is deemed necessary to illustrate medical practitioner's understanding in regards to the role of physiotherapists in the management of individuals with MSD, with the limited relevant information available.

Historically the predominant view of physiotherapists in the USA is that while medical practitioners in general have little understanding regarding physiotherapy as a profession, they would prescribe physiotherapy anyway (Stanton, Fox & Frangos, 1985). A study by Matheny, Brinker & Elliot (2000) reported that family practice residents had a relatively low confidence in the management of musculoskeletal conditions, including referrals to physiotherapy, supporting Stanton's et al (1985) finding. Archer, MacKenzie & Bosse (2009) also confirmed the lack of relevant insight medical practitioners have regarding the role of physiotherapists for patients living with MSD. The study by Archer's et al (2009) was done on medical practitioners practicing as orthopaedic specialists' and suggested that these practitioners had a limited view of the role of physiotherapists. The specialist practitioners believed the role of physiotherapists to be the provision of assistive devices and to improve patients' muscle strength as needed (Archer et al. 2009). Orthopaedic specialists did not consider the role of physiotherapy in relation to providing individuals living with MSD with coping strategies to deal with the emotional aspects of their disabilities, or the improvement of their occupational constraints, or to the management of pain (Archer et al. 2009).

It is therefore clear that international literature indicates that medical practitioners have a lack of insight and understanding in regards to the role of physiotherapy for individuals

living with MSD. In the review of literature conducted for this study, no South African studies were identified to corroborate the lack of medical practitioners' understanding in regards to the role of physiotherapists in the management of individuals living with MSD.

2.8 Other influences on medical practitioner's referrals

To complicate the understanding of appropriate medical practitioner MSD referral practices and management to physiotherapy even further, several other influences exist, which will be highlighted by the researcher in this section.

2.8.1 The influence medical practitioner's knowledge has on MSD management

Decades ago, Stanton et al (1985) argued that the only way to ensure effective treatment and appropriate referrals for musculoskeletal patients, in terms of both therapeutic results and financial constraints, was if medical practitioners had comprehensive knowledge of physiotherapists' scope of practice. This section will provide examples of how the knowledge medical practitioners have in regards to physiotherapy and MSD influence their referral practices. A study in the Netherlands stated that medical practitioner's individual knowledge of physiotherapy gave some explanation for variable referral practices for individuals living with MSD (Kerssens & Groenewegen, 1990). The researcher is of the opinion that the two latter statements indicate that appropriate referrals for individuals living with MSD could be improved if medical practitioners had a more in-depth knowledge about the physiotherapy profession. A Nigerian study indicated that knowledge gained during lectures, regarding the skills physiotherapists have and the practice of physiotherapy during medical practitioners' tertiary training influenced their referrals (Odebiyi et al. 2010). These Nigerian doctors referred patients more regularly to physiotherapy than their counterparts, who were not exposed to information regarding physiotherapy during their undergraduate training (Odebiyi et al. 2010).

Although the Nigerian study proved that tertiary education has an important influence on the knowledge medical practitioners have of appropriate physiotherapy referrals, the effect of tertiary education on medical practitioners' referral practices to physiotherapy in the South African context is unclear (Odebiyi et al. 2010). Communication with an academic staff member, Dr Lynette van der Merwe², a senior lecturer and programme director at the

² Personal communication with Dr Lynette van der Merwe, School of Medicine UFS. Date: 16 February 2016.

School of Medicine at the University of the Free State(UFS), indicated that the current curriculum for medical practitioners does address inter-professional collaboration during the management of patients, but does not specifically focus on appropriate referrals between IPMT members. Dr van der Merwe confirmed the absence of specific physiotherapy referral guidelines for individuals living with MSD to medical practitioners or other members of the IPMT.

To conclude, Nigerian, Dutch and English studies provided evidence to supports that medical practitioners' knowledge regarding physiotherapy has an influence on referral practices of medical practitioners. Interestingly a study done in the United Kingdom indicated that the medical practitioner's knowledge concerning MSD has more influence on their referral practices than the knowledge of the health professional to which they are referring a patient (Kier, George, &McCarthy, 2013). The influence of medical practitioner's knowledge regarding MSD is therefore an important aspect to be taken in consideration when examining their referral practices.

2.8.2 The influence of medical practitioner and patient characteristics on MSD management
Other examples of complex factors influencing medical practitioners referrals are the personality and/or special interests of the medical practitioner, the socio demographic characteristics of the patient, the patient's proximity to a hospital or medical practice and/or the specific condition, such as the perceived seriousness of the condition (Love &Dowell, 2004). These influences are important to consider when studying medical practitioner referral practices for individuals living with MSD.

No literature regarding these influences on South African medical practitioner's referral practices for individuals living with MSD, to physiotherapy could be identified. This is an important gap in the knowledge of MSD management in South Africa and research in this field could possibly improve MSD management in the future.

Research in the USA by Freburger et al (2005) found that patient characteristics also influence medical practitioners' referrals to physiotherapy. Patients were more likely to be referred to physiotherapy if they have a history of depression or surgery, impairment of function with a high expectation to improve, worsening or a prolonged duration of a

presenting problem, previous physiotherapy treatment and if numerous comorbidities were present (Freburger et al. 2005). Freburger et al (2005) did not provide examples of which comorbidities was referred to in the study. The patient's personal factors i.e. educational level also influenced the medical practitioners' referrals (Freburger et al. 2005). Patients who had one or more years of tertiary education were more likely to be referred to physiotherapy, because these patients had been more aware of physiotherapy as a profession and would ask to be referred (Freburger et al. 2005). A patient's enabling characteristics, which make health-care resources available, such as income and insurance also has a huge influence on referrals (Freburger et al. 2005). Some patient referrals will differ even if they have comparable medical needs and resources, due to individual circumstances including demographic characteristics and attitudes, preferences and expectations about health care (Freburger et al. 2005).

Furthermore, Freburger's et al (2005) results also indicated that patients on disability insurance, worker's compensation or involvement in any legal action were less likely to be referred to physiotherapy. The reason for this was not discussed in the article. Medical practitioners are also less likely to refer male patients, patients older than 50 years, while increased body mass (BMI) index, race and ethnicity did not have any effect on physiotherapy referrals (Freburger et al. 2005). The authors did not give reasons as to why the latter mentioned aspects did not influence referrals of patients to physiotherapy.

2.8.3 Medical practitioner-related influences on MSD management

Medical practitioners' management and referral decisions might also be influenced by the circumstances under which medical practitioners practice, or medical practitioner-related influences (Freburger et al. 2005). Donohoe, Kravitz & Wheeler (1999) identified some medical practitioner-related influences on physiotherapy referrals of individuals living with MSD to be related to workload, practice style, time constraints, a need to reduce the practitioner's anxiety regarding patient management, availability of health care professionals, familiarity with the patient, and patient expectation of or request for a referral. They also mentioned that the individual living with MSD requesting a second opinion influenced medical practitioners to refer patients to IPMT members (Donohoe et al. 1999).

Medical practitioners' referrals to physiotherapy for individuals living with MSD are also influenced by the patient's specific clinical need (Freburger et al. 2005). A patient with a herniated disc, not awaiting surgery, spondylosis and sprains/strains were positively associated with physiotherapy referrals. In contrast, the diagnosis of spinal stenosis and patients awaiting surgery were negatively associated with physiotherapy referrals (Freburger et al. 2005).

When injections, as clinically indicated, are given to MSD patients, medical practitioners are less likely to refer these patients to physiotherapists. This occurs despite the fact that injections are often used to facilitate active MSD treatments such as physiotherapy (Freburger et al. 2005).

2.8.4 The influence of the South African health care system on MSD management

Freburger et al's (2005) findings must be considered when investigating medical practitioners' referral practices because of the existing health care system in South Africa and the influence thereof on individuals living with MSD and medical practitioners. To understand the impact of the South African health care system the researcher deemed it necessary to provide a more detailed description of the health care systems' characteristics. South Africa's health care system consists of a public sector, a private sector and a non-governmental organisation (NGO) sector (Jobson, 2015). The public health sector expends approximately 11% of the government's total budget, which is higher than the 5% of Gross domestic product (GDP) recommended by the WHO (Jobson, 2015). The latter statistic reflects the crisis of the burden of diseases including the burden of MSD in South Africa (Jobson, 2015). Jobson states: "The right of access to health care services requires the provision of equal and timely access to basic preventative, curative, rehabilitative health services and health education; regular screening programmes; appropriate treatment of prevalent diseases, illnesses, injuries and disabilities, preferably at community level; the provision of essential drugs and appropriate mental health treatment and care "(2015). South African citizens from a lower income group live in communities with insufficient opportunities and are dependent on public services with very limited resources to ensure the previously described acceptable health standards (Jobson, 2015). The high levels of poverty and unemployment in South Africa and a shortage of medical staff, result in poor health outcomes, which are worse than other similar middle-income countries (Jobson, 2015).

The following statistics will highlight the medical staff shortage crisis in South Africa (Jobson, 2015). There are 165,371 qualified health practitioners registered with the HPCSA in the public and private health sectors (Jobson, 2015). In the public sector, there is one medical practitioner for every 4,219 people (Jobson, 2015). Seventy three percent of general practitioners work in the private sector, therefore a general doctor for every 243 patients in the private sector (Jobson, 2015). These statistical facts make the appropriate and cost effective management of the burden of MSD essential. All the statements made in this section becomes more significant when taking into consideration that Parker and Jelsma (2010) indicated a higher than expected prevalence of individuals living with MSD requesting treatment at a medical clinic, the other developed and developing countries (USA, Mexico and the Philippines) where similar studies were completed. South African MSD patient access and referral to physiotherapy are largely affected by the scarcity of resources and the low medical practitioner to patient ration across communities (Gcelu &Kalla, 2015).

Cost effective treatment options for individuals living with MSD is therefore essential in a country like South Africa, if the above-mentioned factors are taken into consideration. Physiotherapy is one of the most cost effective treatment options for specific MSD as indicated by Gurden et al (2012).

In summary, the worsening burden of disease in South Africa, the extreme shortage of resources, the grossly inequitable distribution of human and financial resources between the private and public health sectors and the current poor performance of public establishments are some of the biggest challenges for South Africa's' health care and requires urgent attention (Jobson, 2015).

2.8.5 The influence of patient compliance with referrals from medical practitioner on MSD management

Referral compliance also needs to be considered as a factor to the long list of influences on MSD referrals. A study in the Netherlands indicates that approximately 12% of patients did not comply with medical practitioners' referrals for specialist care (van Dijk, de Jong and Verheij 2016). According to this study, patients living in a demographic area with lower socio-economic income have less compliance with medical practitioner referrals to

specialists (van Dijk et al. 2016). South African patients experience significant socio economic challenges and the effect of this on the compliance of medical practitioner referrals to members of the IPMT should also be considered in the research of medical practitioner referral practices for individuals living with MSD (Jobson, 2015).

2.8.6 The influence of referral evolution on MSD management

Werner & Ihlebaek (2012) found that general practitioners in Norway manage patients with lower back pain in a similar manner as the general practitioners from the previous decade. Although treatment is similar, general practitioners currently cooperate and refer less frequently to physiotherapists compared to the previous decade (Werner & Ihlebaek, 2012). The authors did not provide the reasons as to why there was deterioration in referral rates of patients with lower back pain to physiotherapy. To understand and address the increased burden of MSD in South Africa, it is important to identify if in time, the management of individuals living with MSD has changed in a positive or negative way, and also if the referrals for individuals living with MSD are increasing with the increased burden of MSD in South Africa and worldwide.

2.9 Conclusion

In light of the findings in the discussion above, strong evidence supports the significant burden of MSD worldwide and in South Africa and confirms physiotherapy as an effective treatment option for individuals living with MSD. The existence of a noteworthy need for a factual scientific investigation to improve comprehension of the effective management of individuals living with MSD to address the burden of MSD is distinct. The literature also strongly suggests inconsistencies and even inappropriate referral practices for individuals living with MSD from medical practitioners to physiotherapy and other allied health professionals (Michaleff et al. 2012; Oakeshott & Kerry's, 1994).

Chapter 2 also demonstrated that influences on medical referrals are multifaceted and complex and existing information has not fully elucidated specific influences associated with the variation in physiotherapy referrals from medical practitioners, for patients living with MSD (Archer et al. 2009). South African medical practitioner referral practices to physiotherapists in Bloemfontein, for individuals living with MSD, might be influenced by latter-mentioned multifaceted factors. This serves as confirmation that research regarding

the influences on South African medical practitioner referral practices for individuals living with MSD to physiotherapy should be conducted, which is confirmed by the lack of South African literature regarding referrals of individuals living with MSD by medical practitioners. The unique South African health-care system, socioeconomic realities, and demographics of the South African population also need to be considered (Jobson, 2015; Gcelu & Kalla, 2015). When considering all factors, an improved comprehension of the medical practitioner's referral practices in the South African context is therefore essential to ensure the correct management of individuals living with MSD. Appropriate referrals of individuals living with MSD could improve these individual's HRQL, decrease the financial implications of inappropriate referrals, and improve the burden of MSD. The methodology to investigate the referral practices of medical practitioners in Bloemfontein for individuals living with MSD will be discussed in Chapter 3.

CHAPTER 3

Research Methodology – Mixed methods

This chapter presents the methodology and the research design, which was implemented to identify the principal aim of this study to explore physiotherapy referral practices of South African medical practitioners in Bloemfontein for individuals living with MSD. The specific objectives of the study were to gain knowledge regarding the referral practices used by medical practitioners who refer individuals living with MSD to physiotherapists and determine different influences, which have an effect on referrals of individuals living with MSD. To identify strategies to improve or maintain referral practices of medical practitioners to physiotherapy for individuals living with MSD, in order to ensure optimal care and wellbeing of MSD individuals. In addition, to determine the awareness amongst South African medical practitioners of the role physiotherapists play in the management of individuals living with MSD. It explains the quantitative and qualitative mixed method research utilised and the implementation of a semi-structured questionnaire. A mixed method methodology was utilised as it was deemed the most feasible method to obtain appropriate informative data regarding general practitioner's referral practices to physiotherapy for individuals living with MSD.

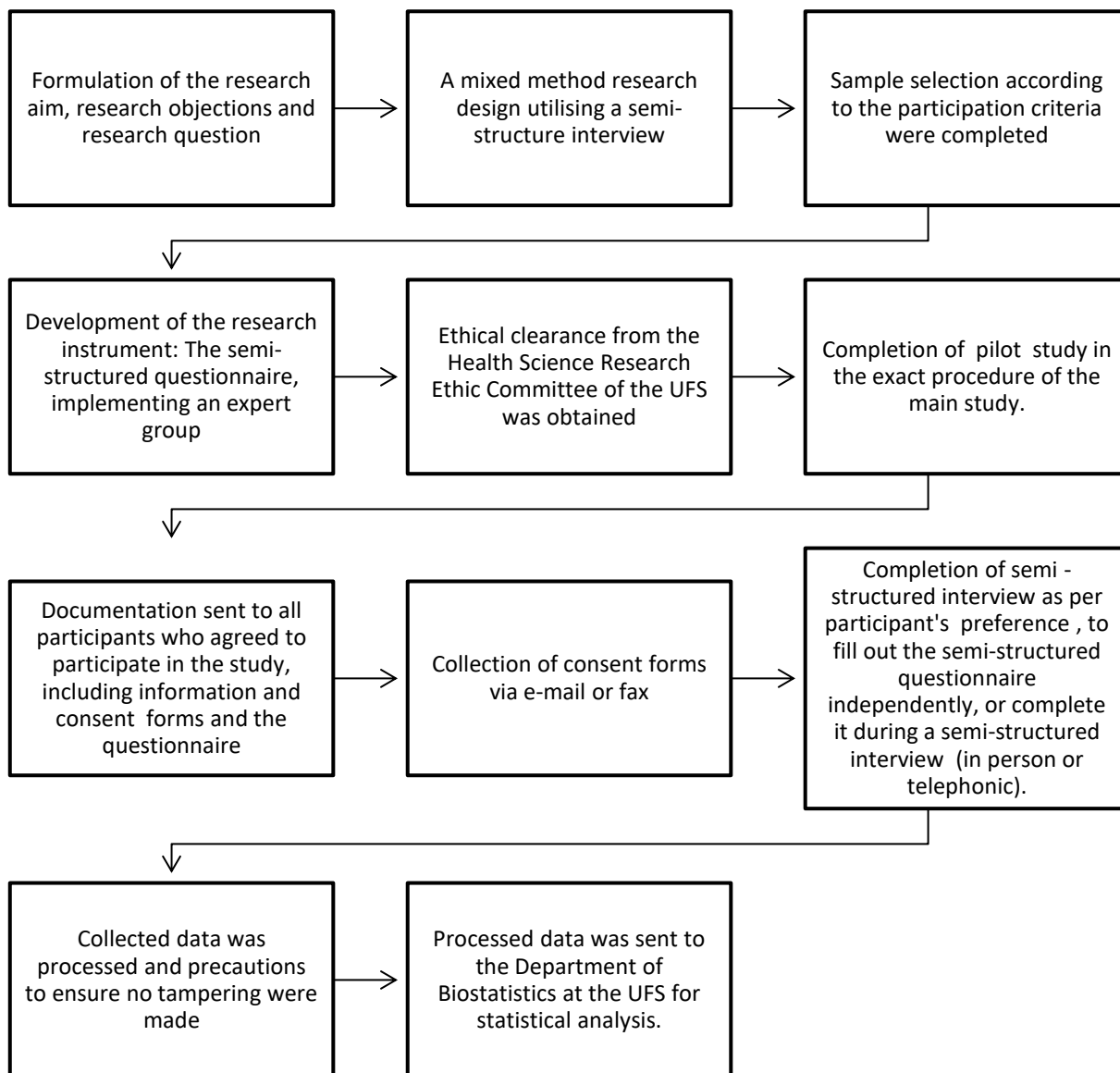


Figure 3.1: A flow diagram illustrating the procedure of the study

3.1 Research design

A mixed method research design utilising a semi-structured interview were implemented. A mixed method design can be described as a method conducting research that involves collecting, analysing, and integrating quantitative and qualitative research in a study to identify the physiotherapy referral practices of South African medical practitioners in Bloemfontein for MSD patients.

3.2 Sample selection

3.2.1 Study population

The study population consisted of all medical practitioners in Bloemfontein, who were at the time of the study practicing medicine in government and private settings. All medical practitioners were to be registered with the HPCSA. According to the HPCSA there were a population of 24,674 (Table 3.1) registered medical practitioners in South Africa of which 1 156 were practicing medicine in the Free State. An estimated 452 medical practitioners were situated in Bloemfontein. A representative sample is only possible when all members of the population have an equal chance of being selected, to enable the researcher to make accurate inferences. (Banerjee & Chaudhury, 2010).

Table 3.1: Medical practitioners registered with the HPCSA. (Provided by HPCSA)

MEDICAL PRACTITIONERS	REGION	INDEPENDENT PRACTICE	PUBLIC SERVICE	SUPERVISED PRACTICE ³	Grand Total
	EASTERN CAPE	1,677	160	23	1,860
	FOREIGN	651	95	2	748
	FREE STATE	1,074	64	18	1,156
	GAUTENG	7,267	729	79	8,076
	KWAZULU NATAL	3,961	464	39	4,464
	LIMPOPO	991	79	6	1,076
	MPUMALANGA	1,017	87	10	1,114
	NORTH WEST	804	132	10	946
	NORTHERN CAPE	365	43	4	412
	UNKNOWN	3	-	-	3
	WESTERN CAPE	4,659	132	28	4,819
Total		22,469	1,985	219	24,674

3.2.2 Study sample

A representative sample is only possible when all members of the population have an equal chance of being selected, to enable the researcher to make accurate inferences. (Banerjee

³ Newly qualified medical practitioners practicing medicine under observation and direction of more senior medical practitioners (Reid et al. 2010).

& Chaudhury, 2010). A systematic selection sampling method was implemented to identify the 150 potential participants of the study. The sampling, which could be described as a type of probability sampling method, in which sample members from a larger population are selected according to a random starting point and a fixed periodic interval process. This sampling interval is calculated by dividing the population size by the desired sample size. A list of 234 medical practitioners in Bloemfontein were compiled by the researcher, implementing an online search, using search engines including MedPages, Google and Yellow Pages. Each medical practitioner on the compiled list was verified by the researcher using the online register of the HPCSA. This list was provided to a biostatistician at the Department of Biostatistics the UFS who then implemented a systematic selection sampling method to identify 150 potential participants. The latter is a large enough sample to allow for generalisation of results for the practices of general practitioners in Bloemfontein.

3.3 Inclusion criteria

South African qualified medical practitioners were only included in the study if they managed and referred patients living with MSD to physiotherapists. Exclusion to the study included potential participants who were unwilling to participate or did not give informed consent as well as medical practitioners who do not consult individuals living with MSD. Medical practitioners who received their tertiary education outside South Africa were excluded from the study.

3.4 Instrumentation:

A questionnaire seemed to be the most practical way to collect a huge amount of information regarding physiotherapy referral practices of medical practitioners in Bloemfontein for referrals of individuals living with MSD. In an effort to increase the response rate, three options of participation were given to medical practitioners. The first option was to complete the questionnaire independently and return it to the researcher via e-mail or fax. The second and third options were to take part in a semi-structured interview to complete the same questionnaire, either in person or telephonically. By giving the participants various options of participation, they were allowed, to choose their participation preference. The latter also allowed for triangulation of the data collected.

3.5 The process of the development of an appropriate questionnaire

This section offers a detailed explanation of the development of the semi-structured

questionnaire for the described study. An exact description of the application of the designed questionnaire, to collect appropriate data regarding medical practitioner referral practices of individuals with MSD to physiotherapy, will be offered after the development of the questionnaire has been described.

3.5.1 Research instrument: The semi- structured questionnaire

Please refer to a visual representation in Figure 3.1 of the development of the semi-structured interview questionnaire. The design of the semi-structured interview questionnaire took place in two phases, and the second phase consisted of four stages.

The first phase involved the design of a proposed semi structured English questionnaire by the researcher. The proposed questionnaire was compiled from relevant literature investigating medical practitioner's referral practices (Clemence & Seamark, 2003; Archer et al. 2009; Odebiyi et al. 2010). During phase two of the questionnaire design, the proposed questions were assessed to ensure that the questions met all the essential requirements to obtain the appropriate data specifically for the present study. Confirmation of the scientific value of the questionnaire was also required. To address the latter requirements, a panel of four experts was identified to validate and improve the questionnaire. The panel of experts was identified with the assistance of the head of department of physiotherapy at the UFS. The group of experts consisted of three academic physiotherapists and one academic medical practitioner. Recognition and credibility as experts in the field of physiotherapy by their peers, was the grounds by which these experts were identified.

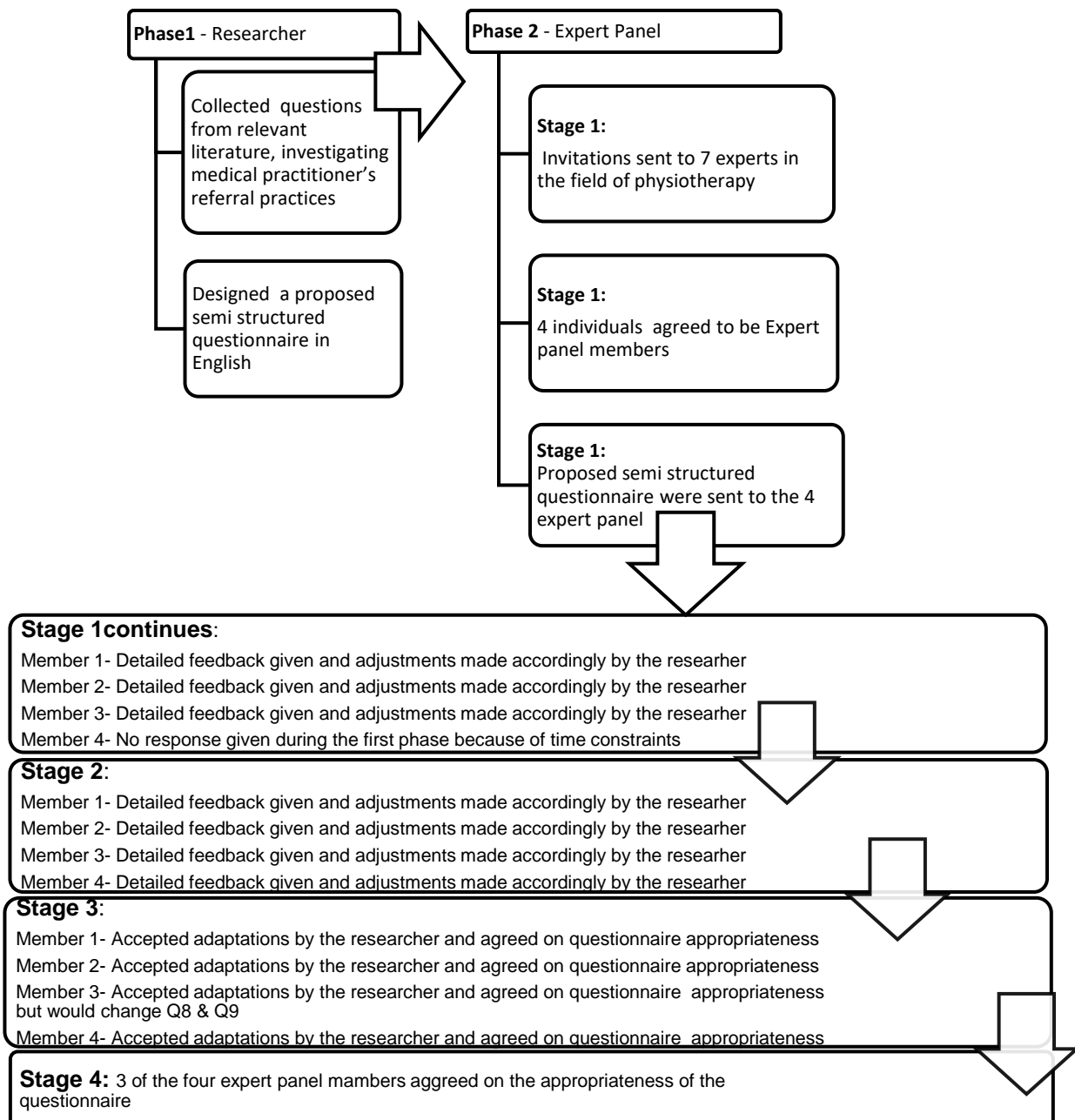


Figure 3.2: A flow diagram of the semi- structured questionnaire design process.

Stage 1:

A written invitation (Appendix A) was sent to the seven identified experts, requesting them to participate as members of a specialised heterogeneous group. After four selected individuals agreed to participate as members of the panel of experts, the proposed questionnaire was sent to them electronically. The panel was required to complete a list of questions (Appendix D) to assist with the assessment process and to substantiate the questionnaire's face and content validity according to the process as described by Wiggins

&Bowers (2014). The panel of experts provided the researcher with feedback and critique taking into consideration the diverse aspects of the research topic. The expert panel advised the researcher regarding the specific questions and correct combination of questions to be included in the questionnaire, to ensure optimal and appropriate data collection. A detailed representation of the expert panel's feedback is provided in section 3.5.2.

3.5.2 Feedback provided by expert panel member

The initial questionnaire sent to the expert panel members is available in Appendix B. Suggestions and changes made by expert panel members during Stage 1 are written in italic and underlined as presented in Table 3.2.

Table 3.2: Recommendations from expert panel member during the questionnaire design

Remarks by expert panel members	Stage 1	Stage 2	Stage 3
Member 1	<p>Q5: Please indicate when doctor would refer patients for physiotherapy.....</p> <p>Q7: Has anything influenced doctor's musculoskeletal patient referrals to physiotherapy? The expert panel member asked if it is the aim of the question to be vague, and suggested if not that it should be changed to 'factors influencing your referral of musculoskeletal patients to physiotherapy. Consider the following options:'</p> <ul style="list-style-type: none"> - Information regarding the skills and/or the role/scope of physiotherapists in the treatment of musculoskeletal conditions provided post-graduation. - Other? Include this option to your 	<p>Although I understand question 7, the formulation thereof (in my humble opinion) could lead to fuzzy answers. The reason being the phrases "when or why physiotherapy", and "suffering from neck and back pain" could lead to vague answer. Maybe choose to use either when or why in the question. Make neck pain and back pain separate entities? The researcher only used the word when as recommended by the expert member but did not separate neck and back pain as medical practitioners use the same guidelines for these musculoskeletal conditions.</p>	<p>Agreed with the appropriateness of the semi-structured questionnaire and had no further recommendations.</p>

	<p>question</p> <p>Recommendations:</p> <p>Maybe a question/s regarding the rehabilitation of musculoskeletal conditions should be included as well?</p>		
Member 2	<p><u>Member 2 felt that physiotherapy was certainly a very important modality of treatment for individuals living with MSD if the patient had a muscle problem only, and that the questionnaire should be changed according to this.</u> The researcher disagreed with this argument based on the discussed roles of physiotherapy in section 2.6.</p> <p>Recommendations:</p> <p>To fill in the questionnaire as word document was not easy.</p> <p><u>Q 5 and Q6 essentially the same, but different format.</u> The researcher combined Q5 and Q6.</p>	<p>Q8 and Q9 essentially ask the same thing. One open ended the other specific/closed. I would think that it would be better to ask Q8 after Q9, so that any additional reason could be mentioned. Maybe more space to respond to the question needs to be given to participants.</p> <p>Question 8 and 9 remained unchanged as the purpose of this positioning was important to identify what participant's individual opinion was compared to other opinions identified in studies regarding the referral practices of individuals living with MSD to physiotherapy.</p>	<p>Agreed with the appropriateness of the semi-structured questionnaire and had no further recommendations.</p>

	<p><u>Q7 typing error.</u> The researcher corrected the typing error.</p> <p><u>Q8 are you testing my opinion or my feeling?</u> The researcher left this question as is, because it was not the intention of this study to differentiate between the participant's opinion and/or their feelings, these feelings or opinions could both influences their referral practices to physiotherapy, and the researcher wanted to include both.</p>		
Member 3	<p><u>Hard to evaluate the questionnaire when the aims and objectives are not provided.</u></p> <p>The researcher provided the study's aims and objectives to the expert panel member.</p> <p>Q1 - Please indicate if your practice is located in Bloemfontein.</p> <p><u>What if they are not practice owners? And work for someone?</u> The researcher adapted</p>	<p>Q9: Are the following statements true or false for your musculoskeletal referrals to physiotherapy?</p> <p>No True or false but yes or no. The researcher changed true or false to yes or no.</p> <p>Would change to: Do any of the following statement apply in your referral practices</p>	<p>Agreed with the appropriateness of the semi-structured questionnaire, but would still change Q8 and Q9 as previously discussed.</p>

	<p>practice to the verb function.</p> <p>1. Please indicate if you consult with patients with musculoskeletal conditions.</p> <p><u>What do you mean by consult? What do you mean by patients, adults, children?</u> The researcher changed consult to manage and included adult and/or paediatric patients.</p> <p>If you have selected no as your answer in question 2, you do not have to complete the rest of the questionnaire</p> <p><u>Thank them for their participation. Perhaps include a more definite break in the questionnaire. ? Perhaps sections e.g. A, B. Start this section on another page.</u></p> <p>The researcher adapted the questionnaire according to the above-mentioned suggestions by adding a section A and B and also thanking the participants who were not proceeding to section B.</p>	<p>of musculoskeletal patients to physiotherapy. The researcher changed the question according to the expert member's recommendation.</p> <p>I would like to identify the Doctor's opinion regarding what the influences on his/ her referrals to physiotherapy are.</p> <p>The researcher changed the question to the following: Has/ or does anything influence your referral of musculoskeletal patients to physiotherapy? If so, please specify.....</p> <p>And,</p> <p>Do any of the following statements apply in your referral practices of musculoskeletal patients to physiotherapy? In an attempt to identify the participant's opinion regarding his/her referral practices.</p> <p>The effect physiotherapy has had</p>	
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	<p>Q2: Please indicate how frequently you refer patients with musculoskeletal conditions for physiotherapy treatment?</p> <p><u>What about assessment?</u> The researcher changed this to assessment and/or treatment</p> <p>Q4: Please indicate if in your opinion physiotherapy treatment is the most cost effective to consider for neck and back pain patients.</p> <p><u>Most cost effective for what? Question unclear. For consideration in what type of neck and back pain do you mean? All types or related to specific causes?</u></p> <p>The researcher removed 'cost effective' from questionnaire.</p> <p>Q 7: Please indicate the current criteria you use when referring musculoskeletal patients</p>	<p>previously on musculoskeletal patients previously significantly influence my referral practices (Archer et al. 2009).</p> <p>Quantify what do you mean here? What effect on symptoms? E.g., pain would be more specific, what you mean by effect.</p> <p>The researcher adapted the question according to recommendation of the member "to the effect regarding the decrease of pain and/or the increase of function".</p>	
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	<p>for physiotherapy treatment?</p> <p>Musculoskeletal patients are referred for physiotherapy treatment according to the guidelines for their specific conditions.</p> <p><u>What guidelines, compiled by whom or what organization or body? The question remained unchanged as the researcher</u> did not want to lead the medical practitioner but rather let them volunteer what they implement as guidelines.</p> <p>Musculoskeletal patients are referred for physiotherapy treatment due to time constraints</p> <p><u>Unsure what you mean here. Time constraints relating to?</u> The researcher removed the specific limitation regarding time constraints. The participant was given the opportunity to identify why he or she</p>		
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	<p>would or would not refer to physiotherapy.</p> <p><input type="checkbox"/> Other</p> <hr/> <hr/> <p><u>Too little space to answer id you are wanting a motivation.</u> The researcher provided more space where the option 'other' were utilised.</p> <p>Q8: Please indicate, in your opinion, if you feel that enough information regarding the skills and/or the role of physiotherapists in the treatment of musculoskeletal conditions have been provided during your tertiary training and after graduation?</p> <p><u>What do you mean by enough? Would use word adequate rather.</u> The researcher changed the word enough to adequate.</p> <p><u>Skills or scope of physiotherapy?</u> The researcher changed this just to the role of</p>		
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	<p>physiotherapists.</p> <p><u><i>This is a very long time? Would separate undergraduate and postgraduate training?</i></u></p> <p><u><i>Are differentiating their expertise level based on qualification here degree, versus diploma versus courses. Vague- would break down and be more specific would want to know where and when to target practitioners.</i></u> The researcher separated the undergraduate from the post-graduate training and also asked the participant to mention their field of expertise.</p> <p>Q9: Please indicate, in your opinion, how useful you think physiotherapy treatment is for the optimal care of patients suffering from the following conditions:</p> <p><u><i>Useful the right word? Do you not want to determine whether the PT is effective?</i></u></p> <p>The researcher adapted the word useful to</p>		
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	<p>effective.</p> <p>In an effort to improve the validity of the questionnaire, please utilize the following questions:</p>		
Member 4	<p>Did not send any recommendations during the first stage</p>	<p>Q9: Specify the specific qualifications and or experience of the physiotherapist i.e. an MSc. in physiotherapy or Orthopaedic Manipulative Therapy (OMT)?</p> <p>The researcher added 'post graduate experience (Master's degree in physiotherapy and/or courses i.e. Sport1, OMT) in musculoskeletal injuries/disorders' to identify if physiotherapy specialisation influenced medical practitioner's referral practices of individuals living with MSD. Add an "other" option, to the questionnaire's possible answers to prevent bias.</p>	<p>Agreed with the appropriateness of the semi-structured questionnaire and had no further recommendations.</p>

Hung, Altschuld & Lee (2008) compared various authors opinion regarding consensus, and found that the majority of authors defining consensus suggested that consensus is achieved when a super majority threshold of a panel are in agreement on a particular subject. For the purposes of this study both the super majority thresholds of 4 out of 5 and the unanimity minus one vote were implemented to reach the decision of consensus (Hartnett, 2011).

For the purpose of the study consensus was reached when four of the five expert panel members agreed on a final suitable questionnaire (Appendix C).

3.6 Ethical consideration

Prior to commencement of the pilot study and the main study ethical clearance from the Health Science Research Ethic Committee of the UFS was obtained, the ethical clearance numbers are IRB no 00006240, REC reference no 230408-011, IORG 0005187 and FWA 00012784 (Appendix I).

According to the 2011 South African census English is the most commonly spoken language in official and commercial public life. Tertiary text books are English and all communication by the HPCSA are done in English, which would indicate that medical practitioners have a good understanding of the English language. Based on these facts English was the preferred language option to collect data from the representative sample of South African medical practitioners in Bloemfontein.

It was important to consider ethical implications during the implementation of the pilot and the main study. Prior to completion of the questionnaire an informative document (Appendix C) and informed consent document (Appendix D) in accordance with the guidelines supplied by the Health Science Research Ethic Committee of the UFS, were provided to each participant.

To affirm that the questionnaire did not cause the participants to be uncomfortable, they were informed that they were under no obligation to answer any question if they felt it was inappropriate, unacceptable or offensive. Participants were asked to indicate any inappropriate, unacceptable or offensive question by indicating the letter "X" as an answer.

All data collected from completed questionnaires, were kept confidential. It was only available if information were to be disclosed by law or in the case of an ethics committee audit. The master list of the medical practitioners was saved on a laptop computer, protected by a password only known to the researcher. Completed questionnaires were filed and kept in a closet at the physiotherapy department of the UFS. Only the researcher had access to the closet's key. Confidentiality was further ensured by using nominal data analysis making no reference to the participants.

Participation was voluntary and participants were allowed to decline or withdraw their participation at any point without the risk of penalty.

Participants did not receive any remuneration for participation in the study and no costs were incurred by participants.

Participants were informed of the possibility that the data collected from the study might be used during academic presentations and publications.

3.7 Pilot Study

The aim of the pilot study was to assess the face and content validity and efficiency of the designed questionnaire, to obtain the correct information and to answer the primary research question (Wiggins & Bowers, 2014). In addition, the pilot study was also performed in an effort to test if the questions were well understood by the participants and to indicate and correct any oversights or difficulties with the questionnaire or the implementation thereof (van Teijlingen & Hundley, 2001). Piloting gave the researcher an opportunity to identify any other lacking components in the data collection process, prior to the main study (van Teijlingen & Hundley, 2001). The pilot study also provided an opportunity to measure the time it took to complete the questionnaire during the different completion options available for participation.

Five medical practitioners practicing at Universitas Hospital in Bloemfontein, who regularly consulted with patients living with MSD, were asked in February 2016 to participate in the pilot study. These medical practitioners were given the option to fill out the semi-structured questionnaire independently, or have an interview, telephonically or in person. Procedures followed were in the exact same manner as the intended study. Two medical practitioners selected to participate in an interview conducted by the researcher in person. One medical

practitioner chose to fill out the questionnaire independently, another medical practitioner agreed to complete the questionnaire during a telephonic interview and one medical practitioner declined participation due to time constraints. The researcher scheduled an appointment with the two participants who agreed to a in person semi-structured interview conducted by the researcher and provided them with an information letter and a consent form, before the scheduled meeting. An e-mail containing the information letter and the consent form was sent to the participant who agreed to complete the questionnaire telephonically and the participant who agreed to fill out the questionnaire independently. All participants were instructed only to continue with the questionnaire after they understood the information given to them and the consent form was signed.

3.7.1 The pilot study of the completion of the questionnaire

The pilot study participant signed the consent form in the presence of the researcher. During the semi-structured interview, the researcher reminded the participant that the interview would be recorded as was explained in the information letter. The researcher warned the participant that the interview was about to commence and indicated that the voice recording would start simultaneous to the interview. The participant was addressed in their professional capacity as “doctor” throughout the interview to ensure confidentiality. The researcher read the questions verbatim from the semi-structured questionnaire and completed the questionnaire as the participant provided answers during the interview. The participant was given enough time to answer the questions, and was not interrupted. After the interview, the saved recording of the interview was uniquely numbered and the questionnaire was given the same number. The duration of the semi-structured interview recording for the specific in person interview was approximately five minutes and forty seconds, indicating the approximate time required to complete the designed questionnaire. After the interview, the written answers of the researcher were compared to the interview by listening to the recording to ensure the validity of the collected data.

3.7.2 The pilot study of the telephonic completion of the questionnaire

The participant utilizing the telephonic interview for the pilot study e-mailed their consent forms to the researcher. The participant also indicated a suitable time to participate in the interview, after which the researcher replied and confirmed this scheduled time via e-mail. The telephonic interview was conducted at the scheduled time. Prior to the start of the interview, the researcher indicated that the entire conversation would be voice recorded as

stipulated in the information letter. The participant was addressed in their professional capacity as “doctor” throughout the entire interview to ensure confidentiality. During the telephonic interview, the participant was given enough time to answer the questions, and was not interrupted prior to proceeding to a next question. The researcher filled out the questionnaire as the participant provided answers during the telephonic interview. The saved voice recording of the telephonic questionnaire was given a unique number, and the questionnaire filled out during the interview was given the same number. The duration piloting the questionnaire, which was completed telephonically, was five minutes and four seconds, as indicated by the recording time.

3.7.3 The pilot study of the independently filled out questionnaire

The participant, who indicated that he/she preferred to fill out the questionnaire independently, e-mailed the consent form as well as the completed questionnaire to a password protected e-mail address of the researcher. The participant’s confidentiality was ensured by not indicating the participants name on the completed questionnaire. After printing the completed questionnaire, there would be no way to link the questionnaire to the participant. The participant who completed the questionnaire indicated that it took him/her approximately five minutes to complete the questionnaire, but this was only an estimate, as the participant did not time himself/herself.

None of the pilot participants had any questions after reading the information letter and had no difficulty completing the questionnaire. They all reported that the questions were clear and easy to understand. All participants indicated that the choice of options to complete the closed ended questions were suitable. As no changes were made to the questionnaire after the pilot study, the data of the pilot study was included in the main study.

3.8 Procedure

Ethical approval was obtained from the Ethic Committee of the Faculty of Health Science, UFS. Participants were identified using a systematic selection process performed by a Biostatistician from the Department of Biostatistics at the UFS.

The researcher contacted identified participants complying with the inclusion and exclusion criteria, as earlier discussed in this chapter, telephonically or via e-mail. If the participant

agreed to participate in the study an e-mail or fax consisting of a letter of information (Appendix E), consent form (Appendix F) and a semi-structured questionnaire (Appendix G) was sent to the participant. All participants who indicated that they were willing to participate were contacted telephonically or via e-mail the next day, to inquire if they successfully received the information letter and the consent form.

Participants were asked to return their consent form to the researcher via either e-mail or fax. The identified medical practitioners were given the option, to fill out the semi-structured questionnaire independently, or complete it during a semi-structured interview. The semi-structured interview was done in person or telephonically. These options enabled the researcher to implement the triangulation method that enhanced the authenticity of the findings and validated the methodology, by examining the results from several perspectives (Patton, 1999). The decision to offer participants a choice of three options to complete the questionnaire was implemented due to literature suggesting that the most effective strategy to collect data is the combined use of multiple response techniques (Millar & Dillman, 2011).

3.8.1 The option to fill out the questionnaire independently

The researcher sent the research documents including the information letter (Appendix E), the consent form (Appendix F) and the questionnaire (Appendix G) to the selected potential participants for their perusal. The week after the research documents were sent to the potential participants the researcher contacted them telephonically to inquire if they received the documents. Participants were requested to e-mail or fax, the consent form as well as the completed questionnaire to the researcher, within a week from the date he/she received the research documents. During the follow up call, the researcher also offered to pick up the completed questionnaire from the participant's practice if the participant preferred this method. Participants made use of all the different options given to them to return the research documents (details of number of participants making use of different return options will be discussed in Chapter 4).

Upon receipt of the completed questionnaires, the researcher printed all the e- mailed questionnaires. Collected completed questionnaires were uniquely numbered; this included the faxed and the e-mailed questionnaires. The researcher also filed the completed

questionnaires in a folder allocated for participants who selected to fill out the semi-structured questionnaire in person. The file was locked in a cabinet in the physiotherapy department at the UFS. Only the researcher had access to this cabinet key. Confidentiality of participants was ensured by not indicating participant's names or contact details on the completed questionnaires. Consent forms were filed in a separate folder. All the information from the completed questionnaires was transferred into an Excel document prepared by a biostatistician from the biostatistics department of the UFS. To validate that the data was transferred correctly, the process of completing the Excel sheet provided by the biostatistician was completed twice. The two completed Excel sheets were compared after completion. If data differed on the two completed Excel sheets, the researcher made corrections by listening to the recording and looking at the questionnaire which was completed by the researcher during the interview. The completed Excel documents were sent to the biostatistician for analysis after the described process of validation of the collected data.

3.8.2 The in person completion of the questionnaire

Appointments were made at times participants' indicated as convenient for semi-structured interviews. Prior to the start of the semi-structured interview, the researcher reminded the participant that the conversation was to be recorded, as explained in the information letter. The researcher warned the participant when the interview was about to start. The participant was addressed as "doctor" during the interview, to ensure confidentiality. The researcher read the questions verbatim to the participant and completed the questionnaire during the interview. Enough time was given to participants to answer the questions, and the researcher never interrupted the participant whilst providing an answer. After the answer was completed, the researcher proceeded to a next question. A unique number was given to each voice-recorded interview saved. After completion of the interview, the questionnaire completed by the researcher whilst the participant provided answers, was given the same number. These latter questionnaires were filed into a folder, and the folder was locked in a cabinet in the physiotherapy department at the UFS. Consent forms were filed in the informed consent folder. All the information from the completed questionnaires was entered in to an Excel spreadsheet prepared by a biostatistician from the biostatistics department of the UFS. The researcher also listened to the recording after completing the questionnaires and made appropriate corrections. To validate that the data was transferred

correctly, the process of completing the Excel sheet provided by the biostatistician was completed twice. If data differed on the two completed Excel sheets, the researcher made corrections by referring back to the recording of the semi-structured interview and the questionnaire filled out by the researcher during the interview. Finally the data was validated by checking all documented information on the Excel sheet against the original recordings or questionnaires of each participant, and corrections were made if deemed necessary (Leahy, 2004). The completed Excel documents were sent to the biostatistician for analysis after the described process of validation of the collected data.

Data from the open-ended questions were documented utilising various themes as explained in Chapter 4.

The Excel spreadsheet was sent to the Department of Biostatistics at the UFS for statistical analysis.

3.8.3 The telephonic completion of the questionnaire

As for the telephonic completion of the questionnaire, appointments to complete the questionnaire telephonically were scheduled at times indicated as convenient for participants who indicated that they would prefer to complete the questionnaire during a telephonic interview. The participant e-mailed the consent form to the researcher's password protected e-mail. The participant indicated a suitable time to participate in the interview after which the researcher then replied and confirmed this scheduled time via e-mail. The telephonic interview was conducted at the scheduled time. The exact same measures to protect the data were followed as indicated in the 3.8.2. To validate that the data was transferred correctly, the exact same process of completing the Excel sheet were followed as described in 3.8.2.

3.9 Statistical Analyses

The categorical data were documented on the Excel sheet provided by the biostatistics department at the UFS. The biostatistician from the biostatistics department of the UFS analysed the categorical data and provided descriptive statistics using frequencies and percentages. Open-ended questions were analysed using a qualitative strategy of inquiry, which is called the grounded theory (Jing & Wenglensky, 2010). During the use of the grounded theory the researcher derived a general, abstract theory of process, action, or int

eration grounded in the views of participants in the study (Jing & Wenglensky, 2010). The grounded theory process includes data collection procedures as well as modification and association of different categories of information obtained in the study (by identifying keywords-in-context on an uncomplicated observation) (Jing & Wenglensky, 2010). A defining feature of grounded theory is the constant comparison of data with developing categories (Jing & Wenglensky, 2010). General elements of the grounded theory design used was, the formulation of a questionnaire, the use of theoretical sampling, interview transcribing, data coding, developing conceptual categories, constant comparison of data, growing theories. The researcher identified key words used during the interviews and then comprehensively examined the answers provided by participants to discover all instances of the word or phrase. In each instance when the researcher found a specific word or phrase frequently used by medical practitioners, it was documented on the Excel spreadsheet. The context in which participants used these words or phrases were also documented. A thematic analysis was conducted to analyse the qualitative data. A thematic analysis provided a concise description of emergent themes within the collected data (Wigdorowitz, 2016). First, the researcher actively engaged with the data by investigating the documented information from the questionnaires on the Excel spreadsheet (Wigdorowitz, 2016). Themes were identified, by categorization the given answers into tables with similar meaning (Ryan & Bernard, n.d). The researcher then reviewed the themes and combined, refined, separated or discards themes to ensure that the themes cohere together meaningfully (Wigdorowitz, 2016).

To provide a more complete and contextual portrayal of the participants' in the study data and methodological triangulation was implemented as previously explained (Jick, 1979). Data collected from the three data collection methods, consisting of qualitative and/or quantitative methods (Guion, 2002). In depth answers given during the semi-structured interview could have been neglected by the researcher if triangulation was not utilised (Jick, 1979). The latter enabled the researcher to extract data and suggest conclusions, which would not have been possible if only one method for example an online survey or a completed questionnaire was utilised. Therefore, triangulation offered the examining of medical practitioner referral practices from multiple perspectives (Jick, 1979). Finally, the

researcher wrote a report of the findings to allow interpretation of the results to illustrate the referral practices of medical practitioners to physiotherapists for patients with MSD.

3.10 Conclusion:

Given the literature as discussed in Chapter 2 data was collected, utilising mixed methods in an effort to improve the understanding of medical practitioner referral practices in the South African context, for individuals living with MSD. In the next chapter, the results will be represented utilising tables and figures.

CHAPTER 4

RESULTS

Data was collected from 18 January 2016 to 24 October 2016 and 152 systemically selected medical practitioners in Bloemfontein were invited to participate in the study. Fifty medical practitioners agreed to participation and gave informed consent. One participant indicated that he/she does not treat individuals with MSD and was excluded from the study. After exclusion of the last mentioned participant, data from forty-nine medical practitioners were included in the results. The response rate of the study was 32%, and the study sample represented 10% of Bloemfontein's 452 medical practitioners.

4.1 Medical practitioner's participation preference

As can be seen in Figure 4.1 the majority of participants ($n = 35$; 71%), selected to fill out the questionnaire independently, followed by participants ($n = 10$; 20%) who preferred the in person semi- structured interview, while only a small number of participants ($n = 4$; 8%) preferred a telephonic interview to complete the questionnaire.

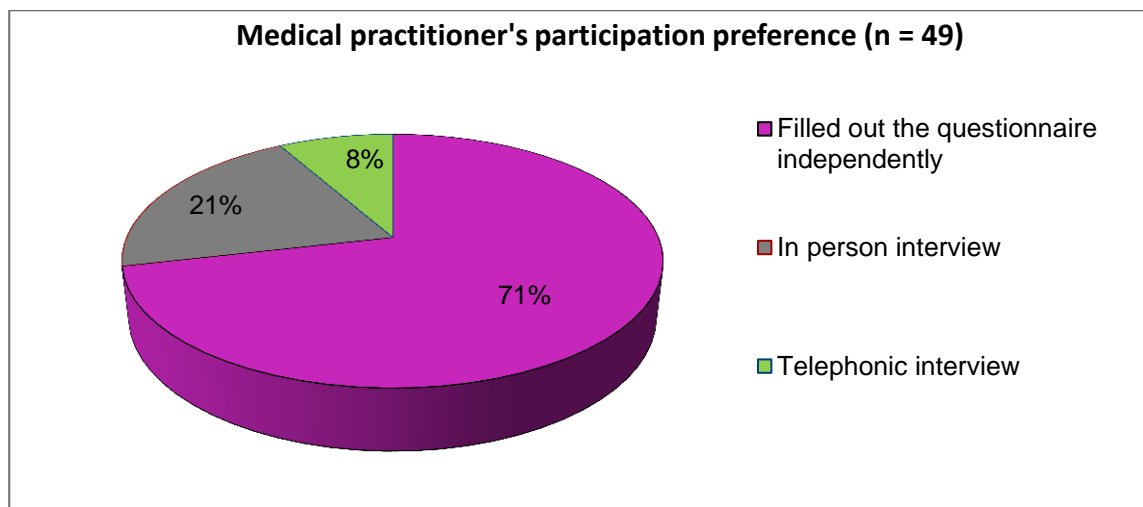


Figure 4.1: Medical practitioner's participation preference ($n = 49$)

4.2 Demographic information

4.2.1 Level of qualifications of participants

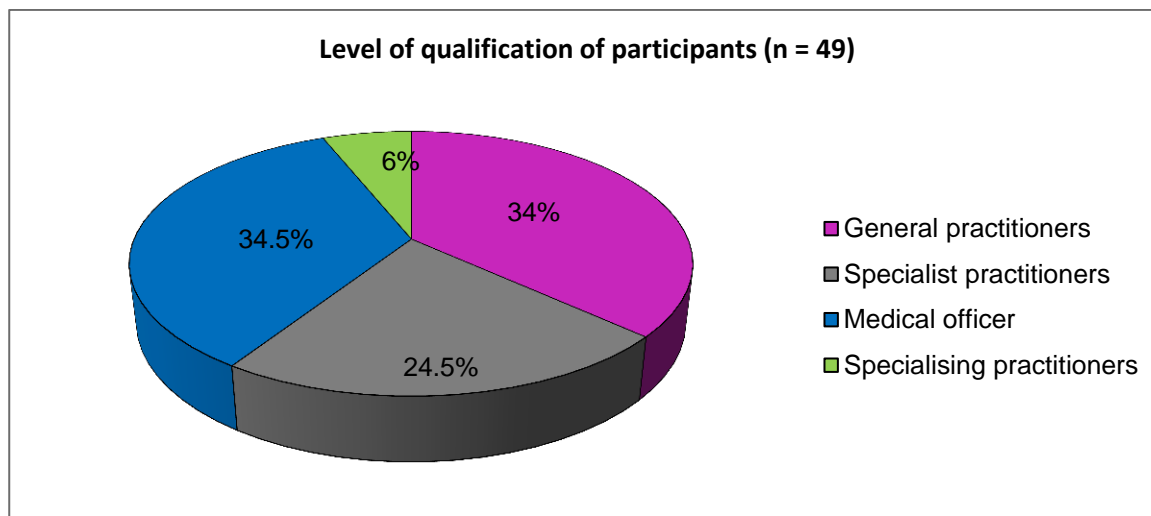


Figure 4.2: Level of qualification of participants (n = 49)

Of the 49 participants who completed the questionnaire, 12 (24%) were medical specialists, 17 (34%) were general practitioners, 17 (34%) were medical officers and three were in the process of becoming a specialist medical practitioner. The participants specialising to become medical specialists were in the field of anaesthesia and family medicine.

4.2.2 Participants' duration of experience as medical practitioners

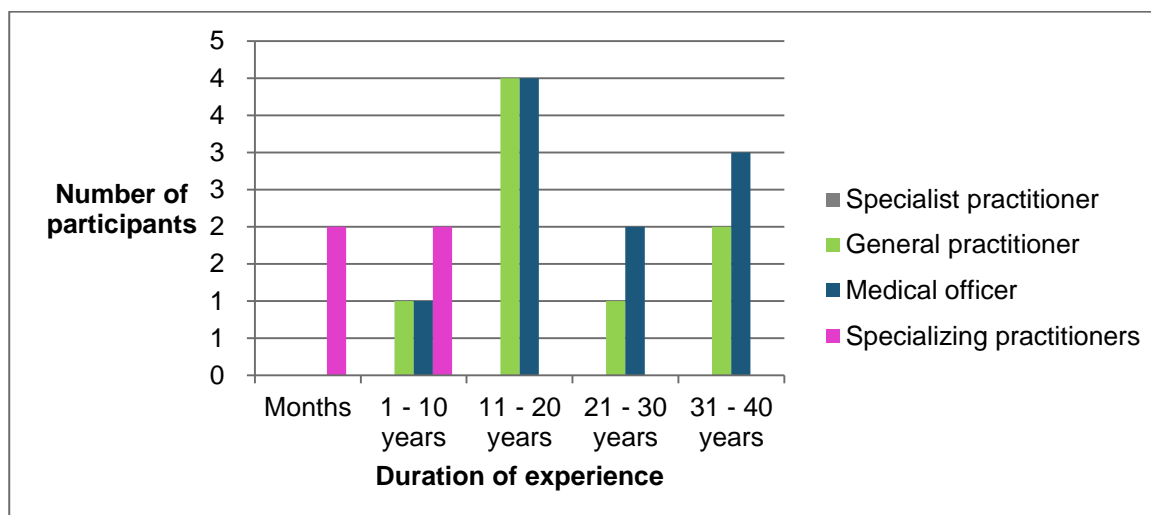


Figure 4.3: Participants' duration of experience as medical practitioners (n = 23)

Twenty-six participants (53%) did not give a value to the number of years they were qualified. Only one participant had less than one-year experience while 16 (32%)

participants had more than ten years' experience. Participants' experience levels varied from months to as long as 40 years.

4.2.3 Participants' special interest and/or field of specialisation

Table 4.1: Participants' special interest and/or field of specialisation (n = 49)

	Specialist Medical Practitioners	General Practitioners	Medical Officers	Specialising Medical Practitioners
Participants with a specific interest in MSD	7	6	0	1
Participants with other interests	0	2	1	1
Participants with no specific interests	4	9	17	1

Only 14 (28%) participants had a specific interest in MSD. Thirty-three (67%) participants had no specific field of interest and 4 (8%) participants indicated that they have interests in medical fields other than MSD.

Table 4.2: Participants different identified fields of interests (n = 49) ⁴

Field of interest indicated by participant	Number of participants	Qualification of participants (presenting the number of participants in brackets)
<u>Adult rheumatoid arthritis</u>	1 (2%)	Rheumatologist (1)
<u>Orthopaedic medicine</u>	6 (12%)	Orthopaedic surgeon (4) General practitioner (2)
<u>Chronic headaches</u>	2 (4%)	Specialist physician (1) General practitioner (1) ◇
<u>Chronic pain</u>	2 (4%)	Specialising practitioner (1) General practitioner (1) ◇
<u>Family medicine</u>	2 (4%)	Specialising practitioner (1) General practitioner (1)
Medicals for divers	1 (2%)	General practitioner (1)
<u>Paediatric conditions</u>	3 (6%)	Paediatric Pulmonologist (1) ◇ Medical Officer (1) General practitioner (1) ◇
<u>Sport medicine</u>	3 (6%)	Orthopaedic surgeon (1) General practitioner (2)
<u>Musculoskeletal pathology</u>	2 (4%)	Paediatric Pulmonologist (1) ◇ Orthopaedic surgeon (1)
<u>Trauma and rehabilitation</u>	1 (2%)	General practitioner (1)
No Special interest	29 (59%)	Medical officers (16) General practitioner (8)

⁴ Take note: - the number of participants indicating a specific field of interest is indicated in brackets.

- Participants who indicated more than one field of interest are indicated by a diamond shape ◇

- Special fields of interest, which are or could be related to MSD are underlined

		Specialist in family medicine(4) Specialising practitioner (1)
No answer provided	2 (4%)	Orthopaedic surgeon (1) General practitioner (2)

As can be seen in Table 4.1 and Table 4.2 the majority (59%) of the participants indicated that they had no special field of interest. Eight general practitioners (16%), 16 (32%) medical officers and 1 (2%) specialising practitioner, expressed no special field of interest. Six participants (12%) expressed a special interest in family medicine, medicals for divers, and paediatric conditions. Twenty practitioners (40%) indicated a special field of interest, which are or could be related to MSD (Table 4.2). Five participants (10%) indicated more than one field of interest. Seven practitioners (14%) who specialised in a certain medical field indicated a special field of interest. Four (8%) specialists in family medicine did not report a special field of interest and one orthopaedic surgeon did not answer this particular question.

Only one (2%) medical officer expressed a special field of interest and it was not MSD related.

4.2.4 Different fields of medical practitioners' specialisation

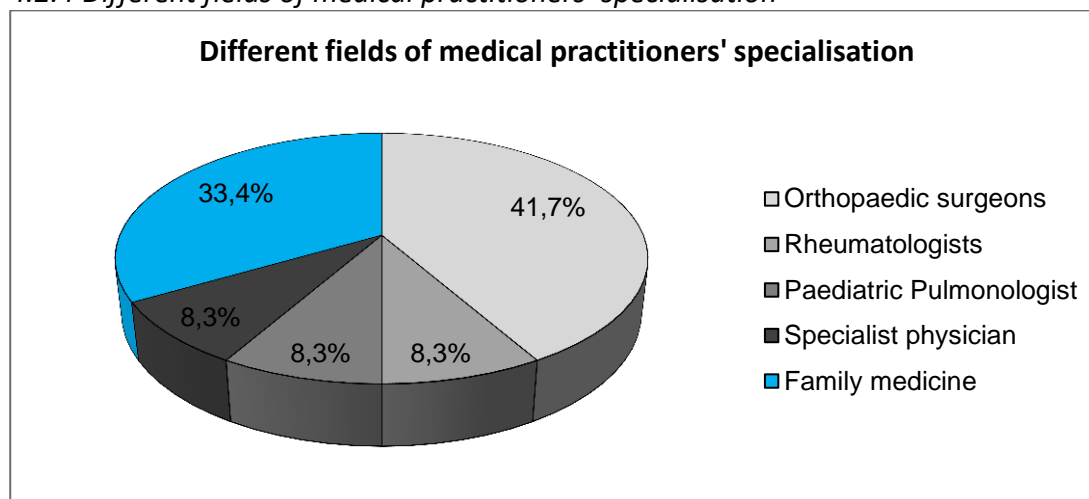


Figure 4.4: Different fields of medical practitioners' specialisation (n = 12)

Of the 49 participants, 12 (24%) were medical specialists. Five (10%) of the specialised practitioners were orthopaedic surgeons, four (8%) were specialised in family medicine, and

one (2%) participant specialised in rheumatology, one (2%) in paediatric pulmonology and one (2%) was specialising as a specialist physician. All the participants indicated that they consulted people living with MSD on a regular basis despite their specialisation field.

4.3 Frequency of individuals living with MSD management and referrals

4.3.1 Frequency of participant's consultations for individuals living with MSD

Table 4.3: Frequency of participant's consultations for individuals living with MSD (n = 49)

Frequency of participant's consultations	Number of participants	Percentage of participants
Daily	31	63.3
Weekly	13	26.5
Monthly	4	8.2
Yearly	1	2.0

4.3.2 Frequency of physiotherapy referrals for participants living with MSD

Table 4.4: Frequency of physiotherapy referrals for participants living with MSD (n = 49)

Frequency of participant's referrals	Number of participants	Percentage of participants
Daily	11	22.5
Weekly	27	55.1
Monthly	9	18.4
Weekly to Monthly	1	2
Yearly	1	2

As can be seen in Table 4.3 and Table 4.4, 31 (63%) participants consulted individuals living with MSD daily, while only 11 (22%) participants referred these patients daily. Twenty-seven (55%) participants referred individual's livings with MSD for physiotherapy on a weekly basis. Four of the five orthopaedic surgeons referred individuals living with MSD daily, whereas the other specialists referred individuals living with MSD weekly or monthly

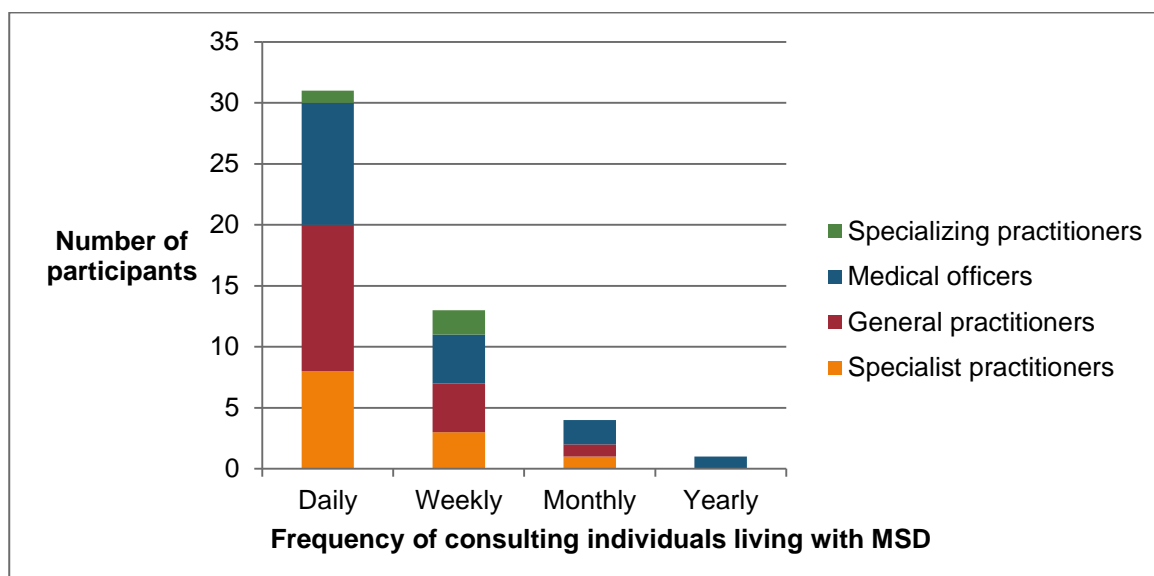


Figure 4.5: Frequency of consulting individuals living with MSD (n = 49)

The majority of participants (63%) consulted individuals living with MSD daily. Practitioners who consulted individuals with MSD daily represented all levels of specialisation including 8 (16%) specialist practitioners, 12 (24%) general practitioners, 10 (20%) medical officers and 1 specialising medical practitioner. Only one (2%) medical officer reported that he/she consulted individuals living with MSD yearly.

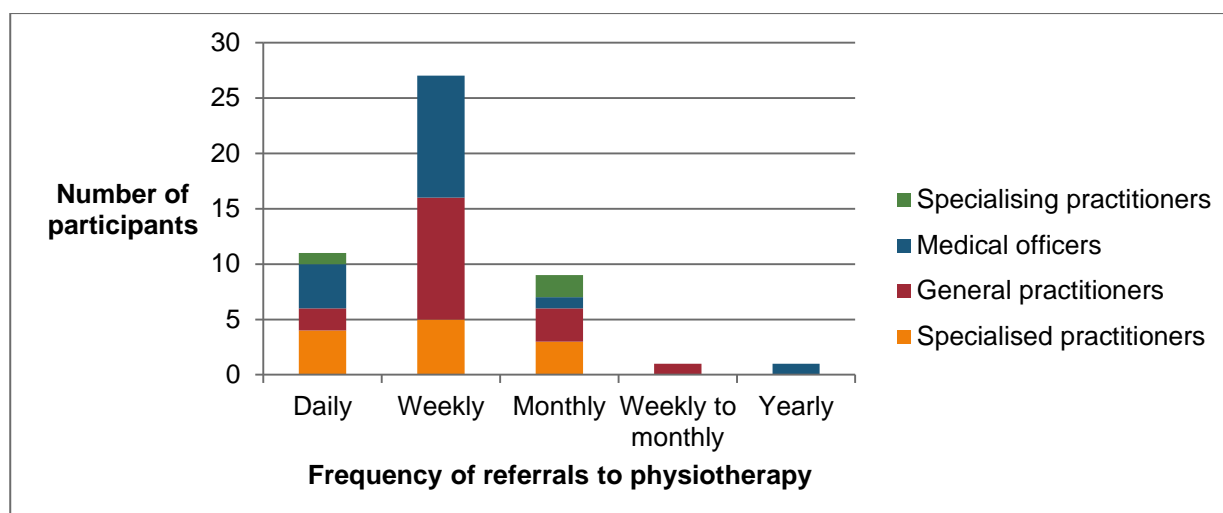


Figure 4.6: Frequency of referrals to physiotherapy for individuals living with MSD (n = 49)

Figure 4.6 shows the qualifications of the medical practitioners and the number of referrals for individuals with MSD to physiotherapy. The majority (55%) of participants referred individuals suffering from MSD on a weekly basis to physiotherapy. Participants reporting

weekly referrals for individuals living with MSD to physiotherapists included five specialist practitioners, 11 general practitioners and 11 medical officers.

4.4 The implementation of referral criteria for individuals living with MSD

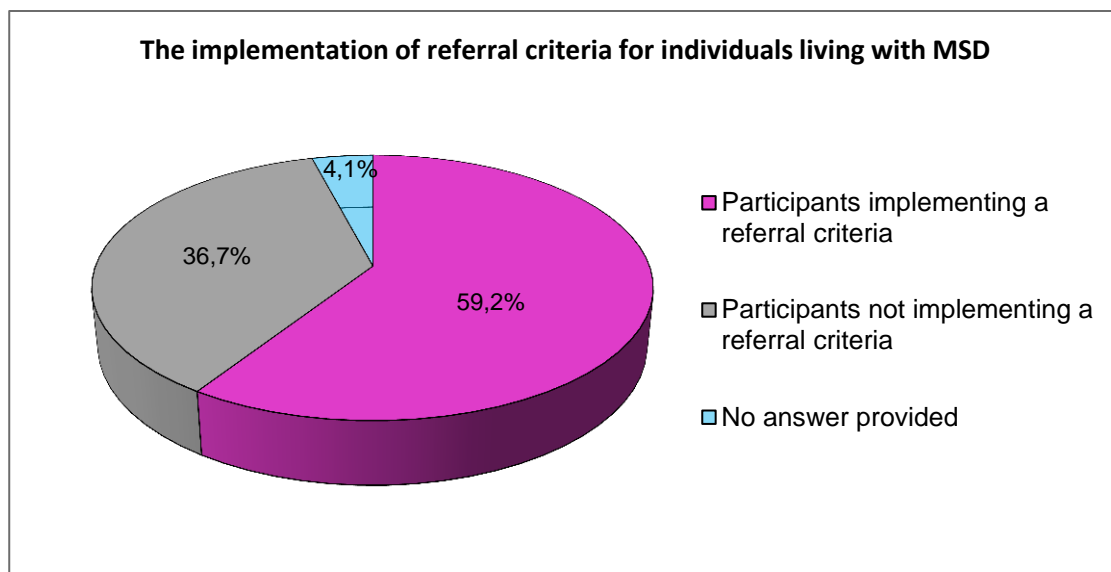


Figure 4.7: The utilisation of referral criteria for individuals living with MSD (n = 49)

Twenty-nine (42%) participants indicated that they utilised a referral criterion for individuals living with MSD as depicted in Figure 4.7. Eighteen (36%) participants indicated that they did not utilise any referral criteria for individuals with MSD. Two (4%) participants did not provide an answer. Two (4%) participants also indicated that they were not provided with any referral criteria during under-graduate studies, for individuals living with MSD.

4.4.1 The different criteria utilised by participants for MSD referrals

Participants' responses included 19 different referral criteria as presented in Table 4.5. Clinical reasoning and rehabilitation to regain full function or full return to activities of normal daily living were the most prevalent referral criteria, followed by soft tissue injuries and specific conditions, which require physiotherapy. A small number of participants implemented criteria of physiotherapy used as an alternative treatment option, chronic pain patients and loss of mobility. Less frequently used were criteria which included work related problems, neurological problems, stress related issues, increased BMI, sport related injuries, medical treatment, inflammatory conditions, HRQOL, and financial implications.

Table 4.5: The different criteria utilised by participants for individuals living with MSD⁵

Number of participants implementing specific criteria	Criteria implemented by participants for individuals living with MSD	Examples provided by participants
9 (18%)	When clinical reasoning indicates a necessity for physiotherapy treatment.	<p><i>P3 –Clinical reasoning</i></p> <p><i>P6 -Clinical reasoning wait 2/52 after comminute fractures, for strengthening and patient education</i></p> <p><i>P7 -Clinical decision - Chronic problem I would refer to physiotherapy, If I think it will recover independently I would not refer to physiotherapy</i></p> <p><i>P9 -Clinical reasoning, according to clinical picture</i></p> <p><i>P11 -Normal X- rays,</i></p> <p><i>P10 -When medical reasons for pain has been excluded</i></p> <p><i>P16 -After assessment indicates chronicity, Clinical reasoning to address chronic problem</i></p> <p><i>P25-Must be sure there is no other pathology</i></p>

⁵ To be noted - the wording from participants were not changed in Table 4.5.

- Participants are presented by *P* and unique number, which represents the participant.

14 (28%)	Rehabilitation to gain function and/or full return to daily activities	<p><i>P3 -When exercises is needed</i></p> <p><i>P10 -To improve stability. -To provide the patient with a safe set of exercises</i></p> <p><i>P34 -If patient needs an increase in functionality</i></p> <p><i>P14 -Patient with poor core muscles and posture, I would refer for strengthening</i></p> <p><i>P15 - Abdominal muscle weakness</i></p> <p><i>P19 -Patients in need of rehabilitation</i></p> <p><i>P21 -Strengthening</i></p> <p><i>P24 –Rehabilitation</i></p> <p><i>P28 -Rehabilitation</i></p> <p><i>P31 -Post op care protocols by department P34 -If patient needs an increase in function</i></p> <p><i>P41 -Rehabilitation after fractures or surgery</i></p> <p><i>P42 -If it is a disabling injury and the patient struggles with daily activities</i></p> <p><i>P44 -Rehabilitation for previous injuries</i></p> <p><i>P46 -If MSD affects function of basic daily activities</i></p>
7 (14%)	Soft tissue injuries	<p><i>P1 -Muscle and tendon problems</i></p> <p><i>P3 -Soft tissue injuries.</i></p> <p><i>P10 -When assistance is needed with spasms.</i></p> <p><i>P14 -Adjunctive therapy for muscle strains and sprains,</i></p>

(7)	(Soft tissue injuries continues)	<p><i>P17 -Specific incident causing strain, muscle spasm and tenderness</i></p> <p><i>P21 -As adjunctive therapy for muscle strains and sprains.</i></p> <p><i>P39 -Muscle injuries, spasms, contractures</i></p>
10 (20%)	Specific conditions requires physiotherapy	<p><i>P 1 -Osteoporosis, Rheumatoid Arthritis</i></p> <p><i>P3 -OA, and for referred pain</i></p> <p><i>P9 -Chronic neck and back pain</i></p> <p><i>P15 -specific syndromes for example SMA and motor neuron disease</i></p> <p><i>P20 -traumatic injuries, chronic pain, possibly degenerative conditions</i></p> <p><i>P32 -Injuries without fractures.</i></p> <p><i>P38 -Musculoskeletal conditions that will benefit from physiotherapy</i></p> <p><i>P39 -Specific condition i.e. muscle injuries, spasms, contractures, CVA patients, trauma, bedridden, CRTI's</i></p> <p><i>P44 -CVA</i></p> <p><i>P 48 -Certain conditions e.g. OA, RA, sport injuries</i></p>
3 (6%)	Severity of the injury	<p><i>P41 -Severity of injury</i></p> <p><i>P42 -severity of injury</i></p> <p><i>P43 -severity of injury and the age of the patient</i></p>

4 (8%)	Physiotherapy used as alternative treatment option	<p><i>P10 -I believe and as a general principal would like patients to be treated in a holistic manner, that is why referral is important.</i></p> <p><i>P11 -failure of operation or treatment</i></p> <p><i>P19 -If not responding to pharmacological treatment</i></p> <p><i>P27 -Non resolution with other conventional treatment, physical disabilities</i></p>
5 (10%)	Patients suffering from pain	<p><i>P2 -Acute pain, chronic pain</i></p> <p><i>P3 -referred pain</i></p> <p><i>P9 -Chronic pain</i></p> <p><i>P12 -For the treatment of pain,</i></p> <p><i>P13 –Pain</i></p>
6 (12%)	Loss of mobility	<p><i>P6 -Post operative mobilization. Usually start immediately with mobilisation</i></p> <p><i>P13 -For mobility.</i></p> <p><i>P10 -loss of mobility</i></p> <p><i>P34 -If patient needs limb mobilisation</i></p> <p><i>P47 -Immobility</i></p> <p><i>P41 -Impact of injury on mobility</i></p>

6	Work related and mechanical injuries	<p><i>P3 -mechanical injuries</i></p> <p><i>P11 -Work related pain e.g. computer</i></p> <p><i>P12 -I educate them on the management of the pain and then refer them to the physiotherapist to further teach them what to do.</i></p> <p><i>P14 -Work related habits causing LBP pain.</i></p> <p><i>P21 - Patient education for work related injuries and mechanical injuries</i></p> <p><i>-Subjective Criteria followed</i></p> <p><i>P39 –Trauma</i></p>
2	Stress related	<p><i>P11-Stress related problems</i></p> <p><i>P20 –Chronic tension</i></p>
3	Post-operative procedures	<p><i>P31 -If standard operating procedure indicates the need for physiotherapy</i></p> <p><i>P32 -Injuries/ Pathology requiring surgical intervention</i></p> <p><i>P49 -Guidelines pertaining to the rehabilitation of specific pathology (e.g. rotator cuff injury)</i></p>
3	Neurological	<p><i>P3 -Neural pain, referred pain.</i></p> <p><i>P4 -Neural tension,</i></p> <p><i>P20 -Post stroke</i></p>
2	Increased BMI	<i>P11 -Overweight patients</i>

		<i>P14 -Patients with increased BMI</i>
2	Sport related injuries	<i>P47-Sport injuries</i> <i>P6 -Sport related injuries</i>
1	Medical treatment	<i>P2 -Prior to prophylactic medical treatment</i>
2	Inflammatory	<i>P1 -Inflammation condition</i> <i>P13 -First treat inflammation and pain, otherwise patient will not be able to tolerate physiotherapy treatment</i>
1	HRQOL	<i>P13 -Quality of life (if it could be improved with physio)</i>
1	Financial implication	<i>P7 -Medical aid or patient's ability to pay</i>

4.4.2 Reasons for referring individuals living with MSD if participant utilised no criteria

Fifteen participants' who utilised no criteria for referring individuals living with MSD, mentioned reasons why they would refer individuals with MSD to physiotherapy, this is presented in Table 4.6.

Table 4.6: Reasons for referring individuals living with MSD if participant had no criteria⁶

Number of participants	Reasons described for MSD referral
15 (30%)	<i>P8 -No specific criteria</i> <i>P18 -If I think people might benefit from physiotherapy. I use my clinical reasoning. To address a chronic problem.</i> <i>P22 -If I think the patient might physiotherapy will compliment on going treatment or further improve patient's condition</i> <i>P23 -Patients in pain or loss of function P26- I use my experience or intuition.</i> <i>P29 -If there is no significant response to NSAIDS</i> <i>P30 -Patient request and recommendation by other doctor</i> <i>P33 -Pain arising from Musculoskeletal pathology including referred pain, tension headaches, as well as injuries needing rehab</i> <i>P35 -If patient would benefit from it</i>

⁶ To be noted - the wording from participants were not changed in Table 4.6.

- Participants are presented by *P* and the unique number, which represents the participant.

	<p><i>P36 -If chances of good recovery are compromised</i></p> <p><i>P37 -No formal guidelines used, clinical and past experience used</i></p> <p><i>P45 -Index of suspicion that patient would benefit from PT or different opinion</i></p>
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4.4.3 Influences on medical practitioner referral practices as identified by literature

Table 4.7: Influences on medical practitioner referral practices as identified by literature
(n = 49)

Influences on medical practitioner referral practices as identified by literature	Number of participants
The effect physiotherapy has had previously on musculoskeletal patients regarding the decrease of pain and/ or the increase of function significantly influence my referral practices (Archer et al. 2009).	48 (98%)
You refer musculoskeletal patients to physiotherapy for treatment because other treatment options have failed (Clemence & Seamark, 2003).	25 (51%)
Open lines of communication (telephonic or face-to-face discussions) with physiotherapists, influence your musculoskeletal referral practices (Clemence & Seamark, 2003).	34 (69%)
Information or knowledge you gained during your undergraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of MSD influence your referral practices.	22 (45%)
Information or knowledge you gained during your postgraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of MSD influence your referral practices.	41 (84%)
I prefer to refer to physiotherapists who have a special interest/or extensive postgraduate experience (Master's degree in physiotherapy and/or courses i.e. Sport1, OMT) in musculoskeletal injuries/disorders?	21 (42%)

The majority of the participants (n = 48; 98%) indicated that positive outcomes from previous physiotherapy management on individuals living with MSD influenced their referral practices. More than half of the participants (n = 25; 51%) indicated that other failing treatment options did influence their referral practices for individuals living with MSD.

Thirty-four participants (69%) indicated that they believe that personal communication influenced their referral practices of individuals living with MSD. One participant left the question regarding the influence of communication between medical practitioners and physiotherapists on their referral practices unanswered. Knowledge participants gained during their undergraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of musculoskeletal conditions only influenced 22 participants' (n = 45%) referral practices. One participant did not answer the latter question regarding the influence of tertiary education on their referral practices to physiotherapy. Forty-one (84%) participants indicated that knowledge they gained during their postgraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of musculoskeletal conditions influenced their referral practices. Two participants did not provide any answer concerning the influence of postgraduate education on medical practitioners' referral practices for individuals living with MSD.

Twenty-one participants (42%) indicated that they preferred to refer to physiotherapists who show a special interest or has extensive postgraduate experience (Master's degree in physiotherapy and/or courses i.e. Sport1, OMT) in musculoskeletal injuries/conditions. One participant did not answer the question regarding the influence of the physiotherapist's experience on the medical practitioners' referral practices for individuals living with MSD.

Table 4.8: Participants remarks who preferred to refer individuals living with MSD to more experienced physiotherapists

Participant	Participants remarks who prefer to refer individuals suffering from MSD to more experienced physiotherapists
P2	<i>Favours physiotherapists with experience in OMT.</i>
P5	<i>Prefers to refer patients with back pain, to physiotherapists with more experience in the treatment of back pain.</i>
P6	<i>Prefer to refer to physiotherapists who he/she knows has more experience in a certain field, but the field were not specified.</i>
P7	<i>Would not necessarily prefer to refer to a physiotherapist who received more postgraduate education but rather to a physiotherapist with more post-graduate experience. The physiotherapist who sees certain conditions daily would be the preferred physiotherapist to refer those conditions to (conditions were not specified by the participant).</i>

4.4.4 Participant identified influences on referrals of patients with MSD

Participants' responses varied regarding the different influences on their referrals of individuals living with MSD to physiotherapy

Table 4.9: Participant identified influences on referrals of individuals living with MSD⁷

Identified influence	Number of participants	Detailed description
When injuries has an effect on the patient's occupation	1 (2%)	<i>P30 -Injuries interfering with the patient's work, like an injury affecting the dominant hand</i>
Accessibility and availability	3 (6%)	<i>P4 and P15- Availability of the physiotherapist</i> <i>P25 - Distance as I work in a rural area, I should refer more pts to physiotherapists, but not always accessible in rural areas</i> <i>P30-We do not have much direct contact with physiotherapists</i>
Self-attendance for physiotherapy treatment/ a good relationship with physiotherapist Influence referral	4 (8%)	<i>P4 -Going to a physiotherapist myself</i> <i>P7 -Good relationship with physio</i> <i>P15-Personal experience and Good relationship with physio</i> <i>P21-Yes, after being to physiotherapy myself</i>
Experience in the field of MSD	4 (8%)	<i>P15-Experience of the science, specific syndromes</i>

⁷ To be noted - the wording from participants were not changed in table 4.9.

- Participants is presented by P and the unique number which represents the participant

		<p><i>P36-The only thing is the nature of the injury and/or the clinical response to treatment</i></p> <p><i>P10-Work experience</i></p> <p><i>P48-Senior doctors telling us when to and when not to refer</i></p>
Disability grants	1	<i>P16 - Applying for disability grants</i>
Financial aspect of physiotherapy treatment	4 (8%)	<p><i>P18-Finances</i></p> <p><i>P28-Finances. Short treatment period for an expensive for a session.</i></p> <p><i>P12-Medical aid funds,</i></p> <p><i>P11-The cost of therapy, but I would still refer the patient. I suggest physiotherapy but they do not always want to go.</i></p>
Quality of care provided by physiotherapist Influence referral	4 (8%)	<p><i>P26 -Occasional session with physiotherapist does help a lot to motivate again</i></p> <p><i>P28 -Quality of care, Physiotherapy now use needles for everything- very negative. Physiotherapists are very financially driven these days; I think this results in poor patient care</i></p> <p><i>P14 -Quality of care. Patient should feel safe.</i></p> <p><i>Patient must not be just a number but must be approach as an individual.</i></p>
Patient dependent	7 (14%)	<p><i>P29 -If return to normal function is needed urgently as with sports</i></p> <p><i>P22 -Patient complaints and the knowledge that physiotherapy might resolve these complaints</i></p> <p><i>P20 -Patient dependent: age, type of work/ sport.</i></p> <p><i>-Willingness of patient to get help</i></p>

(Patient dependent)	(7)	<p><i>P41 -Severity of illness and likelihood of positive response to physiotherapy. If patient request, I try to refer as per request</i></p> <p><i>P49 -Patient willingness to comply with physiotherapy however will always refer to physiotherapy and leave decision with patient.</i></p> <p><i>P 42 -Sometimes patient requests physiotherapy</i></p> <p><i>P43 -if patient request, I try to refer as per request</i></p>
Patient ability to attend physiotherapy	1 (2%)	<i>P37 -Patients ability to come to physiotherapy</i>
Patient mobility	1 (2%)	<i>P12 -Mobility of the patient</i>
Previous satisfactory results	3 (6%)	<p><i>P7 -Good patient results</i></p> <p><i>P13 -It has made other patients I referred much better.</i></p> <p><i>P28 -Too short treatment time reported by patients influenced me to refer less</i></p>
Chronicity of condition and the influence on referrals	1 (2%)	<i>P24 -Chronic problems</i>
Seeking another opinion	2 (4%)	<p><i>P27 -Another opinion, different mode of management</i></p> <p><i>P45 -When orthopaedic consultant is unavailable or conservative management is suggested by orthopaedic consultant</i></p>

not responding adequately to medical treatment	1 (2%)	<i>P47 -Patient with moderate or severe disease , not responding adequately to medical treatment</i>
Did not indicate an influence	8 (16%)	P17, P19, P23, P33, P35, P38, P39 and P46

4.5 Participant opinion of appropriate referrals for MSD

4.5.1 Appropriate referrals for patients with neck and back pain

Table 4.10: Appropriate referrals for patients with neck and back pain⁸

Different appropriate referral reasons	Number of participants	Detailed descriptions
Exclude pathology/fractures	8 (16%)	<p><i>P2 -Exclude the need for surgery or ortho. Will refer to physiotherapy and/or surgeon</i></p> <p><i>P10 -when medical reasons for pain has been excluded</i></p> <p><i>P11 -Normal X- rays</i></p> <p><i>P15 -After vertebral abnormality and spinal deformity excluded</i></p> <p><i>P20 -After Clinically diagnosed</i></p> <p><i>P25 -When there is no unstable fracture</i></p> <p><i>P44 - Acute injuries ruled out like fractures, vertebral body collapse etc. OA which are not for surgery</i></p> <p><i>P45 -When gross pathology has been excluded</i></p>
Core stability (Core stability)	6 (12%)	<p><i>P6 -Core strengthening.</i></p> <p><i>P8 -Peri-operative for strengthening</i></p> <p><i>P7 -Rehab or when physio would take away the cause of the problem.</i></p>

⁸ To be noted - the wording from participants were not changed in table 4.10.

- Participants are presented by P and the unique number, which represents the participant.

		<p><i>P46 -Headaches and radicular pain</i></p> <p><i>P47 -Severe back ache that is debilitating</i></p> <p><i>P49 -In all cases as part of first line conservative management and post operatively, unless it is an emergency case</i></p>
Work related	2 (4%)	<p><i>P11 -Work related pain e.g. computer work. Stress related</i></p> <p><i>P14 - Work related habits causing Lower back pain</i></p> <p><i>P21 -Work related habits</i></p>
Poor posture	2 (4%)	<p><i>P14 -Patient with poor posture</i></p> <p><i>P21 -Patients with poor posture</i></p>
Increased BMI	4 (8%)	<p><i>P6 –Patients on a diet</i></p> <p><i>P14 –Patients with increased BMI</i></p> <p><i>P11 -Overweight patients</i></p> <p><i>PP21 -Patients with increased BMI,</i></p>
Immediate referral	8 (16%)	<p><i>P18 -As soon as possible</i></p> <p><i>P20 -As soon as possible</i></p> <p><i>P24 -Patients with pain</i></p> <p><i>P28 -All of these patients need physio</i></p> <p><i>P30 -Within 48 hours</i></p>

		<p><i>P37 -Important from the beginning</i></p> <p><i>P38 –Physiotherapy is the most appropriate choice</i></p> <p><i>P39 -Anytime the pain is not related to fractures</i></p>
Mechanical back pain	5 (10%)	<p><i>P3 -Mechanical and referred pain</i></p> <p><i>P6 –If it is mechanical, an immediate physiotherapy program is needed.</i></p> <p><i>P7 – Mechanical back and neck pain, to correct imbalance.</i></p> <p><i>P19 and 31- Mechanical back pain</i></p>
Loss of mobility	1 (2%)	<i>P10 -loss of mobility</i>
Analgesia does not relieve pain	9 (18%)	<p><i>P5 - First would give anti-inflammatory, medicine if the patient does not improve I would refer to physiotherapy</i></p> <p><i>P22 -Minimal relief from analgesia</i></p> <p><i>P29 -If NSAID does not resolve pain</i></p> <p><i>P30 - If not resolved after 2 weeks of analgesia</i></p> <p><i>P31 -When medication does not seem to be effective</i></p> <p><i>P36 -If NSAIDS/analgesia is not assisting patient</i></p> <p><i>P39 -Poor response to analgesia</i></p> <p><i>P43 -Once analgesia has failed</i></p> <p><i>P45 –Radiological or conservative treatment does not resolve pain</i></p>

If patient has a medical aid	1 (2%)	<i>P8 – Does patient have a medical aid</i>
If patient has muscle spasms	12 (24.5%)	<i>P3 –Spasms</i> <i>P4 -Local tenderness, muscle and most injuries</i> <i>P10 -When assistance with spasms is needed</i> <i>P22 -Muscle spasms</i> <i>P26 -Soft tissue injuries</i> <i>P29 -If it is associated with muscle spasm</i> <i>P32 -Patients with spasms</i> <i>P39 –If patients have spasms</i> <i>P41 -Severe spasms leading to severe pain</i> <i>P42 -Decreased ROM due to muscle pain and spasm</i> <i>P44 -Muscular pain</i> <i>P46 -Muscle spasms</i>
Neural pain	4 (8%)	<i>P3 -Neural pain</i> <i>P4 -Neural tension</i> <i>P6 -Neural. Radiculopathy -delay physiotherapy when patient has radicular pain because it can make more problems or damage</i> <i>P46 – Radicular pain</i>

Loss of functions	5 (10%)	<p><i>P8 – I will refer an active functional person more often</i></p> <p><i>P23 -Loss of function</i></p> <p><i>P41 –When performance of daily activities of living are affected</i></p> <p><i>P46 -Influence patient's daily function</i></p> <p><i>P48 -If it influences their function and quality of life</i></p>
Patient education	1 (2%)	<i>P12 -I educate them on the management of the pain and then refer them to the physiotherapist to further teach them what to do.</i>
Multi-disciplinary approach	1 (2%)	<i>P37 -Part of multi-disciplinary approach</i>
Degenerative changes	1 (2%)	<i>P32 Patient with degenerative changes</i>

Table 4.11: Reasons to refer individuals living with MSD with back and neck pain to physiotherapy as indicated by participants

Table 4.11 provides reasons to refer individuals living with MSD with back and neck pain to physiotherapy as indicated by participants, in the order of the highest to the lowest order of participant support:

Number of participants	Reasons to refer individuals living with MSD with back and neck pain to physiotherapy
12 (24%)	If patient has muscle spasms
9 (18%)	Analgesia does not relieve pain
8 (16%)	Immediate referral
7 (14%)	Exclude pathology/fractures
7 (14%)	Acute/chronic pain
6 (12%)	Core stability
6 (12%)	Mechanical back pain
5 (10%)	Loss of functions
4 (8%)	Increased BMI
4 (8%)	Neural pain
2 (4%)	Work related
2 (4%)	Poor posture
1 (2%)	If the patient has a medical aid
1 (2%)	Work related injury
1 (2%)	Patient education
1 (2%)	Multi-disciplinary approach
1 (2%)	Degenerative changes

Table 4.12: Reasons to refer individuals living with MSD with peripheral pain to physiotherapy as indicated by participants

Table 4.12 provides reasons to refer individuals living with MSD with peripheral pain to physiotherapy as indicated by participants, in the order of the highest to the lowest order of participant support:

Number of participants	Reasons to refer individuals living with MSD with peripheral pain to physiotherapy
19 (38%)	Clinical picture
15 (30%)	Joint mobility
12 (24%)	Rehabilitation
6 (12%)	Decreased function
5 (10%)	Treatment fails
5 (10%)	After appropriate healing
4 (8%)	If treatment fails
4 (8%)	Immediate referral
4 (8%)	Pain
2 (4%)	Interdisciplinary decision
2 (4%)	Sport specific injuries
2 (4%)	Muscle and joint problem
1 (2%)	Correct exercises
1 (2%)	Unsure

4.5.2 Appropriate referrals for patients with peripheral joint injuries

Table 4.13: Appropriate referrals for patients with peripheral joint injuries⁹

Different appropriate referral reasons	Number of participants	Detailed description of referral reason
Clinical picture	19 (38%)	<p><i>P1 – For a fracture wait to complete healing, for a sprain wait for 7 days. If it is not a serious injury, refer to physio.</i></p> <p><i>P2 -Exclude anything organic and then refer the patient to the physio</i></p> <p><i>P3 –Query the cause and the degree or grade of injury. Patients with decreased range of movements, local tenderness. I will refer most musculoskeletal patients except those with small injuries, that will recover independently</i></p> <p><i>P4 -Dependent on degree of injury</i></p> <p><i>P5 -As per back pain</i></p> <p><i>P7 -For Lower back pain and peripheral injuries if it would prevent surgery</i></p> <p><i>P8 and P10 -According to clinical picture,</i></p> <p><i>P11 and P13 -As per Lower back pain.</i></p>

⁹ To be noted - the wording from participants were not changed in table 4.13.

- Participants is presented by P and the unique number which represents the participant
- Different appropriate referral reasons are in brackets to help with the comprehension of the table

(Clinical picture)	(19)	<p><i>P20 -As soon as diagnosed</i></p> <p><i>P24 -Peripheral joint injuries</i></p> <p><i>P32 -Soft tissue injuries not requiring surgical intervention</i></p> <p><i>P36 -If it is a serious joint injury or fracture</i></p> <p><i>P37 -Important from the beginning, not more or less important</i></p> <p><i>P41 -After long period of POP, severe swelling, post-surgery and decreased joint mobility</i></p> <p><i>P42 -Decreased power and patient struggling to adjust</i></p> <p><i>P43 -Persistent pain and decreased movement</i></p> <p><i>P49 -In most cases, either as initial conservative management "prehab" and post operatively</i></p>
Treatment fails	5 (10%)	<p><i>-Contractures present</i></p> <p><i>- Mechanical problem and stiffness</i></p> <p><i>-Sports men and women, mobilization difficulties</i></p> <p><i>-Persistent pain and decreased movement</i></p> <p><i>when it causes decreased mobility</i></p> <p><i>-I will refer to increase ROM in a joint</i></p>
Joint mobility	15 (30%)	<p><i>P3 –Mechanical problem and stiffness</i></p> <p><i>P6 -Start Physiotherapy asap to prevent stiffness in joints, which would limit mobilization</i></p> <p><i>P8 –I will refer to increase range of motion in a joint</i></p>

(Joint mobility)		<p><i>P9 -Improve mobility</i></p> <p><i>P 10 –I will refer to increase Range of movement in a joint</i></p> <p><i>P11 -To increase mobility at the injured joint</i></p> <p><i>P18 -For mobilisation</i></p> <p><i>P22 –When contractures are present</i></p> <p><i>P24 -Sports men and women, mobilization difficulties</i></p> <p><i>P41 -Decreased joint mobility</i></p> <p><i>P42 -Decreased range of movement</i></p> <p><i>P43 -Persistent pain and decreased movement</i></p> <p><i>P44 -Decreased Range of movement of joints</i></p> <p><i>P46 -When it causes decreased mobility</i></p> <p><i>P47 -Joint stiffness</i></p>
Rehabilitation	12 (25%)	<p><i>P3 -Instabilities</i></p> <p><i>P8 -When strengthening is needed around a joint</i></p> <p><i>P9 -To help patient or introduce exercises to improve strength at that joint, also to slowly introduce exercises, not to further injure that joint</i></p> <p><i>P10 -When strengthening is needed around a joint</i></p> <p><i>P11 -To help patient or introduce exercises to improve strength</i></p>

(Rehabilitation)		<p><i>P15 -Mobilization difficulties</i></p> <p><i>P19 -Rehabilitation for injuries and fractures</i></p> <p><i>P21 -Mobilization difficulty</i></p> <p><i>P22 -Reduced use of affected limb</i></p> <p><i>P26 -Where rehabilitation on the long term is needed</i></p> <p><i>P41 -After long period of POP</i></p> <p><i>P48 -Almost every patient with injuries will benefit from rehabilitation</i></p>
Interdisciplinary decision	3 (6%)	<p><i>P16 -Physiotherapist or occupational therapist should assess patient on initial consultation and decide with the doctor the extent of the disease and the treatment plan</i></p> <p><i>P31 -Would have liked to involve Physiotherapists and chiropractors</i></p> <p><i>P37 -As part of a multidisciplinary approach</i></p>
If treatment fails	4 (8%)	<p><i>P14 -If homeopathy does not work I would refer to a physiotherapist</i></p> <p><i>P15 -When six weeks of conservative treatment i.e. NSAID has been unsuccessful</i></p> <p><i>P45 -Orthopaedic department has nothing to add and conservative treatment failed</i></p> <p><i>P46 -When patient requires more frequent and stronger analgesia</i></p>
Correct exercises	1 (2%)	<i>P11 -To slowly introduce correct exercises, not to further injure that joint.</i>
Sport specific injuries	2 (4%)	<i>P15 -Sports men and women P21 -Sport related injuries</i>

After appropriate healing	5 (10%)	<p><i>P12 -6 weeks post-surgery</i></p> <p><i>P18 -When the fracture has healed</i></p> <p><i>P25 -After fracture has healed and patient is still in serious pain</i></p> <p><i>P 35 -After healing</i></p> <p><i>P33-Once initial healing has taken place</i></p>
decreased function	6 (12%)	<p><i>P9 -Reduced use of affected limb</i></p> <p><i>P10 -To improve function.</i></p> <p><i>P23 -Loss of function</i></p> <p><i>P27 -Inability to use joint properly</i></p> <p><i>P30 -If it is an injury of the dominant hand, refer within 48 hours</i></p> <p><i>P47 -Decreased functioning of the joint</i></p>
muscle and joint problem	2 (4%)	<p><i>P29 -Associated with mild to moderate ligament injuries</i></p> <p><i>P8 -Not muscle related.</i></p>
Immediate referral	4 (8%)	<p><i>P30 -Within 48 hours of the injury</i></p> <p><i>P31 –I would have liked to refer all appropriate patients to PT</i></p> <p><i>P34 – All these patients need physiotherapy</i></p> <p><i>P27 -Immediately to prevent sequelae</i></p>

Pain	4 (8%)	<p><i>P8 –The level of pain. If the patient has pain+++ I won't refer, for example a knee patient unable to mobilise because of pain</i></p> <p><i>P27 -Pain in joints needs physiotherapy referral</i></p> <p><i>P43 -Patients with persistent pain and decreased movement</i></p> <p><i>P47 -Severe joint pain</i></p>
Unsure	1 (2%)	<p><i>P8 – It is difficult for me; I do not really know when to refer. I would not refer Carpal tunnel because it is neural. OA I also do not refer, but am unsure why not. I mostly give anti-inflammatory medication.</i></p>

4.6 Valued comments made during semi-structured interviews

Table 4.14: Valuable comments that were provided by participants at the end of the semi-structured interview

Participant	Valuable comments
P 2	<i>"More information regarding physiotherapy treating MSD will be wonderful"</i>
P 3	<i>"Physios need to be much more visible and the public should be educated regarding it's importance"</i>
P 8	<i>"We (medical practitioners) do not know of the different physios and their specific specialisation, courses given to us (medical practitioners) would help (MSD) referrals. We (medical practitioners) do not really know enough about physios"</i>
P 8	<i>"Interdisciplinary members do not work together due to lack of information about what different disciplines do. Their specific roles are too vague"</i>
P9	<i>"IDT working is a problem. It greatly depends on what the clinician's beliefs regarding physiotherapy are. Some of my colleagues state that they do not know what physiotherapists do"</i>
P 12	<i>"Physiotherapists has made my patients lives much better"</i>
P13	<i>"Experience with patients gives a better idea of when physio will be effective. Patient in too much pain is not for physio"</i>
P13	<i>"If the physio does not put in effort, I prefer not to refer to them"</i>
P28	<i>"Over the last years patients have given positive feedback from biokinetic treatment. Biokineticists has taken over the role of the physiotherapist, I blame Physiotherapists for this and not the doctors or the biokineticists"</i>

4.7 Conclusion

To summarise, most of the participants preferred to fill out the questionnaires independently. All levels of qualifications for medical practitioners were represented in the study. Individuals living with MSD seek help from medical practitioners in Bloemfontein daily and these patients were mostly referred for physiotherapy by practitioners, on a weekly basis. Twenty-nine (59%) participants indicated that they utilised a specific criterion when referring individuals living with MSD to physiotherapy, and eighteen (36%) participants did not make use of a criteria for individuals living with MSD. The criteria for referral of individuals living with MSD were diverse, and so were the reasons for referrals when the participants did not utilise a criterion. The data reflects multifaceted influences on medical practitioner referrals for individuals living with MSD.

CHAPTER 5

DISCUSSION

The insights obtained from this study will now be summarised and compared to the available literature. The findings also provide answers to the research question posed regarding the referral practices of South African medical practitioners in Bloemfontein to physiotherapy for individuals living with MSD. Influences which may have an effect on medical practitioners' referrals for individuals living with MSD to physiotherapy will be discussed and medical practitioners' awareness of the role that physiotherapists play in the management of individuals living with MSD will also be presented.

5.1 Preference of Medical practitioner's participation to the study

Substantial evidence exists in the literature to support using a questionnaire for data collection. However this method carries a significant risk of a low response rate, which according to Braithwaite, Emery, & de Lusignana (2003), could be as low as nine percent. Although this is only one example of medical professionals' response rate to completing questionnaires, there is a variation in response rates reported across studies, with no theoretical reason or explanatory variables, affecting all survey modes in the same manner (Watson, Becker & de Bekker-Grob, 2014). The choice of data collection method remains a complex matter, due to the many different modes and methods of data collection utilised in research (Watson et al, 2014). In comparing 114 international studies, Watson et al(2014) reported that mean response rates for different methods of data collection were the following: internet panel response rates - 13%, self-completed response rates in a clinic or central location - 20%, response rates for interviews - 20%, postal response rates - 34% and other response rates (which were not defined or explained) 13%.

Therefore, the response rate of 33% in this research was higher than the expected nine percent indicated by literature for health care professionals participating in surveys (Braithwaite et al. 2003). This could be because of the participants' positive response to the three options provided for participation in the study. As discussed earlier, choice of

participation in a study is viewed as an effective approach to encourage participation (Millar & Dillman, 2011).

Participants voluntarily divulged more information for closed-ended questions during the semi-structured telephonic and in person interviews. During the in-person semi-structured interviews, the researcher read the questions verbatim from the designed questionnaire to the participants, but participants often engaged in conversations during the interviews, which provided more in-depth information regarding their referral practices. All participants who volunteered for the in person semi-structured interview communicated that they found the topic interesting and would be interested in the outcome of the research.

5.2 Demographic information

5.2.1 Participant qualifications

The researcher anticipated that the different participant qualifications, special interests and length of experience as medical practitioners would have an effect on the referral practices of medical practitioners for individuals living with MSD to physiotherapy. Participants' qualifications represented a range of medical practitioner specialisation levels, which enabled the researcher to compare the level of qualification of the participants with their referral practices. Qualifications of participants included; medical specialists, general practitioners, medical officers and participants in the process of becoming a medical specialist.

Medical specialists who have completed advanced education and clinical training in a specific area of medicine are expected to take the clinical lead because of their specialisation (Reid et al. 2010). Furthermore, the orthopaedic surgeon and specialist rheumatologist are more specialised specifically in the field of MSD, compared to the paediatric pulmonologist and the specialist physician. Four of the five orthopaedic surgeons referred individuals living with MSD daily, whereas the other specialists referred individuals living with MSD weekly or monthly. It is hypothesised that orthopaedic surgeons consult a larger number of individuals living with MSD and have

specialised knowledge of MSD compared to their colleagues. Therefore, the data obtained indicated that the field of specialization only has an effect on the referrals of individuals living with MSD to physiotherapy if the field of specialisation is directly linked to MSD.

General practitioners' practices are not focused on a specific medical specialty for example MSD, but includes the management of various medical conditions in patients of all ages for periodic health examinations, early detection of diseases and prevention of complications when diseases are already present in the individual (Reid et al. 2010). General practitioners therefore have a less specialised knowledge compared to specialists in the field of MSD.

According to the data collected, some of the general practitioners were unsure when to refer individuals living with MSD to physiotherapy, even with years of experience. For example, participant 8 remarked that after 15 years of being qualified as a general practitioner he/ she found it difficult to know when to refer individuals living with MSD to physiotherapy. Participant 8 also stated that he/she does not refer osteo-arthritic patients to physiotherapy and did not utilise a criteria to refer individuals living with MSD to physiotherapy and were unable to explain the motivation for not referring OA patients to physiotherapy.

Medical officers in South Africa are medical practitioners in the primary care setting working under supervision of medical specialists (Reid et al. 2010). Because medical officers have less specialised knowledge than their clinical supervisors, assisting them with the decision making regarding MSD management, the researcher anticipated that medical officers would be less confident than medical specialists when referring individuals with MSD. A statement by Participant 45 supports this hypothesis when he/ she stated, that an index of suspicion that a patient would benefit from physiotherapy or another opinion is utilised when he/she refers individuals with MSD to physiotherapy. Another participant (P 18) remarked that if he or he/she thinks people might benefit from physiotherapy they would refer the patient. The latter two answers could be

indicative of a lack of confidence in these participant's referral practices for individuals living with MSD. The researcher is of the opinion that the use of phrases like "my intuition" or "when think it is necessary," indicates the participants' uncertainty regarding when an individual living with MSD should be referred to receive physiotherapy.

If the participant is in the process of becoming a medical specialist, where specialising in a field regarding the management of individuals living with MSD is essential, they should theoretically have more specialised knowledge than their general practitioner and medical officer colleagues (Reid et al. 2010). The participants who were specialising to become medical specialists were doing their specialisation in family medicine and anaesthesia and their referral practices were similar to general practitioners and medical officers in this study. The researcher argues that the similarity in their referral practices to those of general practitioners and medical officers was due to the fact that their field of specialisation was not directly focussed on MSD.

5.2.2 Experience of participants

The meticulous, clear, and thoughtful use of the present best scientific evidence, or evidence based practice, when referring individuals living with MSD is important (Sackett et al. 1996). Medical practitioner referral practices for individuals with MSD should be based on the best evidence practice, integrating the practitioners' expertise with the best available external clinical evidence from research for the most efficient management thereof (Sackett et al. 1996).

The researcher anticipated that the duration of experience as medical practitioners, as reflected in Figure 4.3, would influence referral practices of these practitioners. The latter was expected because experience has an influence on practitioner's skills and judgment, which is obtained through clinical experience and clinical practice (Sackett et al. 1996). The participants' experience ranged from a few months to forty years, representing experience from newly qualified medical practitioners to medical practitioners close to retirement. The diverse levels of experience made it possible to

compare different levels of experience and the influence thereof on medical practitioner's referral practices. The data reflected that years of clinical experience did not affect participants' referral practices or their implementation of a referral criterion for individuals living with MSD to physiotherapy. The data implies that specialisation in a specific medical field has a larger impact on participating medical practitioner referral practices than their years of experience. Although the researcher anticipated that the years of experience would have an effect on the referral practices of medical practitioners, it was taken into consideration that experience is a complex factor, as it could dramatically differ from one participant to another.

Werner & Ihlebaek (2012) found that general practitioners manage patients with lower back pain in a similar manner as they did in the previous decade, but currently cooperate and refer these MSD patients less frequently to physiotherapists. The authors did not explain the reasons behind the latter decrease in referral rates of patients with lower back pain to physiotherapy over the last decade (Werner & Ihlebaek, 2012). The collected data from medical practitioners in Bloemfontein also showed a decrease in physiotherapy referrals over time. A general practitioner (P 28) qualified for 34 years reported a decrease in his/her referral rates to physiotherapists. The latter participant said that this was due to a decline in the quality of services delivered by physiotherapists, regarding the management of individuals living with MSD and less frequent communication between physiotherapists and medical practitioners. Another two participants (P 5 and P 13), qualified as general practitioners for 30 years, stated that there has unfortunately been a decrease in frequent communication and the quality of care provided by physiotherapists for referred MSD patients. The latter mentioned lack of communication and care influenced these participant's referral practices. Contrary to this, a participant (P 26) qualified for 33 years did not report any decline in his /her referrals for individuals living with MSD to physiotherapy. Seventy one (71) percent of the participants agreed that communication would influence their referrals irrespective of the duration they have been qualified as a medical practitioner. In summary, the data clearly shows that the duration of experience of participants did not have an influence on the referral practices for individuals living with MSD as much as

their field of specialisation.

5.3 Referral frequency of individuals living with MSD to physiotherapy

The majority of the participants (63%) indicated that individuals with MSD seek help from medical practitioners daily. This reflects the significant number of individuals living with MSD seeking help for their pain and disabilities in Bloemfontein. The large number of individuals seeking help for their MSD confirms the WHO's concern with MSD being the leading group of conditions causing pain and disability, with grave financial and health consequences for populations (Paul, 2005). The latter crisis is being referred to as the burden of MSD (Paul, 2005). More than half of the participants consulting individuals with MSD on a daily basis confirmed the burden of MSD in the South African context. In order to address the burden of MSD in South Africa several unique challenges arise, which will now be presented. The South African public health sector expends approximately 11% of the government's total budget, which is 6% higher than the WHO recommended 5% of the GDP (Jobson, 2015). The latter fact further reflects the crisis of the burden of diseases in South Africa (Jobson, 2015). Furthermore, the prevalence of more than a third of individuals attending a clinic in Cape Town, South Africa with MSD were higher than any of the statistics of similar international clinics attended by individuals suffering from MSD (Parker &Jelsma, 2010). In South Africa as a developing country, access to tertiary healthcare is limited and management of both MSD and rehabilitation of MSD disabilities at primary health care centres need to be addressed (Parker &Jelsma, 2010). The scarcity of resources across communities in South Africa and the poor medical practitioner to patient ratio, which is 0.8 for every thousand patients, has grave financial and health consequences (Gcelu &Kalla, 2015; Jobson, 2015). The specific financial consequences for the public, living with MSD in the South African context, has not been confirmed but seems to be higher than expected (Parker &Jelsma, 2010). Patients living with MSD should thus be referred appropriately due to the grave financial and health consequences caused by MSD on the South African population (Gcelu &Kalla, 2015). All the participants included in this study consulted individuals living with MSD daily and most (27) participants referred these patients to physiotherapy weekly, as indicated by Table 4.3 and Table 4.4. It was anticipated that the number of MSD patients consulted by medical practitioners to be equal to the number of referrals

to physiotherapy. The researcher reasoned that the weekly referrals could have occurred due to fact that certain MSD were not appropriate to be referred to physiotherapy, that the medical practitioners implemented the wait-and-see approach as described by Kooijman et al (2013), or that the medical practitioner did not refer the individual suffering from MSD to physiotherapy appropriately. The latter reasoning is supported by an answer provided by one experienced general practitioner (PP 8) who said that he/ she does not refer patients with OA, but was not sure why they do not refer to physiotherapy.

Four of the five orthopaedic surgeons consulted and referred individuals living with MSD daily. The rheumatologist and specialist physician who participated in the study consulted individuals living with MSD on a daily basis but only referred patients on a weekly basis. The four specialists in family medicine consulted patients on a daily, weekly and monthly basis but only referred their patients on a monthly basis. The paediatric pulmonologist who participated in this study consulted individuals living with MSD on a weekly basis and referred patients to physiotherapy on a weekly basis. In contrast, general practitioners, specialising practitioners and medical officers who consulted individuals living with MSD showed no difference in their frequency of referrals of individuals living with MSD, indicating that field of interest or years of experience does not play a role in medical practitioner's referral practices.

Additionally, the findings in this study had similar results as the study by Love and Dowell (2004), indicating that the personality and/or special interests of the medical practitioner also plays a role in the referral practices of medical practitioners to physiotherapy.

The medical practitioners' field of interest and/or years of experience and the frequency of MSD referrals varied tremendously as presented in table 4.2 and only the four orthopaedic surgeons had similar referral frequencies. The research findings for dissimilar medical practitioner referral frequencies and diverse management of MSD are comparable to literature describing referrals to be dissimilar (Tzortziou Brown et al.

2016). Possible explanations for these dissimilarities are that there is uncertainty amongst medical practitioners regarding most effective combination of management interventions that should be implemented for the treatment of MSD, which in turn could influence the frequency of their referrals and their referral practices (Tzortziou Brown et al. 2016). In addition to the last mentioned referral uncertainty, medical practitioners use a multifaceted intervention approach for MSD management (Tzortziou Brown et al. 2016). To be noted is that some participants had more than one field of interest, which is why the percentage of participants who expressed a special field of interest seems to be higher than it should be. Other influences will also be discussed below that might explain the frequency of MSD patient referrals to physiotherapy in more detail.

5.4 The referral criteria used by medical practitioners for individuals living with MSD

Only twenty-nine participants indicated a referral criterion used for individuals living with MSD. A concerning feature reflected in the data (presented in Table 4.5), is the variety of criteria used for individuals living with MSD. The researcher has concluded from the available literature in Chapter 2 that in order to establish the most efficient and cost effective management for MSD patients, practitioners should be familiar with an appropriate evidence-based referral criteria to manage individuals living with MSD, which would leave less room for uncertainty or inappropriate MSD referrals. The lack of evidence-based criteria, according to the researcher, could explain the uncertainty of the medical practitioners regarding the role of physiotherapists in the management of individuals living with MSD.

It is imperative for medical practitioners to manage individuals living with MSD effectively in an effort to decrease the burden of MSD internationally. Providing effective healthcare is costly and delayed or incorrect referrals will increase the expense and decrease the effective management of the individual living with MSD (Gcelu &Kalla, 2015). In a resource-poor South African public sector, prompt appropriate physiotherapy referrals to gain access to the most suitable treatment for an individual living with MSD are thus essential for the most efficient and cost effective management of these patients(Gcelu &Kalla, 2015). The data supports the lack of understanding of referral

criteria and the clinical reasoning of medical practitioners referring individuals with MSD to physiotherapists (Michaleff et al. 2012). Therefore, the researcher supports Michaleff's et al (2012) stance that more research and information to explain the differences between the referral practices of medical practitioners for individuals living with MSD to physiotherapy is necessary. The researcher feels that the latter is necessary not only for spinal patients as Michaleff et al (2012) stated, but also for peripheral conditions. More information regarding the referral criteria and the clinical reasoning of medical practitioners referring individuals living with MSD to physiotherapists will potentially ensure more appropriate referrals and management of MSD patients (Michaleff et al. 2012). The information could provide essential guidance on what changes should be made to referral practices of medical practitioners for individuals living with MSD.

5.5 The implementation of referral criteria for individuals living with MSD

Participant's responses consisted of different themes regarding the referral criteria they implemented for individuals living with MSD. This section will offer a description of the different examples of what medical practitioners indicated as criteria for the referral of individuals living with MSD to physiotherapy as illustrated in table 4.5:

5.5.1 When clinical reasoning indicates a necessity for physiotherapy treatment.

It was deemed important to identify the different referral criteria used by medical practitioners to understand their referral practices. The data of the current study suggested that clinical reasoning plays an important role in the referral practices of individuals living with MSD to physiotherapy. Clinical reasoning was the most prevalent referral criteria mentioned by participating medical practitioners. Clinical reasoning occurs when medical practitioners apply the process of decision making, involving critical thinking, by which the medical practitioner collect and analyse patient information and identify potential actions to potentially improve the bio-psychosocial conditions of patients under their care (Benner, Hughes, & Sutphen, 2008). Clinical reasoning plays a leading role when practitioners decides regarding the management of their patients (Pelaccia, Tardif & Triby, 2011). Clinical reasoning is considered as the medical practitioners' most important skill for selecting medical interventions (Pelaccia

et al. 2011).

Michaleff et al (2012) claimed that research regarding individuals living with MSD referral practices could improve the understanding of the clinical reasoning and referral dynamics between medical practitioners and allied health professionals. The researcher agrees with Michaleff et al (2012) that if more information regarding the clinical reasoning during medical practitioners' referral practices was identified, it could assist and ensure appropriate referrals and management of individuals living with MSD. The data illustrates that clinical reasoning is implemented by medical practitioners but does not provide details regarding the process of clinical reasoning.

5.5.2 Rehabilitation to gain function and/or full return to daily activities

Fifteen participants indicated that they use a rehabilitation need as criterion for MSD patient referrals to physiotherapy. One of the roles of physiotherapists is summarised by the HPCSA as rehabilitation of illness, injury and impairment or disability in its acute, sub-acute, chronic and final stages (2016). It could therefore be hypothesised that participants who implement rehabilitation as a criterion for MSD patients are aware of one of the important roles of physiotherapy. Participants might be aware of physiotherapists' therapeutic value as part of the IPMT, but the participants' knowledge regarding physiotherapy's defined scientifically based protocols, contributing to rehabilitation of patients with MSD might be questionable (Odebiyi et al. 2010). Some of the trending themes mentioned by participants (P3, P6, P10, P13, P 14, P 15 & P 34) of when physiotherapy rehabilitation is necessary included, to improve core stability, strengthen weak muscles, improve posture, improve mobility and to provide the patient with a safe set of exercises. More detailed descriptions were provided by some participants (P 34 & P 46), who reported the need for rehabilitation by physiotherapists for individuals with disabling MSD injuries and to assist patients who struggles with daily activities. Participant 41 specified physiotherapy rehabilitation after fractures or surgery.

The ICF is a universal theoretical framework and classification system, which could be applied for the management of MSD. The ICF's bio-psychosocial and integrative approach for the manage MSD is discussed in section 2.4. The ICF could be utilised to identify the impact of MSD on an individual's functioning, in a comprehensive manner

(Escorpizo & Bemis-Dougherty, 2015). If medical practitioners apply the ICF reference framework it would ensure appropriate referrals for rehabilitation and management of individuals living with MSD (Escorpizo & Bemis-Dougherty, 2015). The ICF also ensures proper allocation of resources, which is an important aspect to consider in a developing country like South Africa (Escorpizo & Bemis-Dougherty, 2015).

Although the data suggests a strong awareness of the role of physiotherapy regarding rehabilitation of MSD patients, the implementation of the ICF as a reference framework were never mentioned. The ICF can play a major role within the rehabilitation process, and also assist to decrease the burden of MSD (Escorpizo & Bemis-Dougherty, 2015). For this reason, medical practitioners should be implementing the ICF when referring any MSD patient for rehabilitation.

Consideration should be given that the ICF is the latest of the WHO classifications (CIHI, 2010). It has therefore not been widely implemented, but rather used in many individual projects, settings, surveys, academia, research, administrative, clinical areas, government and policy development (CIHI, 2010). Taking the latter statement in consideration this would explain why the participating medical practitioners are not implementing the ICF for referrals of individuals living with MSD to physiotherapy. The implementation of the ICF or evidence based guidelines for individuals living with MSD could decrease medical practitioners' dissimilar referral practices to physiotherapy and other members of the IPMT. The latter might also increase more appropriate referral practices for individuals suffering from MSD, which is vital considering the robust evidence presented regarding the burden of MSD. The IPMT can only function successfully if appropriate referral practices of patients living with MSD between members of the IPMT are occurring.

Substantiating statistics presented by the WHO suggests that rehabilitation should be one of the main criteria to refer individuals with MSD to appropriate health care professionals. Some of these statistics include the fact that approximately 1.7 million hip

fractures were reported internationally in 1990 and the expected number is predicted to exceed 6 million by 2050. In addition to the latter, forty percent of people older than 70 years suffer from OA of the knee; mobility limitation affects 80% of patients with OA and 25% of these patients are unable to perform their daily activities (Agel et al. 2003).

5.5.3 Soft tissue injuries

Soft tissue injuries could be included under rehabilitation as criterion for referrals of MSD patients, but due to the fact that the HPCSA describes the role of the physiotherapist to care or rehabilitate injuries during the different stages of healing, and soft tissue injuries require other treatment modalities, it will be discussed separately. Eight participants indicated that they use soft tissue injuries including muscle strains and sprains as a criterion for physiotherapy referrals. Participants (P 1, P 3, P 10, P 14, P 17, P 21 & P 39) described that they refer MSD patients when therapy for muscle strains and sprains are needed or as adjunctive therapy for muscle strains and sprains.

5.5.4 Specific conditions require physiotherapy

Cost effective management for specific MSD conditions are dependent on appropriate referrals (Phillips, 2009). The specific condition of a MSD patient and the perceived seriousness thereof were also mentioned as an influence on the referral practices of medical practitioners in the literature review (Love and Dowell, 2004). Examples of specific conditions where physiotherapy treatment forms part of the best evidence based practice are musculoskeletal, geriatric, neurological, orthopaedic and some paediatric disorders (Moseley et al. 2002).

Fourteen participants confirmed that their referrals depended on the specific MSD condition, which they believed required physiotherapy management. Examples of specific MSD conditions participants believed should be referred to physiotherapy included OA, osteoporosis, rheumatoid arthritis, cardiovascular accidents, referred pain, chronic neck and back pain, and musculoskeletal conditions that would benefit from physiotherapy, specific syndromes such as spinal muscle atrophy and motor neuron disease, and degenerative diseases causing severe pain. Participants examples of specific conditions where similar to conditions mentioned where physiotherapy treatment forms part of the best evidence based practice (Moseley et al. 2002).

5.5.5 Physiotherapy used as an alternative additional treatment option.

Four participants reported that the criterion they use to refer to physiotherapy is when other treatment options failed or when they needed an additional treatment option.

Some of the descriptions provided by participants were specific, and included for example when surgery failed or treatment failed. Another participant (P 19) indicated that if the individual living with MSD does not respond to pharmacological treatment, physiotherapy would be an appropriate option. The fact that some participants implement physiotherapy referrals as a criterion only when other treatment options failed or as an additional treatment option may be problematic as this approach might delay appropriate prompt care, when physiotherapy is the best evidence based option for a specific MSD condition. The implications for delayed referrals or incorrect referrals is the increase in the expense of MSD management and the decrease of effective management of the individual living with MSD, which is critical in a financially challenged South Africa (Gcelu

& Kalla, 2015). Wilson & Cleary (1995) explained HRQOL as the mental, physical, social and general health aspects influencing a patient's quality of life. Delayed referrals will also lead to a prolonged process to address the individual living with MSD HRQOL.

5.5.6 Chronic pain patients

Acute pain, chronic pain, referred pain, the treatment of pain and pain were the phrases used to describe the pain criterion used by participants. Only five participants (P 2, P 3, P 9, P 12 & P 13) listed pain as a referral criterion for individuals with MSD. The WHO identified MSD as the leading group of conditions causing pain and disability internationally according to Paul (2005), therefore it was anticipated that a larger group of participants would list this as a referral criterion.

There exists a significant relationship between higher average pain intensity and poorer HRQOL in patients (Kelemen, Lee & Button, 2012). Individuals with pain report significantly decreased physical functioning and difficulty meeting the demands of school and/or work, compared with individuals who are pain free (Kelemen et al. 2012). The intensity of the individual's pain is also related with his/her HRQOL (Wang, Tang & Shen, 2015). Pain experienced when patients are unwell results in reduced physical

functioning and greater interference with the social aspects of HRQOL (Kelemen et al. 2012). Pain experienced by individuals with MSD is significant because of the effect it has on patients' HRQOL (Wilson & Cleary, 1995).

The reason for the small number of participants reporting pain as a referral criterion for individuals living with MSD to physiotherapy might be due to participants utilising physiotherapy only as an additional or alternative treatment option as indicated in section 5.5.5. The latter reason will then imply that the medical practitioner tries other treatment options first and refer to physiotherapy only if the latter fail. Participants stating that they refer to physiotherapy when other treatment options fail substantiated this.

5.5.7 Loss of mobility

The report on the burden of MSD stated that mobility limitation affects 80% of patients with OA and 25% of these patients are unable to perform their daily activities as a result of this limitation of mobility caused by OA (Agel et al. 2003). Only five participants used problems with mobility as a criterion for individuals living with MSD. Participants (P 6, P 10, P 34, P 41 & P 47) described the criterion of mobility for referral to physiotherapy to be considered when individual's limbs need mobilization and when injuries have an impact on the patient's independent mobility, also as post-operative mobilisation. A larger number of participants were expected to mention mobility as an important criterion for physiotherapy referrals. The latter was expected because of the initial mentioned mobility limitation experienced by 80% individuals suffering from OA, and including non-arthritic MSD patients. The reason for the small number of participants mentioning mobility as a referral criterion was not identified during the study. The researcher is of the opinion that it could be for the same reason as evidence in the literature presented that individuals living with MSD are not referred appropriately in accordance with their need for physiotherapy treatment. Bassel & Hudson (2012) & Cottrell et al (2010) gave examples of individuals living with MSD who were in need of physiotherapy treatment but that were not referred. Cottrell et al (2010) stated that even if general practitioners believed that patients with MSD pain should be

referred for physiotherapy treatment in practice, they only referred two thirds of these patients. The reasons for these incorrect referrals of individuals living with MSD were not identified or explained (Cottrell et al. 2010). The researcher is of the opinion that despite the knowledge of physiotherapy being an appropriate option, for the treatment of individuals who experience mobility constraints, caused by MSD, participants referred these patients incorrectly.

5.5.8 Mechanical injury or injuries at work

Six participants utilised mechanical injuries and work related injuries as criteria for their MSD referrals. Reasons that are more detailed were provided by P12 describing physiotherapy to be an important part of patient education subsequent to a work related injury, after the medical practitioner instructed the patient how to manage their pain. One participant (P 11) suggested that physiotherapy is an appropriate option for individuals who experience pain caused by computer work and stress. Another participant (P 14) also thought physiotherapy to be a treatment option if an individual's work related habits cause lower back pain. Since the CSP describes one of the roles of physiotherapists to encourage and facilitate recovery, enabling people to stay in work, it was expected that work related injuries would result as a more significant referral criterion. A possible reason for this finding could be that the participating medical practitioners did not consult a large number of injuries on duty (IOD) patients. Another extremely important fact to be taken in consideration is that the claiming procedures for individuals who suffered IOD is tremendously time consuming and often unpaid (Abreu, 2015). This has an effect on the medical practitioners' willingness to manage patients who suffered IOD and creates a barrier for IOD patients to access healthcare (Abreu, 2015).

5.5.9 Post-operative procedures, protocols and guidelines

Only four participants indicated the use of post-operative protocols for individuals who have surgical intervention for MSD. One participant (P31) said that he/ she would only refer to physiotherapy if it was indicated by the post-operative protocol. Another participant (P32) stated that physiotherapy treatment is important when the individual suffered injuries or pathology, which has surgical intervention as an outcome.

Five participants were directly involved with surgical procedures which made them more likely to mention post-operative protocols as a reason to refer an individual with MSD to physiotherapy. Even taking the latter fact in consideration the researcher expected more participants to refer individuals post operatively. Medical practitioners who took part in a study by Acharya, Khadgi & Shakya's (2011) stated that they would refer their patients to physiotherapy post-operatively and appeared to have good awareness of physiotherapy. However even with the high outcome of a good awareness of physiotherapy amongst medical practitioners mentioned in the latter study, they still identified a dissimilarity and lack of referral for individuals with MSD to physiotherapy. The likelihood that the latter is true for South African medical practitioners exists.

5.5.10 Stress related

Two participants (P11 & P20) identified chronic tension and stress related problems as appropriate criteria to refer individuals living with MSD to physiotherapy. This is a small number of participants, considering the bio- psychosocial aspects of MSD, which could be improved if medical practitioners implemented the ICF referral framework as previously discussed in section 2.4 and section 5.5.2. Due to the strong association which exist between chronic MSD and NCD caused by obesity and physical inactivity, stress and smoking, it is important to refer these patients appropriately to members of the IPMT (Bonilla-Chacín & Vásquez, 2012). The importance of appropriate referrals to IPMT members are also supported considering the burden of disease caused by both non- communicable diseases and MSD (Agel et al. 2003).

5.5.11 Increased BMI

Only two participants (P11 & P14) utilised a criterion of increased BMI to refer individuals living with MSD for physiotherapy. This is a small number of participants, if the statement by Bonilla-Chacín & Vásquez (2012) that obesity and physical inactivity are significant risk factors for developing chronic conditions such as MSD is taken in consideration. The researcher is of the opinion that more medical practitioners should refer patients with increased BMI to appropriate members of the IPMT to address both NCD and MSD in a more forceful manner.

5.5.12 Sport related injuries

Only two participants (P 6 & P 47) identified sport injuries or sport related injuries as a criterion for MSD referrals. The role of physiotherapists to assess, diagnosis, treat and prevent dysfunction and impairment for sport injuries and many other conditions are widely recognised (McMeeken et al. 2005). Thus, the researcher expected more medical practitioners to report the referral of individuals who had sport related injuries. The researcher's most reasonable explanation for the lower response regarding using sport injuries as referral criterion is that participants categorise sport injury patients under the same criteria as the individuals who are referred for rehabilitation to gain full function, for soft tissue injuries, specific conditions or when clinical reasoning indicates a referral to physiotherapy.

5.5.13 Prophylactic medical treatment

Only participant 2 mentioned prophylactic medical treatment as an appropriate referral criterion for physiotherapy. The lack of reference to the use of physiotherapy as prophylactic medical treatment in this study and in the literature could indicate that physiotherapy is not implemented prophylactically.

5.5.14 HRQOL

One participant (P 13) expressed that in their point of view HRQOL could be improved with physiotherapy. The IPMT involved in the treatment of the individual living with MSD should provide comprehensive healthcare, ensuring the most favourable HRQOL for each patient (Mitchell et al. 2008). Since all participants indicated that they manage individuals with MSD and Mitchell et al (2008) indicated that management by the IPMT involves achieving the most favourable HRQOL, this is an extremely low response. As previously discussed in section 5.5.2, the ICF is a relatively new framework, and therefore the data from this study also suggests that medical practitioners do not implement the ICF as part of their referral practice for individuals living with MSD to physiotherapy.

5.5.15 Financial implication

Only participant 7 indicated using a financial criterion for referring individuals suffering from MSD to physiotherapy. The latter participant practiced medicine in the private

sector and stated that they would only refer an individual to physiotherapy for the management of MSD if the patient's medical aid paid for the physiotherapy service, or if the patient indicated that they are able to pay themselves. The effect the burden of MSD have on the South African health care system and population, highlighted previously, by Jobson (2015), Gcelu & Kalla, (2015) as well as Parker & Jelsma (2010) was not mentioned by any participants. The latter research finding highlights that it is essential for South African medical practitioners to bear in mind that there is financial implication for individuals living with MSD, which should be considered when deciding upon the best management of these conditions.

5.6 Reasons for referring individuals living with MSD if participant did not implement a referral criterion

Although participants did not always implement specific criteria for their referrals to physiotherapy, certain participants did indicate that they refer specific MSD to physiotherapy, which had similarities to the criteria participants identified earlier for MSD referrals (Table 4.5). This might suggest that participants have different definitions for the word criteria, but implement similar referral practices.

Fifteen participants indicated that they do not implement criteria when referring individuals living with MSD to physiotherapy, but did refer patients based on what they thought was the appropriate action to take or based on their intuition or index of suspicion. The latter could be indicative of the possibility of being unsure or implementing a personal referral criterion rather than specific evidence based criteria. Stanton et al (1985) & Matheny et al (2000) stated that medical practitioners have relatively low confidence in the management of MSD, which includes referrals to physiotherapy, which are confirmed by some of the statements made by participants. With the current magnitude of the burden of MSD discussed in 2.2, 30% of participants not implementing a specific criteria or being unsure of appropriate referrals of individuals living with MSD to physiotherapy is concerning.

5.7 Participant's opinion of appropriate referrals for individuals living with neck, back and peripheral problems as a result of MSD

Table 4.11 illustrates specific comments made by participants regarding appropriate

referrals for MSD patients with neck and back pain, and Table 4.12 for peripheral pain. The data collected reveals that the strongest theme for neck and back pain were soft tissue injuries. To be noted is that the questionnaire did not distinguish between referrals for lower back and neck pain since the guidelines for these conditions are similar. None of the participants indicated that they use different referral practices for neck and back pain, which is in contrast from the findings of an Australia study, which indicated that general practitioners treat them, dissimilar.

Since the WHO identified low back pain as one of the most prominent MSD and 80% of the global population report lower back pain at some time during their life, lower back pain is extremely important and costly problem internationally (McClatchey, 2004; Paul, 2005; Agel et al. 2003). None of the participants made any reference to the last mentioned problem and the urgency of appropriate referrals for back pain patients to address this.

The data in table 4.11 and 4.12 suggest that participants' referral practices for the management of individuals living with MSD are dissimilar as argued by Tzortziou Brown et al (2016). The latter data also suggests uncertainty with reference to the specific reasoning why medical practitioners refer individuals living with neck, back and peripheral problems caused by MSD to physiotherapy.

Although some participants' comments indicated that they do consider bio-psychosocial aspects during their referrals for individuals living with MSD none of the participants mentioned the implementation of the ICF framework, which suggest as previously discussed in 5.5.2 that the use of the ICF is not widely utilised in practice by medical practitioners.

The data obtained regarding participant's opinion of appropriate referrals for individuals living with neck, back and peripheral problems as a result of MSD failed to identify what appropriate referrals for patients with MSD to physiotherapy would be. The last mentioned still does not provide sufficient information to fill the gap of information,

identified in the literature, regarding the most appropriate referral for individuals living with neck, back and peripheral problems as a result of MSD. The difference between the referral practices for individuals living with MSD to improve the management thereof also still needs to be answered (Michaleff et al, 2012).

5.8 Influences on medical practitioner's referral practices as identified by literature compared to South African medical practitioners in Bloemfontein.

5.8.1 The influence of positive results from physiotherapy for previously referred individuals living with MSD on participant's referral practices

The expected response was that previous experience of a positive effect by physiotherapy on MSD patients' outcomes would encourage participants to refer more individuals with MSD to physiotherapy (Archer et al. 2009). Ninety eight percent of the participants confirmed that they do refer MSD patient more if individuals previously referred to physiotherapy for MSD had a positive outcome. A positive outcome in medical terms is the improvement of functional limitations or disabilities, the prevention of illness or injury and the improvement of patient satisfaction (The Free Dictionary, n.d).

With 98% of participants confirming that positive outcomes from physiotherapy affected their referrals, this confirms that South African medical practitioners in Bloemfontein are positively influenced by the effective outcome of physiotherapy on individuals living with MSD. These findings are similar to those of Archer et al (2009) who also indicated that previous experiences of a positive effect by physiotherapy on individuals living with MSD' outcomes would encourage participants to refer more individuals living with MSD to physiotherapy. The researcher agrees with Sackett et al (1996) who stated that medical practitioner referral practices for individuals living with MSD should be based on an integration of the practitioners' expertise and the best available external clinical evidence from research for the most efficient management of MSD. Taking the latter into consideration the researcher speculates whether medical practitioners' referrals of individuals living with MSD should not be influenced more by the best evidence-based practice rather than feedback from physiotherapists. If inexperienced medical practitioners depend more on feedback from physiotherapists rather than evidence

based practice, it could potentially leave room for inappropriate referrals to physiotherapists. A solution to the latter problem could be to teach a specific MSD referral criterion, based on specific evidence practices to medical practitioners and students during their under and post-graduate training concerning the management of individuals living with MSD. As discussed in section 2.8.1 the current curriculum for medical practitioners at the UFS does address inter-professional collaboration during the management of patients, but no specific referral guidelines are taught regarding musculoskeletal patients referrals to physiotherapy or other members of the IPMT².¹⁰.It could have a positive effect on the appropriate referrals of individuals living with MSD if medical practitioners are more influenced by specific evidence based referral criteria, and are informed about the latter, rather than by the feedback from physiotherapists.

5.8.2 Open lines of communication

Open lines of communication (telephonic or in person discussions) with physiotherapists, seems to influences medical practitioner's MSD referral practices positively (Clemence &Seamark, 2003). The majority of participants (69%) indicated that open lines of communication (telephonic or in-person discussions) influence their MSD referral practices positively which was also found by Clemence &Seamark in 2003. This once again confirms the significant influence of personal communication between medical practitioners and physiotherapists regarding referrals. One experienced practitioner (P 6) mentioned that he/she relies on feedback from the patient regarding progress at physiotherapy, as communication from physiotherapists are lacking. Seventy-one percent of the participants agreed that communication would influence their referrals irrespectively of the duration they have been qualified as a medical practitioner.

Participants (P 5 &P 13) reported that communication between medical practitioners and physiotherapists are lacking in quality and frequency. One of the latter mentioned participants (P 13) remarked that improved communication would influence his/her referrals positively. Another participant (P 28) made a worrying assertion that

² Personal communication with Dr Lynette van der Merwe, Support School of Medicine UFS. Date: 16 February 2016.

communication from physiotherapists has decreased over the last few years and that he /she relies on feedback directly from patients. The important influence communication has on medical practitioners in Bloemfontein, concerning referrals of individuals, living with MSD to physiotherapy has been highlighted in this study. The study's findings also emphasised that in the medical practitioners' viewpoint communication from physiotherapists is lacking and should be improved. Werner & Ihlebaek, (2012) in their study also confirmed that lack of communication exists between physiotherapists and medical practitioners. In the previously mentioned study they suggest that lack of communication could be a reason for the deterioration in referral rates, of individuals living with MSD to physiotherapy and it should be addressed (Werner & Ihlebaek, 2012). One suggestion would be to make physiotherapists aware of the lack of communication experienced by medical practitioners and that the lack of communication has a negative effect on referrals of individuals living with MSD to physiotherapy.

In summary, participants expressed a significant need for better communication between medical practitioners and physiotherapists. Participants explained that improved communication and/or feedback regarding previously referred MSD patients and the specific role of physiotherapists regarding the treatment of individuals living with MSD is much needed and would influence their referral practices. The latter is comparable to the findings of Clemence and Seamark (2003) who stated that open lines of communication (telephonic or in person discussions) with physiotherapists, seems to influence medical practitioner's referral practices positively. Another component to consider at this point is that even with an awareness of physiotherapy being the appropriate option for an individual suffering from MSD, medical practitioners do not always refer these patients appropriately as also found by Acharya et al. (2011).

5.8.3 Failing treatment options on participant's referral practices for individuals living with MSD

Literature gave an indication that some medical practitioners referred individuals living with MSD physiotherapy for treatment due to other failed treatment options (Clemence & Seamark, 2003). Twenty-five participants responded this to be true for them

confirming the influence of failing treatment options on medical practitioners' referrals to physiotherapy in the current study. Once again the researcher would like to reiterate as previously stated that referrals should not be based on failed treatment options, but rather the meticulous, clear, and thoughtful use of the present best scientific evidence, when referring individuals living with MSD (Sackett et al. 1996). One participant (P 12) explained he/she referred individuals living with MSD to a physiotherapists or surgeon as appropriate, or when the patient does not obtain further relief from pain medication. Participants should only follow the wait-and-see policy for physiotherapy referrals if it is the best practice, for example for patients with shoulder syndromes (Kooijman et al. 2013). There is risk of delayed referrals if medical practitioners apply this to all individuals living with MSD. One example would be hand patients living with systemic sclerosis, where physiotherapy and/ occupational therapy treatment is the most appropriate option of treatment (Hudson, 2012).

Another participant (P 30) reported that when a patient requested physiotherapy as a second opinion a referral to physiotherapy would be considered. This statement concurs with Donohoe's et al (1999) findings that the patient's expectation of treatment or their request for a referral does influence medical practitioners' referrals to physiotherapy.

Considering the findings regarding referrals to physiotherapy due to failed medical interventions is of great concern, as individuals living with MSD should be referred to physiotherapy based on the best evidence-based practice treatment option and not as a last resort, as previously pointed out.

5.8.4 The influence of pre- and post-tertiary education on participant's MSD referral practices to physiotherapy

A significant number (41) of participant's responded that most information regarding the skills and/or the role/scope of practice of physiotherapists in the management of individuals living with MSD were gained during their postgraduate medical training.

Information or knowledge participants gained during tertiary training regarding physiotherapists influenced 22 participant's MSD referral practices. Interestingly, some participants volunteered information during the closed ended questions indicating that

they were never informed (P 2) or that there was a gap in the information (P 3, P 8 &P 31), during their undergraduate training regarding appropriate referrals to physiotherapy for individuals living with MSD. Participants (P 3, P 6 &P 31) felt that medical practitioners did not have nearly enough information regarding physiotherapy. The information regarding the roles of physiotherapists during tertiary education was reported as being too general (P 3).

Stanton et al (1985) argued that the only way to ensure appropriate MSD referral practices was to ensure medical practitioners have a comprehensive insight in the role of physiotherapists. In order to enhance patient outcomes, it is essential that undergraduate medical students should receive education regarding the role/ scope of IPMT members concerning MSD and other conditions. The knowledge gained during lectures regarding the skills physiotherapists have, and the practice of physiotherapy, during medical practitioners' undergraduate training has an influence on their referral practices (Odebiyi et al. 2010).

In contrast to the comments regarding undergraduate training, several participants confirmed that information and experience of physiotherapy and their role in the treatment of individuals living with MSD were gained during their postgraduate training. Participants' remarks (P 3, 5 &P6) indicated that they learned about physiotherapy through experience and said that they had no idea what physiotherapy, occupational therapy or any allied health professionals did, or the value of their input, until they explored their professional roles after they qualified as a medical practitioners. Two participants (P8 &P31) explained that in-person exposure to physiotherapy was obtained when they worked with a physiotherapist and this gave them valuable insight concerning the role of physiotherapists. One participant (P3) indicated that he/she also tried to read about new developments in physiotherapy on the internet, and that more available information regarding physiotherapy is needed.

Medical practitioners' indicated a need to have a more comprehensive understanding of the role of physiotherapists for individuals living with MSD. The latter is necessary to

ensure appropriate MSD referral practices from medical practitioners to physiotherapy as Stanton's et al. (1985) stated. A large number of participants indicated that tertiary education exposure concerning physiotherapy did not provide them with enough specific information regarding the role of physiotherapy. Thus, practitioners are aware of physiotherapy, but lacked detailed knowledge regarding the role and scope of practice for physiotherapists in the management of individuals living with MSD. Information and education regarding the physiotherapy profession and the specialised role of physiotherapists for specific conditions are essential at undergraduate and postgraduate education levels. The latter could be one strategy to improve or maintain referral practices of medical practitioners to physiotherapy for individuals living with MSD, in order to ensure optimal care and wellbeing of these MSD individuals.

The use of online information, to create obtainable accurate evidence based information concerning appropriate referrals for individuals living with MSD to physiotherapy is important; participant 5 supported this sentiment. The latter participant remarked that he/she read up on needed information regarding physiotherapy on the internet during his/her post graduate years. The statements regarding pre and postgraduate education highlighted the need for more information regarding the role and value of physiotherapy to medical practitioners. These statements indicated that appropriate training regarding physiotherapy referrals for MSD patients were not currently provided to participants. It is necessary to ensure that MSD referral criteria are clearly taught to medical practitioners during their undergraduate training and if for whatever reason this was not efficiently done, available postgraduate training is essential to improve appropriate MSD referral practices to physiotherapy. Increasing the knowledge regarding appropriate referral practices for individuals living with MSD to physiotherapy is essential to decrease the variability of referrals according to Kerssens & Groenewegen (1990). The findings supports Kier et al (2013) remark that education regarding physiotherapy referrals for individuals living with MSD should include both information regarding MSD and the role of the health professional they need to be appropriately referred to.

5.8.5 The influence of the physiotherapist's experience on the participant's MSD referral practices

Twenty-one participants agreed that they prefer to refer to physiotherapists who have a special interest/or extensive postgraduate experience in the treatment of MSD. Physiotherapists with more experience in the treatment of MSD could potentially treat these patients more effectively which should make medical practitioners more inclined to refer to them. Participants specifically indicated that they prefer to refer to physiotherapists with experience in OMT and physiotherapists with more experience in the treatment of back pain (P2 & P6). Participants seem to have an awareness of physiotherapists who have OMT experience, and prefer to refer patients with MSD to them. Participants did not report on their methods of identifying experienced therapists and/or how easily available they find information regarding physiotherapists' level of experience to be. A remark by participant 6 indicated that medical practitioners would not necessarily refer to a physiotherapist who received more postgraduate training but rather to a physiotherapist with more postgraduate experience, and felt that these physiotherapists were more capable to address the needs of an individual living with MSD. Participant 7 indicated that the physiotherapist who consults certain conditions daily would be his/ her preferred physiotherapist to refer to (P 7 did not specify the conditions). Participants seem to prefer referral of MSD patients to experienced physiotherapists rather than physiotherapists who has more postgraduate degrees. This might be because participants value the fact that experienced physiotherapists has applied physiotherapy treatment techniques to produce favourable outcomes over time, which carries more weight than the application of theoretical concepts obtained during postgraduate studies.

5.8.6 The influence of patient compliance with medical practitioner referrals on MSD management

Compliance with referrals should also be considered as an influence to the long list of influences on MSD referrals. A study in the Netherlands indicated that approximately 12% of patients did not comply with medical practitioners' referrals for specialist care (van Dijk et al. 2016). According to the latter study patients living in demographic areas with lower socio-economic income have less compliance with medical practitioner referrals to specialists (van Dijk et al. 2016). Compliance of individuals living with MSD

who were referred by the medical practitioner to physiotherapy were not identified in this study but should be considered as an influence on referrals. According to one participant (P49), the patient's willingness to comply with physiotherapy influences medical practitioners' referrals to physiotherapy, however he/ she also stated that he/she would always refer an individual living with MSD for physiotherapy management, and leave the decision to comply with the referral to the patient.

The findings revealed that medical practitioners' referral practices and management of individuals living with MSD are dissimilar to internationally publications by Tzortziou Brown et al. (2016). Participants varied referral practices to physiotherapy could be a result of the different criteria they implement for individuals living with MSD and/or multifaceted influences, identified by participants to have an effect on their referrals. The study objective to determine different influences, which have an effect on referrals, were thus achieved. The research identified that the latter multi-faceted influences reported by participants might have more of an influence on referral practices to physiotherapy than evidence based clinical reasoning or their knowledge of MSD.

5.9 Participant identified influences on referrals of individuals living with MSD

Participants (P4, P15 &P25) indicated that the availability of the physiotherapist is an aspect that influences their referrals for individuals living with MSD patients. Love &Dowell (2004) also identified the availability of the physiotherapist to consult individuals living with MSD as an influence on medical practitioners' referrals. If a medical practitioner is of opinion that a patient with MSD urgently needs physiotherapy the therapist's availability might influence the practitioner's referral more than other aspects as mentioned under point 5.8.

Two participants (P25 &P31) commented that they would use physiotherapy more often if physiotherapists were available in rural areas. The latter remark also confirmed the influence of the socio demographic characteristics of the patient, on the medical practitioner's referral, as suggested by Love &Dowell (2004). Participant 25 and Participant 31 both indicated that they would have referred patients with MSD in rural areas frequently if physiotherapy services were available. The latter indicates that there

might be a patient population in need of physiotherapy treatment for MSD, which are not being aided. The lack of physiotherapy services in rural areas has a detrimental effect on the optimal care for these patients, which in return will affect their HRQOL.

5.10 Valued comments made during the semi-structured interviews

Comments made by several participants reflected in Table 4.14 expressed medical practitioner's need to receive more information regarding physiotherapy management of individuals living with MSD and that physiotherapists should be more present to educate both medical professionals and the public regarding MSD. Increased communication and education, between medical practitioners and physiotherapist regarding the specialised roles that physiotherapist can play in the management of individuals living with MSD were also indicated as a need by the participants. Participant 8 confessed that medical practitioners do not really know enough about physiotherapy. A few participants indicated that they believe the IPMT is not functioning, as it should, to benefit patients. One reason for this could be the lack of knowledge regarding the roles of the IPMT members. Another participant confirmed that a too vague description of the specific roles of members of the IPMT were provided to medical practitioners and more information that is specific would be valuable.

Participants confirmed that referrals of individuals living with MSD depended mostly on what the specific medical practitioner believed and/or know about physiotherapy.

There were some positive and negative remarks concerning physiotherapy, which should also be taken in consideration. Positive remarks included that physiotherapists improve the lives of patients. A negative remark expressed by participant 28 was that over the last years, he/ she received more positive feedback from patients who attended biokinetics, rather than physiotherapy. The latter participant is of view that biokineticists has taken over the role of the physiotherapist and that he/ she felt that physiotherapists was to blame. The remark should not be taken lightly as this might indicate that the participant believes physiotherapists and biokineticists have the same role in the management of individuals living with MSD, which is not the case. The department of health describes biokinetics as a health profession involved with

preventive health care, maintenance of individuals' physical abilities and final phase rehabilitation (Biokinetics Association South Africa, 2016). Biokineticists apply scientifically based physical activity programmes to address the physical and rehabilitation need of individuals (BASA, 2016). The role of the physiotherapist and biokineticist should be clearly differentiated for the referral of individuals with MSD, and these professions should not substitute each other.

It should be taken in consideration that the scope of practice of physiotherapists' and biokineticists' do overlap with regards to the rehabilitation of individuals living with MSD.

5.11 The influence of the methods used on the results of the study

To prevent the data lacking explanation and reasoning regarding the influence on medical practitioners' practices and what their beliefs were, some open-ended questions were included. The open-ended questions assisted the researcher to increase the understanding of the topic at hand (Cohen & Crabtree, 2006).

The triangulation method utilised in the study also proved to be valuable. The method provided an opportunity to compare the data from the different participation options available to participants. Answers provided by the three participation options were similar, which enhanced the trustworthiness and validity of the results. If triangulation was not utilised, in depth answers given during the semi-structured interviews would have been neglected. The latter in depth answers provided the reasoning behind the answers provided by the medical practitioners. The latter enabled the researcher to elicit data and suggest conclusions, which would not have been possible if only an online survey or an independent questionnaire was implemented. Triangulation also offers the benefit of examining the same aspect from multiple perspectives (Todd J Dick, 1979).

5.12 Summary

The information obtained during this study identified information to increase the knowledge regarding the referral practices used by medical practitioners for patients living with MSD in Bloemfontein. Collected data substantiated different influences

stated in the literature, which has an influence on referrals by medical practitioners to physiotherapy. The gathered information clarifies and improves the comprehension of referral dynamics between medical practitioners and allied health professionals. Findings also indicated that only some medical practitioners were aware of the role physiotherapists play in the management of individuals living with MSD. The findings of the study also highlighted the challenges regarding the referral practices of medical practitioners for individuals living with MSD. Possible strategies to improve referral practices of medical practitioners will be offered in Chapter 6

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

This chapter offers a brief summary of the conducted study, followed by the conclusions from the results and recommendations for future research. It will also present suggestions to medical practitioners identified from the research, concerning how to improve the management of MSD to address the global and South African burden caused by these disorders.

6.1 Summary of the findings

A list of 234 medical practitioners from the estimated 452 medical practitioners situated in Bloemfontein was compiled implementing an online search. There was no bias involved in the selection of the latter medical practitioners and they were selected systematically. The biostatistician at the biostatistics department of the UFS identified a representative sample of 150 potential participants from the list of 234 medical practitioners implementing systematic sampling. Forty-nine of the 150 potential participants took part in the study. Any variation between the selected medical practitioners' characteristics and the population of medical practitioners' characteristics in Bloemfontein would be only a matter of chance.

Sixty-three percent of the participants consulted individuals suffering with MSD daily, and 26% on a weekly basis, which indicates the significant number of individuals living with MSD, consulting these medical practitioners. The number of individuals' HRQOL, which are affected by MSD in a developing country such as South Africa, compared with the national economic strain and the scarcity of health care resources, stress the urgency to improve MSD management, to address the burden of MSD.

The findings of this study provided invaluable insight and knowledge with regards to the current referral practices of medical practitioners in Bloemfontein, when referring patients living with MSD to physiotherapy achieving the first research objective. The latter improved the needed comprehension concerning the current management of MSD in South Africa, which could be implemented to advance the management of

individuals suffering from MSD.

6.2 Recommendations for future research

This is a significant baseline study for the referral practices of medical practitioners to physiotherapy when managing individuals suffering from MSD. Expanding the study to other South African provinces could potentially provide the necessary information to improve the understanding and knowledge of the current referral practices medical practitioners have, regarding the specific role of physiotherapy for individuals suffering from MSD. The latter could be extremely beneficial to identify the specific information and education needed to improve medical practitioners' comprehension about physiotherapy, improve their referral practices and effectively decrease the burden of MSD in nationwide. The researcher is of opinion that research regarding referrals and management of MSD should also be extended to all members of the IPMT involved in the management of MSD. Optimal management of MSD to address the burden of MSD could only be possible if all IPMT members are referring patients appropriately and the specific role and scope of practice for each health professional involved are clear to all members.

As explained in section 5.5.2, the ICF framework could play a major role in the management and rehabilitation process of individuals living with MSD and possibly decrease the burden of MSD (Escorpizo and Bemis-Dougherty, 2015). Medical practitioners' implementation and knowledge of the ICF in the referral process of individuals living with MSD is essential, but due to the fact that the ICF is a relatively new framework there is little known regarding the use of the ICF by health care professionals, for the management of MSD. The implementation of the ICF by medical practitioners should be investigated for its applicability and correct use.

The researcher also suggests that more in depth research regarding the specific details of the clinical reasoning process medical practitioners follow when managing individuals with MSD should be performed. This study indicated that evidence based practice has less influence on medical practitioner's referral practices than other complex influences and the extent thereof should be identified. The researcher is of the opinion that the

latter is of great importance since clinical reasoning and evidence-based practice should influence medical practitioners more than other less scientific influences, i.e. personal preference, time restrictions etc. to improve the management of individuals living with MSD. Further investigation into the clinical reason process regarding why medical practitioners do not refer patients with MSD to physiotherapy could provide valuable information and could inform strategies to increase referral rates.

Participant 28 made a powerful statement when he/she said that patients have given feedback that is more positive from biokinetic treatment than physiotherapy over the last years, and that biokinetics has taken over the role of the physiotherapist. The latter is extremely concerning to the researcher, as this statement suggests that the medical practitioner seems to indicate that he/she believes that biokineticists and physiotherapists has the same role and scope of practice for individuals living with MSD. This could be a reason for potential inappropriate referrals and lead to the detriment of individuals living MSD. Future research to investigate the in depth knowledge rather than the awareness medical practitioners have of the different roles of the allied health professionals for the treatment of MSD would be beneficial for the effective management of MSD.

6.3 Limitations

A shortcoming of this study was the absence of the demographic differentiation between practitioners in the private versus the government sector and the influence this has on the referral practices of medical practitioners' physiotherapy referrals. The unique South African health-care system and demographics of the South African population in contrast with other countries needs to be considered in any research concerning health care in South Africa. There is an immense difference between South African private and government health care services and the greatest burden of disease in South Africa is carried by the public sector, which is another important aspect to consider (Jobson, 2015). Because of a poor infrastructure in some facilities in the South African public healthcare system, quality of care is inefficient and even inadequate; in contrast, the private health care system is viewed amongst the four best health care

systems in the world (Jobson, 2015).

Because the ICF framework could play a major role in the management and rehabilitation process of individuals living with MSD and possibly decrease the burden of MSD, a limitation of this study is the fact that practitioners were not specifically questioned regarding the implementation of the ICF for MSD patients.

In this study, two of the questionnaires completed by medical practitioners independently contained unanswered questions, while both the telephonic and the in person semi-structured interviews collected more in depth information.

Many multifaceted factors influence medical practitioners' referrals. Some of the factors not identified in this study are the personality of the medical practitioner, the patient's proximity to a hospital or medical practice, the gender of the medical practitioner and many more. Therefore, more in depth research regarding these factors, which influence referral practices of medical practitioners, is necessary to ensure correct and timeous referrals of individuals living with MSD.

6.4 Suggestions to medical practitioners

NCD and lifestyle-related risk factors as previously discussed are prevalent in SA, and more so amongst the disadvantaged. Considering the magnitude of the burden of MSD and NCD discussed in section 2.2 it is concerning that very few participants mentioned any of these conditions or related risk factors, when explaining their referral practices to physiotherapists. Comprehensive health promotion strategies should be implemented to prevent a chronic disease epidemic when the increase of the burden of disease locally and globally is considered. Considering the latter statement and the results of this study a need exist to increase the awareness for appropriate referrals for individuals with life style risk factors or NCD, to the appropriate members of the IPMT to address the global burden of disease.

The results indicated that the medical practitioners would welcome education and guidance to appropriately refer MSD patients to physiotherapy. Information and guidelines regarding appropriate referrals to different members of the IPMT for specific

conditions to leave less opportunity for inappropriate or delayed referrals should be made available to medical practitioners at undergraduate and postgraduate level. The latter should be accompanied by information regarding the specialised roles of IPMT members.

Accredited education opportunities in the form of lectures, articles, informative documents (online and in paper format) courses and/or workshops should be easily available to convey the previously mentioned significantly important information regarding physiotherapy and the specific role they play in the IPMT. Professional bodies such as the HPCSA and the SASP should accredit these educational opportunities to ensure relevant and accurate information are presented to medical practitioners. Specific educational opportunities will assist medical practitioners as well as other health care professionals to improve the management of individuals living with MSD.

The literature and collected data indicated that medical practitioners should have a thorough understanding of physiotherapy modalities and evaluation procedures to identify the most effective treatment for a musculoskeletal patient, in terms of both therapeutic results and financial influences in the current South African climate. The availability of the Global Core Recommendations for a Musculoskeletal Undergraduate Curriculum should thus be taken in serious consideration during the planning and structuring of medical practitioners undergraduate training programs. Some participants indicated that undergraduate education are lacking specificity and have little effect on their referrals, which supports the implementation of the Global Core Recommendations for a Musculoskeletal Undergraduate Curriculum. If medical practitioners' tertiary education did not provide information to their standard of specificity and detail regarding the role of physiotherapy, they should seek education from peer-reviewed sources to increase their knowledge regarding the latter.

Postgraduate experiences and exposure to physiotherapy were indicated as the period where medical practitioners gain most information regarding the role of physiotherapists in the treatment of individuals with MSD. Medical practitioners indicated that they were

unsure of where to obtain information regarding physiotherapy. The results of this study convinced the researcher of the significant need for accessible education programmes, highlighting evidence based practice, including appropriate referrals to members of the IPMT. These educational programmes should be readily available at both undergraduate and postgraduate levels and medical professional bodies, such as the HPCSA, SASP, and tertiary institutions responsible for medical practitioner training. Qualified physiotherapists should take responsibility for these educational opportunities. To conclude, medical professional bodies and physiotherapists should urgently make it a priority to provide clear information regarding the specific role of physiotherapists and other members of the IPMT, as well as evidence based practice for the appropriate management of MSD, to ensure appropriate referrals and to effectively and promptly address the burden of MSD.

Education regarding the role of physiotherapists for individuals living with MSD could also be accomplished through improved communication between the medical practitioners and physiotherapists. Communication were identified in the study to have a large effect on medical practitioner's referral practices and it is deemed important that physiotherapists improve their communication skills with medical practitioners regarding their specialities, recent developments in physiotherapy and feedback about the referred MSD patients. Communication between physiotherapists and medical practitioners utilising in-person, telephonic and written communication and feedback regarding previously referred individuals living with MSD could be used to urge medical practitioners to refer appropriately.

The WHO envisioned a way of improving health care through increased collaborative efforts with governmental and NGOs to enhance early detection and effective treatment and rehabilitation for individuals with MS. Medical practitioners should thus be encouraged by the HPCSA and other institutions, including the private and the government sectors to consider referrals to physiotherapists and other health professionals to address the burden of disease promptly and more effectively. Medical practitioners could be presented with the clinical benefits, including the improvement of

the HRQOL and the cost effectiveness of physiotherapy and other health professionals for individuals living with MSD, if they referred appropriately to encourage their referrals.

After consideration of the findings and the above-mentioned facts, the researcher is of opinion that national evidence based guidelines for referrals of individuals living with MSD, would leave no room for uncertainty or inappropriate referral errors as discussed in section 5.2. The researcher suggests that the development of detailed guidelines for apt, evidence-based referrals for individuals living with different MSD, would assist the increase in appropriate referrals in South Africa and is needed urgently to address the rising burden of MSD. An example of guidelines to ensure appropriate health care is set the National Institute for Health and Care Excellence (NICE) guidelines implemented by health care professionals in the UK. Guidelines for the appropriate management of individuals living with MSD in South Africa could be developed by a task team, which should include experienced health care professionals, academics or researchers, members of the department of health and HPCSA representatives. Members of the suggested task team to improve MSD management should develop guidelines based on the best evidence based practice for MSD, improving individuals with MSD quality of life in a cost effective manner.

6.5 Suggestions to physiotherapists

It is evident that increased communication and education, between medical practitioners and physiotherapist regarding the specialised roles that physiotherapist can play in the management of individuals living with MSD is needed. The latter could improve the functioning of the IPMT in the management of MSD. Physiotherapists should make an effort to communicate their specialised roles in the treatment of patients with MSD to medical practitioners. Information regarding the specialised roles physiotherapists have to play in the treatment of patients with MSD could easily be accomplished through several communication methods, such as online technology, newsletters, workshops, personal communication to name a few examples.

Feedback regarding the outcome of every referred patient with a MSD should be provided by physiotherapists to the referring medical practitioner. The feedback from the physiotherapist to the medical practitioners should be a detailed description of the scientific treatment method implemented, the objective measures applied, the outcome of the patient and the specific role physiotherapy played in the treatment of the patient.

Physiotherapists as first line practitioners should promote their profession with the assistance of the HPCSA and the SASP, distributing information regarding the value and the role of physiotherapy in the treatment of patients suffering from MSD.

6.6 Conclusion

Important information regarding both correct and/or inadequate referral practices followed by medical practitioners for individuals living with MSD was identified in this research study. Improved management of individuals living with MSD could potentially lead to decreasing the debilitating effect of MSD with earlier detection and evidence based management, improved pain management, and prevention of the inability to work and to enjoy life fully. The cost of MSD on the health care system in South Africa could be decreased with appropriate referrals, which in turn could lessen the burden of the disease on society and the individual.

6.7 Dissemination

A written report of the study findings will be made available to the medical practitioners who participated in the study upon request, the HPCSA and the department of Family Medicine at the UFS. The latter report will recommend the appropriate referral practices identified during the study, state inadequate referral practices and include recommendations regarding referrals for individuals living with MSD to physiotherapy.

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World health organisation, 2017.

Available from: http://www.who.int/topics/global_burden_of_disease/en/
[accessed 27 January 2017]

Appendices

Appendix A:



Letter of explanation to expert panel members

A study to identify musculoskeletal physiotherapy referral practices of South African medical practitioners in Bloemfontein.

Dear expert panel participant,

This is an invitation for you to act as a member of an expert panel in designing a questionnaire. The questionnaire will be implemented for a study to identify physiotherapy referral practices of South African medical practitioners in Bloemfontein for patients suffering from musculoskeletal disorders (MSD) during a semi-structured interview.

Inter professional medical teams (IPMT) exist to provide comprehensive healthcare to members of the public, who have individual multifaceted needs. Proficient referrals between multiple health care practitioners, with different educational and occupational training are essential for an efficient IPMT. Research to identify the current referral system between IPMT members and the efficiency thereof seems important to ensure optimal health care. In an effort to increase comprehension regarding inter professional referrals, a study to identify the referral practices and possible factors influencing Free State medical practitioners' referrals in Bloemfontein to physiotherapy, for patients suffering from MSD, is planned.

If you agree to participate as a member of the panel of experts, a proposed questionnaire compiled from an extensive literature review, will be sent to you electronically. You will be asked to give written feedback to the researcher regarding the questions, considering the diverse aspects of the topic. You will also be responsible for advising the researcher on adding or deleting questions to ensure the correct combination of questions for optimal and appropriate data collection. Changes will be

made until expert members reach consensus that the included questions will enhance the quality of the study and ensure that the appropriate data is collected. At least eighty percent of the expert panel members need to agree on a final suitable questionnaire to reach consensus.

The questionnaire will be proof read by language experts and will be available in English. After proof reading the questionnaire will be returned for a final review by the panel of experts.

The researcher is doing this study as partial fulfilment of the degree M.Sc. in clinical sport physiotherapy at the (UFS), Bloemfontein. If there are any uncertainties and/or questions regarding the questionnaire or the study, please do not hesitate to contact the researcher or study leader immediately. The researcher's contact details, as well as the contact details of the study leader are provided at the end of the document. In there are any ethical questions or concerns, or if you need any information regarding your rights as participant, you are encouraged to contact the secretary of the Ethics Committee of the UFS: Mrs. Mare Marais

Contact number: 051 401 7794/5

Participation is voluntary and you may decide to decline participating in the expert panel at any time, without any risk of penalty or loss of benefits, if you should choose to do so.

The Ethic Committee of the Faculty of Health Science, University of the Free State has approved the study.

ECUFS NR 59/2015

Your input as a member of the expert panel will be greatly valued if you agree to participate.

Thank you,

Yours sincerely,

Alida Maria Janse van Rensburg

Physiotherapist

E-mail address: toytjiev@yahoo.com

Cell phone number: 082 291 2191

Study leader: Roline Barnes, Lecturer, Department of Physiotherapy, UFS

Contact number: 051-401 3295

E-mail address: BarnesRY@ufs.ac.za

Appendix B:

Initial semi structured questionnaire proposed by researcher

A proposed questionnaire to identify musculoskeletal physiotherapy referral practices of South African medical practitioners in Bloemfontein.

Dear expert panel member, please elicit which of the following questions need to be added/deleted to identify musculoskeletal physiotherapy referral practices of medical practitioners in Bloemfontein.

Section A:

Please indicate if you manage and/or treat adult and/or paediatric patients, suffering from musculoskeletal injuries/conditions.

- ☐ Yes,
☐ No.....

Only participants who has answered yes to section A proceed to section B. Participants answering no will be thanked for participation and exit the structured interview.

Section B:

1. Doctor, how long have you been qualified as a medical practitioner.
.....Years..... Months..... Weeks

2. Is Doctor specialized or does doctor have a specific/special field interest?
.....
.....
.....

3. How often does doctor manage patients with musculoskeletal conditions?
☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly,

4. How often does doctor refer patients with musculoskeletal conditions for physiotherapy treatment?

☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly,

5. Does doctor implement any specific criteria/guidelines for the referral of musculoskeletal patients to physiotherapy?

☐ Yes,

namely.....

.....
.....
.....

☐ No, please indicate why doctor would refer patients for physiotherapy.....

.....
.....
.....

6. Please indicate, when or why physiotherapy treatment would be the most appropriate option for the following musculoskeletal patients:

6.1 Patient suffering from neck and back pain?

.....
.....
.....

6.2 Peripheral joint injuries?

.....
.....
.....

7. Has anything influenced doctor's musculoskeletal patient referrals to physiotherapy? Also consider the effect of the following options:

(Doctor is allowed to select more than one of the following options.)

☐ The effect physiotherapy had on musculoskeletal patients has significantly affected my referrals (Archer et al. 2009).

☐ Musculoskeletal patients are referred for physiotherapy treatment because other treatment options have failed (Clemence & Seamark, 2003).

☐ Communication (telephonic or in person discussions) with a physiotherapist indicated a referral (Clemence & Seamark, 2003).

☐ Information regarding the skills and/or the role/scope of physiotherapists in the treatment of musculoskeletal conditions provided during tertiary training.

☐ Information regarding the skills and/or the role/scope of physiotherapists in the treatment of musculoskeletal conditions provided post-graduation.

8. Do you have a preference to refer musculoskeletal patients to a physiotherapist who has a special interest/or a postgraduate degree in musculoskeletal injuries/conditions?

☐ Yes

☐ No

Appendix C:¹¹

Final accepted semi structured questionnaire accepted by expert panel members

Dear expert panel member,

Please elicit which of the following questions need to be added/deleted to identify musculoskeletal physiotherapy referral practices of South African medical practitioners in Bloemfontein.

A questionnaire to identify musculoskeletal physiotherapy referral practices of South African medical practitioners in Bloemfontein.

Section A:

Please indicate if you assess and treat adult and/or paediatric patients, suffering from musculoskeletal injuries/disorders.

☐ Yes,

☐ No.....

Only participants who have answered yes to the question under section A will proceed to section B. Participants answering no will be thanked for their participation and exit the semi-structured interview.

Section B:

The following questions will be posed directly to the doctor

1. How long have you been qualified as a medical practitioner?

☐ Years ☐ Months ☐ Weeks

¹¹ Appendix C was the final document accepted by the expert panel members, it is similar to Appendix G, which was the document, sent out to participants. In Appendix G, the UFS logo was added and it was given to participants with Appendix E and Appendix F.

2. Are you a medical specialist? If so what is your field of specialisation?

.....

3. Do you have a field of specific/special interest related to musculoskeletal pathology?

.....

.....

4. How often do you manage patients with musculoskeletal disorders (MSD)?

☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly,

5. How often do you refer patients with MSD for physiotherapy assessment and/or treatment?

☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly

6. Do you apply any specific criteria and/or guidelines for the referral of musculoskeletal patients to physiotherapy?

☐ Yes, namely.....

.....

.....

☐ No, please indicate why you would then refer patients for physiotherapy

.....

7. Please indicate in your opinion, when physiotherapy treatment would be the most appropriate choice for the following musculoskeletal patients:

6.1 Patient suffering from neck and back pain

.....

.....

6.2 Patients with Peripheral joint injuries.....

.....
.....
8. Has/ or does anything influence your referral of musculoskeletal patients to physiotherapy? If so, please specify.....

.....
9. Do any of the following statements apply in your referral practices of musculoskeletal patients to physiotherapy?

- The effect physiotherapy has had previously on musculoskeletal patients regarding the decrease of pain and/ or the increase of function significantly influence my referral practices (Archer et al. 2009).

☐ Yes ☐ No

- You refer musculoskeletal patients to physiotherapy for treatment because other treatment options have failed (Clemence & Seamark, 2003).

☐ Yes ☐ No

- Open lines of communication (telephonic or face-to-face discussions) with physiotherapists, influence your musculoskeletal referral practices (Clemence & Seamark, 2003).

☐ Yes ☐ No

- Information or knowledge you gained during your undergraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of MSD influence your referral practices.

☐ Yes ☐ No

- Information or knowledge you gained during your postgraduate medical training regarding the skills and/or the role/scope of practice of

physiotherapists in the management of MSD influence your referral practices.

☐ Yes ☐ No

- I prefer to refer to physiotherapists who have a special interest/or extensive postgraduate experience (Master's degree in physiotherapy and/or courses i.e. Sport1, OMT) in musculoskeletal injuries/disorders?

☐ Yes ☐ No

Appendix D:



A document to assist expert panel members with the evaluation of the questionnaire
In an effort to improve the validity of the questionnaire, please utilize the following questions:

1. Do the proposed questions indicate clearly what kind of answer is desired?
Yes ☐ No ☐ Question number(s) _____
2. Do any of the proposed questions include ambiguous words or phrases?
Yes ☐ No ☐ Question number(s) _____
3. Do the proposed questions correspond with the knowledge the respondent should have?
Yes ☐ No ☐ Question number(s) _____
4. Do any of the proposed questions appear offensive or insensitive to respondents?
Yes ☐ No ☐ Question number(s) _____
5. Are all the response categories clear and appropriate?
Yes ☐ No ☐ Question number(s) _____

Recommendations:

The study has been approved by the Ethic Committee of the Faculty of Health Science, University of the Free State.

(Ethical number of approval will be included here)

Thank you for participating in this study, your input is valued.

Yours sincerely

Alida Maria Janse van Rensburg

Physiotherapist

E-mail address: toytjiev@yahoo.com

Cell phone number: 082 291 2191

Study leader: Roline Barnes

Lecturer, Department of Physiotherapy, UFS

Contact number: 051- 401 3295

E-mail address: BarnesRY@ufs.ac.za

Appendix E:



Information document to medical practitioners

Dear medical practitioner,

Inter professional medical teams (IPMT) exist to provide comprehensive healthcare to members of the public, who have individual multifaceted needs. Proficient referrals between multiple health care practitioners, with different educational and occupational training are essential for an efficient IPMT. In an effort to increase comprehension regarding inter professional referrals, data collection to identify the referral practices and possible factors influencing referrals of medical practitioners for patients with musculoskeletal conditions to physiotherapy, is planned.

The researcher is doing this study as partial fulfilment of the degree M.Sc. in clinical sport physiotherapy at the University of the Free State (UFS), Bloemfontein.

Research in regards to this study can be defined as an investigation gathering data or factual information in relation to the referral practices medical practitioners follow for patients suffering from musculoskeletal conditions to physiotherapy.

To obtain data a questionnaire will be implemented as the study method. The medical practitioner will complete the questionnaire by hand or during a semi structured interview face to face or telephonically. Please complete the written consent form if you agree to participate. If you prefer to participate during a telephonic interview, your consent will be recorded verbally prior to the interview. Interviews will be recorded to ensure a true representation of the data collected. Your information will remain anonymous and your data will be treated confidentially at all times. You may withdraw from this study at any given moment during the completion of the questionnaire. The results of the study may be published.

The duration of completing the questionnaire is approximately five to ten minutes. Confidentiality will be ensured by using anonymous questionnaires and thematic data analysis, never referring to participants' details.

You are under no obligation to answer any question if you feel it is inappropriate, unacceptable or offensive. Please indicate if you feel any question to be inappropriate, unacceptable or offensive question during the interview by answering with the phrase "next question, please".

After completion of the research I intend to present and/publish the study findings, to

commend correct referral practices, state inadequate referral procedures and include recommendations regarding musculoskeletal referrals.

Your voluntary participation could play an integral role in the promising new developments, which could improve the management of musculoskeletal patients.

This document comprises of relevant information regarding the questionnaire to be completed. If there are any uncertainties and/or questions in regards to the questionnaire after reading the explanatory information letter, please do not hesitate to contact the researcher immediately. The researcher's contact details, as well as the contact details of the study leader are provided at the end of the document. If there are any ethical questions or concerns, or if you need any information regarding your rights as participant, you are encouraged to contact the secretary of the Ethics Committee of the UFS: Mrs. Mare Marais

Contact number: 051 401 7794/5

Participation is voluntary and you may decide to decline or discontinue participating at any time, without any risk of penalty or loss of benefits, if you should choose to do so.

No remuneration is offered for participating in the study.

The study has been approved by the Ethic Committee of the Faculty of Health Science, University of the Free State.

ECUFS NR 59/2015

Thank you for participating in this study, your input is valued.

Yours sincerely

Alida Maria Janse van Rensburg

Physiotherapist

E-mail address: toytjiev@yahoo.com

Cell phone number: 082 291 2191

Study leader: Roline Barnes

Lecturer, Department of Physiotherapy, UFS

Contact number: 051-401 3295

E-mail address: BarnesRY@ufs.ac.za

Appendix F:



Participant consent form

CONSENT TO PARTICIPATE IN RESEARCH

PROJECT TITLE:

A study to identify the physiotherapy referral practices of South African medical practitioners in Bloemfontein for musculoskeletal patients.

You have been asked to participate in a research study.

You have been informed about the study by Alida Janse van Rensburg.

You have been informed that there is no remuneration for participation in this study.

You have been informed that appropriate procedures will be followed to ensure your confidentiality in this study.

You may contact Alida Janse van Rensburg at telephone number 082 2912191 at any time if you have questions about the research.

You may contact the Secretary of the Ethics Committee of the Faculty of Health Sciences, UFS at telephone number (051) 4052812 if you have questions about your rights as a research subject.

Your participation in this research is voluntary, and you will not be penalised or lose benefits if you refuse to participate or decide to terminate participation.

If you agree to participate, you will be given a signed copy of this document as well as the participant information sheet, which is a written summary of the research.

The research study, including the above information has been verbally described to me. I understand what my involvement in the study means and I voluntarily agree to participate.

Signature of Participant

Date

Appendix G:



A questionnaire to identify musculoskeletal physiotherapy referral practices of medical practitioners in Bloemfontein for patients with MSD to physiotherapy

Section A:

Please indicate if you assess and treat adult and/or paediatric patients, suffering from musculoskeletal injuries/conditions.

- ☐ Yes,
- ☐ No.....

Only participants who have answered yes to the question under section A will proceed to section B. Participants answering no will be thanked for their participation and exit the semi-structured interview.

Section B:

The following questions will be posed directly to the doctor

10. How long have you been qualified as a medical practitioner?

- ☐ Years ☐ Months ☐ Weeks

11. Are you a medical specialist? If so what is your field of specialisation?

.....

12. Do you have a field of specific/special interest related to musculoskeletal pathology?

.....

.....

13. How often do you manage patients with musculoskeletal conditions?

☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly,

14. How often do you refer patients with musculoskeletal conditions for physiotherapy assessment and/or treatment?

☐ Daily, ☐ Weekly, ☐ Monthly, ☐ Yearly

15. Do you apply any specific criteria and/or guidelines for the referral of musculoskeletal patients to physiotherapy?

☐ Yes, namely.....
.....

..... ☐ No, please indicate why you would then refer patients for physiotherapy
.....

16. Please indicate in your opinion, when physiotherapy treatment would be the most appropriate choice for the following musculoskeletal patients:

7.1 Patient suffering from neck and back pain
.....
.....

7.2 Patients with Peripheral joint injuries.....
.....
.....

17. Has/ or does anything influence your referral of musculoskeletal patients to physiotherapy? If so, please specify.....
.....

18. Do any of the following statements apply in your referral practices of musculoskeletal patients to physiotherapy?

- The effect physiotherapy has had previously on musculoskeletal patients regarding the decrease of pain and/ or the increase of function significantly influence my referral practices (Archer et al. 2009).

☐ Yes ☐ No

- You refer musculoskeletal patients to physiotherapy for treatment because other treatment options have failed (Clemence & Seamark, 2003).

☐ Yes ☐ No

- Open lines of communication (telephonic or face-to-face discussions) with physiotherapists, influence your musculoskeletal referral practices (Clemence & Seamark, 2003).

☐ Yes ☐ No

- Information or knowledge you gained during your undergraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of musculoskeletal conditions influence your referral practices.

☐ Yes ☐ No

- Information or knowledge you gained during your postgraduate medical training regarding the skills and/or the role/scope of practice of physiotherapists in the management of musculoskeletal conditions influence your referral practices.

☐ Yes ☐ No

- I prefer to refer to physiotherapists who have a special interest/or extensive postgraduate experience (Master's degree in physiotherapy and/or courses i.e. Sport1, OMT) in musculoskeletal injuries/conditions?

☐ Yes ☐ No

Appendix H:



PPB 10

HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA

PROFESSIONAL BOARD FOR PHYSIOTHERAPY, PODIATRY AND
BIOKINETICS

DEFINITION OF CORE FUNCTIONS OF PHYSIOTHERAPY, PODIATRY AND
BIOKINETICS

PHYSIOTHERAPY

1. Care and Rehabilitation of illness, injury and impairment/disability in the following
Stages

Acute

Sub-acute

Chronic

Final

2. Restoration to functional ability

3. Health promotion and disease prevention through education

BIOKINETICS

1. Rehabilitation and care

1.2. Rehabilitation and care in the final stage of chronic diseases of lifestyle and
Orthopaedics where

Disorders are well controlled, the patient stabilized and in the absence of -

Pain

Swelling

Inflammation

Systemic Complications

Abnormal/Restricted range of movement

Abnormal function

2. Health Screening

3. Return to Sport

4. Performance Optimizing

5. Wellness

6. Health Promotion and Disease Prevention through education

PODIATRY

1. Medical, surgical, rehabilitative and preventative foot and lower limb care, with the
Emphasis on a conservative approach

2. Health promotion through education

Appendix I:



IRB nr 00006240
REC Reference nr 230408-011
IORG0005187
FWA00012784

16 September 2015


MS AM JANSE VAN RENSBURG
DEPT OF PHYSIOTHERAPY
FACULTY OF HEALTH SCIENCES
UFS

Dear Ms AM Janse van Rensburg

ECUFS NR 59/2015
DEPARTMENT OF PHYSIOTHERAPY
PROJECT TITLE: A STUDY TO IDENTIFY THE REFERRAL PRACTICES OF MEDICAL PRACTITIONERS IN SOUTH AFRICA FOR MUSCULOSKELETAL PATIENTS TO PHYSIOTHERAPY.

1. You are hereby kindly informed that, at the meeting held on 15 September 2015, the Ethics Committee approved the above project after all conditions were met.
2. Any amendment, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.
3. A progress report should be submitted within one year of approval of long term studies and a final report at completion of both short term and long term studies.
4. Kindly use the ECUFS NR as reference in correspondence to the Ethics Committee Secretariat.
5. The Ethics Committee functions in compliance with, but not limited to, the following documents and guidelines: The SA National Health Act, No. 61 of 2003; Ethics in Health Research: Principles, Structures and Processes (2015); SA GCP(2006); Declaration of Helsinki; The Belmont Report; The US Office of Human Research Protections 45 CFR 461 (for non-exempt research with human participants conducted or supported by the US Department of Health and Human Services- (HHS), 21 CFR 50, 21 CFR 56; CIOMS; ICH-GCP-E6 Sections 1-4; The International Conference on Harmonization and Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH Tripartite), Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines, Constitution of the Ethics Committee of the Faculty of Health Sciences.

Yours faithfully


DR SM LE GRANGE
CHAIR: ETHICS COMMITTEE

C: Ms R Barnes

ethics Committee
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