

**THE KNOWLEDGE, ATTITUDES AND PERCEPTIONS OF  
QUALIFIED CHIROPRACTORS AND PHYSIOTHERAPISTS IN  
SOUTH AFRICA REGARDING THE OTHER PROFESSIONAL  
PRACTICE**

By  
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Dissertation submitted in partial compliance with the requirements for  
the Master's Degree in Technology: Chiropractic  
Durban University of Technology

I, Micaela Ravidutt, do declare that this dissertation is representative of  
my own work in both conception and execution (except where  
acknowledgements indicate to the contrary)

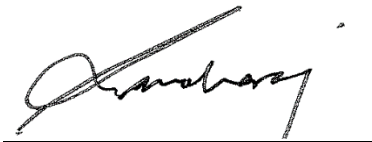


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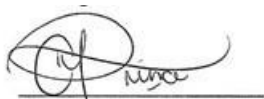
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## **DEDICATION**

I dedicate this dissertation in loving memory of my late grandfather, Govindasamy Padavattan Naicker. I wish you were still here to celebrate my achievements as you did when I was younger. Love you always.

## **ACKNOWLEDGEMENT**

To my Lord and Saviour, Jesus Christ, I thank You for walking this journey with me, for blessing me so abundantly and for guiding me through life.

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# ABSTRACT

## **Background**

Chiropractors and physiotherapists treat patients that present with similar conditions. Arising from this, a sense of competition is perceived between these professionals, as both professions use similar methods of treatment when providing care to their patients. However, chiropractors and physiotherapists may belong to different health paradigms which influences how each profession approaches patient management.

There is also an overlap between the roles of each profession in providing healthcare, as the methods of managing patients seem to be similar. This requires an investigation into the knowledge, attitudes and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice. This could potentially determine possible misconceptions and myths that the two professions have of each other's practice. If identified and corrected, this could influence awareness within a multidisciplinary setting to enhance and promote holistic patient-centred care.

## **Aim**

The aim of this study was to determine the knowledge, attitudes and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

## **Methodology**

The research conducted was a quantitative study with a descriptive design which targeted qualified chiropractors and physiotherapists in South Africa. The research tool was an online questionnaire administered through an online platform named the QuestionPro Survey, which included questions and statements relating to the knowledge, attitudes and perceptions of the two professions regarding the other professional practice to meet the objectives of the study.

The minimum sample size required for this study comprised of 116 chiropractors and 128 physiotherapists. The data obtained from each group were analysed separately and then a comparative analysis was done. An alpha value of 0.05 and a margin of error of 0.085 were assumed.

## **Results**

Chiropractors and physiotherapists in South Africa generally demonstrated good knowledge, positive attitudes, and positive perceptions toward the other profession. Both professions were familiar with the other profession's scope of practice. Chiropractors achieved a mean knowledge score of 75.7%, whereas physiotherapists obtained 59.7% on their knowledge of the examinations performed by the other profession. Chiropractors obtained an average score of 85.3% and physiotherapists achieved 72.0% on their knowledge of the treatment modalities that the other profession may perform for a patient. Both professions had good knowledge about the conditions that the other profession may treat, with chiropractors having achieved a mean knowledge score of 82.4% and physiotherapists having obtained a score of 77.3%. A total of 75.0% of chiropractors and 72.1% of physiotherapists considered the other profession to be competent in examining neuromusculoskeletal conditions. More chiropractors (82.8%) than physiotherapists (70.0%) believed the other profession to be competent in treating neuromusculoskeletal conditions.

Each profession acknowledged the role of the other profession within the South African healthcare system. Of the sampled professions, 81.9% of chiropractors and 55.3% of physiotherapists had referred patients to the other profession. It was found that 69.8% of chiropractors, compared to 32.1% of physiotherapists, had patients referred to them by the other profession. A total of 69.0% of chiropractors and 55.3% of physiotherapists were in agreement that they would like to work closely with the other profession.

## **Conclusion**

In South Africa, chiropractors and physiotherapists had good knowledge and positive attitudes and perceptions of each other's practices. There also appeared to be a referral relationship between these professions. However, the challenges between the professions were limited and there was insufficient inter-professional awareness and exposure when practicing within the different health paradigms.

Therefore, inter-professional education between chiropractors and physiotherapists of their practices as part of the university curriculum within a multidisciplinary team should be enhanced and encouraged. This would enhance and encourage inter-professional relationships between the two professions, thus promoting the delivery of holistic patient-centred care.

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## GLOSSARY OF TERMS

**Chiropractic:** According to the Chiropractic Association of South Africa (2022) and World Federation of Chiropractic (2001), chiropractic is defined as “a health profession concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, and the effects of these disorders on the function of the nervous system and general health”.

**Physiotherapy:** The South African Society of Physiotherapy (2022) defines physiotherapy as a healthcare profession “concerned with assessing, treating and preventing human 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”.

**Knowledge:** Refers to the “awareness, understanding, or information that has been acquired by personal experience or study” (Cambridge English Dictionary 2022).

**Attitudes:** A belief or opinion about something or someone that governs one’s behaviour (Cambridge English Dictionary 2022). Attitude refers to “how people feel about certain subjects or issues” (Sima, Belachew and Abebe 2019).

**Perceptions:** Refer to “a thought, belief or opinion often held by many people based on how things appear” (Cambridge English Dictionary 2022).

**Inter-professional Collaboration:** Ndibu Muntu Keba Kebe *et al.* (2020) define inter-professional collaboration as “a process by which professionals from multiple disciplines share roles and tasks in order to respond in a coherent and integrated way to the needs of patients, their loved ones and the community”.

## LIST OF ABBREVIATIONS

AHPCSA	Allied Health Professions Council of South Africa
CASA	Chiropractic Association of South Africa
CEU	Continuing Education Unit
CPD	Continuing Professional Development
DUT	Durban University of Technology
HPCSA	Health Professions Council of South Africa
IFC	Interferential Current Therapy
IREC	Institutional Research Ethics Committee
SASP	South African Society of Physiotherapy
SPSS	Statistical Package for Social Sciences
TENS	Transcutaneous Electrical Nerve Stimulation
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
WFC	World Federation of Chiropractic

# CHAPTER ONE INTRODUCTION

## 1.1 INTRODUCTION

Recent literature emphasises the need for healthcare professionals to form inter-professional relationships with members of different healthcare professions (Ellapen *et al.* 2018; Bitter *et al.* 2013; Chung *et al.* 2012). This is believed to stimulate inter-professional education and enhance inter-professional collaboration, communication and acceptance between various healthcare practitioners which ultimately can improve the quality of patient care (Ellapen *et al.* 2018; Slabbert 2014; Reeves *et al.* 2013; Naidoo and Bühler 2009). For this to be achieved, it is necessary to conduct studies to understand the knowledge, attitudes and perceptions that exist between different professions.

## 1.2 OVERVIEW

Chiropractors and physiotherapists treat a common range of musculoskeletal disorders and share similarities in some aspects of patient management (Ryan, San Too and Bismark 2018; Hunter 2004). Both professions share similarities in terms of the utilization of non-invasive treatment modalities such as manipulation, mobilization, massage therapy, heat therapy, cryotherapy, hydrotherapy, electrotherapy, traction therapy, immobilization therapy, acupuncture therapy and rehabilitation (South African Society of Physiotherapy 2022; Allied Health Professions Council of South Africa 2018; Carlesso *et al.* 2014).

The difference between the professions is that chiropractic belongs to the Biopsychosocial Model of healthcare which follows a “patient-centred care approach” which focuses on the patient holistically and aims to “investigate, eliminate and prevent disease”, whereas physiotherapy belongs to the Biomedical Model of healthcare which is “disease directed” in their process of providing healthcare, as the biomedical model follows a “reductionistic approach to patient care” (Gliedt *et al.* 2017; van Dulmen *et al.* 2013; Bello 2012).

Since chiropractors and physiotherapists belong to different health paradigms, discord has existed between both professions (Carlesso *et al.* 2014; Hunter 2004). In a South African context, in which the majority of the population live in low socio-economic environment within multi-cultural backgrounds, awareness and perception between the chiropractic and physiotherapy professions may vary due to limited knowledge and inter-professional exposure (Ellapen *et al.* 2018). Inadequate or delayed referral may compromise patient care and prevent appropriate treatment, negatively impacting the healthcare system (Ellapen *et al.* 2018).

In South Africa, research into this field, to analyse the knowledge, attitudes and perceptions that these two professions have of each other will promote inter-professional relationships and ultimately enhance patient outcomes. This will contribute to the limited South African literature that exists by adding new knowledge regarding “inter-professional knowledge, acceptance and collaboration” between South African chiropractors and physiotherapists (Slabbert 2014; Naidoo and Bühler 2009).

The outcomes of this study will be beneficial to both professions and patients as the results can be used to promote inter-professional education to improve the overall quality of patient care. This will promote the development of a multidisciplinary team by stimulating inter-professional collaboration and will optimize the efficiency of the healthcare system in providing adequate care to patients, thus preventing delays in referrals, diagnosis and appropriate treatment, which in turn will reduce unnecessary healthcare costs to the patient (Ndibu Muntu Keba Kebe *et al.* 2020; Riva *et al.* 2010).

### **1.3 AIM OF THE STUDY**

The aim of this study is to determine the knowledge, attitudes and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

## **1.4 STATEMENT OF THE OBJECTIVES**

### **1.4.1 Objective One**

To assess the knowledge of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

### **1.4.2 Objective Two**

To examine the attitudes of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

### **1.4.3 Objective Three**

To investigate the perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

### **1.4.4 Objective Four**

To compare the knowledge, attitudes and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice influence on inter-professional relationships.

## **1.5 HYPOTHESIS**

### **1.5.1 Hypothesis One**

It is hypothesized that South African chiropractors will have greater knowledge of the physiotherapy profession than physiotherapists will have of the chiropractic profession.

### **1.5.2 Hypothesis Two**

It is hypothesized that both South African chiropractors and physiotherapists will have a negative attitude regarding the other professional practice.

### **1.5.3 Hypothesis Three**

It is hypothesized that both South African chiropractors and physiotherapists will have negative perceptions regarding the other professional practice.

#### **1.5.4 Hypothesis Four**

It is hypothesized that a lack of knowledge of the chiropractic or physiotherapy profession will result in negative attitudes and perceptions of that profession, thus preventing or limiting inter-professional relationships.

### **1.6 DELIMITATIONS**

- Despite selecting an appropriate sampling method to represent the entire South African population of chiropractors and physiotherapists, the generalizations that were drawn cannot be assumed to represent the entire targeted population (Datt and Chetty 2016).
- Despite conducting a focus group and pilot study to ensure content validity and reliability, clarity, adaptability and eligibility of the online questionnaire, it cannot be assumed that all participants in the main study interpreted each question similarly (Peytchev *et al.* 2010).

# CHAPTER TWO LITERATURE REVIEW

## 2.1 INTRODUCTION

Chiropractors and physiotherapists treat patients that present with similar conditions (Ryan, San Too and Bismark 2018; Hunter 2004). Although both professions share a similar scope of practice, patient management varies based on “education and clinical paradigms” that each profession belongs to (Carlesso *et al.* 2014). This chapter will explore the different models of healthcare, give an overview of the chiropractic and physiotherapy professions and discuss the importance of inter-professional collaboration.

## 2.2 THE DIFFERENT MODELS OF HEALTHCARE

Within healthcare, there are two main models of care that professions will follow, namely the Biomedical Model and the Biopsychosocial Model (Wade and Halligan 2017).

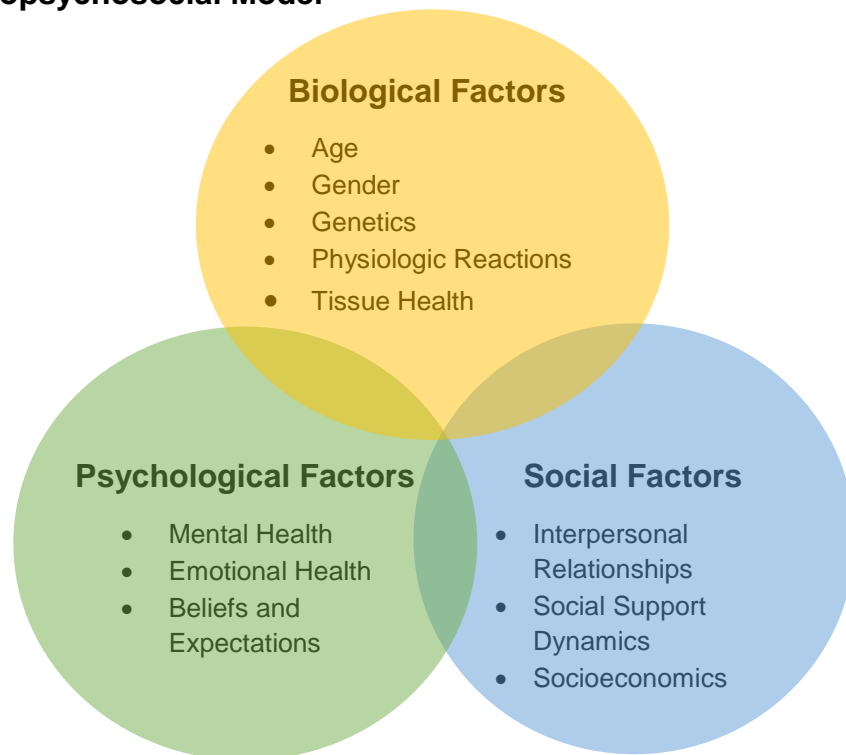
### 2.2.1 The Biomedical Model

The Biomedical Model of healthcare focuses on the biological factors that contribute to disease and aims to correct the “underlying pathology” and is concerned with assessing, preventing and treating disease without much consideration of the psychological and social factors that contribute to disease (Wade and Halligan 2017; Bello 2012; Havelka, Lucanin and Lucanin 2009). Health professionals, such as physiotherapists and general practitioners, who are educated and practice within this model, are said to be “disease directed” in their process of providing healthcare, aiming to correct the disease, as the pathology is seen as the only cause of disease and removal of the disease will restore health (Fuller 2017; Slabbert 2014; Bello 2012; Wade and Halligan 2004).

According to Havelka, Lucanin and Lucanin (2009), this model suggests that disease results “from injury of external origin (physical, chemical and microbiologic causes) and of internal origin (vascular, immunologic and metabolic causes)”. The Biomedical

Model grants more attention to the disease than the patient, disregarding the psychosocial factors that contribute to disease, making the model inefficient in treating and preventing disease, such as long-term illness, that is caused by multiple different aetiologies and predisposing factors (Fuller 2017; Havelka, Lucanin and Lucanin 2009). Many patients with chronic illness have several diseases which may be untreatable if followed by the biomedical approach (Fuller 2017; Havelka, Lucanin and Lucanin 2009). This model, however, proves efficient in curing diseases that result from a single aetiology, such as curing a “bacterial infection with an antibiotic” (Fuller 2017; Havelka, Lucanin and Lucanin 2009).

### 2.2.2 The Biopsychosocial Model



**Figure 2.1: Biopsychosocial Model (adapted from Gliedt *et al.* 2017)**

The Biopsychosocial Model of healthcare is a patient-centred model that takes into account the “biological factors (age, gender, genetics, physiologic reactions and tissue health), psychological factors (mental health, emotional health, beliefs and expectations) and social factors (interpersonal relationships, social support dynamics and socioeconomics)” that contribute to disease (Gliedt *et al.* 2017). This model of healthcare follows a holistic approach which concentrates on the patient as a whole, by considering the patient’s needs and experiences (Molyneux 2022). Thus, the

Biopsychosocial Model of healthcare supports patient-centred care and is not limited to the patient's illness (Molyneux 2022).

Patient-centred care enables patients to engage in all decisions concerning their health which aids a better understanding of the patient's requirements, principles and preferences and allows for the assessment of possible interventions which may be associated with improved or favourable health results (Kuipers, Cramm and Nieboer 2019; van Dulmen *et al.* 2013). Patient-centred care, therefore, consists of communication, including collaborative decision-making that is adapted to the patient's individual needs, which promotes patient satisfaction and compliance to treatment (Kuipers, Cramm and Nieboer 2019; van Dulmen *et al.* 2013; Sanders *et al.* 2013; Epstein and Street 2011).

Hammerich *et al.* (2019) state that "patient-centred care is internationally recognized as a foundation of quality patient care and is the key component of the doctor-patient relationship". The Biopsychosocial Model focuses on the ill patient rather than the disease, and thus highlighting the need for multidisciplinary teams, which allows for a holistic approach to patient management (Havelka, Lucanin and Lucanin 2009). Complementary and alternative medicine health professionals, such as chiropractors, naturopaths and homeopaths, who are educated and practice within this model focus on the patient holistically and "aim to investigate, eliminate and prevent disease" (Gliedt *et al.* 2017; Brown *et al.* 2014; Slabbert 2014).

The different models of healthcare will direct how these different professions will approach the diagnostic work up and management of patients (Wade and Halligan 2017; Carlesso *et al.* 2014).

Literature has demonstrated that some health professionals, such as physiotherapists, adopt both the biomedical and biopsychosocial approach in providing healthcare (Sanders *et al.* 2013). Over the years, the physiotherapy profession has undergone a clinical paradigm shift, and adopting the concept of "patient-centeredness" as the Biopsychosocial Model of healthcare has been associated with improved patient results by enhancing patient education and considering the biological, psychological and social factors that contribute to illness (Yetzer and Disney 2017; Sanders *et al.*

2013). Progressing from a “disease directed” biomedical approach to a holistic, patient-centred biopsychosocial approach has been acknowledged as being imperative in delivering efficient healthcare (Yetzer and Disney 2017; Sanders *et al.* 2013).

Perhaps practicing within the same model of healthcare, i.e. the Biopsychosocial Model, may encourage inter-professional collaboration between chiropractors and physiotherapists, as both professions will share the same philosophy and goals in providing holistic, patient-centred healthcare.

## **2.3 DEFINITION OF CHIROPRACTIC AND PHYSIOTHERAPY**

Chiropractic has been defined as “a health profession specializing in the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health” (CASA 2022; Jones-Harris 2010; WFC 2001). Physiotherapy is “a healthcare profession that helps restore movement and function when a person is affected by injury, illness or disability which is achieved through movement and exercise, manual therapy, education and advice” (Chartered Society of Physiotherapy 2022).

How the two professions manage their patients is determined by factors such as patient characteristics, evidence-based practice, post-graduate courses and clinical settings (Carlesso *et al.* 2014). The management approaches of physiotherapists and chiropractors differ slightly as chiropractors often perform manipulation as part of their treatment plan, whereas physiotherapists prefer joint mobilization as it is a softer, passive treatment approach where low velocity movement is applied to a restricted joint to restore normal range of motion (Bailey *et al.* 2020; Knaap 2019; Thondhlana 2018; Carlesso *et al.* 2014).

Manipulation is defined as a high velocity, short lever arm thrust that is applied to a restricted spinal or extremity joint to restore normal range of motion (Bailey *et al.* 2020; Burgess 2018). Manipulative techniques are included in the undergraduate chiropractic course, which is in contrast to physiotherapists, who may do an elective post-graduate course to incorporate manipulative techniques into their existing management

approach as the undergraduate physiotherapy course focuses on joint mobilizations (DUT 2022; SASP 2022; UKZN n.d.).

## **2.4 CHIROPRACTIC AND PHYSIOTHERAPY CURRICULUM**

### **2.4.1 Chiropractic Curriculum**

Chiropractic is an internationally recognized profession and can be studied in various countries (CASA 2022). In South Africa, chiropractic can be studied at the University of Johannesburg (UJ) and Durban University of Technology (DUT) (CASA 2022). In these institutions, chiropractic is a six year course that consists of four years to achieve a Bachelor's Degree in Health Sciences: Chiropractic and two years to achieve a Master's Degree in Health Sciences: Chiropractic, after which an internship is completed, enabling the student to register as a chiropractor with the Allied Health Professions Council of South Africa in order to practice (DUT 2022). The subjects studied for each course vary at each university but the content that is covered is similar. For the purpose of this study, the chiropractic curriculum of the Durban University of Technology will be used to provide insight into the coursework.

For a Bachelor's Degree in Health Sciences: Chiropractic Curriculum (DUT 2022) the following is studied:

#### Year One

Semester One: Gross Anatomy IA, Physiology IA, Physics 101, Biological Sciences, Philosophy and History of Medicine/Contemporary Social Issues in South Africa, Cornerstone, Issues of Gender and Society within Healthcare/IsiZulu for Healthcare Professionals I.

Semester Two: Gross Anatomy IB, Histology, Physiology IB, Chemistry, Physics 102, Chiropractic Principles and Practice I, Cultural Diversity/Information and Communication Technology Literacy and Skills.

#### Year Two

Semester One: Gross Anatomy II, Physiology IIA, Biochemistry, Immunology, Parasitology and Communicable Diseases and Chiropractic Principles and Practice II.

Semester Two: Diagnostic Imaging I, Physiology IIB, General Pathology, Clinical Anatomy, Sociology/Leadership and Supervisory Development, Introduction to Sign Language/ Values in the Workplace.

### Year Three

Semester One: Diagnostics IA, Systemic Pathology IA, Psychopathology, Chiropractic Principles and Practice IIIA, HIV and Communicable Diseases/Entrepreneurial Edge and Reflections on Quantitative Thinking/Equality and Diversity.

Semester Two: Diagnostics IB, Systemic Pathology IB, Clinical Chiropractic and Biomechanics I, Diagnostic Imaging II, Chiropractic Principles and Practice IIIB and Myofascial and Adjunctive Therapies I.

### Year Four

Semester One: Diagnostics IIA, Chiropractic Principles and Practice IVA, Myofascial and Adjunctive Therapies II, Clinical Nutrition, Research Methods and Bioethics and Clinical Chiropractic and Biomechanics IIA.

Semester Two: Diagnostics IIB, Public and Community Health, Chiropractic Principles and Practice IVB, Clinical Pharmacology, Clinical Chiropractic and Biomechanics IIB, Diagnostic Imaging III and International Perspectives and Practices of Health Care Systems/Clinical Mentoring and Assessment.

For a Master's Degree in Health Sciences: Chiropractic Curriculum (DUT 2022) the following is studied:

### Year One

Annual: Research Project and Dissertation V.

Semester One: Chiropractic Practice Management and Jurisprudence V, Diagnostic Imaging V and Clinical Chiropractic Practicum VA.

Semester Two: Clinical Chiropractic Practicum VB and Chiropractic Case Management V.

### Year Two:

Semester One: Chiropractic Practice VB.

Semester Two: Chiropractic Practice VB.

## 2.4.2 Physiotherapy Curriculum

Physiotherapy is an internationally recognized profession and can be studied in various countries (Wikström-Grotell 2021). Physiotherapy can be studied at eight universities in South Africa (SASP 2022), namely:

- University of KwaZulu-Natal.
- University of Cape Town.
- University of the Free State.
- University of Pretoria.
- University of Stellenbosch.
- University of Western Cape.
- University of the Witwatersrand.
- Sefako Makgatho Health Science University.

The physiotherapy course varies between each university but the content that is covered and the duration of the course are similar (SASP 2022). For the purpose of this study, the physiotherapy curriculum of the University of KwaZulu-Natal will be used to provide insight into the coursework.

The University of KwaZulu-Natal (n.d.) offers physiotherapy as a four year course to achieve a Bachelor of Science Degree in Physiotherapy, after which an internship is completed, enabling the student to register as a physiotherapist with the Health Professions Council of South Africa.

The subjects included in the course for each year of study consist of the following (UKZN n.d.):

### Year One

Physiotherapy modules: Introduction to Physiotherapy Science and Electrotherapy for Physiotherapy.

External modules: Biology, Physics, Psychology, Zulu (for non-isiZulu speakers), Academic Writing (for isiZulu-speakers).

### Year Two

Physiotherapy modules: Kinesiology for Physiotherapy, Massage and Manipulation, Neurology and Community Physiotherapy.

External modules: Human Physiology and Anatomy (Head, neck, trunk, limbs and embryology).

### Year Three

Physiotherapy modules: Principles of Physiotherapy Practice, Neuromusculoskeletal Physiotherapy, Physiotherapy Clinical Practice (four hospital/community sites).

External modules: Clinical Sciences for Physiotherapy and Occupational Therapy.

### Year Four

Physiotherapy modules: Principles of Physiotherapy, Clinical Elective, Physiotherapy Research, Physiotherapy Clinical Practice (four hospital/community sites).

External modules: Clinical Sciences for Physiotherapy.

The educational standards and training requirements of each profession is maintained by the respective councils and forms a guideline for the respective profession's scope of practice (AHPCSA 2018; HPCSA 2022).

## **2.5 SCOPE OF PRACTICE**

A scope of practice is defined as the services that a health professional is permitted to provide in accordance with their qualification (American Nurses Association n.d.). A scope of practice ensures that a healthcare provider performs their duties using the knowledge, skills and expertise that they have acquired, whilst adhering to the laws and regulations of their profession (Health & Care Professions Council 2022). This enables healthcare professionals to practice their profession safely (Health & Care Professions Council 2022).

### **2.5.1 Chiropractic Scope of Practice**

In terms of the scope of practice, the Allied Health Professions Council of South Africa regulations in terms of the Associated Health Services Professions Act, 1982 states that South African chiropractors can perform a “physical examination of any person, with or without the taking, reading and interpreting of X-ray plates for the purpose of diagnosing any physical defect, illness or deficiency in such person” (AHPCSA 2018).

The regulations in terms of the Associated Health Service Professions Act, 1982 also states that South African chiropractors can provide “treatment and prevention of any physical defect, illness or deficiency that is related to spinal, pelvic, spino-visceral and general neuromusculoskeletal disorders in any person” (AHPCSA 2018).

Chiropractic treatment includes manipulation or adjustment, electrotherapy, hydrotherapy, traction therapy, vibration therapy, thermal therapy, exercise therapy, immobilization therapy, neuro-muscular reflex therapy, massage therapy, cryotherapy, acupuncture or acupressure therapy or remedies, dietary advice and dietary supplementation (Hartvigsen and French 2020; AHPCSA 2018; Carlesso *et al.* 2014). Chiropractors can specialise in sports, paediatrics, orthopaedics, radiology and neurology by completing additional qualifications (Callanen 2020).

### **2.5.2 Physiotherapy Scope of Practice**

The Health Professions Council of South Africa Act 56 of 1974 states that the scope of South African physiotherapists which “may be performed as a Supplementary service to medicine includes orthopaedics, paediatrics, geriatrics, neurology and neurosurgery, respiratory disease and thoracic surgery, cardiovascular diseases and surgery, obstetrics and gynaecology, intensive care units, sports medicine and rehabilitation” (HPCSA 2022).

Physiotherapy treatment modalities include “mobilization, manipulation, massage and acupressure, exercise programmes, relaxation techniques, hydrotherapy and biofeedback, electrotherapy, thermal therapy, cryotherapy, traction, the use of assistive devices and patient education” (SASP 2022; HPCSA 2022; Carlesso *et al.* 2014). Physiotherapists can specialise in sports medicine, geriatrics, paediatrics, neurology, orthopaedics and cardiovascular and pulmonary rehabilitation (Castin 2019).

The difference between the professions is that chiropractic belongs to the Biopsychosocial Model of healthcare which follows a “patient-centred care approach”, which focuses on the patient holistically and aims to “investigate, eliminate and prevent disease”, whereas physiotherapy belongs to the Biomedical Model of healthcare which is “disease directed” in their process of providing healthcare. The Biomedical Model

follows a “reductionistic approach to patient care” (Gliedt *et al.* 2017; van Dulmen *et al.* 2013; Bello 2012).

### **2.5.3 Comparison of the Chiropractic and Physiotherapy Professions**

The similarities that exist between the chiropractic and physiotherapy professions include:

- Both professions examine and treat various musculoskeletal conditions (Ryan, San Too and Bismark 2018; Hunter 2004).
- Chiropractors and physiotherapists use non-invasive interventions, such as manipulation, mobilization, electrotherapy, thermal and cryotherapy, hydrotherapy, acupuncture, massage, traction, immobilization therapy and exercise and rehabilitation to alleviate pain and restore joint movement and function (SASP 2022; AHPCSA 2018; Thondhlana 2018; Carlesso *et al.* 2014; Slabbert 2014).
- Both professions are registered with a statutory health council and follow similar regulations and policies in providing ethical and professional healthcare to patients (Slabbert 2014).

The differences that exist between the chiropractic and physiotherapy professions include:

- The clinical paradigm or philosophy that the practitioner practices. Chiropractors follow the Biopsychosocial Model whereas physiotherapists may follow the Biomedical Model or the Biopsychosocial Model in providing healthcare to patients (Gliedt *et al.* 2017; van Dulmen *et al.* 2013; Bello 2012). Each healthcare paradigm guides the professions’ approach to patient management (Wade and Halligan 2017; Carlesso *et al.* 2014).
- Although both professions use manipulation and mobilization to restore joint range of motion, chiropractors primarily use manipulation but physiotherapists prefer to use mobilization (Thondhlana 2018; Knaap 2019; Carlesso *et al.* 2014).

- Currently in South Africa, physiotherapy is integrated in both the private and public health sectors but chiropractic only exists within the private health sector (SASP 2022; Davies 2018; Naidoo and Bühler 2009).

Based on the similarities between the two professions, chiropractic and physiotherapy may be considered complementary professions (Thondhlana 2018). Inter-professional relationships between chiropractors and physiotherapists may be influenced by the level of knowledge, attitudes and perceptions of one profession toward the other (Ellapen *et al.* 2018; Naidoo and Bühler 2009; Langworthy and Smink 2000). The overlap of scope of practice and the exclusion of chiropractic from the public health sector in South Africa may negatively impact the association of both professions because of restricted inter-professional exposure, which may limit inter-professional knowledge (Davies 2018; Ellapen *et al.* 2018; Naidoo and Bühler 2009). A lack of inter-professional education, knowledge and exposure may directly affect collaboration between chiropractors and physiotherapists (Ellapen *et al.* 2018; Slabbert 2014).

## **2.6 KNOWLEDGE, ATTITUDES, PERCEPTIONS AND AWARENESS OF CHIROPRACTIC AND PHYSIOTHERAPY**

According to Sima, Belachew and Abebe (2019) knowledge is described as “the fact or condition of knowing something with familiarity gained through experience or association”. Attitude refers to “how people feel about certain subjects or issues” (Sima, Belachew and Abebe 2019). Attitude-relevant knowledge is defined as “the number of attitude-relevant beliefs and experiences that come to mind when encountering an attitude object” (Fabrigar *et al.* 2006).

It has previously been suggested that a high level of knowledge considerably affects “attitudes on behaviour and that impact of attitudes on attitudinal processes is based on the relevance of knowledge content” (Fabrigar *et al.* 2006). This was further explained by Alotaibi *et al.* (2019) where limited knowledge on tuberculosis among healthcare workers in Saudi Arabia may have been associated with their negative attitudes toward the condition and this could potentially influence negative perceptions in patients which could result in misconceptions and unfavourable treatment outcomes. Such inadequate knowledge could potentially lead to delayed diagnosis or misdiagnosis (Alotaibi *et al.* 2019).

Both the chiropractic and physiotherapy professions play an essential role in the healthcare system; however, public and professional awareness of both professions vary among different countries (Paul and Mullerpatan 2015). Agni and Battin (2017) state that there is complete recognition of physiotherapy among the general practitioners in Mumbai, India. Additionally, it was found that in the United Kingdom, 35.0% of people residing in the urban and semi urban areas and 29.5% of Australians were familiar with the physiotherapy profession (Paul and Mullerpatan 2015). Although 90.0% of healthcare practitioners and 78.0% of the public in India were aware of physiotherapy, knowledge of the function and purpose of the profession in cardiovascular, pulmonary, oncology, obstetrics, gynaecology and plastic surgery domains were limited (Doshi *et al.* 2017).

Physicians in Saudi Arabia had a fair level of awareness of the physiotherapy profession where the majority had received education on the benefits of physiotherapy for certain conditions (Al-Eisa *et al.* 2016). However, 58.0% of physicians had negative perceptions of physiotherapy, which may have resulted in poor referrals of patients to physiotherapists for management (Al-Eisa *et al.* 2016).

A majority of 85% of the Nigerian rural population had no knowledge of physiotherapy (Paul and Mullerpatan 2015). Westin *et al.* (2013) found that over 50.0% of the Swedish general practitioners had inadequate knowledge about chiropractic but many Norwegian general practitioners had some understanding of chiropractic. This could have been influenced by age (whereby younger general practitioners may have had greater awareness or exposure to the chiropractic profession), the advancement in the academic requirements between younger and older practitioners and misunderstandings regarding the pros and cons of chiropractic treatment (Westin *et al.* 2013). Furthermore, the population of chiropractors in Norway was much greater than that of Sweden which may be attributed to the limited knowledge of the chiropractic profession by Swedish general practitioners, due to less professional exposure (Westin *et al.* 2013).

General practitioners in Harare, Zimbabwe, had a relatively adequate understanding of chiropractic and their perception may have been associated with the extent of knowledge that they had of the profession (Thondhlana 2018). However, according to

Thondhlana (2018), knowledge itself cannot be the sole influencer of perception as perception may also be associated with inter-professional experience as well as the affordability and availability of the profession and educational training.

The attitudes of orthopaedic surgeons in North America regarding chiropractic varied between “very positive and extremely negative” (Busse *et al.* 2011). Factors that contributed to positive attitudes involved having a relationship with a chiropractor whereas negative attitudes stemmed from older age and the validation of evidence-based literature and the media as a provider of information about the profession (Busse *et al.* 2011).

According to Naidoo and Bühler (2009), in terms of the students’ understanding of the functions of each other’s profession in Durban, KwaZulu-Natal, both the chiropractic and physiotherapy students had a similar level of knowledge of the other profession but chiropractic students had “more positive perceptions and attitudes towards physiotherapy” compared to the physiotherapy students regarding the chiropractic profession. Most physiotherapy students believed that there was “direct competition” between chiropractors and physiotherapists (Naidoo and Bühler 2009).

Walker *et al.* (2017) found that chiropractic and nursing students in Murdoch University in Western Australia displayed “positive attitudes and beliefs towards complementary and alternative medicine” although there was a lack of knowledge and this was influenced by personal experience, the opinions of qualified chiropractors and nurses outside of the university environment and the support of evidence-based literature.

In a South African context, insufficient inter-professional knowledge in the healthcare system results in inaccurate and undesirable perceptions and “professional individualism” which affects and limits the number of patient referrals to appropriate healthcare professionals which can potentially lead to misdiagnoses and misguided management of the patient (Ellapen *et al.* 2018). This shows that the potential lack of knowledge of the other profession can impact the healthcare system.

A sense of competition between the two professions may exist as both professions treat patients that present with similar conditions and often use similar modalities as

treatment options (Ryan, San Too and Bismark 2018; Engel *et al.* 2014; Hunter 2004; Langworthy and Smink 2000). “Tension” has also existed between chiropractors and physiotherapists as these professions may belong to different models of healthcare (Carlesso *et al.* 2014; Hunter 2004). The conflicting perceptions and attitudes of physiotherapy and chiropractic students indicate further education and understanding is required on both professions in order for a favourable relationship to occur between the two professions and possibly lead to inter-professional collaboration or referral (Naidoo and Bühler 2009). According to Langworthy and Smink (2000), increased knowledge is associated with “inter-professional acceptance and respect”.

## **2.7 THE IMPORTANCE OF INTER-PROFESSIONAL COLLABORATION**

Selected South African medical doctors are generally not cognisant of the scope of practice of physiotherapists and chiropractors, which has resulted in misconceptions and antagonism between these professions, thereby delaying the formation of a “multidisciplinary medical rehabilitation team” (Ellapen *et al.* 2018). As independent as chiropractic is as a profession, Salsbury *et al.* (2018) and Riva *et al.* (2010) state that an increasing number of chiropractors are joining a multidisciplinary setting which fosters co-management of one patient by different professions.

The co-management of patients occurs when one patient is overseen by two or more primary healthcare professionals who play equal roles in providing healthcare for that same patient, which will result in better communication and optimal patient care by stimulating inter-professional relationships (Norful *et al.* 2018; Riva *et al.* 2010). There needs to be efficient communication and co-operation between the chiropractic and physiotherapy professions for both professions to benefit, as this will prevent an insufficient exchange of knowledge and prevent the delivery of substandard patient care (Ellapen *et al.* 2018; Riva *et al.* 2010). For a favourable inter-professional association to exist between these two professions, Naidoo and Bühler (2009) indicate that sufficient insight and familiarity of each other’s profession is necessary. To endorse inter-professional relationships and referrals, inter-professional education should be encouraged as this will also help benefit the patient (Ellapen *et al.* 2018; Slabbert 2014).

Inter-professional education occurs when members of different healthcare professions or disciplines, partake in “learning with, from and about each other” which enables the sharing of expertise between the professions which promotes increased awareness and acceptance of the need for different healthcare professions (Bridges *et al.* 2011). Collaboration of different healthcare providers is fundamental in promoting optimal and efficient healthcare that is required to satisfy the needs of patients, implement patient-centred communication and management, enhance patient safety and allowing each healthcare provider involved in the multidisciplinary team to use their acquired skills and expertise to administer appropriate healthcare services (Reeves *et al.* 2013).

Inter-professional education and collaboration helps to prevent professional individualism which leads to contention between various health professions (Ellapen *et al.* 2018). Professional individualism results in a lack of inter-professional knowledge, which prevents a holistic and multidisciplinary approach to patient care and, thereby, preventing referrals to appropriate healthcare professionals (Ellapen *et al.* 2018).

It may be assumed that physiotherapists are less inclined towards developing inter-professional relationships with chiropractors and biokineticists due to negative perceptions that both professions were ‘trespassing’ on the physiotherapy scope of practice (Ellapen *et al.* 2018). This was similarly demonstrated by Slabbert (2014), that 46.0% of physiotherapists indicated that they do not refer patients to a chiropractor and 43.8% of chiropractors seldom referred patients to physiotherapists, in an eThekweni Municipality study. This may suggest that chiropractors are more inclined to establish inter-professional relationships with physiotherapists. However, Hunter (2004) found that South African physiotherapists desired better communication and co-operation with chiropractors to improve patient outcomes and benefit both professions.

Therefore, there is a paucity of information that is available regarding the extent of inter-professional relationships that may currently exist between South African chiropractors and physiotherapists.

## **2.8 CONCLUSION**

From the presented literature, a paucity exists around the extent of current inter-professional relationships between the chiropractic and physiotherapy professions in South Africa. Thus, this study aims to determine and compare the knowledge, attitudes, and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice and its influence on inter-professional relationships between the two professions.

# **CHAPTER THREE METHODOLOGY**

## **3.1 RESEARCH DESIGN**

This research study design was a quantitative descriptive, cross-sectional survey and falls within the positivist paradigm (Park, Konge and Artino Junior 2020). Bhandari (2020) defines quantitative research as “the process of collecting and analysing numerical data. It can be used to find patterns and averages, make predictions, test causal relationships and generalize results to wider populations”. The survey design was appropriate for the study because a cross-sectional survey gathers information to make deductions about a particular population at a specific point in time (Thomas 2020; Lavrakas 2008).

## **3.2 RESEARCH SETTING**

An online questionnaire was sent to participants in the private and public practice sectors across South Africa via the QuestionPro Survey software. The research setting may have varied among the participants, as some practitioners may practice individually or in group practices in the private sector, whereas others may practice in the public sector in which their practice setting may consist of hospital or clinic rooms. Some participants may also practice in medical centres or multidisciplinary settings and work with and amongst other healthcare professionals. This was indicated in the ‘Personal Information’ section of the questionnaire.

## **3.3 POPULATION AND SAMPLING**

The sample population refers to the minimum number of individuals who are required to participate in the study and complete the questionnaire (Aldous, Rheeder and Esterhuizen 2013). A sample population is a representation of the greater population (Aldous, Rheeder and Esterhuizen 2013; Banerjee and Chaudhury 2010). The population for this research comprised of qualified chiropractors and physiotherapists practicing in South Africa who were registered with the AHPCSA and HPCSA respectively.

### **3.4 SAMPLING METHOD**

This study used a sample of convenience. Convenience sampling, which is a type of non-probabilistic sampling where participants are selected depending on their accessibility, was used for this study (Martinez-Mesa *et al.* 2016). Participants who met the inclusion criteria and completed the questionnaire were included in the study. Participants were recruited for the study until the sample size requirements for both chiropractors and physiotherapists were achieved (Martinez-Mesa *et al.* 2016).

Upon agreement with the registrar of the AHPCSA and Medpages targeted communications manager, the online questionnaire was distributed to all the registered chiropractors and physiotherapists in South Africa via email. One Continuing Professional Development (CPD) point, alternatively known as a Continuing Education Unit (CEU), was awarded by the AHPCSA to each chiropractor for participating in this study following the completion of the questionnaire. The HPCSA does not award CPD points to physiotherapists for participating in research studies.

### **3.5 SAMPLE CHARACTERISTICS**

To be eligible to participate in the study, the chiropractors and physiotherapists had to comply with the following criteria:

Inclusion Criteria:

1. Each chiropractor and physiotherapist must have been registered with their respective council, i.e. the Allied Health Professions Council of South Africa (AHPCSA) for chiropractors and the Health Professions Council of South Africa (HPCSA) for physiotherapists.
2. Each participant must have been practicing within South Africa at the time of data collection.
3. Each participant had to have provided informed consent online prior to participating in this study.

Exclusion Criteria:

1. Any chiropractor or physiotherapist who was not registered with the AHPCSA or the HPCSA respectively.

2. Any chiropractor or physiotherapist who was registered with the AHPCSA or HPCSA respectively but was not practicing within South Africa at the time of data collection.
3. Any chiropractor or physiotherapist who participated in the focus group or the pilot study.
4. Any chiropractor or physiotherapist who did not provide informed consent.

### **3.6 SAMPLE SIZE**

At the time of data collection, 8334 physiotherapists were registered with the Health Professions Council of South Africa and upon direction via an email communication from the HPCSA information specialist and information technology helpdesk administrator Daffue (2021), the researcher consulted Medpages targeted communications service for the email distribution of the online questionnaire to prospective physiotherapy participants. In an email communication with Medpages targeted communications manager Fisher (2021), there were 2987 physiotherapists registered with Medpages and in an email communication with AHPCSA registrar Mullinder (2021), there were 900 chiropractors registered with the AHPCSA at the time of data collection, but only 896 were practicing. Due to a poor response rate, the initial sample size of 79 chiropractors and 271 physiotherapists had to be amended and the South African Society of Physiotherapy was then approached for assistance in distributing the questionnaires to physiotherapists. The minimum sample size required for this study then comprised of 116 chiropractors and 128 physiotherapists.

### **3.7 DATA COLLECTION TOOL**

Questionnaire-based research involves obtaining data by asking questions (Ponto 2015). A quantitative questionnaire is the measurement tool that is used for data collection as a questionnaire is the main instrument for collecting data in a survey research (Lavrakas 2008). McLeod (2018) defines a questionnaire as “a research instrument consisting of a series of questions for the purpose of gathering information from respondents”. According to Paradis *et al.* (2016) a questionnaire is appropriate for determining the sample population’s knowledge, attitudes, and perceptions.

The QuestionPro Survey was used to create the questionnaire for this study. The QuestionPro Survey enabled the researcher to ensure that each participant was only allowed to complete the questionnaire once. The questionnaire was structured in such a way that participants were directed to an eligibility assessment first to determine whether they met the inclusion criteria and provided an informed consent letter online before accessing the questionnaire. If the participant did not meet the inclusion criteria for the study, the software ensured that they were unable to proceed to the questionnaire and, therefore, were excluded from the study by terminating the questionnaire.

The questionnaire for this study was formulated by adapting questionnaires from a previous study conducted by Slabbert (2014) after permission had been obtained (Appendix I). Once the questionnaire had been formulated for this study, the questionnaire then needed to be tested. A focus group and a pilot study were conducted to assess the eligibility and adaptability of the questionnaire to be used in the study in terms of structure and content validity and reliability. The questionnaires were amended according to the recommendations from the focus group and the pilot study. Thereafter, the final online questionnaire was distributed amongst qualified chiropractors and physiotherapists in South Africa via email. Data were obtained and stored on the QuestionPro Survey after participants had submitted their completed online questionnaire.

### **3.8 FOCUS GROUP**

Prior to the main study, a focus group of six people who were knowledgeable in this field of research was necessary to provide appropriate feedback regarding the questionnaire. The participants were selected based on their suitability to this research study (George 2021). All focus group participants (comprising of three chiropractors and three physiotherapists) needed to meet the same inclusion criteria as the main study to participate. The participants were required to read the Letter of Information, provide Informed Consent and agree to a Letter of Confidentiality online via the QuestionPro Survey before participating in the focus group.

The nature of the study, as well as the aims and objectives were explained to the participants in the focus group. The participants were then able to access the questionnaire via the QuestionPro Survey for critical evaluation. Once all the participants had completed the questionnaire, feedback was provided to the researcher via email regarding the structure of the questionnaire and the quality and significance of each question to ensure content reliability and validity. The questionnaire was subsequently amended according to the feedback. The focus group feedback (Appendix L) was kept anonymous and was stored in the Department of Chiropractic at DUT on a password protected USB for a period of five years after which it will be deleted.

### **3.9 PILOT STUDY**

Following the completion of the focus group, a pilot study was conducted to assess the structure and ensure content reliability and validity of the questionnaire via the QuestionPro Survey (Crossman 2019). Thereafter, the final questionnaire was formulated. Pilot study participants (comprising of two chiropractors and two physiotherapists) needed to meet the same inclusion criteria as the main study in order to participate. Participants were excluded if they had participated in the focus group. All participants were required to read a Letter of Information, provide Informed Consent and agree to a Letter of Confidentiality online via the QuestionPro Survey prior to participating in the pilot study.

The participants were required to complete the questionnaire and then give appropriate feedback regarding the questionnaire via email, which was then adapted into the final questionnaire to be distributed to the research population. This helped to “address any difficulties that any of the participants had faced whilst completing the questionnaire” (d’Hotman de Villiers 2015). The pilot study feedback (Appendix O) was kept anonymous and was stored in the Department of Chiropractic at DUT on a password protected USB for a period of five years, after which it will be deleted.

### **3.10 STUDY PROCEDURE**

Once the questionnaire was finalized and approved, full ethical approval was obtained from DUT Institutional Research Ethics Committee (IREC Ethical Clearance Number: IREC 123/20). The questionnaires were distributed to the participants of the study via the QuestionPro Survey. The questionnaires were distributed to all South African chiropractors by the AHPCSA registrar and physiotherapists by Medpages targeted communications service via email. Each participant was able to access the Letter of Information and was required to provide Informed Consent online via the QuestionPro Survey prior to accessing and completing the questionnaire. The questionnaire should have taken approximately fifteen minutes to complete. The participants had one month to complete the questionnaire via the QuestionPro Survey.

The data were secured on the QuestionPro Survey and was only accessible to the researcher, the supervisor, the co-supervisor and the statistician. The questionnaire link and research study information for the main study was sent to the Chiropractic Association of South Africa and South African Society of Physiotherapy, which in turn was distributed via email to their members in order to promote participation.

### **3.11 DATA REDUCTION AND ANALYSIS**

Descriptive statistics in the form of frequencies, percentages, means and standard deviations are used to describe the data (Kaliyadan and Kulkarni 2019). In addition, tables and graphs are used to summarize and represent the data graphically (Kaliyadan and Kulkarni 2019).

The Chi-square Goodness of Fit Test is a univariate test, used on a categorical variable to test whether any of the response options are selected significantly more or less often than the others (Rana and Singhal 2015). Under the null hypothesis, it is assumed that all responses are equally selected. Pearson's Chi-square test is used to assess whether a significant relationship exists between two categorical variables that are represented in a cross-tabulation (Turhan 2020; McHugh 2013). When conditions are not met, Fisher's exact test is used (McHugh 2013). A binomial test assesses whether a significant proportion of respondents select one of two possible responses (Viti, Terzi and Bertolaccini 2015). One sample t-test tests whether an average score is

significantly different from a scalar value (Ali and Bhasker 2016). In this study, the scalar value is the central score on a Likert agreement scale. An independent samples t-test is a test that compares the mean scores of two independent groups to determine if a significant difference exists (Ali and Bhasker 2016; Kim 2015).

The data obtained from each group were analysed separately and then a comparative analysis was done. An alpha value of 0.05 and a margin of error of 0.085 were assumed. Throughout, a *p*-value of 0.05 was used to indicate significance. The analysis was carried out using SPSS version 25.

### **3.12 ETHICAL CONSIDERATIONS**

This study adhered to the principles of beneficence, autonomy, non-maleficence and justice (Jahn 2011):

- Participants had the right to self-determination or to make their own informed choices regarding participation in this study (autonomy).
- The results of this study were used to help stimulate inter-professional education between physiotherapy and chiropractic professions to encourage interdisciplinary understanding and acceptance (beneficence).
- This study did not cause harm to the participants (non-maleficence).
- All participants were treated fairly, equally, and impartially and no discrimination in terms of race, colour or creed took place (justice).

# CHAPTER FOUR RESULTS

## 4.1 INTRODUCTION

This chapter represents the results obtained from the online questionnaires in this study. SPSS version 25.0 was used to analyse the data. The data are represented in the form of graphs and tables and are arranged according to the sections in the questionnaire.

## 4.2 ABBREVIATIONS

The following abbreviations have been used in the presentation of the data:

%	Percentage
<	Refers to a figure that is less than a figure shown
>	Refers to a figure that is greater than a figure shown
-<	Refers to a figure that is less than or equal to another figure
=	Equal to
<i>n</i>	Number
<i>p</i>	A <i>p</i> -value or probability value indicates statistical significance of the data (McLeod 2019). A <i>p</i> -value of <0.05 represents statistically significant data (McLeod 2019).
$\chi^2$	Symbol indicating chi-square test
SD	Standard deviation
t	Symbol indicating a t-test
df	Degrees of freedom
E.g.	Example
N/A	Not Applicable

## 4.3 RESPONSE RATE

### 4.3.1 Chiropractic Response Rate

There were 900 chiropractors registered with the AHPCSA but only 896 were practicing at the time of the study. The original sample size required for the chiropractic study group was 79. The online questionnaire was distributed to the qualified chiropractors

by the AHPCSA and CASA. The sample size was not achieved within the allocated data collection timeframe due to a poor response rate from prospective participants.

Possible reasons for the poor response rate included:

- Failing to meet the inclusion criteria (e.g., practitioners who were not registered with the AHPCSA, practitioners who were registered with the AHPCSA but were not practicing within South Africa or who had emigrated and were no longer practicing within South Africa, practitioners who had participated in the focus group or pilot study and practitioners who were unwilling to participate in the study and therefore did not provide informed consent).
- Incorrect contact details and as a result did not receive the email request to participate in this study.
- COVID-19 and its implications in practice.

The email was redistributed by the AHPCSA to prospective participants and a total of 113 responses were received. The sample size was amended due to the poor response rate from the physiotherapy study group (See Section 4.3.2). Therefore, the new sample size required for the chiropractors was 116 which was achieved. The response rate was 12.95% (116/896) of the total sample population of chiropractors and 100% (116/116) of the required sample population.

#### **4.3.2 Physiotherapy Response Rate**

The sample population was 2987 for the physiotherapy study group. The original sample size for the physiotherapy study group was 271. The online questionnaire was distributed to the qualified physiotherapists by Medpages. The sample size was not achieved within the allocated data collection timeframe due to a poor response rate from prospective participants. Possible reasons for the poor response rate included:

- Failing to meet the inclusion criteria (e.g., practitioners who were not registered with the HPCSA, practitioners who were registered with the HPCSA but were not practicing within South Africa or who had emigrated and were no longer practicing within South Africa, practitioners who had participated in the focus

group or pilot study and practitioners who were unwilling to participate in the study and therefore did not provide informed consent).

- Incorrect contact details and as a result did not receive the email request to participate in this study.
- COVID-19 and its implications in practice.

Due to the poor response rate, the online questionnaire was distributed to physiotherapists by the SASP. Despite an effort to meet the sample size of 271 physiotherapists, the sample size was still not achieved. In total, only 190 responses were received from physiotherapists who were registered with Medpages and the SASP.

The sample size was amended due to the poor response rate. Therefore, the new sample size required for the physiotherapists was 128, which was achieved as a total of 190 responses were received. The response rate was 6.36% (190/2987) of the total sample population of physiotherapists and 100% of the required sample population. All 190 responses were included in the study.

#### **4.4 DATA COLLECTION TOOL**

The online questionnaire, which was administered through the QuestionPro Survey, consisted of five sections. The questionnaire introduced five questions that determined if the participants met the inclusion criteria prior to progressing to the questionnaire. The questionnaire was terminated if participants did not comply with the inclusion criteria. The questionnaire comprised of 24 questions.

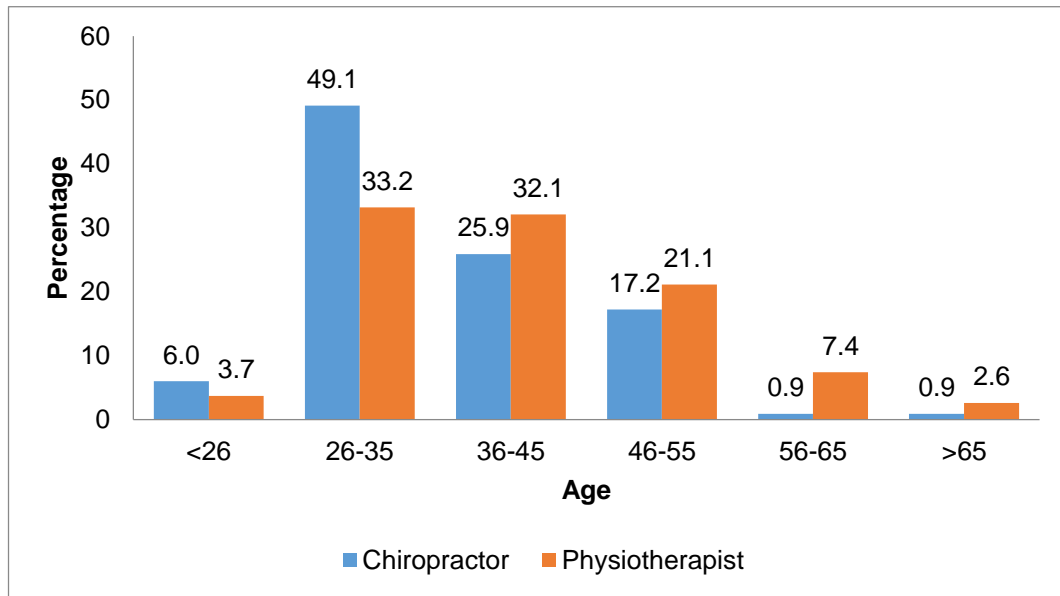
#### **4.5 RESULTS**

##### **4.5.1 Section One: Personal Information**

The following tables and figures portray the personal demographics of the participants, showing age, gender, qualifications, and practice information.

**Table 4.1.1: Age**

Group		Frequency	Percentage
Chiropractor	<26	7	6.0
	26-35	57	49.1
	36-45	30	25.9
	46-55	20	17.2
	56-65	1	0.9
	>65	1	0.9
	Total	116	100.0
Physiotherapist	<26	7	3.7
	26-35	63	33.2
	36-45	61	32.1
	46-55	40	21.1
	56-65	14	7.4
	>65	5	2.6
	Total	190	100.0

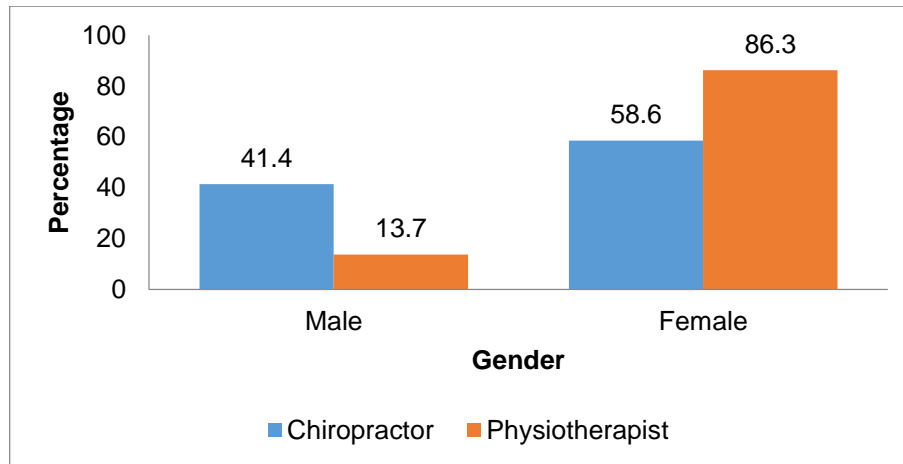


**Figure 4.1.1: Age distribution per profession**

The majority of chiropractors and physiotherapists who had participated in this study were in the 26-35 age group.

**Table 4.1.2: Gender**

Group		Frequency	Percentage
Chiropractor	Male	48	41.4
	Female	68	58.6
	Total	116	100.0
Physiotherapist	Male	26	13.7
	Female	164	86.3
	Total	190	100.0

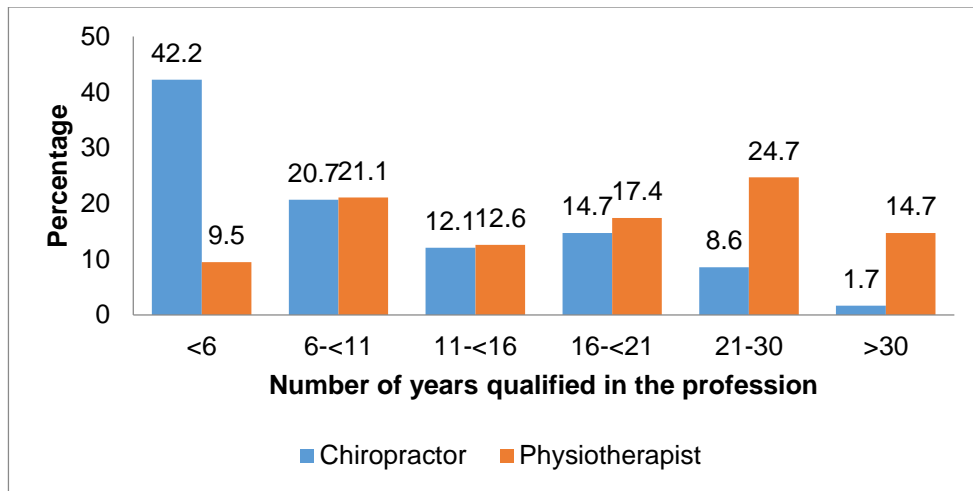


**Figure 4.1.2: Gender distribution per profession**

There were more females from both professional study groups who participated in the study than males.

**Table 4.1.3: Number of years qualified in the profession**

Group		Frequency	Percentage
Chiropractor	<6	49	42.2
	6-<11	24	20.7
	11-<16	14	12.1
	16-<21	17	14.7
	21-30	10	8.6
	>30	2	1.7
	Total	116	100.0
Physiotherapist	<6	18	9.5
	6-<11	40	21.1
	11-<16	24	12.6
	16-<21	33	17.4
	21-30	47	24.7
	>30	28	14.7
	Total	190	100.0

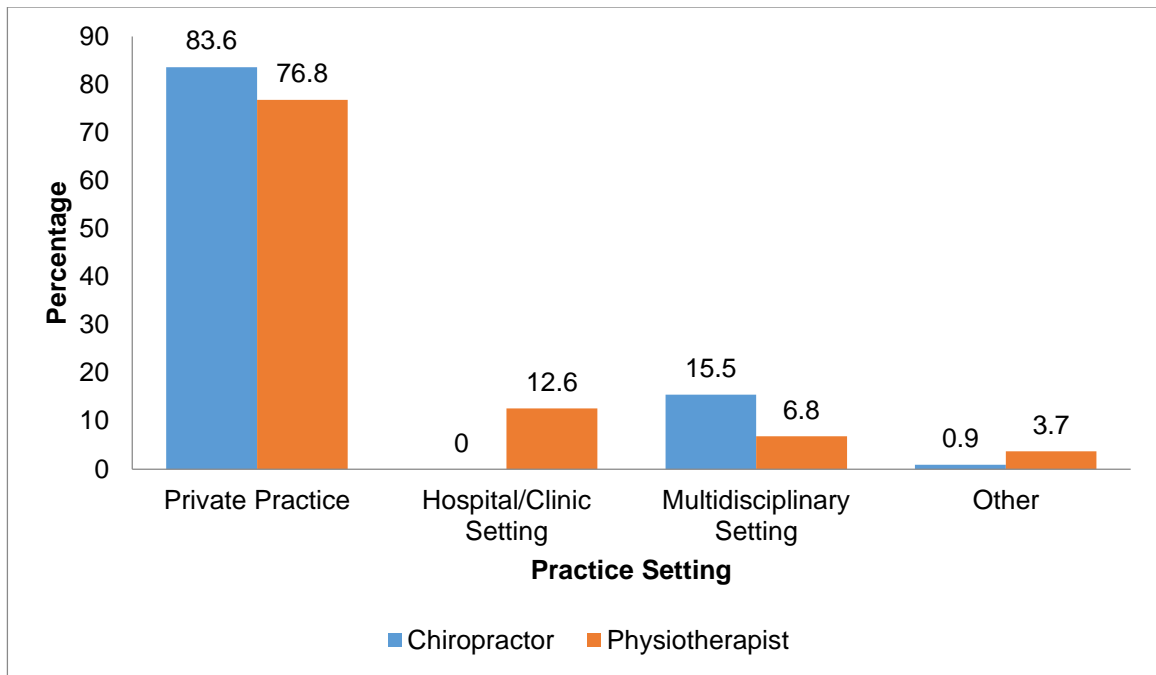


**Figure 4.1.3: Number of years qualified in the profession**

Although a substantial percentage of physiotherapists (24.7%) have been qualified between 21 and 30 years, this contrasted with the chiropractic study group, which showed 42.2% of chiropractors who participated in this study were qualified for less than six years.

**Table 4.1.4: Practice setting**

	Group	Frequency	Percentage
Chiropractor	Private Practice	97	83.6
	Hospital/Clinic Setting	0	0
	Multidisciplinary Setting	18	15.5
	Other	1	0.9
	Total	116	100.0
Physiotherapist	Private Practice	146	76.8
	Hospital/Clinic Setting	24	12.6
	Multidisciplinary Setting	13	6.8
	Other	7	3.7
	Total	190	100.0



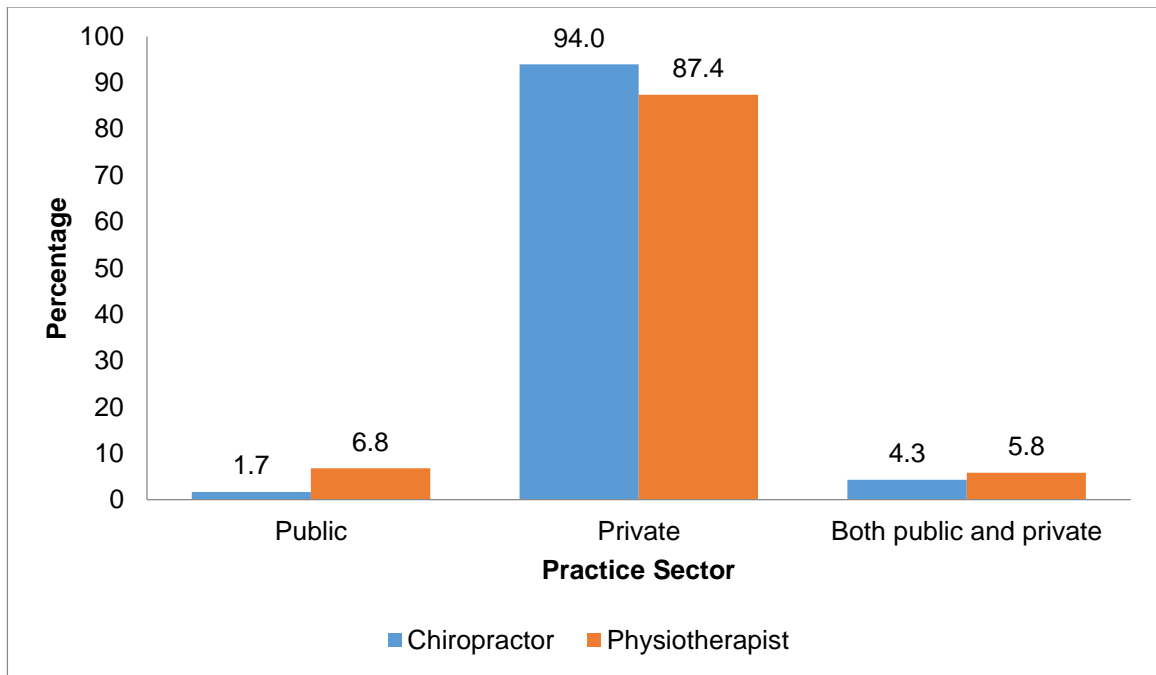
**Figure 4.1.4: Practice setting**

Table 4.1.4 and Figure 4.1.4 illustrate that 83.6% of chiropractors and 76.8% of physiotherapists practiced their profession within the private practice setting.

One chiropractor indicated that they are involved in the teaching and clinical management of students. Some physiotherapists indicated that they are involved in the academic setting at educational facilities, such as tertiary institutions and special needs schools, in addition to practicing in the private practice setting or hospital/clinic setting. A non-governmental organization of a day care centre was also reported as a practice setting by a physiotherapist.

**Table 4.1.5: Practice sector**

	Group	Frequency	Percentage
Chiropractor	Public	2	1.7
	Private	109	94.0
	Both public and private	5	4.3
	Total	116	100.0
Physiotherapist	Public	13	6.8
	Private	166	87.4
	Both public and private	11	5.8
	Total	190	100.0

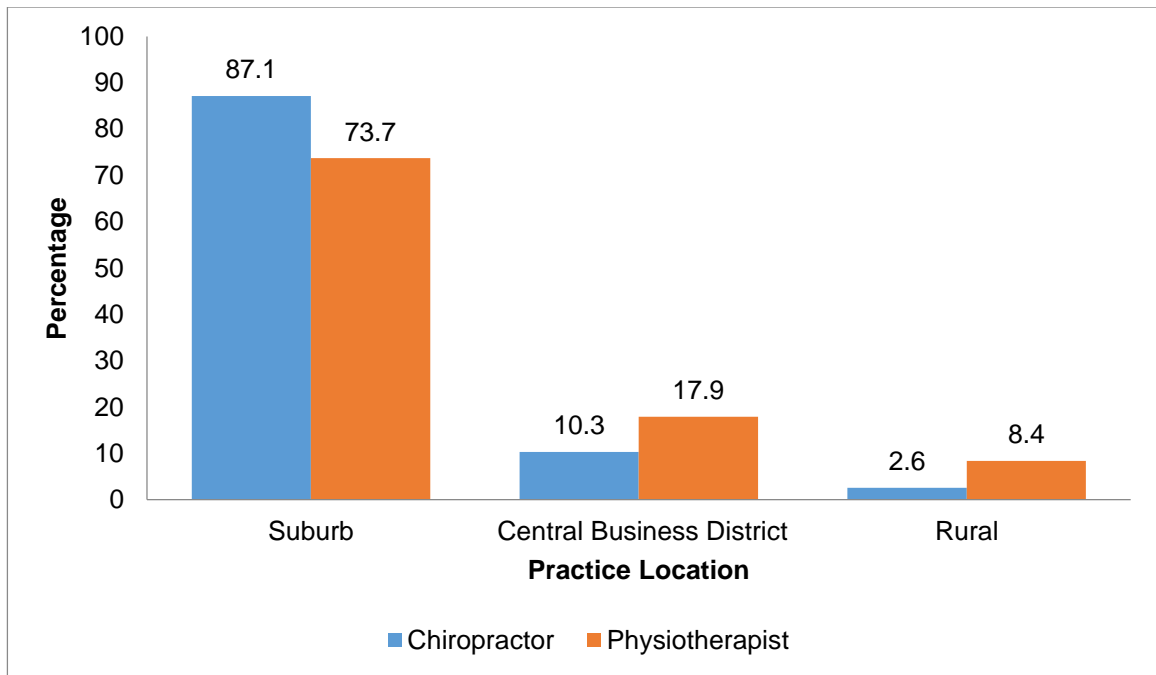


**Figure 4.1.5: Practice sector**

Table 4.1.5 and Figure 4.1.5 illustrate that 94.0% of chiropractors ( $n=109$ ) and 87.4% of physiotherapists ( $n=166$ ) practiced within the private sector.

**Table 4.1.6: Practice location**

Group		Frequency	Percentage
Chiropractor	Suburb	101	87.1
	Central Business District	12	10.3
	Rural	3	2.6
	Total	116	100.0
Physiotherapist	Suburb	140	73.7
	Central Business District	34	17.9
	Rural	16	8.4
	Total	190	100.0

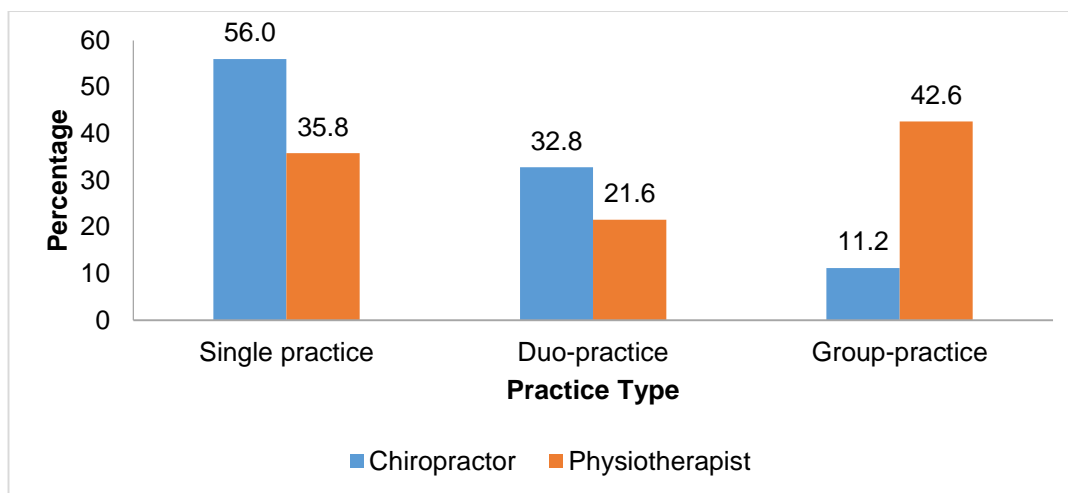


**Figure 4.1.6: Practice location**

Those chiropractors (87.1%) and physiotherapists (73.7%) who had indicated that their practice was located in a suburb formed the largest group, while those who had indicated that their practice was located in a rural district formed the smallest group.

**Table 4.1.7: Practice type**

Group		Frequency	Percentage
Chiropractor	Single practice	65	56.0
	Duo-practice	38	32.8
	Group-practice	13	11.2
	Total	116	100.0
Physiotherapist	Single practice	68	35.8
	Duo-practice	41	21.6
	Group-practice	81	42.6
	Total	190	100.0

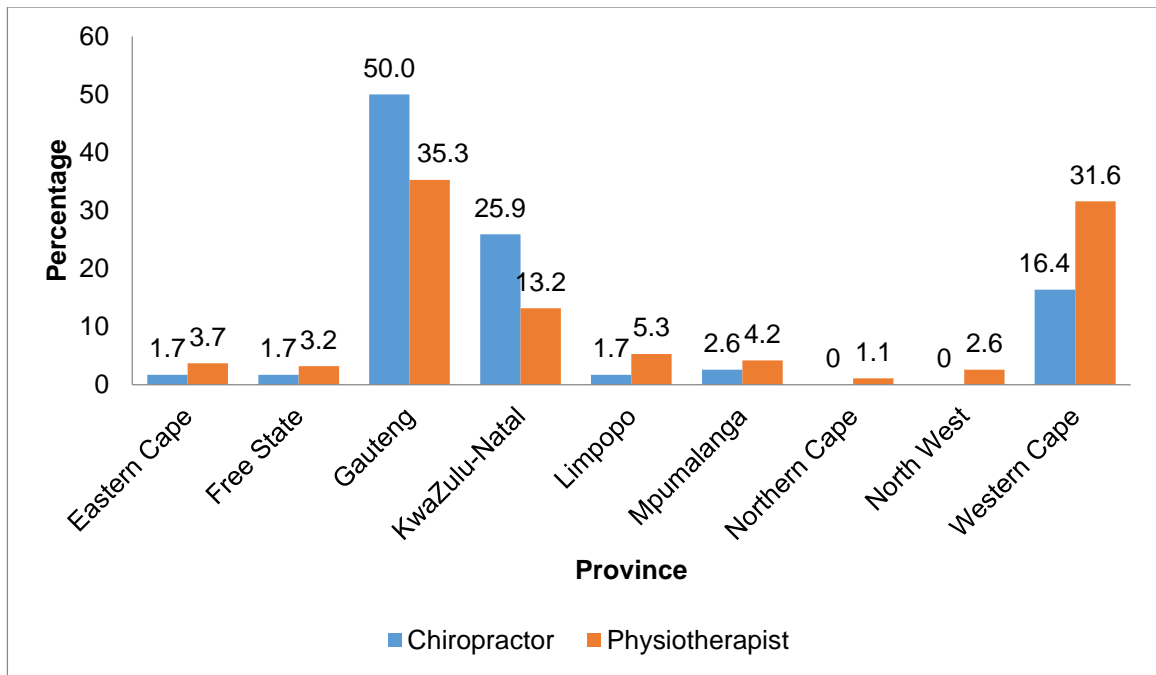


**Figure 4.1.7: Practice type**

According to Table 4.1.7 and Figure 4.1.7, 32.8% of chiropractors and 21.6% of physiotherapists specified practicing within a duo-practice, whereas 11.2% of chiropractors and 42.6% of physiotherapists specified practicing within a group-practice. It was found that 56.0% of chiropractors and 35.8% of physiotherapists practice on their own.

**Table 4.1.8: Province in which the practice is located**

Group		Frequency	Percentage
Chiropractor	Eastern Cape	2	1.7
	Free State	2	1.7
	Gauteng	58	50.0
	KwaZulu-Natal	30	25.9
	Limpopo	2	1.7
	Mpumalanga	3	2.6
	Northern Cape	0	0
	North West	0	0
	Western Cape	19	16.4
	Total	116	100.0
Physiotherapist	Eastern Cape	7	3.7
	Free State	6	3.2
	Gauteng	67	35.3
	KwaZulu-Natal	25	13.2
	Limpopo	10	5.3
	Mpumalanga	8	4.2
	Northern Cape	2	1.1
	North West	5	2.6
	Western Cape	60	31.6
	Total	190	100.0



**Figure 4.1.8: Province in which the practice is located**

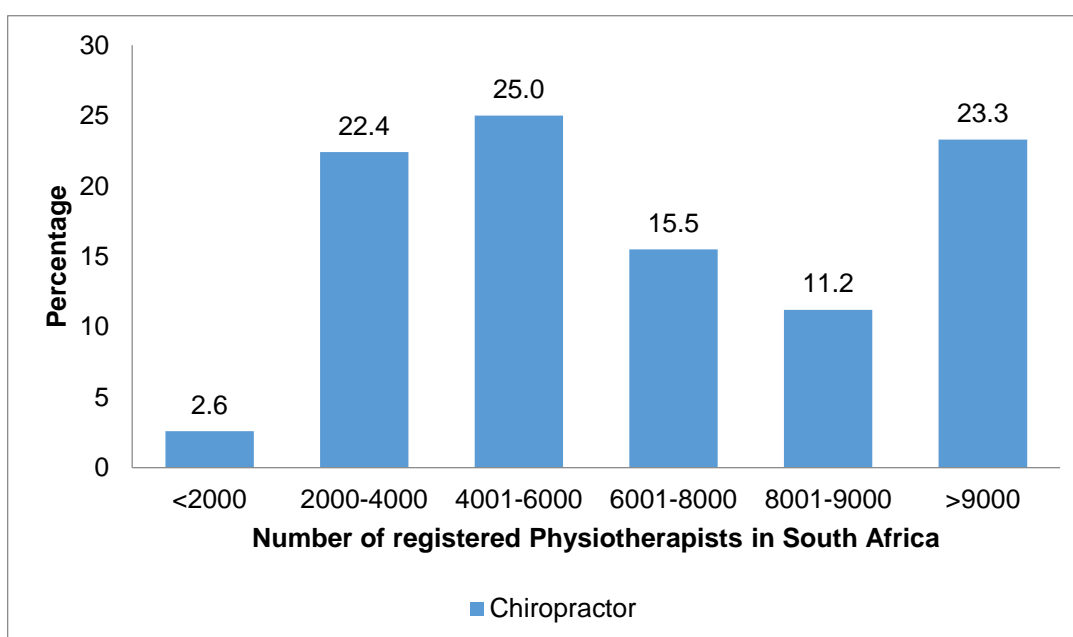
Table 4.1.8 and Figure 4.1.8 demonstrate that the majority (50.0%) of chiropractors reported that their practice was located in Gauteng, while 25.9% indicated that their practice was located in KwaZulu-Natal. Of the physiotherapists, the majority of the participants were located in Gauteng (35.3%) and the Western Cape (31.6%).

#### **4.5.2 Section Two: Knowledge**

The following tables and figures portray the knowledge of the participants about the other profession.

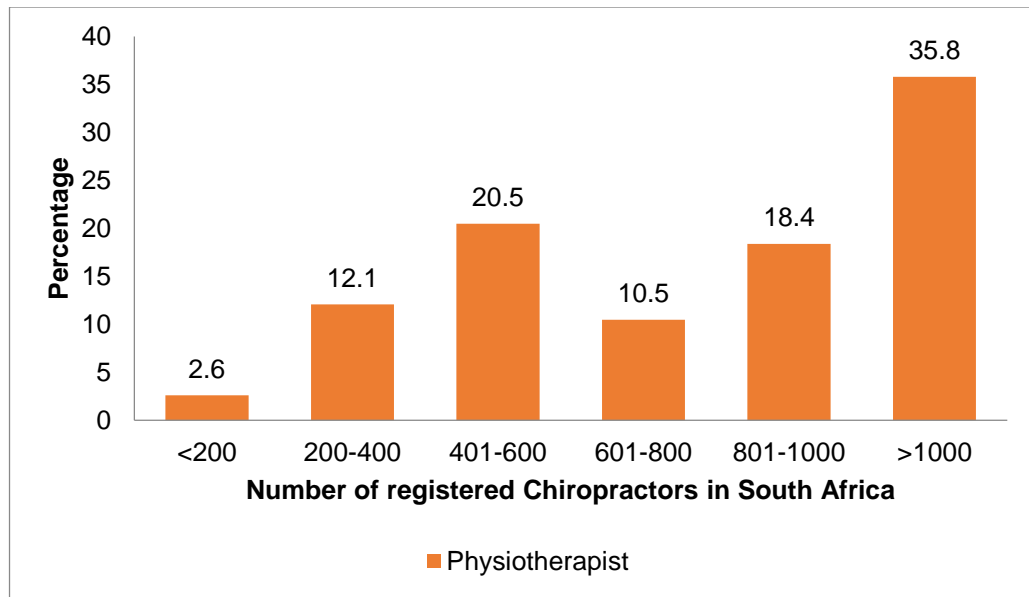
**Table 4.2.1: How many registered members of the other profession do you think there are in South Africa?**

Group		Frequency	Percentage
Chiropractor	<2000	3	2.6
	2000-4000	26	22.4
	4001-6000	29	25.0
	6001-8000	18	15.5
	8001-9000	13	11.2
	>9000	27	23.3
	Total	116	100.0
Physiotherapist	<200	5	2.6
	200-400	23	12.1
	401-600	39	20.5
	601-800	20	10.5
	801-1000	35	18.4
	>1000	68	35.8
	Total	190	100.0



**Figure 4.2.1.1: Number of registered physiotherapists in South Africa**

The results from the chi-square goodness-of-fit test show that a significant 25.0% of chiropractors believed that there were 4001-6000 registered physiotherapists, 23.3% of chiropractors believed that there were >9000 registered physiotherapists and 22.4% believed that there were 2000-4000 registered physiotherapists and in South Africa,  $\chi^2(5) = 26.138, p < .001$ .



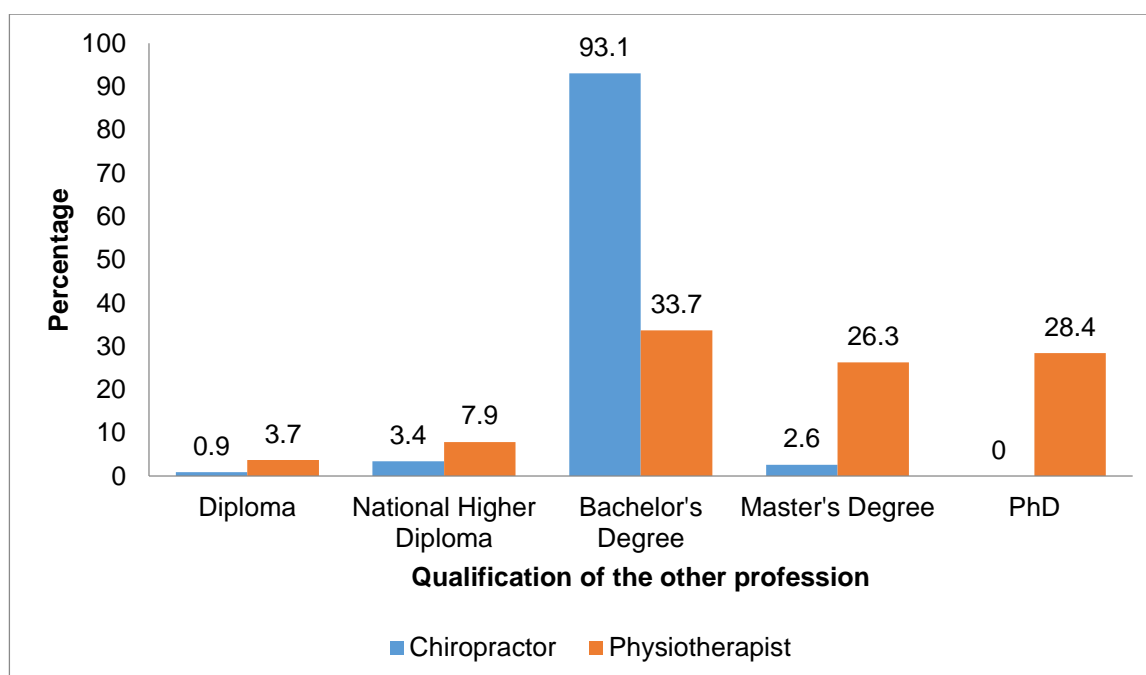
**Figure 4.2.1.2: Number of registered chiropractors in South Africa**

Results from a chi-square goodness-of-fit test show that a significant 35.8% of physiotherapists believed that there were >1000 registered chiropractors, 20.5 % of physiotherapists believed that there were 401-600 registered chiropractors and 18.4% of physiotherapists believed that there were 801-1000 registered chiropractors in South Africa,  $\chi^2 (5) = 72.863, p < .001$ .

Therefore, 11.2% of chiropractors and 18.4% of physiotherapists knew the answer regarding the number of physiotherapists and chiropractors registered in South Africa respectively. The results from an independent samples t-test indicate that there is no significant difference in the knowledge between these professions ( $p = .078$ ).

**Table 4.2.2: What qualification do you think the other profession obtains once qualified in South Africa?**

	Group	Frequency	Percentage
Chiropractor	Diploma	1	0.9
	National Higher Diploma	4	3.4
	Bachelor's Degree	108	93.1
	Master's Degree	3	2.6
	PhD	0	0
	Total	116	100.0
Physiotherapist	Diploma	7	3.7
	National Higher Diploma	15	7.9
	Bachelor's Degree	64	33.7
	Master's Degree	50	26.3
	PhD	54	28.4
	Total	190	100.0



**Figure 4.2.2: Qualification obtained by the other profession in South Africa**

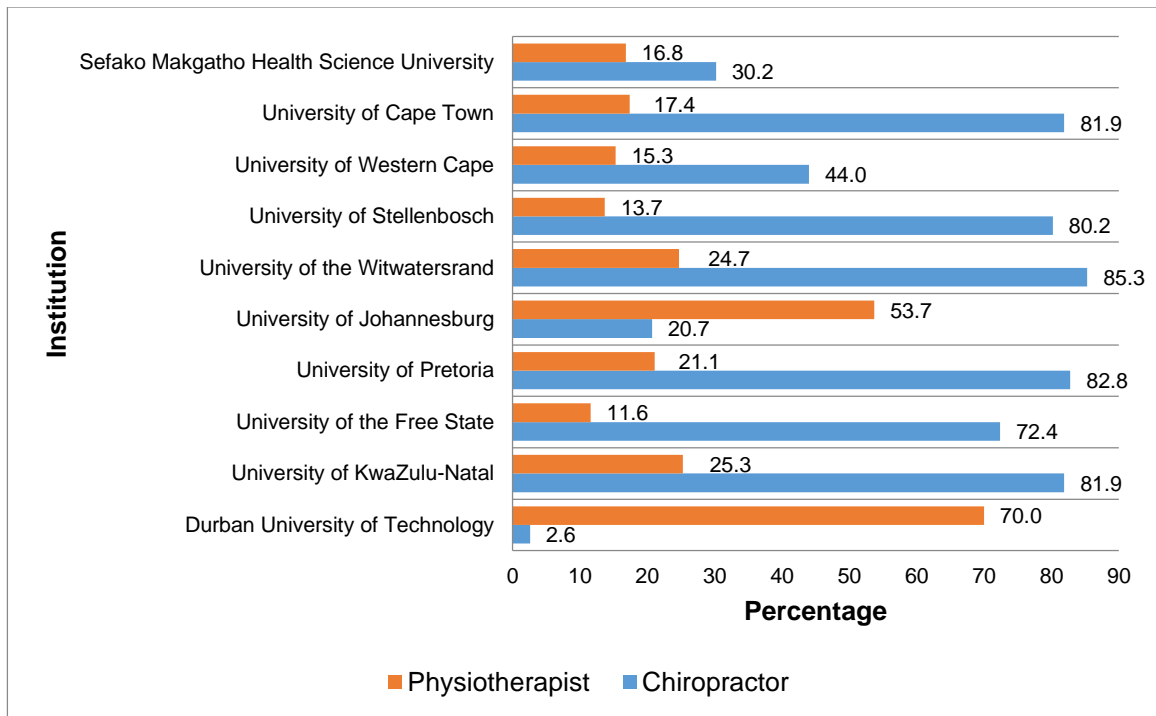
The results from the chi-square goodness-of-fit test show that a significant number (93.1%) of chiropractors think that qualified physiotherapists obtain a Bachelor's degree in South Africa,  $\chi^2 (3) = 287.103, p < .001$ . A significant number (60.0%) of physiotherapists think that qualified chiropractors obtain a Bachelor's degree or a Master's degree in South Africa,  $\chi^2 (4) = 67.526, p < .001$ .

The results from an independent samples t-test show that chiropractors scored significantly higher (mean = 93.1%) than physiotherapists (mean = 26.3%) on their knowledge of the degree obtained by the other profession in South Africa,  $t(303.138) = 16.779, p < .001$ .

**Table 4.2.3: At which institution(s) can the other profession be studied in South Africa?**

Institution	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Durban University of Technology	Yes	3 (2.6)	<.001*	133 (70.0)	<.001*
	No	113 (97.4)		57 (30.0)	
University of KwaZulu-Natal	Yes	95 (81.9)	<.001*	48 (25.3)	<.001*
	No	21 (18.1)		142 (74.7)	
University of the Free State	Yes	84 (72.4)	<.001*	22 (11.6)	<.001*
	No	32 (27.6)		168 (88.4)	
University of Pretoria	Yes	96 (82.8)	<.001*	40 (21.1)	<.001*
	No	20 (17.2)		150 (78.9)	
University of Johannesburg	Yes	24 (20.7)	<.001*	102 (53.7)	.346
	No	92 (79.3)		88 (46.3)	
University of the Witwatersrand	Yes	99 (85.3)	<.001*	47 (24.7)	<.001*
	No	17 (14.7)		143 (75.3)	
University of Stellenbosch	Yes	93 (80.2)	<.001*	26 (13.7)	<.001*
	No	23 (19.8)		164 (86.3)	
University of Western Cape	Yes	51 (44.0)	.227	29 (15.3)	<.001*
	No	65 (56.0)		161 (84.7)	
University of Cape Town	Yes	95 (81.9)	<.001*	33 (17.4)	<.001*
	No	21 (18.1)		157 (82.6)	
Sefako Makgatho Health Science University	Yes	35 (30.2)	<.001*	32 (16.8)	<.001*
	No	81 (69.8)		158 (83.2)	

\* indicates significant at the 95% level



**Figure 4.2.3: Institutions in South Africa that the other profession can be studied**

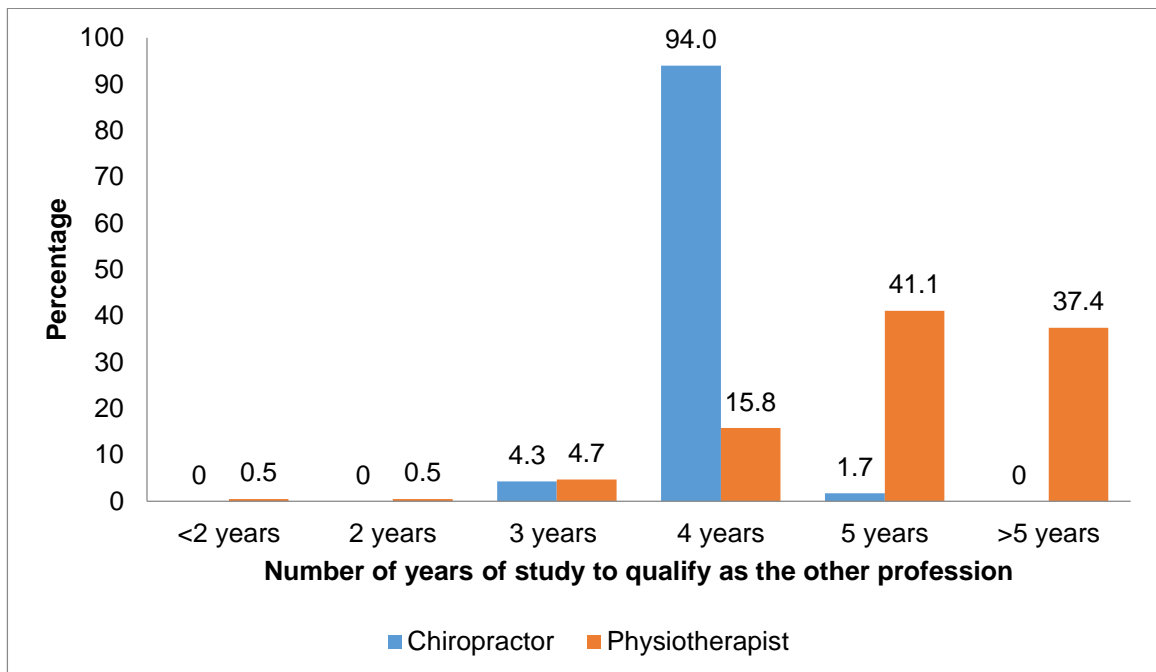
As demonstrated in Table 4.2.3 and Figure 4.2.3, results from a binomial test show that a significant 97.4%, 79.3% and 69.8% of chiropractors indicated that physiotherapy cannot be studied at the Durban University of Technology, University of Johannesburg and Sefako Makgatho Health Science University, respectively. A significant percentage of chiropractors believed that physiotherapy can be studied at the University of KwaZulu-Natal (81.9%), University of the Free State (72.4%), University of Pretoria (82.8%), University of the Witwatersrand (85.3%), University of Stellenbosch (80.2%) and University of Cape Town (81.9%).

The results from the binomial test demonstrate that a significant 70.0% of physiotherapists indicated that chiropractic can be studied at DUT. A significant percentage of physiotherapists believed that chiropractic cannot be studied at the University of KwaZulu-Natal (74.7%), University of the Free State (88.4%), University of Pretoria (78.9%), University of the Witwatersrand (75.3%), University of Stellenbosch (86.3%), University of Western Cape (84.7%), University of Cape Town (82.6%) and Sefako Makgatho Health Science University (83.2%).

Therefore, 73.5% of chiropractors and 77.8% of physiotherapists knew the answers regarding the institutions that physiotherapy and chiropractic can be studied in South Africa respectively. The results from an independent samples t-test indicate that there is no significant difference in the knowledge between these professions ( $p=.058$ ).

**Table 4.2.4: How many years of studying do you think is required to qualify as the other profession in South Africa?**

Group		Frequency	Percentage
Chiropractor	<2 years	0	0
	2 years	0	0
	3 years	5	4.3
	4 years	109	94.0
	5 years	2	1.7
	>5 years	0	0
	Total	116	100.0
Physiotherapist	<2 years	1	0.5
	2 years	1	0.5
	3 years	9	4.7
	4 years	30	15.8
	5 years	78	41.1
	>5 years	71	37.4
	Total	190	100.0



**Figure 4.2.4: Number of years of studying required to qualify as the other profession**

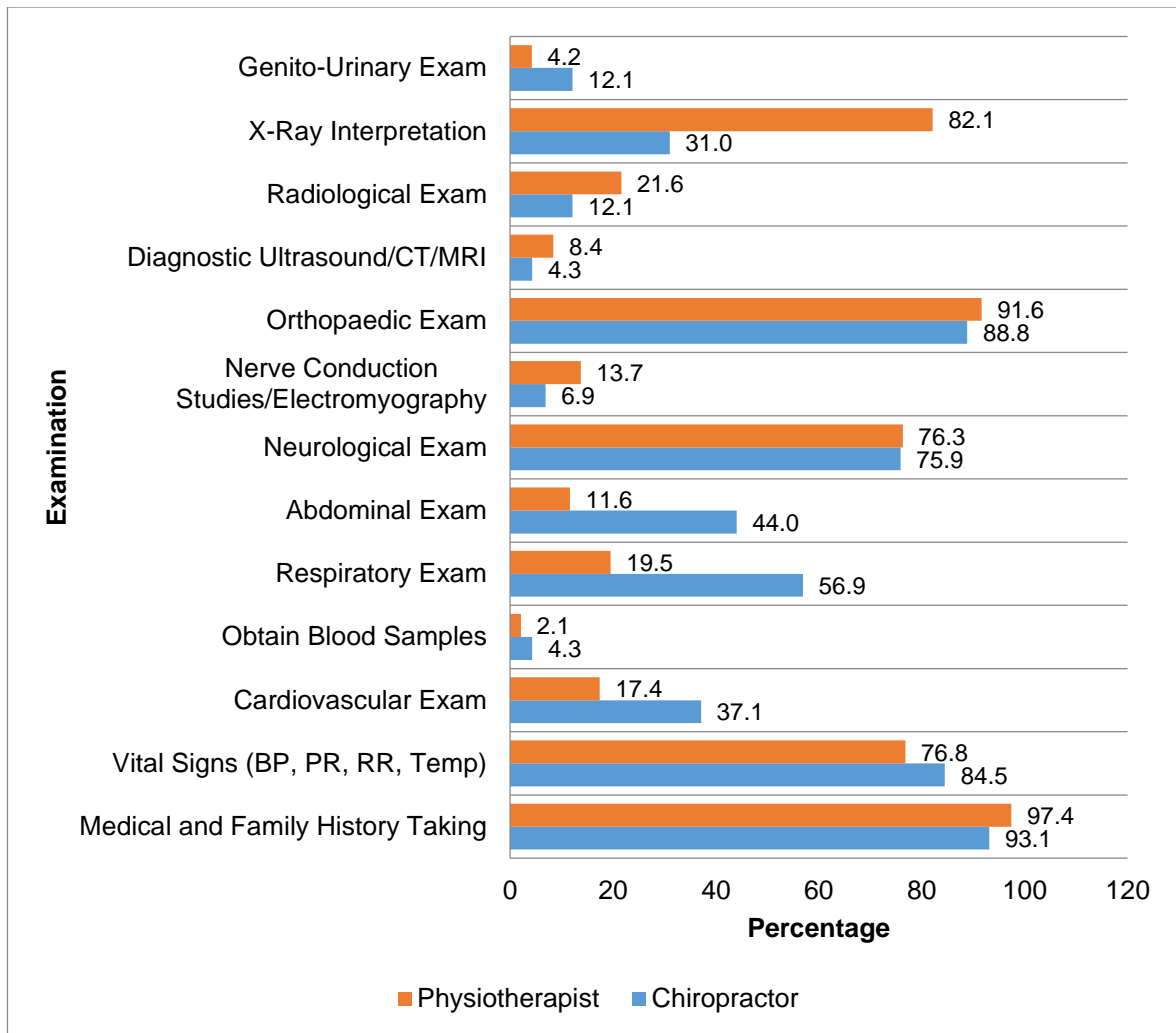
The results from a chi-square goodness-of-fit test demonstrate that a significant 94.0% of chiropractors indicated that physiotherapy was a 4-year course,  $\chi^2 (2) = 192.017$ ,  $p < .001$ . A significant 41.1% and 37.4% of physiotherapists indicated that chiropractic required 5 years or more to study respectively,  $\chi^2 (5) = 192.358$ ,  $p < .001$ .

The results from an independent samples t-test show that chiropractors scored an overall knowledge score of 94.0% which was significantly higher than the physiotherapists with an overall score of 37.4% on their knowledge of the number of years required to study the other profession in South Africa:  $t (293.103) = 13.602$ ,  $p < .001$ .

**Table 4.2.5: Indicate which of the following examinations you think the other profession may perform on a patient**

Examination	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Medical and Family History Taking	Yes	108 (93.1)	<.001*	185 (97.4)	<.001*
	No	8 (6.9)		5 (2.6)	
Vital Signs (BP, PR, RR, Temp)	Yes	98 (84.5)	<.001*	146 (76.8)	<.001*
	No	18 (15.5)		44 (23.2)	
Cardiovascular Exam	Yes	43 (37.1)	.007*	33 (17.4)	<.001*
	No	73 (62.9)		157 (82.6)	
Obtain Blood Samples	Yes	5 (4.3)	<.001*	4 (2.1)	<.001*
	No	111 (95.7)		186 (97.9)	
Respiratory Exam	Yes	66 (56.9)	.163	37 (19.5)	<.001*
	No	50 (43.1)		153 (80.5)	
Abdominal Exam	Yes	51 (44.0)	.227	22 (11.6)	<.001*
	No	65 (56.0)		168 (88.4)	
Neurological Exam	Yes	88 (75.9)	<.001*	145 (76.3)	<.001*
	No	28 (24.1)		45 (23.7)	
Nerve Conduction Studies/Electromyography	Yes	8 (6.9)	<.001*	26 (13.7)	<.001*
	No	108 (93.1)		164 (86.3)	
Orthopaedic Exam	Yes	103 (88.8)	<.001*	174 (91.6)	<.001*
	No	13 (11.2)		16 (8.4)	
Diagnostic Ultrasound/CT/MRI	Yes	5 (4.3)	<.001*	16 (8.4)	<.001*
	No	111 (95.7)		174 (91.6)	
Radiological Exam	Yes	14 (12.1)	<.001*	41 (21.6)	<.001*
	No	102 (87.9)		149 (78.4)	
X-Ray Interpretation	Yes	36 (31.0)	<.001*	156 (82.1)	<.001*
	No	80 (69.0)		34 (17.9)	
Genito-Urinary Exam	Yes	14 (12.1)	<.001*	8 (4.2)	<.001*
	No	102 (87.9)		182 (95.8)	

\* indicates significant at the 95% level



**Figure 4.2.5: Examinations that the other profession may perform**

As indicated in Table 4.2.5 and Figure 4.2.5, results from a binomial test show that a significant percentage of chiropractors indicated that physiotherapists may perform the following: Medical and Family History Taking (93.1%), Vital Signs (84.5%), Neurological Exam (75.9%) and Orthopaedic Exam (88.8%). Similarly, a significant percentage of Physiotherapists indicated that chiropractors may perform Medical and Family History Taking (97.4%), Vital Signs (76.8%), Neurological Exam (76.3%), Orthopaedic Exam (91.6%) and X-Ray Interpretation (82.1%).

A significant proportion of chiropractors believed that physiotherapists may not perform a Cardiovascular Exam (62.9%), Obtain Blood Samples (95.7%), Nerve Conduction Studies/Electromyography (93.1%), Diagnostic Ultrasound/CT/MRI (95.7%), Radiological Exam (87.9%), X-Ray Interpretation (69.0%) and Genito-Urinary Exam (87.9%).

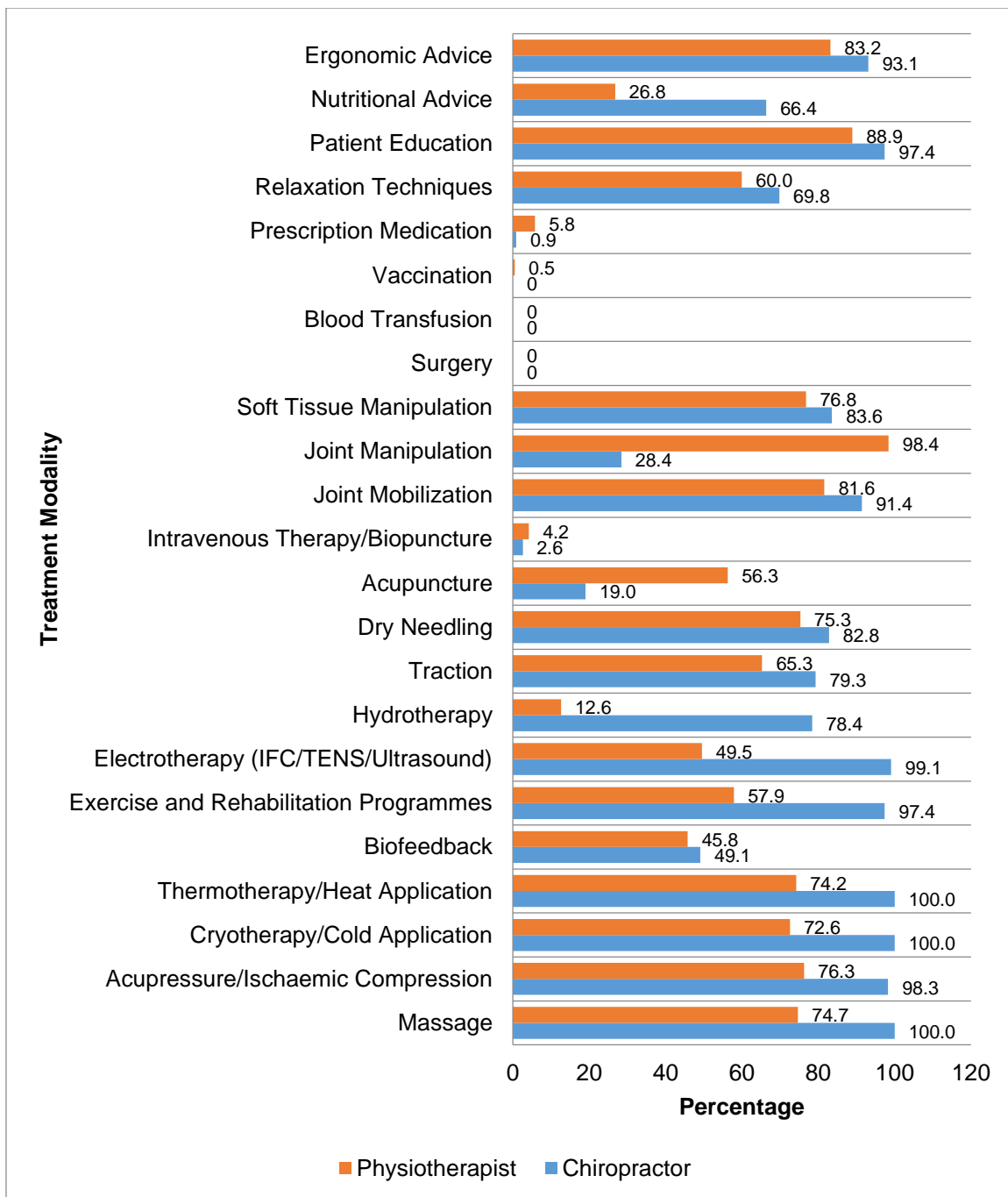
A significant percentage of physiotherapists believed that chiropractors may not perform a Cardiovascular Exam (82.6%), Obtain Blood samples (97.9%), Respiratory Exam (80.5%), Abdominal Exam (88.4%), Nerve Conduction Studies/Electromyography (86.3%), Diagnostic Ultrasound/CT/MRI (91.6%), Radiological Exam (78.4%) and Genito-Urinary Exam (95.8%).

Results from an independent samples t-test indicate that chiropractors scored significantly higher (mean = 75.7%) than physiotherapists (mean = 59.7%) on their knowledge of the examinations that the other profession may perform in South Africa,  $t(283.940) = 12.146, p < .001$ .

**Table 4.2.6: Indicate what treatment modalities you think the other profession may perform for the treatment and management of a patient**

Treatment Modality	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Massage	Yes	116 (100.0)	<.001*	142 (74.7)	<.001*
	No	0 (0)		48 (25.3)	
Acupressure/Ischaemic Compression	Yes	114 (98.3)	<.001*	145 (76.3)	<.001*
	No	2 (1.7)		45 (23.7)	
Cryotherapy/Cold Application	Yes	116 (100.0)	<.001*	138 (72.6)	<.001*
	No	0 (0)		52 (27.4)	
Thermotherapy/Heat Application	Yes	116 (100.0)	<.001*	141 (74.2)	<.001*
	No	0 (0)		49 (25.8)	
Biofeedback	Yes	57 (49.1)	.926	87 (45.8)	.276
	No	59 (50.9)		103 (54.2)	
Exercise and Rehabilitation Programmes	Yes	113 (97.4)	<.001*	110 (57.9)	.035*
	No	3 (2.6)		80 (42.1)	
Electrotherapy (IFC/TENS/Ultrasound)	Yes	115 (99.1)	<.001*	94 (49.5)	.942
	No	1 (0.9)		96 (50.5)	
Hydrotherapy	Yes	91 (78.4)	<.001*	24 (12.6)	<.001*
	No	25 (21.6)		166 (87.4)	
Traction	Yes	92 (79.3)	<.001*	124 (65.3)	<.001*
	No	24 (20.7)		66 (34.7)	
Dry Needling	Yes	96 (82.8)	<.001*	143 (75.3)	<.001*
	No	20 (17.2)		47 (24.7)	
Acupuncture	Yes	22 (19.0)	<.001*	107 (56.3)	.095
	No	94 (81.0)		83 (43.7)	
Intravenous Therapy/Biopuncture	Yes	3 (2.6)	<.001*	8 (4.2)	<.001*
	No	113 (97.4)		182 (95.8)	
Joint Mobilization	Yes	106 (91.4)	<.001*	155 (81.6)	<.001*
	No	10 (8.6)		35 (18.4)	
Joint Manipulation	Yes	33 (28.4)	<.001*	187 (98.4)	<.001*
	No	83 (71.6)		3 (1.6)	
Soft Tissue Manipulation	Yes	97 (83.6)	<.001*	146 (76.8)	<.001*
	No	19 (16.4)		44 (23.2)	
Surgery	Yes	0 (0)	<.001*	0 (0)	<.001*
	No	116 (100.0)		190 (100.0)	
Blood Transfusion	Yes	0 (0)	<.001*	0 (0)	<.001*
	No	116 (100.0)		190 (100.0)	
Vaccination	Yes	0 (0)	<.001*	1 (0.5)	<.001*
	No	116 (100.0)		189 (99.5)	
Prescription Medication	Yes	1 (0.9)	<.001*	11 (5.8)	<.001*
	No	115 (99.1)		179 (94.2)	
Relaxation Techniques	Yes	81 (69.8)	<.001*	114 (60.0)	.007*
	No	35 (30.2)		76 (40.0)	
Patient Education	Yes	113 (97.4)	<.001*	169 (88.9)	<.001*
	No	3 (2.6)		21 (11.1)	
Nutritional Advice	Yes	77 (66.4)	.001*	51 (26.8)	<.001*
	No	39 (33.6)		139 (73.2)	
Ergonomic Advice	Yes	108 (93.1)	<.001*	158 (83.2)	<.001*
	No	8 (6.9)		32 (16.8)	

\* indicates significant at the 95% level



**Figure 4.2.6: Treatment modalities that the other profession may perform**

As seen in Table 4.2.6 and Figure 4.2.6, the results from the binomial test show that a significant percentage of chiropractors indicated that physiotherapists may perform massage (100.0%), acupressure/ischaemic compression (98.3%), cryotherapy (100.0%), thermotherapy (100.0%), exercise and rehabilitation programmes (97.4%), electrotherapy (99.1%), hydrotherapy (78.4%), traction (79.3%), dry needling (82.8%), joint mobilization (91.4%), soft tissue manipulation (83.6%), relaxation techniques

(69.8%), patient education (97.4%), nutritional advice (66.4%) and ergonomic advice (93.1%) for the treatment and management of a patient.

Interestingly, a significant percentage of physiotherapists indicated that chiropractors may perform massage (74.7%), acupressure/ischaemic compression (76.3%), cryotherapy (72.6%), thermotherapy (74.2%), exercise and rehabilitation programmes (57.9%), traction (65.3%), dry needling (75.3%), joint mobilization (81.6%), joint manipulation (98.4%), soft tissue manipulation (76.8%), relaxation techniques (60.0%), patient education (88.9%) and ergonomic advice (83.2%).

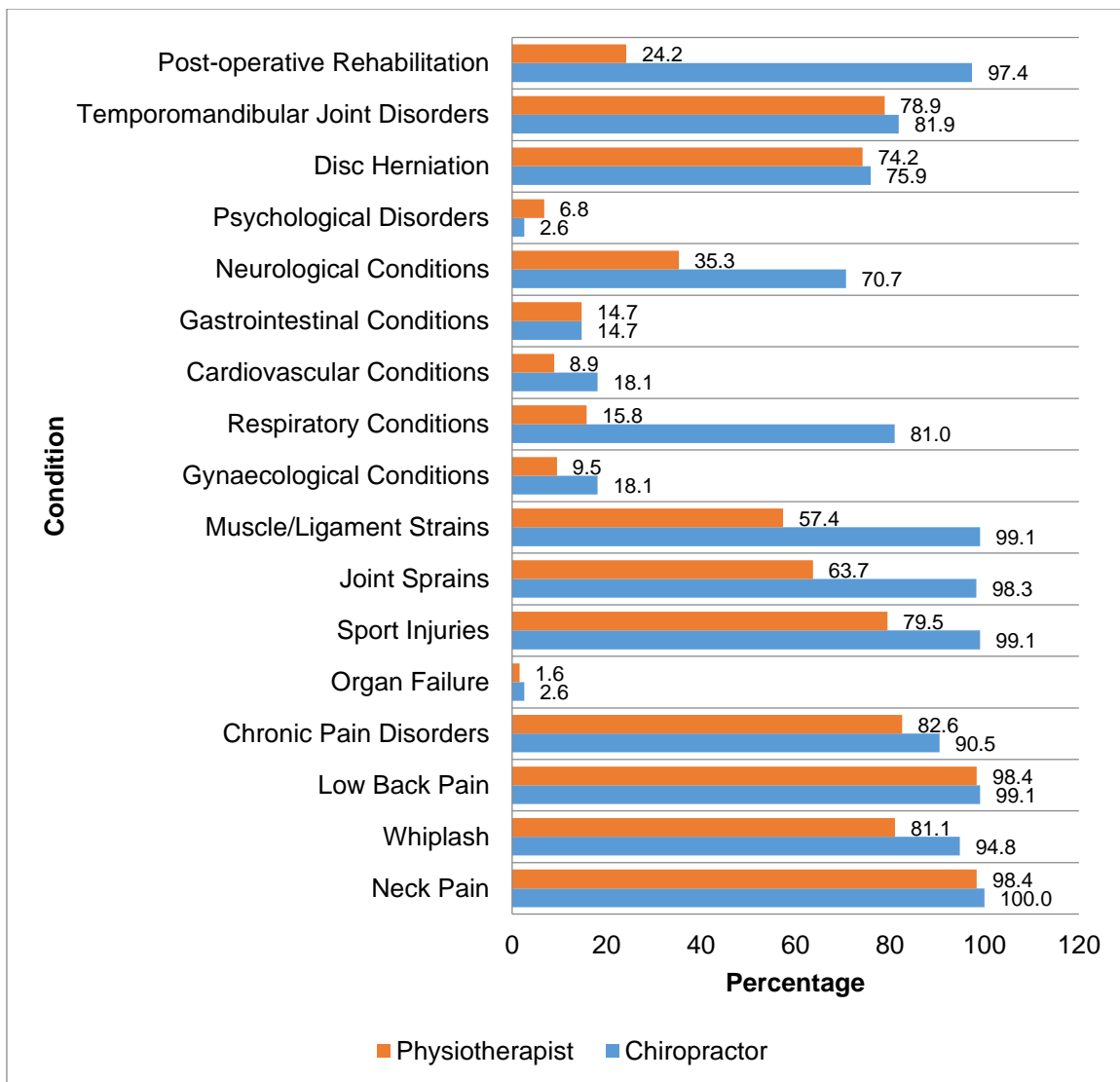
A significant proportion of chiropractors and physiotherapists believed that neither profession may perform or provide intravenous therapy/biopuncture, surgery, blood transfusion, vaccination, and prescription medication. Furthermore, 71.6% and 81.0% of chiropractors had indicated that joint manipulation and acupuncture respectively may not be performed by physiotherapists. Physiotherapists had also indicated that chiropractors may not perform hydrotherapy (87.4%) and provide nutritional advice (73.2%).

The results from an independent samples t-test showed that although physiotherapists scored an impressive overall knowledge score of 72.0%, chiropractors scored significantly higher with an overall score of 85.3% on their knowledge of the treatment modalities that the other profession may perform for the treatment and management of patients in South Africa:  $t(303.986) = 11.316, p < .001$ .

**Table 4.2.7: Indicate which of the following conditions the other profession may treat**

Condition	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Neck Pain	Yes	116 (100.0)	<.001*	187 (98.4)	<.001*
	No	0 (0)		3 (1.6)	
Whiplash	Yes	110 (94.8)	<.001*	154 (81.1)	<.001*
	No	6 (5.2)		36 (18.9)	
Low Back Pain	Yes	115 (99.1)	<.001*	187 (98.4)	<.001*
	No	1 (0.9)		3 (1.6)	
Chronic Pain Disorders	Yes	105 (90.5)	<.001*	157 (82.6)	<.001*
	No	11 (9.5)		33 (17.4)	
Organ Failure	Yes	3 (2.6)	<.001*	3 (1.6)	<.001*
	No	113 (97.4)		187 (98.4)	
Sport Injuries	Yes	115 (99.1)	<.001*	151 (79.5)	<.001*
	No	1 (0.9)		39 (20.5)	
Joint Sprains	Yes	114 (98.3)	<.001*	121 (63.7)	<.001*
	No	2 (1.7)		69 (36.3)	
Muscle/Ligament Strains	Yes	115 (99.1)	<.001*	109 (57.4)	.050*
	No	1 (0.9)		81 (42.6)	
Gynaecological Conditions	Yes	21 (18.1)	<.001*	18 (9.5)	<.001*
	No	95 (81.9)		172 (90.5)	
Respiratory Conditions	Yes	94 (81.0)	<.001*	30 (15.8)	<.001*
	No	22 (19.0)		160 (84.2)	
Cardiovascular Conditions	Yes	21 (18.1)	<.001*	17 (8.9)	<.001*
	No	95 (81.9)		173 (91.1)	
Gastrointestinal Conditions	Yes	17 (14.7)	<.001*	28 (14.7)	<.001*
	No	99 (85.3)		162 (85.3)	
Neurological Conditions	Yes	82 (70.7)	<.001*	67 (35.3)	<.001*
	No	34 (29.3)		123 (64.7)	
Psychological Disorders	Yes	3 (2.6)	<.001*	13 (6.8)	<.001*
	No	113 (97.4)		177 (93.2)	
Disc Herniation	Yes	88 (75.9)	<.001*	141 (74.2)	<.001*
	No	28 (24.1)		49 (25.8)	
Temporomandibular Joint Disorders	Yes	95 (81.9)	<.001*	150 (78.9)	<.001*
	No	21 (18.1)		40 (21.1)	
Post-operative Rehabilitation	Yes	113 (97.4)	<.001*	46 (24.2)	<.001*
	No	3 (2.6)		144 (75.8)	

\* indicates significant at the 95% level



**Figure 4.2.7: Conditions the other profession may treat**

The results from the binomial test showed significantly that both chiropractors and physiotherapists indicated that the other profession may treat neck pain, whiplash, low back pain, chronic pain syndromes, sport injuries, joint sprains, muscle/ligament strains, disc herniation, and temporomandibular joint disorders. Both professions also shared a joint belief that organ failure, gynaecological conditions, cardiovascular conditions, gastrointestinal conditions and psychological disorders may not be treated by the other profession. A significant proportion of chiropractors agreed that physiotherapists may treat respiratory conditions, neurological conditions and provide post-operative rehabilitation whereas the majority of physiotherapists disagreed that chiropractors may treat the aforementioned conditions.

The results from an independent samples t-test showed that although physiotherapists scored an impressive overall knowledge score of 77.3%, chiropractors scored significantly higher with an overall score of 82.4% on their knowledge of the conditions that the other profession may treat in South Africa:  $t(303.258) = 3.789, p < .001$ .

### 4.5.3 Section Three: Attitudes

The following tables and figures portray the participants' attitudes toward the other profession.

**Table 4.3.1: Chiropractors' attitudes toward physiotherapy**

Statement	Chiropractor Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
Physiotherapists are competent in musculoskeletal and neurological examination	3 (2.6)	4 (3.4)	22 (19.0)	63 (54.3)	24 (20.7)	116	3.87 (0.870)	10.778	115	<.001*
Physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions	0 (0)	4 (3.4)	16 (13.8)	71 (61.2)	25 (21.6)	116	4.01 (0.704)	15.431	115	<.001*
Physiotherapists can perform the same treatment (i.e. manipulation, soft tissue therapy etc...) as chiropractors without additional training	78 (67.2)	30 (25.9)	2 (1.7)	6 (5.2)	0 (0)	116	1.45 (0.773)	-21.625	115	<.001*
Chiropractic and physiotherapy are similar professions	15 (12.9)	35 (30.2)	25 (21.6)	39 (33.6)	2 (1.7)	116	2.81 (1.095)	-1.866	115	.065
Chiropractic and physiotherapy are complimentary professions	0 (0)	3 (2.6)	14 (12.1)	72 (62.1)	27 (23.3)	116	4.06 (0.676)	16.890	115	<.001*
Physiotherapy is effective for some patients	0 (0)	2 (1.7)	5 (4.3)	78 (67.2)	31 (26.7)	116	4.19 (0.588)	21.772	115	<.001*
Physiotherapy causes more harm than good	50 (43.1)	55 (47.4)	10 (8.6)	1 (0.9)	0 (0)	116	1.67 (0.670)	-21.356	115	<.001*
Physiotherapy treatments have been shown to be superior to chiropractic	45 (38.8)	53 (45.7)	16 (13.8)	0 (0)	2 (1.7)	116	1.80 (0.805)	-16.041	115	<.001*
Chiropractic treatments have been shown to be superior to physiotherapy	13 (11.2)	35 (30.2)	30 (25.9)	28 (24.1)	10 (8.6)	116	2.89 (1.155)	-1.045	115	.298
You would like to work closely with the physiotherapy profession	0 (0)	5 (4.3)	31 (26.7)	42 (36.2)	38 (32.8)	116	3.97 (0.879)	11.931	115	<.001*
You already work closely with a physiotherapist	11 (9.5)	19 (16.4)	23 (19.8)	43 (37.1)	20 (17.2)	116	3.36 (1.219)	3.200	115	.002*

\* indicates significant at the 95% level

The results from a one-sample t-test indicated that there is significant agreement amongst chiropractors that: physiotherapists are competent in musculoskeletal and neurological examination; physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions; chiropractic and physiotherapy are complimentary professions; physiotherapy is effective for some patients; some chiropractors would like to work closely with the physiotherapy profession, and some chiropractors already work closely with a physiotherapist.

There is significant disagreement amongst chiropractors that: physiotherapists can perform the same treatment (i.e. manipulation, soft tissue therapy etc...) as chiropractors without additional training; physiotherapy causes more harm than good, and physiotherapy treatment has been shown to be superior to chiropractic.

**Table 4.3.2: Physiotherapists' attitudes toward chiropractic**

Statement	Physiotherapist Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
Chiropractors are competent in musculoskeletal and neurological examination	2 (1.1)	12 (6.3)	39 (20.5)	87 (45.8)	50 (26.3)	190	3.90 (0.900)	13.784	189	<.001*
Chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions	3 (1.6)	14 (7.4)	40 (21.1)	88 (46.3)	45 (23.7)	190	3.83 (0.928)	12.358	189	<.001*
Chiropractors can perform the same treatment (i. e. manipulation, soft tissue therapy etc...) as physiotherapists without additional training	29 (15.3)	60 (31.6)	35 (18.4)	48 (25.3)	18 (9.5)	190	2.82 (1.239)	-1.992	189	.048*
Chiropractic and Physiotherapy are similar professions	33 (17.4)	57 (30.0)	41 (21.6)	54 (28.4)	5 (2.6)	190	2.69 (1.138)	-3.762	189	<.001*
Chiropractic and physiotherapy are complimentary professions	9 (4.7)	13 (6.8)	31 (16.3)	101 (53.2)	36 (18.9)	190	3.75 (0.997)	10.333	189	<.001*
Chiropractic is effective for some patients	1 (0.5)	2 (1.1)	14 (7.4)	130 (68.4)	43 (22.6)	190	4.12 (0.615)	25.014	189	<.001*
Chiropractic causes more harm than good	20 (10.5)	99 (52.1)	59 (31.1)	10 (5.3)	2 (1.1)	190	2.34 (0.779)	-11.638	189	<.001*
Chiropractic treatments have been shown to be superior to physiotherapy	11 (5.8)	58 (30.5)	75 (39.5)	34 (17.9)	12 (6.3)	190	2.88 (0.980)	-1.629	189	.105
Physiotherapy treatments have been shown to be superior to chiropractic	27 (14.2)	92 (48.4)	67 (35.3)	2 (1.1)	2 (1.1)	190	2.26 (0.752)	-13.509	189	<.001*
You would like to work closely with the chiropractic profession	8 (4.2)	22 (11.6)	55 (28.9)	81 (42.6)	24 (12.6)	190	3.48 (0.996)	6.630	189	<.001*
You already work closely with a chiropractor	35 (18.4)	68 (35.8)	37 (19.5)	35 (18.4)	15 (7.9)	190	2.62 (1.206)	-4.391	189	<.001*

\* indicates significant at the 95% level

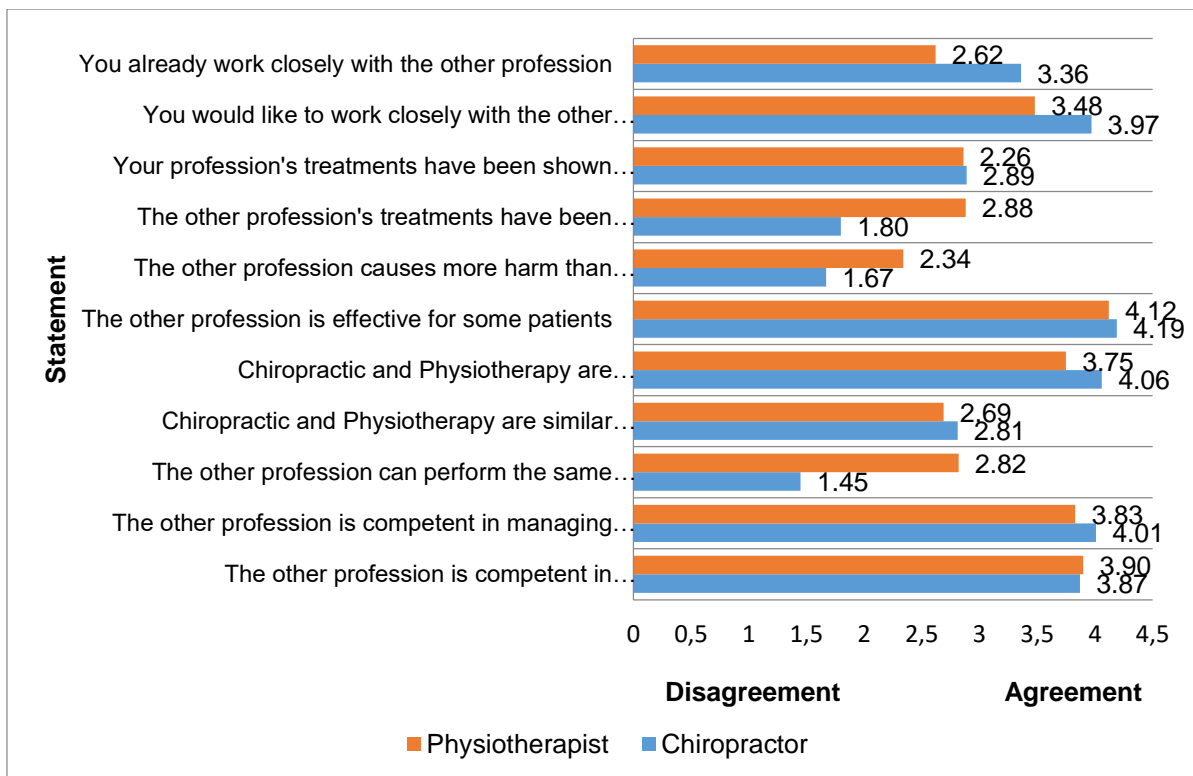
The results from a one sample t-test show that there is significant agreement amongst physiotherapists that: chiropractors are competent in musculoskeletal and neurological examination; chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions; chiropractic and physiotherapy are complimentary professions; chiropractic is effective for some patients, and some physiotherapists would like to work closely with the chiropractic profession.

There is significant disagreement amongst physiotherapists that: chiropractors can perform the same treatment (i.e. manipulation, soft tissue therapy etc...) as physiotherapists without additional training; chiropractic and physiotherapy are similar professions; chiropractic causes more harm than good; physiotherapy treatments have been shown to be superior to chiropractic, and some physiotherapists already work closely with a chiropractor.

**Table 4.3.3: Comparative analysis - Independent samples t-test**

Statement	Chiropractor	Physiotherapist	Independent samples t-test		
	Mean (SD)	Mean (SD)	t	df	p-value
The other profession is competent in musculoskeletal and neurological examination	3.87 (0.870)	3.90 (0.900)	-0.280	304	.780
The other profession is competent in managing and treating patients with neuromusculoskeletal conditions	4.01 (0.704)	3.83 (0.928)	1.887	289.847	.060
The other profession can perform the same treatment (i.e. manipulation, soft tissue therapy etc...) as your profession without additional training	1.45 (0.773)	2.82 (1.239)	-11.938	303.840	<.001*
Chiropractic and physiotherapy are similar professions	2.81 (1.095)	2.69 (1.138)	0.915	304	.361
Chiropractic and physiotherapy are complimentary professions	4.06 (0.676)	3.75 (0.997)	3.268	300.627	.001*
The other profession is effective for some patients	4.19 (0.588)	4.12 (0.615)	1.036	304	.301
The other profession causes more harm than good	1.67 (0.670)	2.34 (0.779)	-7.684	304	<.001*
The other profession's treatments have been shown to be superior to your profession	1.80 (0.805)	2.88 (0.980)	-10.498	278.578	<.001*
Your profession's treatments have been shown to be superior to the other profession	2.89 (1.155)	2.26 (0.752)	5.191	175.022	<.001*
You would like to work closely with the other profession	3.97 (0.879)	3.48 (0.996)	4.542	266.261	<.001*
You already work closely with the other profession	3.36 (1.219)	2.62 (1.206)	5.230	304	<.001*

\* indicates significant at the 95% level



**Figure 4.3.1: Mean score of each profession relating to attitudes toward the other profession**

When compared, the results showed that chiropractors disagree significantly more than physiotherapists that the other profession can perform the same treatment (i.e. manipulation, soft tissue therapy etc...) as their profession without additional training.

Chiropractors agree significantly more than physiotherapists that chiropractic and physiotherapy are complimentary professions.

Chiropractors disagree significantly more than physiotherapists that the other profession causes more harm than good.

Chiropractors disagree significantly more than physiotherapists that the other profession's treatments have been shown to be superior to theirs.

Chiropractors disagree significantly more than physiotherapists that their profession's treatments have been shown to be superior to the other profession.

Chiropractors agree significantly more than physiotherapists that they would like to work closely with the other profession.

There is a significant difference in the level of agreement regarding how closely these two professions work with each other. While there is significant agreement from chiropractors that they work closely with physiotherapists, the physiotherapists do not agree.

#### 4.5.4 Section Four: Perceptions

The following tables and figures portray the participants' perceptions of the other profession.

**Table 4.4.1: Indicate your responses to the following statements regarding your perceptions on the physiotherapy profession**

Statement: The physiotherapy profession...	Chiropractor Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
...is a primary health care service	11 (9.5)	40 (34.5)	17 (14.7)	32 (27.6)	16 (13.8)	116	3.02 (1.251)	0.148	115	.882
...is a secondary health care service	10 (8.6)	17 (14.7)	10 (8.6)	70 (60.3)	9 (7.8)	116	3.44 (1.106)	4.283	115	<.001*
...is an alternative health care service	19 (16.4)	53 (45.7)	20 (17.2)	24 (20.7)	0 (0)	116	2.42 (0.997)	-6.240	115	<.001*
...is accessible to all members of the public	1 (0.9)	14 (12.1)	6 (5.2)	67 (57.8)	28 (24.1)	116	3.92 (0.925)	10.745	115	<.001*
...is affordable	5 (4.3)	30 (25.9)	49 (42.2)	31 (26.7)	1 (0.9)	116	2.94 (0.858)	-0.758	115	.450
...is needed in South Africa	0 (0)	0 (0)	7 (6.0)	78 (67.2)	31 (26.7)	116	4.21 (0.536)	24.253	115	<.001*
...is included in Medical Aid cover	0 (0)	1 (0.9)	1 (0.9)	72 (62.1)	42 (36.2)	116	4.34 (0.543)	26.511	115	<.001*
...is based on scientific evidence	0 (0)	1 (0.9)	8 (6.9)	78 (67.2)	29 (25.0)	116	4.16 (0.574)	21.838	115	<.001*
...plays an important role in the health care system	0 (0)	0 (0)	3 (2.6)	75 (64.7)	38 (32.8)	116	4.30 (0.514)	27.251	115	<.001*
...is registered with the Health Professions Council of South Africa	1 (0.9)	2 (1.7)	2 (1.7)	40 (34.5)	71 (61.2)	116	4.53 (0.703)	23.503	115	<.001*
...is registered with the Allied Health Professions Council of South Africa	84 (72.4)	26 (22.4)	3 (2.6)	3 (2.6)	0 (0)	116	1.35 (0.663)	-26.759	115	<.001*

\* indicates significant at the 95% level

The results from a one sample t-test demonstrated that there is significant agreement amongst chiropractors that the physiotherapy profession: is a secondary health care service; is accessible to all members of the public; is needed in South Africa; is included in medical aid cover; is based on scientific evidence, plays an important role in the health care system and is registered with the Health Professions Council of South Africa.

There is significant disagreement amongst chiropractors that the physiotherapy profession: is an alternative health care service and is registered with the Allied Health Professions Council of South Africa.

**Table 4.4.2: Indicate your responses to the following statements regarding your perceptions on the chiropractic profession**

Statement: The chiropractic profession...	Physiotherapist Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
...is a primary health care service	18 (9.5)	61 (32.1)	28 (14.7)	65 (34.2)	18 (9.5)	190	3.02 (1.195)	0.243	189	.808
...is a secondary health care service	12 (6.3)	47 (24.7)	46 (24.2)	79 (41.6)	6 (3.2)	190	3.11 (1.018)	1.425	189	.156
...is an alternative health care service	5 (2.6)	26 (13.7)	21 (11.1)	116 (61.1)	22 (11.6)	190	3.65 (0.946)	9.511	189	<.001*
...is accessible to all members of the public	28 (14.7)	48 (25.3)	16 (8.4)	82 (43.2)	16 (8.4)	190	3.05 (1.271)	0.571	189	.569
...is affordable	23 (12.1)	50 (26.3)	77 (40.5)	37 (19.5)	3 (1.6)	190	2.72 (0.966)	-3.982	189	<.001*
...is needed in South Africa	5 (2.6)	11 (5.8)	59 (31.1)	98 (51.6)	17 (8.9)	190	3.58 (0.836)	9.630	189	<.001*
...is included in Medical Aid cover	2 (1.1)	26 (13.7)	50 (26.3)	99 (52.1)	13 (6.8)	190	3.50 (0.853)	8.080	189	<.001*
...is based on scientific evidence	6 (3.2)	16 (8.4)	70 (36.8)	80 (42.1)	18 (9.5)	190	3.46 (0.895)	7.137	189	<.001*
...plays an important role in the health care system	5 (2.6)	19 (10.0)	56 (29.5)	92 (48.4)	18 (9.5)	190	3.52 (0.895)	8.024	189	<.001*
...is registered with the Health Professions Council of South Africa	48 (25.3)	63 (33.2)	22 (11.6)	44 (23.2)	13 (6.8)	190	2.53 (1.279)	-5.047	189	<.001*

...is registered with the Allied Health Professions Council of South Africa	5 (2.6)	14 (7.4)	24 (12.6)	95 (50.0)	52 (27.4)	190	3.92 (0.964)	13.163	189	<.001*
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\* indicates significant at the 95% level

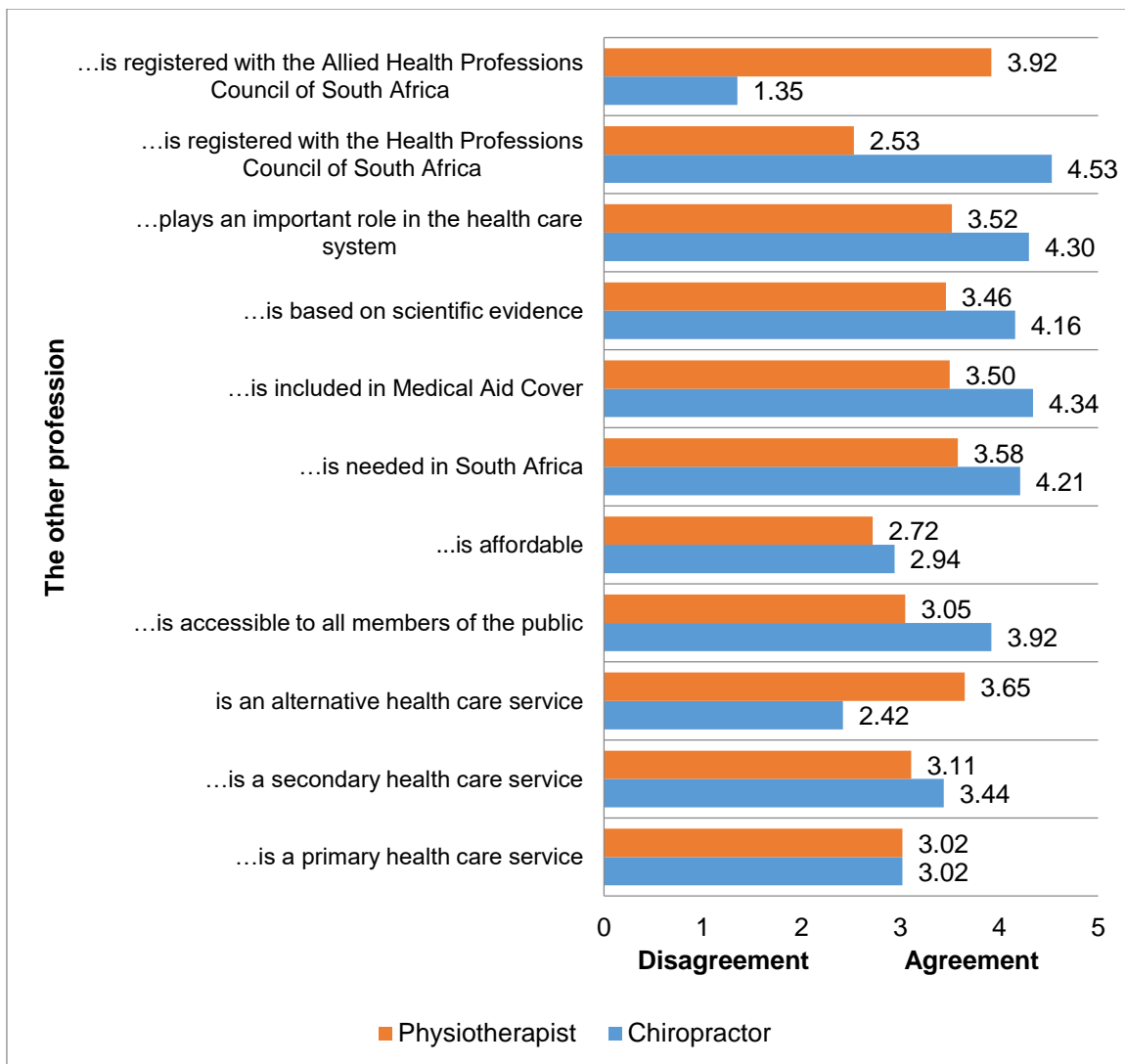
The results from a one sample t-test showed that there is significant agreement amongst physiotherapists that the chiropractic profession: is an alternative health care service; is needed in South Africa; is included in medical aid cover; is based on scientific evidence; plays an important role in the health care system, and is registered with the Allied Health Professions Council of South Africa.

There is significant disagreement amongst physiotherapists that the chiropractic profession: is affordable and is registered with the Health Professions Council of South Africa.

**Table 4.4.3: Comparative analysis - Independent samples t-test**

Statement: The other profession...	Chiropractor	Physiotherapist	Independent samples t-test		
	Mean (SD)	Mean (SD)	t	df	p-value
...is a primary health care service	3.02 (1.251)	3.02 (1.195)	-0.027	304	.979
...is a secondary health care service	3.44 (1.106)	3.11 (1.018)	2.698	304	.007*
...is an alternative health care service	2.42 (0.997)	3.65 (0.946)	-10.814	304	<.001*
...is accessible to all members of the public	3.92 (0.925)	3.05 (1.271)	6.903	294.757	<.001*
...is affordable	2.94 (0.858)	2.72 (0.966)	2.061	265.230	.040*
...is needed in South Africa	4.21 (0.536)	3.58 (0.836)	7.936	303.261	<.001*
...is included in medical aid cover	4.34 (0.543)	3.50 (0.853)	10.478	303.455	<.001*
...is based on scientific evidence	4.16 (0.574)	3.46 (0.895)	8.343	303.228	<.001*
...plays an important role in the health care system	4.30 (0.514)	3.52 (0.895)	9.684	303.050	<.001*
...is registered with the Health Professions Council of South Africa	4.53 (0.703)	2.53 (1.279)	17.651	301.142	<.001*
...is registered with the Allied Health Professions Council of South Africa	1.35 (0.663)	3.92 (0.964)	-27.556	299.742	<.001*

\* indicates significant at the 95% level



**Figure 4.4.1: Mean score of each profession relating to perceptions of the other profession**

Chiropractors agree significantly more than physiotherapists that the other profession is a secondary health care service.

There is a significant difference in the level of agreement regarding whether the other profession is an alternative health care service. While there is significant agreement from physiotherapists that chiropractic is an alternative health care service, the chiropractors do not agree that physiotherapy is an alternative health care service.

Chiropractors agree significantly more than physiotherapists that the other profession is accessible to all members of the public.

Chiropractors disagree significantly more than physiotherapists that the other profession is affordable.

Chiropractors agree significantly more than physiotherapists that the other profession is needed in South Africa.

Chiropractors agree significantly more than physiotherapists that the other profession is included in medical aid cover.

Chiropractors agree significantly more than physiotherapists that the other profession is based on scientific evidence.

Chiropractors agree significantly more than physiotherapists that the other profession plays an important role in the health care system.

There is a significant difference in the level of agreement regarding whether the other profession is registered with the Health Professions Council of South Africa. While there is significant agreement from chiropractors that the physiotherapy profession is registered with the Health Professions Council of South Africa, the physiotherapists do not agree that the chiropractic profession is registered with the Health Professions Council of South Africa.

There is a significant difference in the level of agreement regarding whether the other profession is registered with the Allied Health Professions Council of South Africa. While there is significant agreement from physiotherapists that the chiropractic profession is registered with the Allied Health Professions Council of South Africa, the chiropractors do not agree that the physiotherapy profession is registered with the Allied Health Professions Council of South Africa.

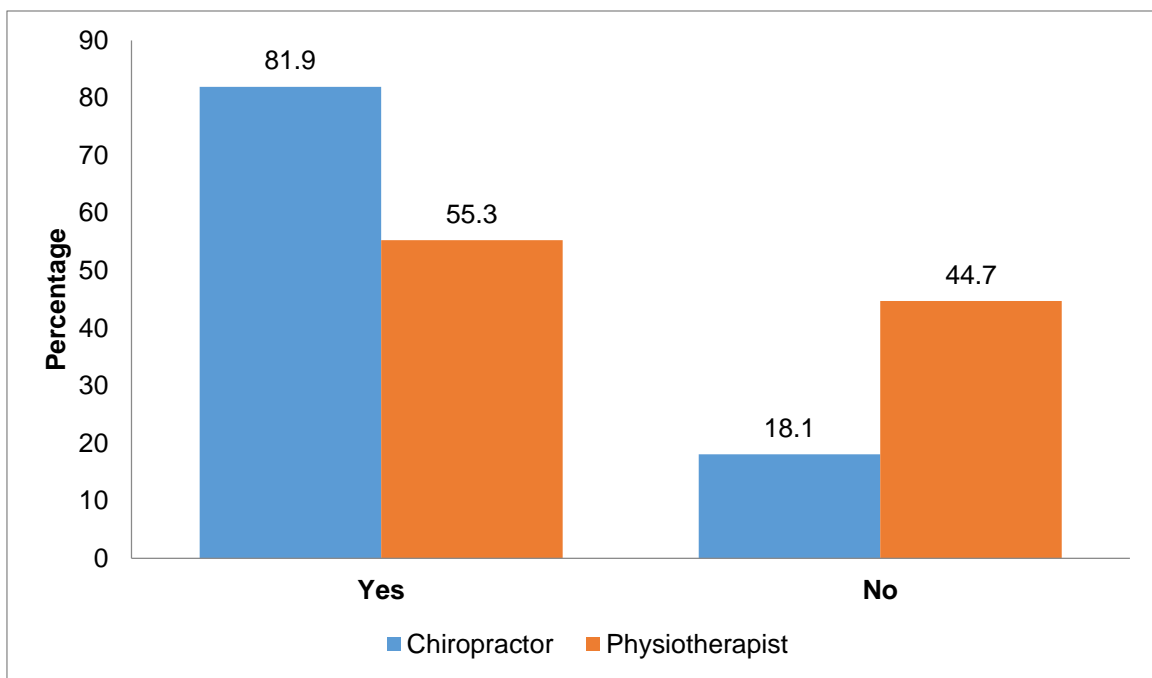
#### **4.5.5 Section Five: Inter-Professional Relationships**

The following tables and figures portray the inter-professional relationship between chiropractors and physiotherapists.

**Table 4.5.1: Do you ever refer patients to the other profession?**

Group		Frequency	Percentage	<i>p</i> -value
Chiropractor	Yes	95	81.9	<.001*
	No	21	18.1	
	Total	116	100.0	
Physiotherapist	Yes	105	55.3	.168
	No	85	44.7	
	Total	190	100.0	

\* indicates significant at the 95% level



**Figure 4.5.1: Referral of patients to the other profession**

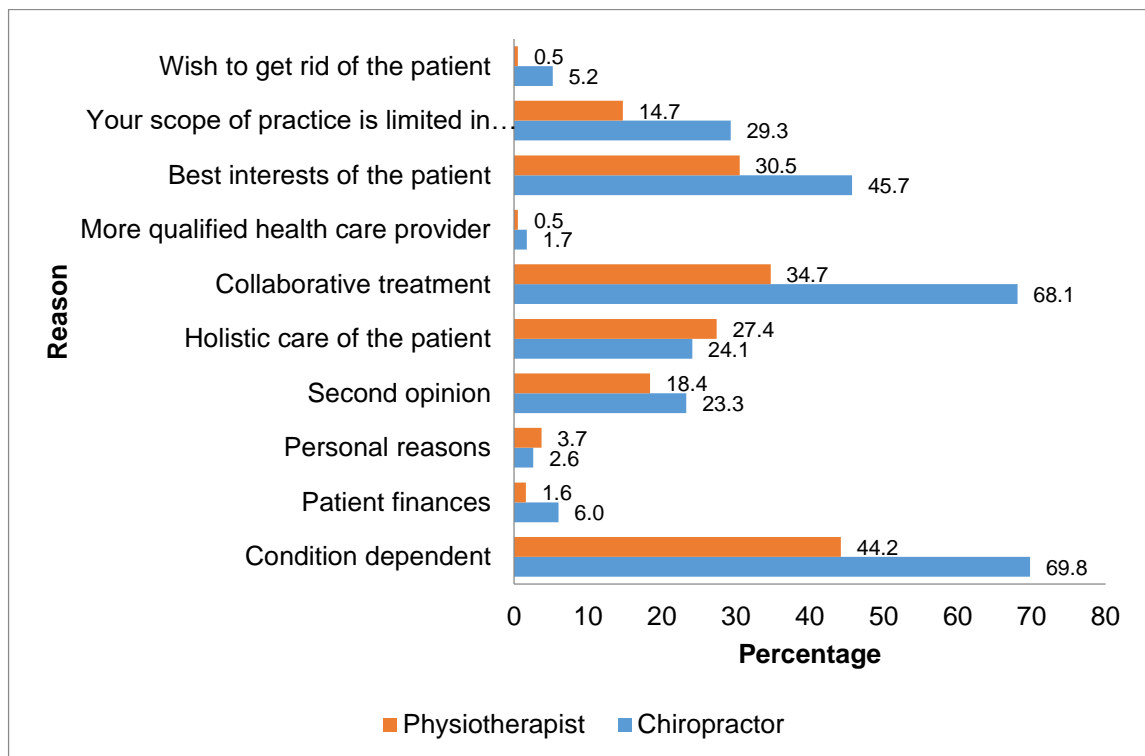
The results from the binomial test showed that a significant 81.9% of chiropractors do refer patients to physiotherapists.

The results from the chi-square test of independence show that there is a significant relationship between profession and referring patients to the other profession,  $\chi^2 (1) = 22.566$ ,  $p < .001$ . A significant number of chiropractors (81.9%) indicated that they do refer patients to physiotherapists, while a significant number of physiotherapists (44.7%) indicated that they do not refer patients to chiropractors.

**Table 4.5.2: Indicate the reason(s) for referring to the other profession**

Reason	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Condition dependent	Yes	81 (69.8)	<.001*	84 (44.2)	.127
	No	35 (30.2)		106 (55.8)	
Patient finances	Yes	7 (6.0)	<.001*	3 (1.6)	<.001*
	No	109 (94.0)		187 (98.4)	
Personal reasons	Yes	3 (2.6)	<.001*	7 (3.7)	<.001*
	No	113 (97.4)		183 (96.3)	
Second opinion	Yes	27 (23.3)	<.001*	35 (18.4)	<.001*
	No	89 (76.7)		155 (81.6)	
Holistic care of the patient	Yes	28 (24.1)	<.001*	52 (27.4)	<.001*
	No	88 (75.9)		138 (72.6)	
Collaborative treatment	Yes	79 (68.1)	<.001*	66 (34.7)	<.001*
	No	37 (31.9)		124 (65.3)	
More qualified health care provider	Yes	2 (1.7)	<.001*	1 (0.5)	<.001*
	No	114 (98.3)		189 (99.5)	
Best interests of the patient	Yes	53 (45.7)	.403	58 (30.5)	<.001*
	No	63 (54.3)		132 (69.5)	
Your scope of practice is limited in helping the patient	Yes	34 (29.3)	<.001*	28 (14.7)	<.001*
	No	82 (70.7)		162 (85.3)	
Wish to get rid of the patient	Yes	6 (5.2)	<.001*	1 (0.5)	<.001*
	No	110 (94.8)		189 (99.5)	

\* indicates significant at the 95% level



**Figure 4.5.2: Reasons for referral of patients to the other profession**

The results from the binomial test showed that a significant proportion of chiropractors refer patients to physiotherapists for the following reasons: condition dependent (69.8%) and collaborative treatment (68.1%). A significant proportion of physiotherapists do not refer patients to chiropractors for any of these reasons.

**Table 4.5.3: Comparative analysis: Chi-square test of independence**

Reason	Variable	Chiropractor	Physiotherapist	Chi-square test of independence/ <sup>b</sup> Fisher's exact test		
		Frequency (%)	Frequency (%)	Value	df	p-value
Condition dependent	Yes	81 (69.8)	84 (44.2)	19.023	1	<.001*
	No	35 (30.2)	106 (55.8)			
Patient finances	Yes	7 (6.0)	3 (1.6)	-	-	.046 <sup>b</sup> *
	No	109 (94.0)	187 (98.4)			
Personal reasons	Yes	3 (2.6)	7 (3.7)	-	-	.747 <sup>b</sup>
	No	113 (97.4)	183 (96.3)			
Second opinion	Yes	27 (23.3)	35 (18.4)	1.051	1	.305
	No	89 (76.7)	155 (81.6)			
Holistic care of the patient	Yes	28 (24.1)	52 (27.4)	0.389	1	.533
	No	88 (75.9)	138 (72.6)			
Collaborative treatment	Yes	79 (68.1)	66 (34.7)	32.163	1	<.001*
	No	37 (31.9)	124 (65.3)			
More qualified health care provider	Yes	2 (1.7)	1 (0.5)	-	-	.560 <sup>b</sup>
	No	114 (98.3)	189 (99.5)			
Best interests of the patient	Yes	53 (45.7)	58 (30.5)	7.164	1	.007*
	No	63 (54.3)	132 (69.5)			
Your scope of practice is limited in helping the patient	Yes	34 (29.3)	28 (14.7)	9.468	1	.002*
	No	82 (70.7)	162 (85.3)			
Wish to get rid of the patient	Yes	6 (5.2)	1 (0.5)	-	-	.013 <sup>b</sup> *
	No	110 (94.8)	189 (99.5)			

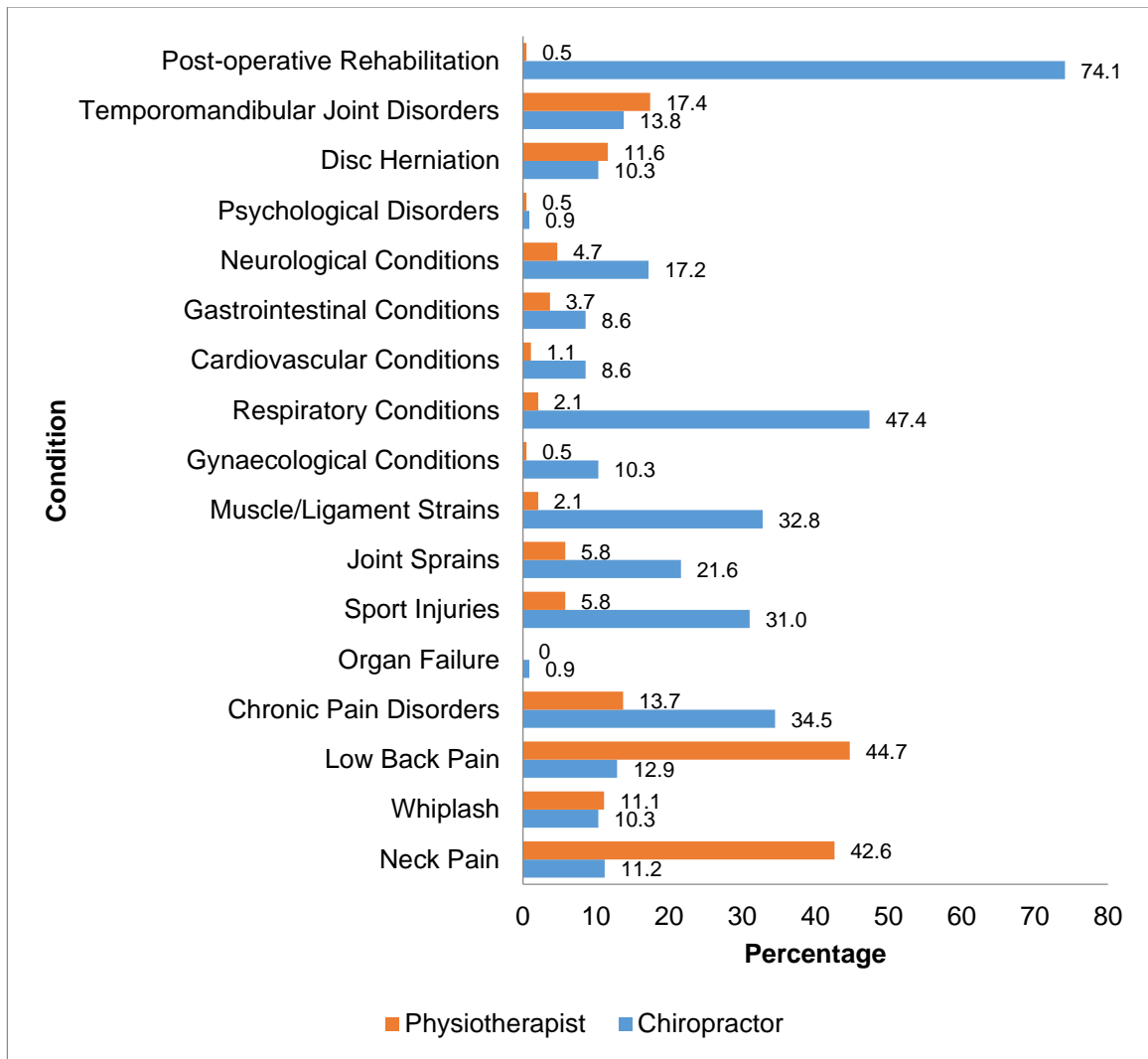
\* indicates significance at 95% level

The results showed that significantly more chiropractors referred patients to physiotherapists, than vice versa, for the following reasons: condition dependent, patient finances, collaborative treatment, best interest of the patient, limited scope of practice to help the patient and wishing to get rid of the patient.

**Table 4.5.4: Indicate which of the following condition(s) you refer a patient to the other profession**

Condition	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Neck Pain	Yes	13 (11.2)	<.001*	81 (42.6)	.050*
	No	103 (88.8)		109 (57.4)	
Whiplash	Yes	12 (10.3)	<.001*	21 (11.1)	<.001*
	No	104 (89.7)		169 (88.9)	
Low Back Pain	Yes	15 (12.9)	<.001*	85 (44.7)	.168
	No	101 (87.1)		105 (55.3)	
Chronic Pain Disorders	Yes	40 (34.5)	.001*	26 (13.7)	<.001*
	No	76 (65.5)		164 (86.3)	
Organ Failure	Yes	1 (0.9)	<.001*	0 (0)	<.001*
	No	115 (99.1)		190 (100.0)	
Sport Injuries	Yes	36 (31.0)	<.001*	11 (5.8)	<.001*
	No	80 (69.0)		179 (94.2)	
Joint Sprains	Yes	25 (21.6)	<.001*	11 (5.8)	<.001*
	No	91 (78.4)		179 (94.2)	
Muscle/Ligament Strains	Yes	38 (32.8)	<.001*	4 (2.1)	<.001*
	No	78 (67.2)		186 (97.9)	
Gynaecological Conditions	Yes	12 (10.3)	<.001*	1 (0.5)	<.001*
	No	104 (89.7)		189 (99.5)	
Respiratory Conditions	Yes	55 (47.4)	.643	4 (2.1)	<.001*
	No	61 (52.6)		186 (97.9)	
Cardiovascular Conditions	Yes	10 (8.6)	<.001*	2 (1.1)	<.001*
	No	106 (91.4)		188 (98.9)	
Gastrointestinal Conditions	Yes	10 (8.6)	<.001*	7 (3.7)	<.001*
	No	106 (91.4)		183 (96.3)	
Neurological Conditions	Yes	20 (17.2)	<.001*	9 (4.7)	<.001*
	No	96 (82.8)		181 (95.3)	
Psychological Disorders	Yes	1 (0.9)	<.001*	1 (0.5)	<.001*
	No	115 (99.1)		189 (99.5)	
Disc Herniation	Yes	12 (10.3)	<.001*	22 (11.6)	<.001*
	No	104 (89.7)		168 (88.4)	
Temporomandibular Joint Disorders	Yes	16 (13.8)	<.001*	33 (17.4)	<.001*
	No	100 (86.2)		157 (82.6)	
Post-operative Rehabilitation	Yes	86 (74.1)	<.001*	1 (0.5)	<.001*
	No	30 (25.9)		189 (99.5)	

\* indicates significant at the 95% level



**Figure 4.5.3: Conditions of patients referred to the other profession**

The results from a binomial test indicated that a significant 74.1% of chiropractors referred patients to physiotherapists for post-operative rehabilitation.

**Table 4.5.5: Comparative analysis: Chi-square test of independence**

Condition	Variable	Chiropractor	Physiotherapist	Chi-square test of independence/ <sup>b</sup> Fisher's exact test		
		Frequency (%)	Frequency (%)	Value	df	p-value
Neck Pain	Yes	13 (11.2)	81 (42.6)	33.420	1	<.001*
	No	103 (88.8)	109 (57.4)			
Whiplash	Yes	12 (10.3)	21 (11.1)	0.038	1	.846
	No	104 (89.7)	169 (88.9)			
Low Back Pain	Yes	15 (12.9)	85 (44.7)	33.119	1	<.001*
	No	101 (87.1)	105 (55.3)			
Chronic Pain Disorders	Yes	40 (34.5)	26 (13.7)	18.418	1	<.001*
	No	76 (65.5)	164 (86.3)			
Organ Failure	Yes	1 (0.9)	0 (0)	-	-	.379 <sup>b</sup>
	No	115 (99.1)	190 (100.0)			
Sport Injuries	Yes	36 (31.0)	11 (5.8)	35.309	1	<.001*
	No	80 (69.0)	179 (94.2)			
Joint Sprains	Yes	25 (21.6)	11 (5.8)	17.239	1	<.001*
	No	91 (78.4)	179 (94.2)			
Muscle/Ligament Strains	Yes	38 (32.8)	4 (2.1)	57.153	1	<.001*
	No	78 (67.2)	186 (97.9)			
Gynaecological Conditions	Yes	12 (10.3)	1 (0.5)	-	-	<.001 <sup>b*</sup>
	No	104 (89.7)	189 (99.5)			
Respiratory Conditions	Yes	55 (47.4)	4 (2.1)	95.004	1	<.001*
	No	61 (52.6)	186 (97.9)			
Cardiovascular Conditions	Yes	10 (8.6)	2 (1.1)	-	-	.001 <sup>b*</sup>
	No	106 (91.4)	188 (98.9)			
Gastrointestinal Conditions	Yes	10 (8.6)	7 (3.7)	3.345	1	.067
	No	106 (91.4)	183 (96.3)			
Neurological Conditions	Yes	20 (17.2)	9 (4.7)	13.128	1	<.001*
	No	96 (82.8)	181 (95.3)			
Psychological Disorders	Yes	1 (0.9)	1 (0.5)	-	-	1.000 <sup>b</sup>
	No	115 (99.1)	189 (99.5)			
Disc Herniation	Yes	12 (10.3)	22 (11.6)	0.111	1	.739
	No	104 (89.7)	168 (88.4)			
Temporomandibular Joint Disorders	Yes	16 (13.8)	33 (17.4)	0.685	1	.408
	No	100 (86.2)	157 (82.6)			
Post-operative Rehabilitation	Yes	86 (74.1)	1 (0.5)	191.806	1	<.001*
	No	30 (25.9)	189 (99.5)			

\* indicates significant at the 95% level

The results showed that a significant proportion of physiotherapists referred patients to chiropractors for neck pain and low back pain. A significant proportion of chiropractors referred patients to physiotherapists for the following conditions: chronic pain

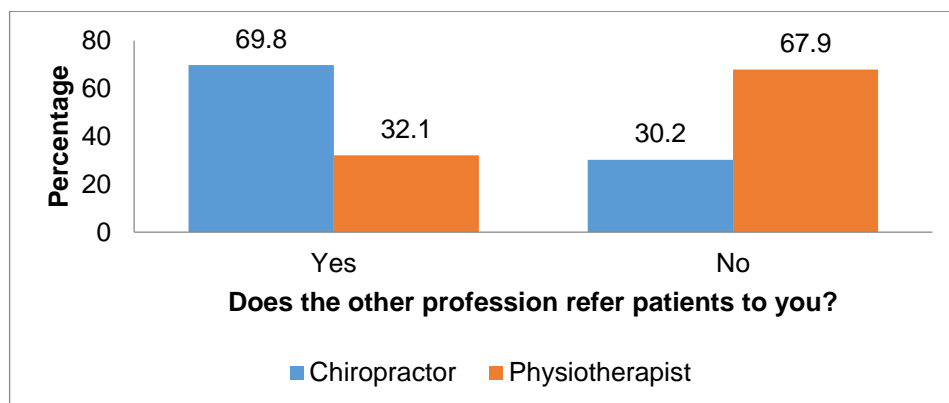
disorders, sport injuries, joint sprains, muscle/ligament strains, gynaecological conditions, respiratory conditions, cardiovascular conditions, neurological conditions, and post-operative rehabilitation.

Question 19.3 in the questionnaire allowed the participants to express their reasons for not referring patients to the other profession if they had answered “no” to question 19. The common reasons reported by chiropractors included: having no contact with a physiotherapist; having no need to refer patients to a physiotherapist; possessing the necessary skills and expertise to manage a patient effectively; overlap of scope of practice; patient finances, and a general poor attitude displayed toward chiropractic by physiotherapists. Physiotherapists commonly reported the following reasons for not referring patients to a chiropractor: having no contact or no need to; inadequate knowledge about chiropractic; patient finances; limited scientific evidence for chiropractic; poor inter-professional relationships; possessing the necessary skills and expertise to manage a patient effectively; no chiropractor available in the public health sector, and an overlap of scope of practice.

**Table 4.5.6: Does the other profession ever refer patients to you?**

Group		Frequency	Percentage	p-value
Chiropractor	Yes	81	69.8	<.001*
	No	35	30.2	
	Total	116	100.0	
Physiotherapist	Yes	61	32.1	<.001*
	No	129	67.9	
	Total	190	100.0	

\* indicates significant at the 95% level



**Figure 4.5.4: Does the other profession ever refer patients to you?**

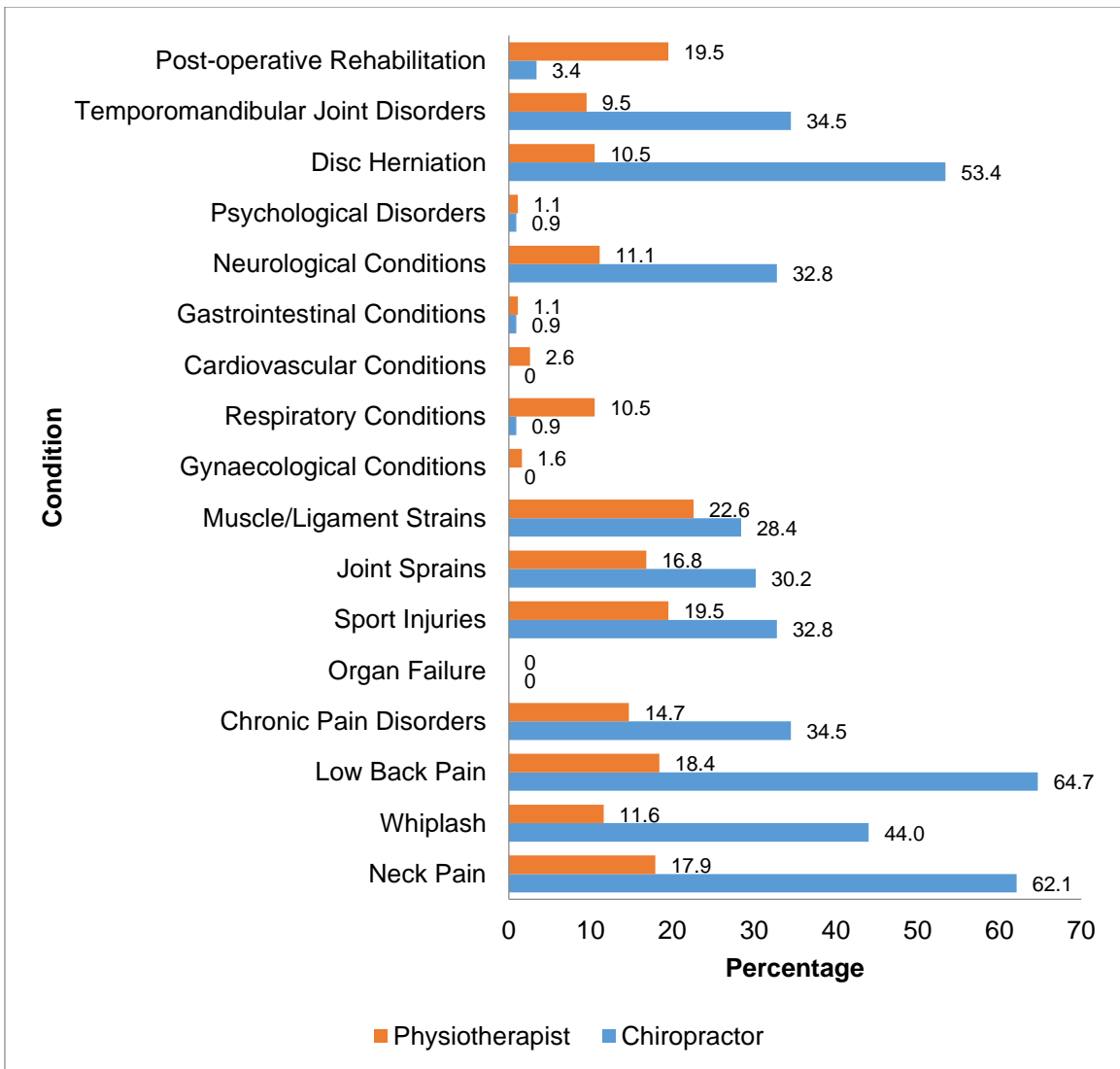
The results from the binomial test revealed that 69.8% of chiropractors reported that physiotherapists had referred patients to them. Similarly, 67.9% of physiotherapists indicated that chiropractors had never referred patients to them.

The results from the Pearson's chi-square analysis showed that a significant proportion (69.8%) of chiropractors had patients referred to them by physiotherapists,  $\chi^2 (1) = 41.210, p < .001$ .

**Table 4.5.7: Indicate for which of the following condition(s) the other profession refers patients to you**

Condition	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Neck Pain	Yes	72 (62.1)	.012*	34 (17.9)	<.001*
	No	44 (37.9)		156 (82.1)	
Whiplash	Yes	51 (44.0)	.227	22 (11.6)	<.001*
	No	65 (56.0)		168 (88.4)	
Low Back Pain	Yes	75 (64.7)	.002*	35 (18.4)	<.001*
	No	41 (35.3)		155 (81.6)	
Chronic Pain Disorders	Yes	40 (34.5)	.001*	28 (14.7)	<.001*
	No	76 (65.5)		162 (85.3)	
Organ Failure	Yes	0 (0)	<.001*	0 (0)	<.001*
	No	116 (100.0)		190 (100.0)	
Sport Injuries	Yes	38 (32.8)	<.001*	37 (19.5)	<.001*
	No	78 (67.2)		153 (80.5)	
Joint Sprains	Yes	35 (30.2)	<.001*	32 (16.8)	<.001*
	No	81 (69.8)		158 (83.2)	
Muscle/Ligament Strains	Yes	33 (28.4)	<.001*	43 (22.6)	<.001*
	No	83 (71.6)		147 (77.4)	
Gynaecological Conditions	Yes	0 (0)	<.001*	3 (1.6)	<.001*
	No	116 (100.0)		187 (98.4)	
Respiratory Conditions	Yes	1 (0.9)	<.001*	20 (10.5)	<.001*
	No	115 (99.1)		170 (89.5)	
Cardiovascular Conditions	Yes	0 (0)	<.001*	5 (2.6)	<.001*
	No	116 (100.0)		185 (97.4)	
Gastrointestinal Conditions	Yes	1 (0.9)	<.001*	2 (1.1)	<.001*
	No	115 (99.1)		188 (98.9)	
Neurological Conditions	Yes	38 (32.8)	<.001*	21 (11.1)	<.001*
	No	78 (67.2)		169 (88.9)	
Psychological Disorders	Yes	1 (0.9)	<.001*	2 (1.1)	<.001*
	No	115 (99.1)		188 (98.9)	
Disc Herniation	Yes	62 (53.4)	.516	20 (10.5)	<.001*
	No	54 (46.6)		170 (89.5)	
Temporomandibular Joint Disorders	Yes	40 (34.5)	.001*	18 (9.5)	<.001*
	No	76 (65.5)		172 (90.5)	
Post-operative Rehabilitation	Yes	4 (3.4)	<.001*	37 (19.5)	<.001*
	No	112 (96.6)		153 (80.5)	

\* indicates significant at the 95% level



**Figure 4.5.5: Conditions the other profession refers patients to you**

The results from the binomial test showed that a significant percentage of chiropractors had patients referred to them by physiotherapists for neck pain (62.1%) and low back pain (64.7%).

**Table 4.5.8: Comparative analysis: Chi-square test of independence**

Condition	Variable	Chiropractor	Physiotherapist	Chi-square test of independence/ <sup>b</sup> Fisher's exact test		
		Frequency (%)	Frequency (%)	Value	df	p-value
Neck Pain	Yes	72 (62.1)	34 (17.9)	62.078	1	<.001*
	No	44 (37.9)	156 (82.1)			
Whiplash	Yes	51 (44.0)	22 (11.6)	41.590	1	<.001*
	No	65 (56.0)	168 (88.4)			
Low Back Pain	Yes	75 (64.7)	35 (18.4)	66.867	1	<.001*
	No	41 (35.3)	155 (81.6)			
Chronic Pain Disorders	Yes	40 (34.5)	28 (14.7)	16.248	1	<.001*
	No	76 (65.5)	162 (85.3)			
Organ Failure	Yes	0 (0)	0 (0)	-	-	-
	No	116 (100.0)	190 (100.0)			
Sport Injuries	Yes	38 (32.8)	37 (19.5)	6.870	1	.009*
	No	78 (67.2)	153 (80.5)			
Joint Sprains	Yes	35 (30.2)	32 (16.8)	7.484	1	.006*
	No	81 (69.8)	158 (83.2)			
Muscle/Ligament Strains	Yes	33 (28.4)	43 (22.6)	1.305	1	.253
	No	83 (71.6)	147 (77.4)			
Gynaecological Conditions	Yes	0 (0)	3 (1.6)	-	-	.292 <sup>b</sup>
	No	116 (100.0)	187 (98.4)			
Respiratory Conditions	Yes	1 (0.9)	20 (10.5)	10.525	1	.001*
	No	115 (99.1)	170 (89.5)			
Cardiovascular Conditions	Yes	0 (0)	5 (2.6)	-	-	.161 <sup>b</sup>
	No	116 (100.0)	185 (97.4)			
Gastrointestinal Conditions	Yes	1 (0.9)	2 (1.1)	-	-	1.000 <sup>b</sup>
	No	115 (99.1)	188 (98.9)			
Neurological Conditions	Yes	38 (32.8)	21 (11.1)	21.804	1	<.001*
	No	78 (67.2)	169 (88.9)			
Psychological Disorders	Yes	1 (0.9)	2 (1.1)	-	-	1.000 <sup>b</sup>
	No	115 (99.1)	188 (98.9)			
Disc Herniation	Yes	62 (53.4)	20 (10.5)	67.644	1	<.001*
	No	54 (46.6)	170 (89.5)			
Temporomandibular Joint Disorders	Yes	40 (34.5)	18 (9.5)	29.326	1	<.001*
	No	76 (65.5)	172 (90.5)			
Post-operative Rehabilitation	Yes	4 (3.4)	37 (19.5)	15.941	1	<.001*
	No	112 (96.6)	153 (80.5)			

\* indicates significant at the 95% level

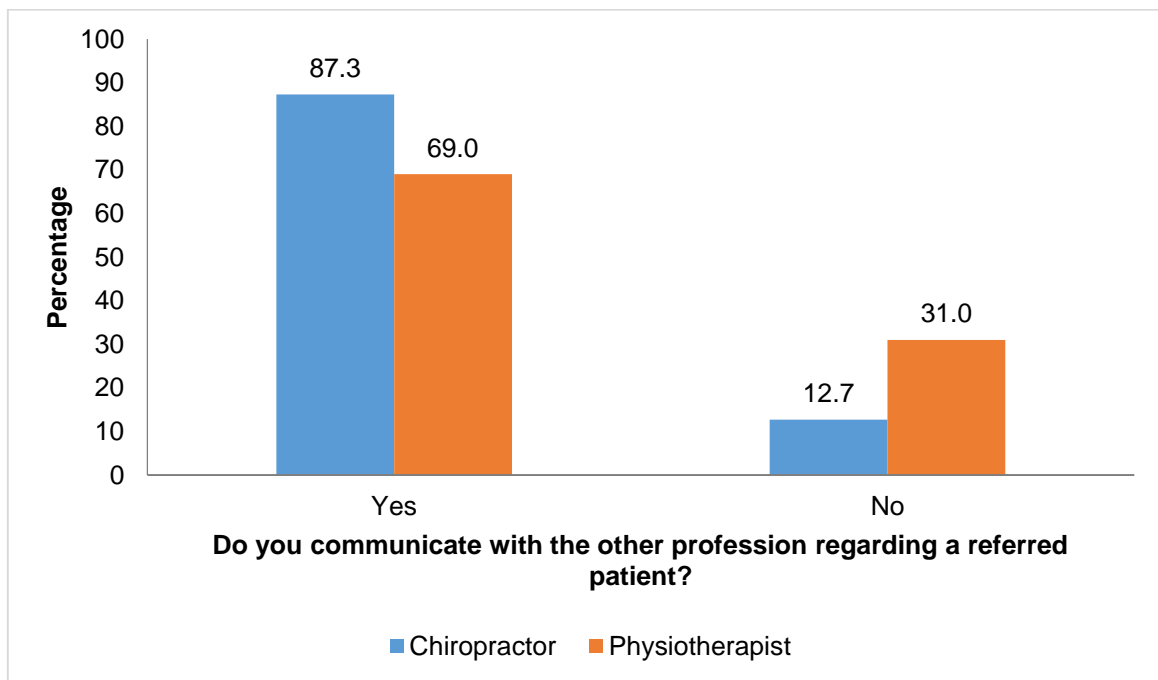
The results showed that a significant proportion of chiropractors had patients referred to them by physiotherapists for the following conditions: neck pain, whiplash, low back

pain, chronic pain disorders, sport injuries, joint sprains, neurological conditions, disc herniation and temporomandibular joint disorders. A significant proportion of physiotherapists had patients referred to them by chiropractors for respiratory conditions and post-operative rehabilitation.

**Table 4.5.9: Do you communicate with the other profession regarding feedback of the patient that you had referred to him/her or vice versa if the patient had been referred to you?**

Group	Variable	Frequency	Percentage	p-value
Chiropractor	Yes	89	87.3	<i>p</i> <.001*
	No	13	12.7	
	Total	102	100.0	
Physiotherapist	Yes	78	69.0	<i>p</i> <.001*
	No	35	31.0	
	Total	113	100.0	

\* indicates significant at the 95% level



**Figure 4.5.6: Communication with the other profession regarding a referred patient**

The results from the binomial test indicated that 87.3% of chiropractors and 69.0% of physiotherapists communicated with the other profession regarding a referred patient.

The results from the Chi-square test of independence showed that significantly more chiropractors compared to physiotherapists indicated that they communicated with the

other profession regarding a patient that had been referred to them or a patient that they had referred to a physiotherapist,  $\chi^2 (1) = 10.272, p=.001$ .

**Table 4.5.10: Indicate your agreement that you consider there to be an overlap between the scope of practice of chiropractors and physiotherapists**

Group	Variable	Frequency (%)	Mean (SD)	t	df	p-value
Chiropractor	Strongly Disagree	8 (6.9)	3.85 (1.015)	9.055	115	<.001*
	Disagree	3 (2.6)				
	Neutral	12 (10.3)				
	Agree	68 (58.6)				
	Strongly Agree	25 (21.6)				
	Total	116 (100.0)				
Physiotherapist	Strongly Disagree	6 (3.2)	3.88 (0.897)	13.500	189	<.001*
	Disagree	10 (5.3)				
	Neutral	23 (12.1)				
	Agree	113 (59.5)				
	Strongly Agree	38 (20.0)				
	Total	190 (100.0)				

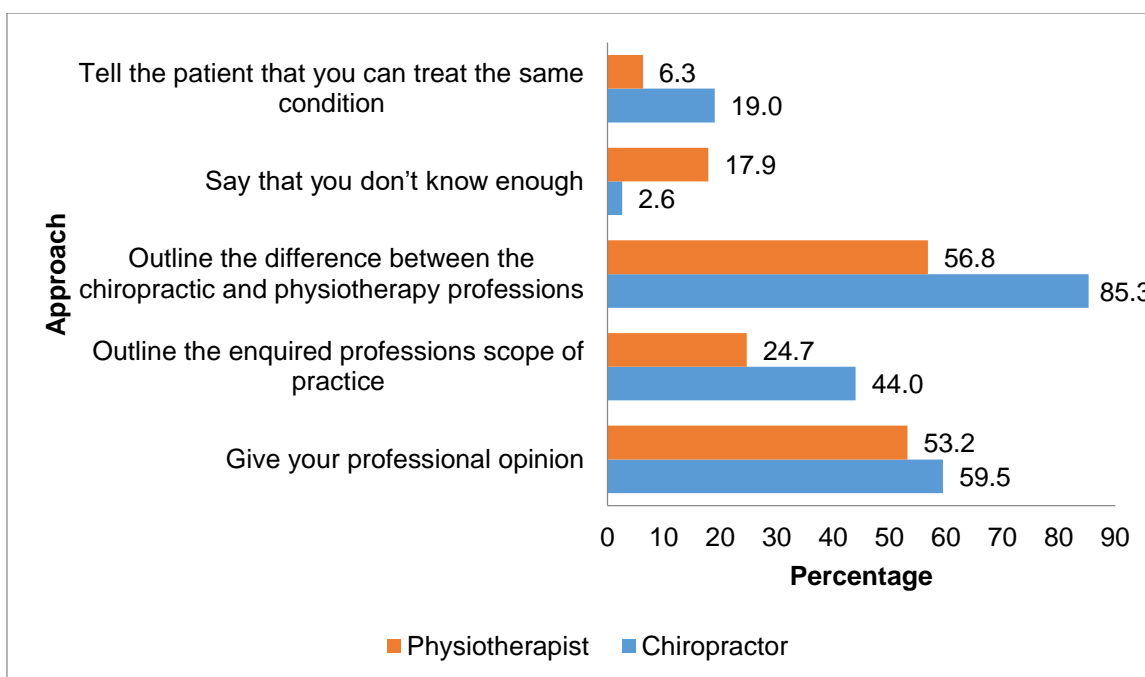
\* indicates significant at the 95% level

The results from the one-sample t-test demonstrated significant agreement by both professions that there is an overlap between the scope of practice of chiropractors and physiotherapists. The results from the independent samples t-test indicated that there is no significant difference between the responses of both professions ( $p=.819$ ).

**Table 4.5.11: Should a patient enquire about the other profession, how do you approach this question?**

Approach	Variable	Chiropractor		Physiotherapist	
		Frequency (%)	p-value	Frequency (%)	p-value
Give your professional opinion.	Yes	69 (59.5)	.051	101 (53.2)	.425
	No	47 (40.5)		89 (46.8)	
Outline the enquired professions scope of practice.	Yes	51 (44.0)	.227	47 (24.7)	<.001*
	No	65 (56.0)		143 (75.3)	
Outline the difference between the chiropractic and physiotherapy professions.	Yes	99 (85.3)	<.001*	108 (56.8)	.069
	No	17 (14.7)		82 (43.2)	
Say that you don't know enough.	Yes	3 (2.6)	<.001*	34 (17.9)	<.001*
	No	113 (97.4)		156 (82.1)	
Tell the patient that you can treat the same condition.	Yes	22 (19.0)	<.001*	12 (6.3)	<.001*
	No	94 (81.0)		178 (93.7)	

\* indicates significant at the 95% level



**Figure 4.5.7: Approach to patient's enquiry about the other profession**

As seen in figure 4.5.7, the results from the binomial test indicated that a significant percentage of chiropractors (85.3%) outlined the difference between the chiropractic and physiotherapy professions when approaching a patient's enquiry about the other profession.

**Table 4.5.12: Comparative analysis: Chi-square test of independence**

Approach	Variable	Chiropractor	Physiotherapist	Chi-square test of independence		
		Frequency (%)	Frequency (%)	Value	df	p-value
Give your professional opinion.	Yes	69 (59.5)	101 (53.2)	1.167	1	.280
	No	47 (40.5)	89 (46.8)			
Outline the enquired professions scope of practice.	Yes	51 (44.0)	47 (24.7)	12.233	1	<.001*
	No	65 (56.0)	143 (75.3)			
Outline the difference between the chiropractic and physiotherapy professions.	Yes	99 (85.3)	108 (56.8)	26.736	1	<.001*
	No	17 (14.7)	82 (43.2)			
Say that you don't know enough.	Yes	3 (2.6)	34 (17.9)	15.880	1	<.001*
	No	113 (97.4)	156 (82.1)			
Tell the patient that you can treat the same condition.	Yes	22 (19.0)	12 (6.3)	11.669	1	.001*
	No	94 (81.0)	178 (93.7)			

\* indicates significant at the 95% level

The results show that significantly more chiropractors than physiotherapists indicated that they outline the enquired professions scope of practice, outline the difference between the chiropractic and physiotherapy professions and tell the patient that they can treat the same condition. However, significantly more physiotherapists than chiropractors indicated that they tell the patient that they do not know enough about the chiropractic profession.

**Table 4.5.13: Indicate your agreement that inter-professional relationships between chiropractors and physiotherapists are beneficial for**

	Chiropractor Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
The patient	4 (3.4)	0 (0)	8 (6.9)	45 (38.8)	59 (50.9)	116	4.34 (0.884)	16.278	115	<.001*
The physiotherapy profession	2 (1.7)	6 (5.2)	12 (10.3)	54 (46.6)	42 (36.2)	116	4.10 (0.908)	13.092	115	<.001*
The chiropractic profession	2 (1.7)	5 (4.3)	12 (10.3)	53 (45.7)	44 (37.9)	116	4.14 (0.893)	13.718	115	<.001*

\* indicates significant at the 95% level

**Table 4.5.14: Indicate your agreement that inter-professional relationships between chiropractors and physiotherapists are beneficial for**

	Physiotherapist Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree					
The patient	2 (1.1)	4 (2.1)	29 (15.3)	110 (57.9)	45 (23.7)	190	4.01 (0.756)	18.428	189	<.001*
The physiotherapy profession	7 (3.7)	14 (7.4)	35 (18.4)	100 (52.6)	34 (17.9)	190	3.74 (0.962)	10.560	189	<.001*
The chiropractic profession	4 (2.1)	8 (4.2)	36 (18.9)	111 (58.4)	31 (16.3)	190	3.83 (0.827)	13.772	189	<.001*

\* indicates significant at the 95% level

As demonstrated in tables 4.5.13 and 4.5.14, the results from the one sample t-test show that there is significant agreement by both professions that inter-professional relationships between chiropractors and physiotherapists are beneficial for the patient, the physiotherapy profession and the chiropractic profession.

**Table 4.5.15: Comparative analysis - Independent samples t-test**

Indicate your agreement that inter-professional relationships between chiropractors and physiotherapists are beneficial for:	Chiropractor	Physiotherapist	Independent samples t-test		
	Mean (SD)	Mean (SD)	t	df	p-value
The patient	4.34 (0.884)	4.01 (0.756)	3.299	214.543	.001*
The physiotherapy profession	4.10 (0.908)	3.74 (0.962)	3.304	304	.001*
The chiropractic profession	4.14 (0.893)	3.83 (0.827)	3.101	304	.002*

\* indicates significant at the 95% level

The results show that chiropractors agree significantly more than physiotherapists that inter-professional relationships between both professions are beneficial for the patient, the physiotherapy profession and the chiropractic profession.

# CHAPTER FIVE DISCUSSION

## 5.1 INTRODUCTION

This chapter will discuss the results presented in chapter 4 and the objectives of the study.

## 5.2 DEMOGRAPHICS

### 5.2.1 Age

In this study, the majority of the chiropractors (49.1%,  $n=57$ ) were between the ages of 26 and 35 years. This compares favourably with Lamprecht and Padayachy (2019) who found that the average age of chiropractors in an eThekweni municipality study was 35.6 years. Similarly, Slabbert (2014) found that the mean age of the chiropractors in the eThekweni municipality was 35.3 years. This further agrees with Ford (2013) in which the mean age of the chiropractic respondents in South Africa was 34.7 years and Gordon (2012) in which the average age of the South African chiropractors was 36.4 years. Additionally, Keyter (2010) found that majority of the chiropractic participants in South Africa (45.0%) were between the ages of 30 and 39 years.

The majority of the physiotherapists (33.2%,  $n=63$ ) in this study were between the ages of 26 and 35 years. This compares favourably with Hassem *et al.* (2022) in which the mean age of the physiotherapists in South Africa was 37.25 years. Similarly, in South Africa, Rowe and Sauls (2020) found that majority of the physiotherapists in their study were between the ages of 31 and 35 years. This is further supported by Slabbert (2014) in which the average age of the physiotherapists in an eThekweni municipality study was 36 years. Additionally, Hunter (2004) found that the majority of physiotherapists (31.6%) in South Africa were between the ages of 26 and 35 years.

### 5.2.2 Gender

A large percentage of chiropractors (58.6%,  $n=68$ ) in this study were female. This compares favourably with Slabbert (2014), who found most of the chiropractic participants (54.0%) in the eThekweni municipality were female. The results also

correspond with the findings of Ford (2013), in which 51.7% of chiropractors in South Africa were female. Contrary to this study, Gordon (2012) and Keyter (2010) found that 57.96% and 60.8% of South African chiropractors respectively were male.

In this study, the vast majority of physiotherapists (86.3%,  $n=164$ ) were female. This compares favourably with Hassem *et al.* (2022) in which 95.3% of South African physiotherapists were female. In another South African study, Rowe and Sauls (2020) found that 92.0% of physiotherapists were female. This is further supported by Slabbert (2014) in which most of the physiotherapy respondents (81.6%) in the eThekweni municipality were female. Similarly, Hunter (2004) found that 90.0% of the physiotherapy participants in South Africa were female.

### **5.2.3 Number of Years Qualified in the Profession**

The majority of the chiropractic respondents (42.2%,  $n=49$ ) in this study were qualified for less than six years. This reflects the findings by Gordon (2012) and Keyter (2010) in which 42.3% and 46.7% of South African chiropractors respectively had been practicing for less than five years. By contrast however, Lamprecht and Padayachy (2019) reported that the average number of years in practice for chiropractors in an eThekweni municipality study was 9.4 years. Slabbert (2014) also found that the average number of years in practice for chiropractors in the eThekweni municipality was nine years and Ford (2013) found that eight years was the average time in practice for chiropractors in South Africa.

The present findings could be due to the fact that a number of qualified chiropractors are emigrating to developed countries to seek higher standard healthcare facilities to practice in, higher income opportunities and to further their qualification (Williams 2019). It should be noted that there is a paucity of studies that investigate the demographics of chiropractors in other provinces in South Africa.

The majority of the physiotherapy respondents (24.7%,  $n=47$ ) in this study were qualified between 21 and 30 years. This compares favourably with Hunter (2004) in which the majority of the South African physiotherapists (27.7%) were qualified and in practice between 21 and 30 years. However, the present results contrast Hassem *et*

*al.* (2022) in which the mean number of years in practice for physiotherapists in South Africa was 14.43 years and Slabbert (2014) in which the average number of years in practice for physiotherapists in the eThekweni municipality was 14 years.

#### **5.2.4 Practice Setting**

In this study, a large percentage of chiropractors (83.6%,  $n=97$ ) practiced their profession within a private practice setting. One chiropractor indicated that they were involved in an educational setting. Similarly, Slabbert (2014) demonstrated that 89.58% of chiropractors practiced in private practice in the eThekweni municipality.

The majority of chiropractic participants (58.3%) in a South African study by Keyter (2010) also practiced in private care. The chiropractic profession is excluded from the public health sector in South Africa and, therefore, South African chiropractors do not practice in hospitals, health centres and clinics, and are limited to the private practice setting (Ismail *et al.* 2021; Davies 2018).

In contrast, in South Africa, physiotherapists may practice in private and public hospitals, private practice, schools, health and sport centres and tertiary institutions (SASP 2022). The majority of physiotherapists (76.8%,  $n=146$ ) practiced their profession within a private practice setting in this study. A total of five physiotherapists indicated that they were involved in an educational setting. This corresponds with Slabbert (2014) who demonstrated that 86.21% of physiotherapists in the eThekweni municipality practiced in private practice. Additionally, this also reflects the results obtained by Hunter (2004) in which 96.0% of South African physiotherapists practiced within a private practice setting.

#### **5.2.5 Practice Sector**

This study found that the private health sector was the most common sector of practice for both the chiropractic (94.0%,  $n=109$ ) and physiotherapy (87.4%,  $n=166$ ) study groups. The chiropractic result was expected as currently in the South African healthcare system; chiropractors only practice within the private health sector, whereas physiotherapy is integrated in both the private and public health sectors (SASP 2022; Davies 2018; Naidoo and Bühler 2009).

### **5.2.6 Practice Location**

This study found that the vast majority of chiropractors (87.1%,  $n=101$ ) practiced within a suburb. This compares favourably with the results of Slabbert (2014) in which 89.58% of chiropractors practiced within a suburb in the eThekweni municipality. Contrary to this study, Ford (2013) found that majority of the South African chiropractic respondents (50.0%) practiced in an urban area, whereas only 38.8% were situated in a suburb. In another South African study, Keyter (2010) found that 72.5% of the chiropractic respondents were situated in an urban area and only 24.2% practiced within a suburb. Most chiropractors in South Africa practice within main towns and cities which corresponds with the result in this study (Ismail *et al.* 2021).

In this study, most of the physiotherapists (73.7%,  $n=140$ ) practiced within a suburb. This compares favourably with the results obtained by Slabbert (2014) in which 70.0% of physiotherapists practiced within a suburb in the eThekweni municipality. Contrary to this study, Hunter (2004) found that the majority of South African physiotherapy participants (50.0%) practiced in an urban area whereas only 41.0% practiced within a suburb.

### **5.2.7 Practice Type**

Chiropractic practitioners may practice individually, in partnership with another chiropractor or in groups of chiropractors. This study found that a large percentage of chiropractors (56.0%,  $n=65$ ) practiced individually. This corresponds with the findings of Gordon (2012) who found that 45.4% of South African chiropractors practiced individually. Contrary to this study, Slabbert (2014) found that majority of the chiropractors (64.58%) in the eThekweni municipality had a duo-practice, i.e. a practice consisting of two chiropractors.

Physiotherapists may practice individually, in a partnership with another physiotherapist or in groups of physiotherapists. In this study, a large percentage of physiotherapists (42.6%,  $n=81$ ) practiced within a group-practice, consisting of more than two physiotherapists. This contrasts the results obtained by Slabbert (2014) in which less than 35.0% of physiotherapists in the eThekweni municipality had a duo-

practice and Hunter (2004) in which the majority of physiotherapists (53.1%) in South Africa practiced individually and only 19.8% practiced within a group-practice.

### **5.2.8 Provincial Location of Practice**

Gauteng was commonly mentioned as a practice location by chiropractors at 50.0% ( $n=58$ ), followed by KwaZulu-Natal at 25.9% ( $n=30$ ). This compared favourably with Gordon (2012) in which most chiropractors practiced in Gauteng (38.4%) and KwaZulu-Natal (38.4%). A possible reason for the provincial location of the chiropractic participants' practice is that the tertiary institutions which offer the chiropractic programme, i.e. the University of Johannesburg and Durban University of Technology, are located in Gauteng and KwaZulu-Natal respectively.

Gauteng was also commonly mentioned as a practice location by physiotherapists at 35.3% ( $n=67$ ) followed by the Western Cape at 31.6% ( $n=60$ ). This was also observed by Hunter (2004) in which the majority of physiotherapy participants (40.1%) were from the Gauteng province but only 18.1% were from the Western Cape. Perhaps, as it may be the case with chiropractors, the location of the physiotherapists' practice may be associated with the provincial location of a tertiary institution that offers the physiotherapy programme, e.g. the University of the Witwatersrand, University of Pretoria, Sefako Makgatho Health Science University and the University of Western Cape.

### **5.2.9 Summary of Demographics**

In this study, the majority of the chiropractic respondents were female, between the ages of 26 and 35 years and were qualified for less than six years. A large percentage of chiropractors practiced individually, within a private practice setting and within the private health sector. Most chiropractors practiced in Gauteng and within a suburb.

The majority of physiotherapists were female, between the ages of 26 and 35 years and were qualified between 21 and 30 years. Most of the physiotherapy respondents practiced in a group-practice, within the private practice setting and within the private health sector. A large percentage of physiotherapists practiced in Gauteng and within a suburb.

### **5.3 KNOWLEDGE OF QUALIFIED CHIROPRACTORS AND PHYSIOTHERAPISTS IN SOUTH AFRICA REGARDING THE OTHER PROFESSIONAL PRACTICE**

It was hypothesized that South African chiropractors will have greater knowledge of the physiotherapy profession than physiotherapists will have of the chiropractic profession.

#### **5.3.1 Number of Registered Chiropractors and Physiotherapists in South Africa**

At the time of the study, as stated in an email communication by information specialist and information technology helpdesk administrator Daffue (2021), 8334 physiotherapists were registered with the Health Professions Council of South Africa and in an email communication with AHPCSA registrar Mullinder (2021), there were 900 chiropractors who were registered with the Allied Health Professions Council of South Africa. In this study, a very small percentage of chiropractors (11.2%,  $n=13$ ) and physiotherapists (18.4%,  $n=35$ ) answered correctly. Therefore, in this study, both professions have poor knowledge regarding the number of registered practitioners in the country. Similarly, Hunter (2004) demonstrated that 51.0% of physiotherapists indicated that they did not know how many chiropractors there are in South Africa.

Chiropractors scored 11.2% on their knowledge of the number of physiotherapists registered in South Africa, which was less than the physiotherapists who scored 18.4% on their knowledge of the number of chiropractors registered in South Africa. However, there was no significant difference in the knowledge between these professions ( $p=.078$ ). Therefore, both professions demonstrated poor knowledge in this question.

Chiropractic, although globally recognized, is a small yet growing profession in South Africa. Considering that the physiotherapy population in South Africa is nine times greater than that of the chiropractic population, one can assume that physiotherapy should be better known than chiropractic in the country. A possible reason for the poor knowledge relating to the number of chiropractors and physiotherapists in South Africa is that, unlike physiotherapy, chiropractic is not integrated in the public health sector

(Davies 2018). This therefore reduces inter-professional exposure and awareness within this sector which ultimately impacts both professions.

### **5.3.2 Qualification Obtained by South African Chiropractors and Physiotherapists**

In South Africa, chiropractors obtain a Master's Degree and physiotherapists obtain a Bachelor's Degree once qualified (DUT 2022; UKZN n.d.). The vast majority of chiropractors (93.1%,  $n=108$ ) and a small percentage of physiotherapists (26.3%,  $n=50$ ) answered correctly. It is evident that chiropractors in this study have good knowledge, whereas physiotherapists have poor knowledge regarding the qualification obtained by the other profession in the country.

This compares favourably to Hunter (2004) in which 23.2% of physiotherapists identified that a Master's Degree is the qualification obtained by a chiropractor. Additionally, this finding is in keeping with Maharaj (2009) in which 19.6% of provincial and national health portfolio committee members of South Africa believed that a Master's Degree is obtained by qualified chiropractors in South Africa. Similarly, 14.3% of South African paediatricians were aware that chiropractors graduate with a Master's Degree (Heslop 2008). Naidoo (2008) also found that only 10.0% of South African biokineticists knew that chiropractors qualify with a Master's Degree.

The literature highlights that poor knowledge on the qualification obtained by South African chiropractors exists amongst various professions in South Africa which could mean that these professions consider chiropractors to be less qualified than they are (Heslop 2008). A possible reason for this could be limited inter-professional awareness and exposure of various disciplines to chiropractic due to the profession being small in South Africa.

With respect to the qualification obtained by the other profession in South Africa, physiotherapists obtained a knowledge score of 26.3% which was significantly lower than the 93.1% obtained by the chiropractors ( $p<.001$ ). It is evident that chiropractors have a good knowledge regarding the qualification obtained by physiotherapists but the physiotherapists demonstrated poor knowledge when asked about the qualification

that chiropractors obtain once qualified. This creates an opportunity for chiropractors to educate the physiotherapy profession on their educational achievements.

### **5.3.3 Institutions that Offer Chiropractic and Physiotherapy in South Africa**

In South Africa, chiropractic can be studied at two institutions and physiotherapy can be studied at eight institutions (CASA 2022; SASP 2022).

The following number of chiropractors knew that physiotherapy can be studied at the: University of KwaZulu-Natal (81.9%,  $n=95$ ), University of Cape Town (81.9%,  $n=95$ ), University of the Free State (72.4%,  $n=84$ ), University of Pretoria (82.8%,  $n=96$ ), University of Stellenbosch (80.2%,  $n=93$ ), University of Western Cape (44.0%,  $n=51$ ), University of the Witwatersrand (85.3%,  $n=99$ ) and Sefako Makgatho Health Science University (30.2%,  $n=35$ ). Since physiotherapy is offered at many institutions excluding the Durban University of Technology and University of Johannesburg, which is where chiropractic may be studied, this may be the reason why the chiropractic participants were more knowledgeable in this question.

In this study, 70.0% ( $n=133$ ) and 53.7% ( $n=102$ ) of physiotherapists knew that chiropractic can be studied at the Durban University of Technology and the University of Johannesburg respectively. The results starkly contrast the findings of Heslop (2008), in which 57.1% and 22.6% of South African paediatricians believed that chiropractic can be studied at the DUT and the UJ respectively. Additionally, Maharaj (2009) found that only 26.0% and 6.0% of provincial and national health portfolio committee members of South Africa believed that chiropractic can be studied at the DUT and UJ respectively. Since the researcher was from DUT and the online questionnaire contained the DUT logo, this may be the reason for the better knowledge that chiropractic is offered at DUT as compared to UJ.

Chiropractors achieved an overall of 73.5% on their knowledge regarding the institutions that physiotherapy can be studied at in South Africa and the physiotherapists obtained an overall score of 77.8% on their knowledge regarding the institutions that chiropractic can be studied at in South Africa. Although both professions have good knowledge about the institutions that offer training to the other

profession in South Africa, further education and inter-professional exposure can enhance awareness. There was no significant difference in the knowledge between the chiropractic and physiotherapy professions regarding the institutions that other profession can be studied at in South Africa ( $p=.058$ ).

#### **5.3.4. Number of Years Required to Study Chiropractic and Physiotherapy in South Africa**

Chiropractic is offered as a six year course and physiotherapy is offered as a four year course in South Africa (DUT 2022; UKZN n.d.). Chiropractors ( $n=109$ ) obtained an overall score of 94.0%, whereas physiotherapists ( $n=71$ ) achieved an overall score of 37.4%. Thus, this study shows that chiropractors have good knowledge and physiotherapists have a poor knowledge of the number of years required to study the other profession in South Africa. The physiotherapy result was considerably lower than the 70.1% of physiotherapists who knew the qualification obtained by chiropractors in a South African study by Hunter (2004).

Chiropractors achieved a score of 94.0%, which was significantly higher than the physiotherapists' score of 37.4% with respect to the number of years that is required to study physiotherapy and chiropractic in South Africa respectively ( $p<.001$ ). This shows that the physiotherapists had inadequate knowledge compared to the chiropractors who demonstrated a high level of knowledge. As demonstrated in Section 5.3.2, one can assume that there is a direct link between the poor knowledge of the qualification obtained by the chiropractors and the number of years required to study chiropractic in South Africa. This again creates an opportunity for chiropractors to interact with physiotherapists and to promote awareness on the training requirements of the chiropractic profession. This knowledge may encourage greater understanding, respect and acceptance of the chiropractic profession which in turn will support inter-professional relationships.

#### **5.3.5 Examinations Performed by Chiropractors and Physiotherapists in South Africa**

Chiropractors may perform the following examinations: medical and family history taking, vital signs, cardiovascular examination, respiratory examination, abdominal

examination, neurological examination, orthopaedic examination, radiological examination, X-Ray interpretation and genito-urinary examination (AHPCSA 2018). Physiotherapists may perform the following examinations on a patient: medical and family history taking, vital signs, cardiovascular examination, respiratory examination, neurological examination, orthopaedic examination and X-Ray interpretation (HPCSA 2022).

#### Medical and Family History Taking

In this study, 93.1% ( $n=108$ ) of chiropractors, compared to 97.4% ( $n=185$ ) of physiotherapists, knew that the other profession can obtain a medical and family history. This indicates that both professions are aware that the other profession can obtain a medical and family history. By comparison, Hunter (2004) found that 77.0% of physiotherapists believed that chiropractors can obtain a family history and 90.0% indicated that chiropractors can obtain a past medical history. By contrast however, Maharaj (2009) demonstrated that only 49.0%, 47.1% and 25.5% of provincial and national health portfolio committee members of South Africa indicated that chiropractors can obtain a family history, past medical history and social history respectively.

#### Vital Signs

It was found that 84.5% of chiropractors ( $n=98$ ), compared to 76.8% of physiotherapists ( $n=146$ ), were aware that the other profession can take vital signs. Both professions were knowledgeable that vital signs can be obtained by the other profession. This finding was considerably higher than the 19.0% of physiotherapists who believed that chiropractors can obtain vital signs in a study by Hunter (2004). Similarly, the finding of the current study was higher than that of Maharaj (2009) who demonstrated that 47.1% of provincial and national health portfolio committee members of South Africa knew that chiropractors can take vital signs.

#### Cardiovascular Examination

More chiropractors (37.1%,  $n=43$ ), compared to physiotherapists (17.4%,  $n=33$ ), in this study believed that a cardiovascular examination can be performed by the other profession. The findings, therefore, highlight the need to educate each profession that both chiropractors and physiotherapists are trained to perform a cardiovascular

examination. This is in keeping with the work of Maharaj (2009) in which 17.6% of provincial and national health portfolio committee members of South Africa indicated that chiropractors can perform a cardiovascular review. However, Hunter (2004) found that a much lower percentage (8.0%) of physiotherapists believed that chiropractors can perform a cardiovascular examination. Martin Ebenezer *et al.* (2019) stated that a small proportion of medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia believed that physiotherapists can perform a cardiovascular assessment which corresponds with the 37.1% of chiropractors in this study.

### Respiratory Examination

In this study, 56.9% of chiropractors ( $n=66$ ), compared to 19.5% of physiotherapists ( $n=37$ ), knew that the other profession can perform a respiratory examination. Based on the results, both professions should consider educating the other on their ability to perform a respiratory examination. The physiotherapy finding is higher than the 5.0% of physiotherapists who indicated that chiropractors can perform a respiratory examination (Hunter 2004). However, the current result corresponds with the 17.6% of provincial and national health portfolio committee members of South Africa who believed that chiropractors can perform a respiratory examination. Martin Ebenezer *et al.* (2019) stated that a small proportion of medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia believed that physiotherapists can perform a respiratory assessment which contrasts the 56.9% of chiropractors in this study.

### Abdominal Examination

A low 11.6% of physiotherapists ( $n=22$ ) knew that chiropractors can perform an abdominal examination. It may therefore be worthwhile for chiropractors to enhance the physiotherapists' knowledge in this area. This result is slightly higher than the 4.0% of physiotherapists who believed that chiropractors can perform an abdominal examination (Hunter 2004).

### Neurological Examination

This study found that 75.9% of chiropractors ( $n=88$ ) compared to a similar 76.3% of physiotherapists ( $n=145$ ) were aware that the other profession can perform a

neurological examination. It is evident that both professions demonstrated good knowledge in this area. By comparison, this finding is lower than work of Hunter (2004) in which 96.0% of physiotherapists indicated that chiropractors can perform a neurological examination. However, Maharaj (2009) found that only 29.4% of provincial and national health portfolio committee members of South Africa knew that chiropractors can perform a neurological examination.

#### Orthopaedic Examination

More physiotherapists (91.6%,  $n=174$ ), compared to chiropractors (88.8%,  $n=103$ ), in this study believed that the other profession can perform an orthopaedic examination. The findings indicate that both professions have good knowledge that the other profession can perform an orthopaedic examination. This compares favourably with Hunter (2004), in which 92.0% of physiotherapists believed that chiropractors can perform an orthopaedic examination. Similarly, Martin Ebenezer *et al.* (2019) stated that medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia believed that physiotherapists can perform a musculoskeletal examination. However, Maharaj (2009) found that a lower 43.1% of provincial and national health portfolio committee members of South Africa knew that chiropractors can perform an orthopaedic examination.

#### Radiological Examination

A small proportion of physiotherapists (21.6%,  $n=41$ ) knew that chiropractors can perform a radiological examination. This creates an opportunity for the chiropractic profession to educate the physiotherapy profession regarding their ability to perform a radiological examination. This contrasts with Hunter (2004) who demonstrated that 75.0% of physiotherapists indicated that chiropractors can perform a radiological examination. However, the result compares favourably with Maharaj (2009) in which 29.4% of provincial and national health portfolio committee members of South Africa knew that chiropractors can perform a radiological exam. Only 12.1% of chiropractors ( $n=14$ ) thought that physiotherapists can perform a radiological examination.

#### X-Ray Interpretation

In this study, more physiotherapists (82.1%,  $n=156$ ) compared to chiropractors (31.0%,  $n=36$ ) believed that the other profession can interpret radiographic films. Since both

professions are trained to interpret X-Rays, it would be beneficial for the physiotherapy profession to promote awareness to chiropractors.

#### Genito-Urinary Examination

It was found that a small 4.2% of physiotherapists ( $n=8$ ) in this study knew that chiropractors can perform a genito-urinary examination. The results highlight the need for chiropractors to educate physiotherapists on their ability to perform a genito-urinary examination. Similarly, it was noted by Hunter (2004) that 3.0% of physiotherapists were aware that chiropractors can perform a genito-urinary review. The current finding was slightly lower than the 9.8% of provincial and national health portfolio committee members of South Africa who knew that chiropractors can perform a genito-urinary examination (Maharaj 2009).

#### **5.3.5.1 Mean Knowledge Score of Chiropractors and Physiotherapists on the Examinations Performed by the Other Profession in South Africa**

Chiropractors obtained a mean knowledge score of 75.7%, which was significantly higher than the physiotherapists, who achieved a mean knowledge score of 59.7% ( $p<.001$ ). Therefore, chiropractors have good knowledge and physiotherapists have adequate knowledge of the examinations that the other profession may perform in South Africa. Although the examinations performed by each profession may differ, both professions are skilled.

It would be beneficial for chiropractors and physiotherapists to enhance the existing knowledge of the other profession in order to stimulate inter-professional understanding and acceptance. This could assist in breaking down the barriers of competition and inter-professional animosity (Ellapen *et al.* 2018). Furthermore, improved inter-professional knowledge will help to clarify the roles that each profession plays in order to provide optimal, efficient and collaborative healthcare (Ansa *et al.* 2020).

#### **5.3.6 Treatment Modalities Offered by Chiropractors and Physiotherapists in South Africa**

Chiropractors may offer the following for the treatment and management of a patient:

massage, acupressure/ischaemic compression, cryotherapy/cold therapy, thermotherapy/heat application, exercise and rehabilitation programmes, electrotherapy, hydrotherapy, traction, dry needling, acupuncture, joint mobilization, joint manipulation, soft tissue manipulation, patient education, nutritional advice and ergonomic advice (Hartvigsen and French 2020; AHPCSA 2018; Carlesso *et al.* 2014).

Physiotherapists may offer the following for the treatment and management of a patient: massage, acupressure/ischaemic compression, cryotherapy/cold therapy, thermotherapy/heat application, biofeedback, exercise and rehabilitation programmes, electrotherapy, hydrotherapy, traction, dry needling, joint mobilization, joint manipulation, soft tissue manipulation, relaxation techniques, patient education and ergonomic advice (HPCSA 2022; SASP 2022; Carlesso *et al.* 2014).

The results obtained are noted below and where possible, are compared to existing literature.

### Massage

All chiropractic respondents (100.0%,  $n=116$ ) and a large percentage of physiotherapists (74.7%,  $n=142$ ) knew that the other profession can offer massage. This indicates that chiropractors and physiotherapists are well informed that the other profession uses massage as a treatment modality.

The physiotherapy finding compares favourably with the work of Heslop (2008), in which 76.2% of South African paediatricians were aware that chiropractors offer massage as a treatment modality. However, the results contrast the work of Hunter (2004), who demonstrated that 45.0% of physiotherapists believed that chiropractors can perform massage. Similarly, only 27.0% of the general public in Australia knew that chiropractors offer massage (Wilson, Swincer and Vemulpad 2007).

The chiropractic finding compares favourably with Vardhan *et al.* (2018) who found that 100.0% of general practitioners in Jalandhar city, Punjab, India knew that physiotherapists can perform massage and offer exercises. Similarly, 89.0% of medical students at a Nigerian university believed that physiotherapists can perform massage (Odebiyi *et al.* 2008). Massage was also indicated as a modality offered by

physiotherapists by 70.6% of medical radiography students, 82.9% of medical laboratory science students, 82.4% of nursing sciences students, 83.2% of medicine and surgery students and 87.5% of dentistry students at a Nigerian College (Anieto *et al.* 2019). By contrast, only 53.3% of general practitioners in Mumbai, India indicated that physiotherapists offer massage (Agni and Battin 2017). Additionally, Olawale and Adjabeng (2014) demonstrated that 35.9% of the general public at the Makola market in Accra, Ghana knew that physiotherapists perform massage.

#### Acupressure/Ischaemic Compression

The vast majority of chiropractors (98.3%,  $n=114$ ) and most physiotherapists (76.3%,  $n=145$ ) thought that the other profession can perform acupressure/ischaemic compression. This indicates that chiropractors and physiotherapists have good knowledge regarding the ability of the other profession to provide acupressure/ischaemic compression. By contrast, 50.7% of general practitioners in Mumbai, India were aware that physiotherapists treat pressure points (Agni and Battin 2017). Similarly, a low 45.2% of South African paediatricians believed that chiropractors can offer ischaemic compression (Heslop 2008).

#### Cryotherapy/Cold Therapy

All chiropractic respondents (100.0%,  $n=116$ ) knew that physiotherapists can offer cryotherapy. This shows that chiropractors have good knowledge that physiotherapists provide cryotherapy. When compared, this finding is higher than the work of Odebiyi *et al.* (2008), in which 81.0% of medical students at a Nigerian university agreed that physiotherapists can offer cryotherapy. Similarly, Martin Ebenezer *et al.* (2019) stated that most medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia knew that physiotherapists offer cryotherapy. Additionally, 79.4% of general practitioners in Jalandhar city, Punjab, India knew that physiotherapists use cryotherapy as a treatment modality (Vardhan *et al.* 2018).

In contrast, 59.3% of general practitioners in Mumbai, India believed that physiotherapists offer cryotherapy (Agni and Battin 2017). According to Olawale and Adjabeng (2014), a mere 1.2% of the general public at the Makola market in Accra, Ghana knew that physiotherapists can offer cryotherapy.

A large proportion of physiotherapists (72.6%,  $n=138$ ) knew that chiropractors can offer cryotherapy/cold therapy. Therefore, physiotherapists have good knowledge that chiropractors offer cryotherapy. This finding is higher than that of Hunter (2004) who found 27.0% of physiotherapists indicated that chiropractors can perform cryotherapy. Similarly, only 50.0% of South African paediatricians were aware that chiropractors use cryotherapy as a treatment modality (Heslop 2008).

#### Thermotherapy/Heat Application

All chiropractors in this study (100.0%,  $n=116$ ) believed that physiotherapists can offer thermotherapy. The results indicate that chiropractors are well informed that physiotherapists use thermotherapy as a treatment modality. By comparison, this result is higher than the work of Vardhan *et al.* (2018) in which 79.4% of general practitioners in Jalandhar city, Punjab, India agreed that physiotherapists offer thermotherapy. Similarly, Agni and Battin (2017) found that 70.7% of general practitioners in Mumbai, India were aware that physiotherapists provide thermotherapy. This contrasts with Olawale and Adjabeng (2014) who demonstrated that 5.5% of the general public at the Makola market in Accra, Ghana knew that physiotherapists can provide thermotherapy.

In this study, 74.2% of physiotherapists ( $n=141$ ) indicated that chiropractors offer thermotherapy. Therefore, physiotherapists have good knowledge that chiropractors provide thermotherapy for patients. This contrasts Hunter (2004) who demonstrated that 44.0% of physiotherapists believed that chiropractors can perform thermotherapy. Additionally, Heslop (2008) found that 56.0% of South African paediatricians were aware that chiropractors use thermotherapy as a treatment modality.

#### Biofeedback

Less than half of the chiropractors (49.1%,  $n=57$ ) thought that physiotherapists can perform biofeedback. This study has shown that chiropractors have insufficient knowledge that physiotherapists offer biofeedback. Therefore, this is a potential area for physiotherapists to educate chiropractors to enhance their knowledge.

#### Exercise and Rehabilitation Programmes

Most chiropractors (97.4%,  $n=113$ ) knew that physiotherapists can offer exercise and rehabilitation programmes. This shows that chiropractors in this study are well informed

that physiotherapists offer exercise and rehabilitation programmes as a treatment modality. Similarly, 100.0% of general practitioners in Jalandhar city, Punjab, India believed that physiotherapists provide exercises and massage (Vardhan *et al.* 2018).

In contrast, Olawale and Adjabeng (2014) found that 48.1% of the general public at the Makola market in Accra, Ghana knew that physiotherapists can include exercise as part of the treatment regime. Odebiyi *et al.* (2008) also found that 71.0% of medical students at a Nigerian university believed that physiotherapists can assist with gait training.

More than half of the physiotherapy respondents (57.9%,  $n=110$ ) thought that chiropractors can offer exercise and rehabilitation programmes. This indicates that physiotherapists have adequate knowledge but it would be beneficial for chiropractors to educate physiotherapists in this area to enhance their knowledge and promote inter-professional understanding.

### Electrotherapy

The vast majority of chiropractors (99.1%,  $n= 115$ ) believed that physiotherapists can provide electrotherapy. Evidently, chiropractors have good knowledge that physiotherapists use electrotherapy. This result is higher than the work of Agni and Battin (2017) in which 66% of general practitioners in Mumbai, India were aware that physiotherapists use electrotherapy. When compared to Odebiyi *et al.* (2008), the current finding is higher than the 22.0%, 56.0%, 22.0%, 40.0% and 79.0% of medical students at a Nigerian university believed that physiotherapists can perform ultrasound, transcutaneous electrical nerve stimulation, interferential current therapy, laser therapy and infrared radiation respectively. Similarly, Martin Ebenezer *et al.* (2019) stated that most medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia were aware that physiotherapists can use TENS and ultrasound to treat patients.

In contrast, only 2.0% of general practitioners in Jalandhar city, Punjab, India were aware that physiotherapists provide electrotherapy (Vardhan *et al.* 2018) and Olawale and Adjabeng (2014) demonstrated that 5.5% of the general public at the Makola market in Accra, Ghana knew that physiotherapists can provide electrotherapy.

Just under half of the physiotherapists (49.5%,  $n=94$ ) knew that chiropractors can provide electrotherapy. This presents an opportunity for the chiropractic profession to educate physiotherapists to enhance their knowledge. The results are higher than the 23.8% of South African paediatricians who believed that chiropractors use electrotherapy (Heslop 2008).

### Hydrotherapy

A large proportion of chiropractors (78.4%,  $n=91$ ) thought that physiotherapists can offer hydrotherapy. Therefore, chiropractors in this study are well informed that physiotherapists provide hydrotherapy. This compares favourably with the work of Odebisi *et al.* (2008) who found that 87.0% of medical students at a Nigerian university believed that physiotherapists can provide hydrotherapy. However, Olawale and Adjabeng (2014) demonstrated that only 1.5% of the general public at the Makola market in Accra, Ghana knew that physiotherapists offer hydrotherapy.

A small percentage of physiotherapists (12.6%,  $n=24$ ) believed that chiropractors can offer hydrotherapy. This poor knowledge creates a window of opportunity for chiropractors to educate the physiotherapy profession.

### Traction

Most chiropractic respondents (79.3%,  $n=92$ ) identified traction as a treatment modality offered by physiotherapists. It is clear that chiropractors have good knowledge that physiotherapists offer traction. This finding is higher than the work of Anioto *et al.* (2019) in which 22.7% of medical radiography students, 25.7% of medical laboratory science students, 41.2% of nursing sciences students, 29.7% of medicine and surgery students and 62.5% of dentistry students at a Nigerian college believed that physiotherapists can perform traction.

More than half of the physiotherapy respondents (65.3%,  $n=124$ ) thought that chiropractors use traction as part of the patient's treatment plan. This shows that physiotherapists have moderate knowledge and therefore it would be beneficial for the chiropractic profession to better educate physiotherapists.

### Dry Needling

A large percentage of chiropractors (82.8%,  $n=96$ ) knew that physiotherapists can use dry needling as part of their treatment plan for patients. It is apparent that chiropractors are well informed in this field.

Most physiotherapists (75.3%,  $n=143$ ) knew that chiropractors can use dry needling as part of their treatment regime. It is evident that physiotherapists have good knowledge that chiropractors can perform dry needling. This contrasts the 41.7% of South African paediatricians who believed that chiropractors offer dry needling (Heslop 2008).

### Acupuncture

More than half of the physiotherapy respondents (56.3%,  $n=107$ ) thought that chiropractors can perform acupuncture. It would therefore be beneficial for the chiropractic profession to better educate physiotherapists on their ability to perform acupuncture. This finding is higher than the work of Hunter (2004) who demonstrated that 32.0% of physiotherapists believed that chiropractors can perform acupuncture.

### Joint Mobilization

The vast majority of chiropractors (91.4%,  $n=106$ ) believed that physiotherapists can perform joint mobilization. This shows that chiropractors are well informed that physiotherapists perform joint mobilization. By comparison, Agni and Battin (2017) found that 81.3% of general practitioners in Mumbai, India believed that physiotherapists provide joint mobilization. This finding is also higher than the work of Odebiyi *et al.* (2008) in which 73.0% of medical students at a Nigerian university thought that physiotherapists can perform passive movements.

The majority of the physiotherapists (81.6%,  $n=155$ ) knew that chiropractors can perform joint mobilization. Therefore, physiotherapists have good knowledge that chiropractors offer joint mobilization. This is higher than the results obtained by Hunter (2004) in which 66.0% of physiotherapists were aware that chiropractors can perform joint mobilization.

### Joint Manipulation

Less than half of the chiropractic respondents (28.4%,  $n=33$ ) thought that physiotherapists can perform joint manipulation. This presents a need for the

physiotherapy profession to better educate chiropractors that physiotherapists can provide joint manipulation. This compares favourably with the 34.5% of medical radiography students, 24.3% of medical laboratory students, and 37.5% of dentistry students at a Nigerian college who believed that physiotherapists can perform joint manipulation (Anieto *et al.* 2019). However, by contrast, Anieto *et al.* (2019) found that 52.9% of nursing sciences students and 48.5% of medicine and surgery students knew that joint manipulation is a modality offered by physiotherapists.

The vast majority of physiotherapists (98.4%,  $n=187$ ) believed that chiropractors can perform joint manipulation. The physiotherapists in this study have good knowledge that chiropractors use joint manipulation. This compares favourably with Hunter (2004) in which 100.0% of physiotherapists knew that chiropractors perform joint manipulation. Similarly, Naidoo (2008) found that 100.0% of South African biokineticists agreed that chiropractors can use joint manipulation when providing treatment. Additionally, Heslop (2008) demonstrated that 98.8% of South African paediatricians were aware that chiropractors perform joint manipulation.

#### Soft Tissue Manipulation

Most chiropractors (83.6%,  $n=97$ ) knew that physiotherapists can provide soft tissue manipulation. A large percentage of physiotherapists (76.8%,  $n=146$ ) thought that chiropractors can perform soft tissue manipulation. Both professions in this study have good knowledge that the other profession can provide soft tissue manipulation.

#### Relaxation Techniques

More than half of the chiropractic respondents (69.8%,  $n=81$ ) thought that physiotherapists can offer relaxation techniques. This presents an opportunity for physiotherapists to better educate chiropractors. The results compare favourably with the 65.5% of medical radiography students, 72.9% of medical laboratory science students, 60.3% of nursing sciences students and 75.2% of medicine and surgery students at a Nigerian college who knew that physiotherapists offer relaxation as part of the treatment regime (Anieto *et al.* 2019).

However, Anieto *et al.* (2019) found that 100.0% of dentistry students were aware that physiotherapists offer relaxation techniques. The present study has shown that

chiropractors have adequate knowledge that physiotherapists offer relaxation techniques.

#### Patient Education

The vast majority of chiropractors (97.4%,  $n=113$ ) knew that physiotherapists can provide patient education. Most physiotherapists (88.9%,  $n=169$ ) knew that chiropractors can provide patient education as part of treatment and management. Chiropractors and physiotherapists have good knowledge that the other profession provides patient education.

#### Nutritional Advice

A low percentage of physiotherapists (26.8%,  $n=51$ ) believed that chiropractors can offer nutritional advice. It would be beneficial for chiropractors to better inform the physiotherapy profession to enhance their knowledge. By comparison, Hunter (2004) found that 12.0% of physiotherapists thought that chiropractors can offer dietary advice.

#### Ergonomic Advice

A large proportion of chiropractors (93.1%,  $n=108$ ) believed that physiotherapists can provide ergonomic advice. A large proportion of physiotherapists (83.2%,  $n=158$ ) knew that chiropractors can offer ergonomic advice. Both professions in this study have good knowledge in this field. The physiotherapy finding is higher than that of Hunter (2004), in which 58.0% of physiotherapists believed that chiropractors can provide ergonomic advice.

### **5.3.6.1 Mean Knowledge Score of Chiropractors and Physiotherapists on the Treatments Offered by the Other Profession in South Africa**

Chiropractors achieved an overall score of 85.3% on their knowledge of the treatment modalities that physiotherapists may perform for a patient. Thus, it is evident that chiropractors have good knowledge of the treatment interventions offered by physiotherapists. Physiotherapists obtained an overall score of 72.0% on their knowledge of the treatment modalities that chiropractors may perform for a patient. Thus, physiotherapists have good knowledge of the treatment interventions offered by

chiropractors. However, when comparing the knowledge scores obtained by each profession, chiropractors scored significantly higher than the physiotherapists ( $p < .001$ ). Despite having good knowledge, it would be beneficial for both professions to better educate the other profession on the treatment modalities that they offer. This will enhance inter-professional knowledge, promote inter-professional understanding and respect and encourage the co-management of patients.

### **5.3.7 Conditions Chiropractors and Physiotherapists May Treat in South Africa**

Chiropractors may treat the following conditions: neck pain, whiplash, low back pain, chronic pain disorders, sport injuries, joint sprains, muscle/ligament strains, neurological conditions, disc herniation, temporomandibular joint disorders and provide post-operative rehabilitation (CASA 2022; AHPCSA 2018).

Physiotherapists may treat the following conditions: neck pain, whiplash, low back pain, chronic pain disorders, sport injuries, joint sprains, muscle/ligament strains, gynaecological conditions, respiratory conditions, cardiovascular conditions, neurological conditions, disc herniation, temporomandibular joint disorders and provide post-operative rehabilitation (HPCSA 2022). The results obtained are noted below and are compared to previous literature.

### Neck Pain

All chiropractors (100.0%,  $n=116$ ) and the vast majority of physiotherapists (98.4%,  $n=187$ ) knew that the other profession can treat neck pain. It is evident that both professions are well informed that the other profession can treat neck pain. The physiotherapy finding compares favourably with Hunter (2004) who found that 95.0% of physiotherapists believed that chiropractors may treat (61.0%) or may sometimes treat (34.0%) neck pain.

### Whiplash

A large percentage of chiropractors and (94.8%,  $n=110$ ) and physiotherapists (81.1%,  $n=154$ ) believed that the other profession can treat whiplash. This indicates that both professions have good knowledge that the other profession can treat whiplash. Similarly, Naidoo (2008) found that 78.4% of South African biokineticists knew that chiropractors can treat whiplash.

### Low Back Pain

The vast majority of chiropractors (99.1%,  $n=115$ ) and physiotherapists (98.4%,  $n=187$ ) thought that the other profession can treat low back pain. The results show that both professions are well informed in this area. This corresponds with Hunter (2004) who found that 97.0% of physiotherapists believed that chiropractors may treat (63.0%) or may sometimes (34.0%) treat low back pain. Similarly, Naidoo (2008) demonstrated that 94.5% of biokineticists in South Africa thought that chiropractors can treat low back pain.

### Chronic Pain Disorders

Most chiropractors (90.5%,  $n=105$ ) and physiotherapists (82.6%,  $n=157$ ) identified chronic pain disorders as a condition that may be treated by the other profession. Hence, both professions in this study demonstrated good knowledge that the other profession can treat chronic pain disorders. The physiotherapy finding is higher than the work of Hunter (2004) in which 68.0% of physiotherapists reported that chiropractors may treat (40.0%) or may sometimes (28.0%) treat chronic pain disorders.

### Sport Injuries

The vast majority of chiropractors (99.1%,  $n=115$ ) and a large proportion of physiotherapists (79.5%,  $n=151$ ) thought that the other profession can treat sport injuries. Consequently, chiropractors and physiotherapists have good knowledge that the other profession can treat sport injuries. The physiotherapy result is higher than that of Hunter (2004) who found that 61.0% of physiotherapists identified that chiropractors may treat (24.0%) or may sometimes (37.0%) treat sport injuries.

### Joint Sprains

A large percentage of chiropractors (98.3%,  $n=114$ ) and more than half of the physiotherapy respondents (63.7%,  $n=121$ ) believed that the other profession can treat joint sprains. This shows that chiropractors have good knowledge whereas physiotherapists have adequate knowledge that the other profession can treat joint sprains. The results highlight the need for the chiropractic profession to better educate physiotherapists to enhance their knowledge in this field. This is higher than the 46.0% of physiotherapists who agreed that chiropractors may treat (20.0%) or may sometimes treat (26.0%) joint and ligament sprains, in a study by Hunter (2004). Additionally, Naidoo (2008) demonstrated that 44.3% of biokineticists in South Africa thought that joint sprains can be treated by chiropractors. The physiotherapy finding compares favourably with Olawale and Adjabeng (2014) who found that 52.5% of the general public in Makola market in Accra, Ghana knew that physiotherapists can treat bone and joint disorders.

### Muscle/Ligament Strains

The vast majority of chiropractic respondents (99.1%,  $n=115$ ) and just over half of the physiotherapists (57.4%,  $n=109$ ) knew that muscle/ligament strains can be treated by the other profession. Chiropractors demonstrated good knowledge, whereas physiotherapists have adequate knowledge that the other profession can treat muscle/ligament strains. This therefore creates an opportunity for chiropractors to better educate the physiotherapy profession on their ability to treat these complaints.

The physiotherapy results correspond with the results obtained by Hunter (2004) in which 43.0% of physiotherapists thought that chiropractors may treat (16.0%) or may sometimes treat (27.0%) muscle strains. The chiropractic result is considerably higher

than the 38.2% of the general public in Makola market in Accra, Ghana believed that physiotherapists can treat muscle disorders. Martin Ebenezer *et al.* (2019) also stated that medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia were aware that physiotherapists can treat musculoskeletal conditions.

#### Gynaecological Conditions

In this study, 18.1% of chiropractors ( $n=21$ ) were aware that physiotherapists can treat gynaecological conditions. The poor knowledge demonstrated by chiropractors in this study presents a potential area for physiotherapists to better educate the chiropractic profession. Similarly, Martin Ebenezer *et al.* (2019) stated that the medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia did not know that physiotherapists can treat women's health disorders and pelvic floor disorders.

#### Respiratory Conditions

Most chiropractic respondents (81.0%,  $n=94$ ) believed that physiotherapists can treat respiratory conditions. This shows that chiropractors are well informed that physiotherapists can treat respiratory conditions. However, Martin Ebenezer *et al.* (2019) stated that the medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia did not know that physiotherapists can treat respiratory conditions.

#### Cardiovascular Conditions

It was found that 18.1% of chiropractors ( $n=21$ ) knew that physiotherapists can treat cardiovascular conditions. Yet again, the opportunity arises for physiotherapists to better educate the chiropractic profession. The results are higher than the 4.4% of the general public in Makola market in Accra, Ghana knew that physiotherapists can treat cardio-respiratory conditions (Olawale and Adjabeng 2014). Similarly, Martin Ebenezer *et al.* (2019) stated that the medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia did not know that physiotherapists can treat cardiopulmonary conditions.

### Neurological Conditions

A large percentage of chiropractors (70.7%,  $n=82$ ) and a small percentage of physiotherapists (35.3%,  $n=67$ ) believed that the other profession can treat neurological conditions. This shows that while chiropractors have good knowledge that physiotherapists can treat neurological conditions, the physiotherapists have poor knowledge that chiropractors can treat the same complaints. It would benefit the chiropractic profession to better educate the physiotherapy profession to enhance their knowledge. However, Martin Ebenezer *et al.* (2019) stated that the medical and health science students at Universiti Tunku Abdul Rahman Sungai Long Campus in Malaysia did not know that physiotherapists can treat neurological conditions such as cerebral palsy.

### Disc Herniation

A large proportion of chiropractors (75.9%,  $n=88$ ) and physiotherapists (74.2%,  $n=141$ ) identified disc herniation as a condition treated by the other profession. Both chiropractors and physiotherapists in this study are knowledgeable that the other profession can treat disc herniation. These results are higher than the 41.0% of physiotherapists who thought that disc herniation may be treated (24.0%) or may sometimes be treated (17.0%) by chiropractors in a study by Hunter (2004). Naidoo (2008) also demonstrated that 62.5% of biokineticists in South Africa agreed that chiropractors can treat disc herniation.

### Temporomandibular Joint Disorders

Most chiropractors (81.9%,  $n=95$ ) and physiotherapists (78.9%,  $n=150$ ) knew that temporomandibular joint disorders can be treated by the other profession. The results indicate that both professions have good knowledge that the other profession can treat temporomandibular joint disorders. By comparison, Hunter (2004) found that 43.0% of physiotherapists believed that chiropractors may treat (35.0%) or may sometimes treat (8.0%) temporomandibular joint disorders.

### Post-Operative Rehabilitation

A large percentage of chiropractors (97.4%,  $n=113$ ), compared to a small percentage of physiotherapists (24.2%,  $n=46$ ), thought that the other profession can provide post-operative rehabilitation. Hence, chiropractors have good knowledge, whereas

physiotherapists have poor knowledge that the other profession can provide post-operative rehabilitation. This creates a potential area for the chiropractic profession to better educate the physiotherapy profession that chiropractors can perform rehabilitation for post-operative conditions. The physiotherapy finding corresponds with Hunter (2004) who demonstrated that 28.0% of physiotherapists were aware that chiropractors may offer (10.0%) or may sometimes offer (18.0%) post-operative rehabilitation. Similarly, Agni and Battin (2017) found that 82.0% of general practitioners in Mumbai, India believed that physiotherapists should provide pre/post-operative treatment to orthopaedic patients.

#### **5.3.7.1 Mean Knowledge Score of Chiropractors and Physiotherapists on the Conditions Treated by the Other Profession in South Africa**

Chiropractors obtained a mean score of 82.4% on their knowledge of the conditions that physiotherapists may treat. Thus, chiropractors have good knowledge regarding the conditions that physiotherapists may treat. Physiotherapists achieved a mean score of 77.3% on their knowledge of the conditions that chiropractors may treat. Overall, physiotherapists have good knowledge of the conditions treated by chiropractors. Although both professions have good knowledge with regard to the conditions that the other profession may treat in South Africa, there was a significant difference in the knowledge between these professions ( $p < .001$ ).

One can assume that since 2004, the knowledge of physiotherapists improved as it is observed that a larger percentage of physiotherapy participants in this study compared to Hunter (2004) believed that chiropractors can treat chronic pain disorders, sport injuries, joint/ligament sprains, muscle strains, disc herniation and temporomandibular joint disorders.

Good inter-professional knowledge on the conditions that chiropractors and physiotherapists may treat should encourage referral relationships between the two professions (Busari, Moll and Duits 2017). Both professions can be involved in the co-management of patients, using their skills to deliver optimal healthcare (Busari, Moll and Duits 2017). By doing so, this will promote inter-professional respect, discourage professional rankings and eliminate professional stereotypes (Darlow *et al.* 2015).

### 5.3.8 Summary of the Knowledge of Qualified Chiropractors and Physiotherapists in South Africa Regarding the Other Professional Practice

**Table 5.1: Comparing the knowledge of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice**

<b>Chiropractors</b>	<b>Physiotherapists</b>
<p>Poor level of knowledge:</p> <ul style="list-style-type: none"> <li>• The number of registered physiotherapists in South Africa</li> </ul>	<p>Poor level of knowledge:</p> <ul style="list-style-type: none"> <li>• The number of registered chiropractors in South Africa</li> <li>• The qualification obtained by South African chiropractors</li> <li>• The number of years required to study chiropractic in South Africa</li> </ul>
<p>High level of knowledge:</p> <ul style="list-style-type: none"> <li>• The qualification obtained by South African physiotherapists</li> <li>• The institutions in South Africa that offer physiotherapy courses</li> <li>• The number of years required to study physiotherapy in South Africa</li> <li>• The examinations performed by physiotherapists</li> <li>• The treatment modalities offered by physiotherapists</li> <li>• The conditions that physiotherapists may treat</li> </ul>	<p>Moderate to high level of knowledge:</p> <ul style="list-style-type: none"> <li>• The institutions in South Africa that offer chiropractic courses</li> <li>• The examinations performed by chiropractors</li> <li>• The treatment modalities offered by chiropractors</li> <li>• The conditions that chiropractors may treat</li> </ul>

Hypothesis one: South African chiropractors will have greater knowledge of the physiotherapy profession than physiotherapists will have of the chiropractic profession.

Hypothesis one can be accepted based on the results obtained in this study.

A study by Naidoo and Bühler (2009) found that physiotherapy and chiropractic students demonstrated equal knowledge regarding the other profession. However, in this study chiropractors overall demonstrated greater knowledge regarding the other professional practice than the physiotherapists.

## **5.4 ATTITUDES OF QUALIFIED CHIROPRACTORS AND PHYSIOTHERAPISTS IN SOUTH AFRICA REGARDING THE OTHER PROFESSIONAL PRACTICE**

It was hypothesized that both South African chiropractors and physiotherapists will have a negative attitude regarding the other professional practice. The significant findings that were reported in the previous chapter will be discussed.

### **5.4.1 Competence in Musculoskeletal and Neurological Examination**

In this study 75.0% of chiropractors ( $n=87$ ) agreed that physiotherapists are competent in musculoskeletal and neurological examination.

A large proportion of physiotherapists (72.1%,  $n=137$ ) in this study agreed that chiropractors are competent in musculoskeletal and neurological examination. Similarly, a low 42.1% of South African pharmacists believed that chiropractors “are specialists in the field of nerve, muscle and bone disorders”, with a total of 97.3% believing that chiropractors are competent (51.4%), moderately competent (27.8%) and very competent (18.1%) in the examination of neuromuscular conditions (Palmer 2008).

Additionally, Maharaj (2009) demonstrated that 43.1% of provincial and national health portfolio committee members of South Africa identified chiropractors to be “very competent in neuromusculoskeletal examination and diagnosis”. Naidoo (2008) also found that 51.3% of South African biokineticists agreed that chiropractors are greatly competent in examining neuromusculoskeletal conditions, while 40.8% agreed that chiropractors are moderately competent. Furthermore, 36.0% and 44.0% of South African biokineticists agreed that chiropractors are greatly and moderately competent in diagnosing neuromusculoskeletal conditions (Naidoo 2008).

Heslop (2008) found that 61.5%, 6.4% and 11.5% of South African paediatricians believed that chiropractors are competent, moderately competent and very competent respectively, in examining and diagnosing musculoskeletal conditions. Heslop (2008) also demonstrated that 36.0%, 6.7% and 1.3% of South African paediatricians believed

that chiropractors are competent, moderately competent and very competent respectively, in examining and diagnosing neurological conditions.

In this study, chiropractors and physiotherapists have a positive attitude that the other profession is skilled in examining the musculoskeletal and nervous systems of a patient. Based on these results, one can assume that these professions have a mutual respect for each other. This should promote inter-professional collaboration between the two professions, thus allowing them to treat patients cohesively and efficiently (Busari, Moll and Duits 2017). There was no significant difference in the level of agreement between both professions on whether the other profession is competent in musculoskeletal and neurological examination ( $p=.078$ ).

#### **5.4.2 Competence in Managing and Treating Neuromusculoskeletal Conditions**

In this study, 82.8% of chiropractors ( $n=96$ ) believed that physiotherapists are competent in managing and treating patients presenting with neuromusculoskeletal conditions ( $p<.001$ ).

This study found that 70.0% of physiotherapists ( $n=133$ ) agreed that chiropractors are competent in managing and treating patients presenting with neuromusculoskeletal complaints ( $p<.001$ ). This was higher than the findings of Hunter (2004) and Maharaj (2009), in which 53.0% of physiotherapists and 32.7% of provincial and national health portfolio committee members of South Africa respectively indicated that chiropractic offers excellent treatment for certain neuromusculoskeletal conditions. Naidoo (2008) also demonstrated that 44.7% and 42.1% of South African biokineticists believed that chiropractors are greatly and moderately competent in treating neuromusculoskeletal conditions. Westin *et al.* (2013) found that 93.0% of Norwegian general practitioners and 63.0% of Swedish general practitioners believed that chiropractors are competent for musculoskeletal conditions but only 17.0% of Norwegian general practitioners and 25.0% of Swedish general practitioners agreed that chiropractors are competent to treat neurological disturbances.

This study shows that chiropractors and physiotherapists have a positive attitude that the other profession is competent in treating neuromusculoskeletal complaints.

Therefore, one can assume that these professions recognize the skills and expertise of the other profession in contributing to the management of a patient (Ansa *et al.* 2020). This should increase the likelihood of chiropractors and physiotherapists referring patients to each other when necessary to provide coordinated, high quality patient care (Ansa *et al.* 2020). There was no significant difference in the level of agreement between both professions on whether the other profession is competent in managing and treating neuromusculoskeletal conditions ( $p=.060$ ).

#### **5.4.3 Providing Similar Treatments as the Other Profession**

It is evident that chiropractors and physiotherapists treat a common group of patients and offer similar treatments yet, despite this, 93.1% of chiropractors ( $n=108$ ) believed that physiotherapists cannot perform the same treatment as chiropractors without additional training ( $p<.001$ ). This compares favourably with the findings of Slabbert (2014) in which 93.8% of chiropractors did not agree that physiotherapists can perform the same treatment as chiropractors without additional training.

Less than half of the physiotherapy respondents (46.8%,  $n=89$ ) did not believe that chiropractors can perform the same treatment as physiotherapists without additional training ( $p=.048$ ). This was lower than the findings of Slabbert (2014) who demonstrated that 96.6% of physiotherapists believed that chiropractors cannot perform the same treatment as physiotherapists without additional training.

Although there was significant disagreement by the chiropractic and physiotherapy professions that the other profession can perform the same treatment as their profession without additional training, it was noted that the chiropractors disagreed significantly more than the physiotherapists ( $p<.001$ ). This suggests that both professions consider themselves highly qualified in providing a healthcare service which should not overlap without the relevant training. While this is necessary, this could be a potential barrier to developing inter-professional relationships as there may be an overlap in the scope of practice.

#### **5.4.4 Professional Ranking**

It was found that 84.5% of the chiropractic respondents ( $n=98$ ) did not agree that physiotherapy treatments have been shown to be superior to chiropractic ( $p<.001$ ). An insignificant 41.4% of chiropractors ( $n= 48$ ) disagreed that chiropractic treatments have been shown to be superior to physiotherapy ( $p=.298$ ).

A considerable number of physiotherapists (62.6%,  $n=119$ ) did not believe that their treatments have been shown to be superior to chiropractic ( $p<.001$ ). An insignificant 36.3% of physiotherapists ( $n=69$ ) disagreed that that chiropractic treatments have been shown to be superior to physiotherapy ( $p=.105$ ).

In summary, chiropractors and physiotherapists disagreed that the other profession's treatments have been shown to be superior to theirs. However, it was evident that the chiropractors disagreed significantly more than the physiotherapists ( $p<.001$ ). Interestingly, both professions also disagreed that their profession's treatments have been shown to be superior to the other profession's treatments. While both professions disagreed on this statement, chiropractors disagreed significantly more than physiotherapists ( $p<.001$ ). This suggests that there is no professional hierarchy between chiropractors and physiotherapists and that both professions have mutual respect for each other.

#### **5.4.5 Similar Professions**

Less than half of the physiotherapists (47.4%,  $n=90$ ) did not agree that chiropractic and physiotherapy are similar professions ( $p<.001$ ). This suggests that physiotherapists believe that each profession has a unique contribution to the treatment and management of a patient. Therefore, one can assume that physiotherapists recognize the value of chiropractic which may increase the likelihood of inter-professional collaboration. The results compare favourably with Slabbert (2014) who found that 54.0% of physiotherapists did not believe that chiropractic and physiotherapy are similar professions.

#### **5.4.6 Complementary Professions**

A large percentage of chiropractors (85.3%,  $n=99$ ) agreed that chiropractic and physiotherapy are complementary professions ( $p<.001$ ). Similarly, a study by Slabbert (2014) found that 81.3% of chiropractors agreed that chiropractic and physiotherapy are complementary professions.

Most physiotherapists (72.1%,  $n=137$ ) agreed that chiropractic and physiotherapy are complementary professions ( $p<.001$ ). Similarly, Slabbert (2014) found that 62.0% of physiotherapists agreed that chiropractic and physiotherapy are complementary professions. Additionally, Maharaj (2009) found that 78.4% of provincial and national health portfolio committee members of South Africa agreed that chiropractic and physiotherapy are complementary professions. Hunter (2004) demonstrated that 54.0% of physiotherapists reported that chiropractic is complementary to physiotherapy which is lower than the 72.1% of physiotherapists observed in this study. Langworthy and Smink (2000) also found that 48.0% of physiotherapists in a Netherlands study indicated that chiropractic and physiotherapy are complementary professions which is lower than the results of the current study.

Both professions agreed that chiropractic and physiotherapy are complementary professions, with chiropractors having agreed significantly more than physiotherapists ( $p=.001$ ). Based on these results, one can assume that both professions would be open to inter-professional relationships. Chiropractors and physiotherapists would therefore be able to complement each other in the treatment that they provide while co-managing patients.

#### **5.4.7 Effectiveness to Patients**

The vast majority of physiotherapists (91.1%,  $n=173$ ) believed that chiropractic is effective for some patients ( $p<.001$ ). This finding is higher than the 24.7% of North American orthopaedic surgeons in a study by Busse *et al.* (2011), who believed that chiropractic is particularly effective for spinal complaints (1.72%), low back pain (9.20%), general musculoskeletal disorders (9.20%) and non-surgical injuries (4.60%). Similarly, Palmer (2008) found that a low 21.1% of South African pharmacists believed that chiropractic is effective for some patients and Naidoo (2008) found that 64.1% of

South African biokineticists agreed that chiropractic provides good treatment for certain musculoskeletal conditions. Additionally, Heslop (2008) found that 17.6% and 25.9% of South African paediatricians believed that chiropractic may be effective for some patients and chiropractic is effective for some neuromusculoskeletal conditions respectively. Maharaj (2009) also found that 60.8% of provincial and national health portfolio committee members of South Africa agreed that chiropractic is effective for some patients.

The vast majority of chiropractic respondents (94.0%,  $n=109$ ) believed that physiotherapy is effective for some patients ( $p<.001$ ).

In summary, both professions demonstrated a positive attitude that the other profession is effective in the management of a patient. This suggests that both professions respect and recognize the need for the other profession which can stimulate inter-professional collaboration and acceptance. There was no significant difference in the level of agreement between both professions on whether the other profession is effective for some patients ( $p=.301$ ).

#### **5.4.8 Harm to Patients**

In this study, 90.5% of the chiropractors ( $n=105$ ) did not agree that physiotherapy causes more harm than good ( $p<.001$ ).

More than half of the physiotherapy respondents (62.6%,  $n=119$ ) indicated that they did not agree that chiropractic causes more harm than good ( $p<.001$ ). This is in keeping with the results of Maharaj (2009) in which 62.9% of provincial and national health portfolio committee members of South Africa did not agree that chiropractic causes more harm than good. Additionally, Heslop (2008) found that only 2.4% of South African paediatricians believed that chiropractic causes more harm than good.

Although there was significant disagreement by both professions that the other profession causes more harm than good, it was found that chiropractors disagreed significantly more than physiotherapists ( $p<.001$ ). The findings suggest that there is

mutual respect between chiropractors and physiotherapists and that each profession acknowledges that the other profession has value to add to the healthcare of a patient.

#### **5.4.9 Work Closely with the Other Profession**

A substantial number of chiropractors (69.0%,  $n=80$ ) agreed that they are inclined to work closely with the physiotherapy profession ( $p<.001$ ). More than half of the chiropractic participants (54.3%,  $n=63$ ) agreed that they already work closely with a physiotherapist ( $p=.002$ ). In comparison, Naidoo and Bühler (2009) reported that 52.0% of first year and 80.0% of final year chiropractic students agreed that they would like to work closely with the physiotherapy profession.

Although 54.2% of physiotherapists ( $n=103$ ) did not agree that they worked closely with a chiropractor, 55.3% ( $n=105$ ) agreed that they would like to work closely with the chiropractic profession ( $p<.001$ ). Similarly, Naidoo and Bühler (2009) found that 45.0% of first year and 53.0% of final year physiotherapy students indicated that they are inclined to work closely with the chiropractic profession.

There was significant agreement by both chiropractors and physiotherapists that they would like to work closely with the other profession, with chiropractors having agreed significantly more than physiotherapists ( $p<.001$ ). However, a significant difference in the level of agreement with respect to how closely these two professions work with each other was noted. There was significant agreement from chiropractors that they work closely with physiotherapists but, there was significant disagreement from physiotherapists that they work closely with chiropractors ( $p<.001$ ).

Based on these results, it appears that both professions acknowledge the role of the other profession and that there exists a mutual respect and understanding. This should increase inter-professional relationships between chiropractors and physiotherapists. However, the absence of chiropractic in the public health sector in South Africa may be responsible for limiting inter-professional relationships, especially for those physiotherapists practicing within the public health sector.

### 5.4.10 Summary of the Attitudes of Qualified Chiropractors and Physiotherapists Regarding the Other Professional Practice

**Table 5.2: Comparing the attitudes of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice**

Chiropractors	Physiotherapists
<p>Agreed on:</p> <ul style="list-style-type: none"> <li>• Physiotherapists are competent in musculoskeletal and neurological examination.</li> <li>• Physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions.</li> <li>• Chiropractic and physiotherapy are complementary professions.</li> <li>• Physiotherapy is effective for some patients.</li> <li>• Some chiropractors would like to work closely with the physiotherapy profession.</li> <li>• Some chiropractors already work closely with a physiotherapist.</li> </ul>	<p>Agreed on:</p> <ul style="list-style-type: none"> <li>• Chiropractors are competent in musculoskeletal and neurological examination.</li> <li>• Chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions.</li> <li>• Chiropractic and physiotherapy are complementary professions.</li> <li>• Chiropractic is effective for some patients.</li> <li>• Some physiotherapists would like to work closely with the chiropractic profession.</li> </ul>
<p>Disagreed on:</p> <ul style="list-style-type: none"> <li>• Physiotherapists can perform the same treatment as chiropractors without additional training.</li> <li>• Physiotherapy treatments have been shown to be superior to chiropractic.</li> <li>• Physiotherapy causes more harm than good.</li> </ul>	<p>Disagreed on:</p> <ul style="list-style-type: none"> <li>• Chiropractors can perform the same treatment as physiotherapists without additional training.</li> <li>• Physiotherapy treatments have been shown to be superior to chiropractic.</li> <li>• Chiropractic and physiotherapy are similar professions.</li> <li>• Chiropractic causes more harm than good.</li> <li>• Some physiotherapists already work closely with a chiropractor.</li> </ul>

Naidoo and Bühler (2009) found that more chiropractic students than physiotherapy students have positive attitudes toward the other profession. However, the current study found that both professions demonstrated overall positive attitudes of the other profession. This means that there is currently a greater awareness of each other's profession as compared to the past.

Hypothesis two: Both South African chiropractors and physiotherapists will have a negative attitude regarding the other professional practice.

Hypothesis two must be rejected as this study demonstrated that both South African chiropractors and physiotherapists had an overall positive attitude toward the other professional practice.

## **5.5 PERCEPTIONS OF QUALIFIED CHIROPRACTORS AND PHYSIOTHERAPISTS IN SOUTH AFRICA REGARDING THE OTHER PROFESSIONAL PRACTICE**

It was hypothesized that both South African chiropractors and physiotherapists will have negative perceptions regarding the other professional practice. Only significant findings that were reported in the previous chapter will be discussed.

### **5.5.1 Chiropractic and Physiotherapy as a Healthcare Service**

More than half of the chiropractic participants (68.1%,  $n=79$ ) agreed that physiotherapy is a secondary health care service, while slightly fewer (62.1%,  $n=72$ ) did not agree that physiotherapy is an alternative healthcare service ( $p<.001$ ). In some countries, patients require a referral from other healthcare professionals, such as general practitioners, in order to receive physiotherapy care (Vardhan *et al.* 2018; Agni and Battin 2017). However, in South Africa, physiotherapy is a primary healthcare service and therefore patients do not require a referral from a doctor to access physiotherapy healthcare (SASP 2022). There may also be a discrepancy regarding the term “secondary healthcare service” among chiropractors (Langworthy and Smink 2000).

In this study, there was a significant agreement by both professions that the other profession is a secondary healthcare service with chiropractors having agreed significantly more than physiotherapists ( $p=.007$ ). This suggests that both professions should be educated on the other’s professional status in the healthcare system.

Chiropractic is classified as complementary and alternative medicine (McCubbin 2017). In this study, 72.6% of physiotherapists ( $n=138$ ) agreed that chiropractic is an

alternative healthcare service ( $p < .001$ ). This compares favourably with Hunter (2004) in which 61.0% of physiotherapists perceived chiropractic as an alternative healthcare profession. Additionally, 56.7% of provincial and national health portfolio committee members of South Africa in a study by Maharaj (2009) indicated that that chiropractic is a scientific, alternative healthcare service.

A low 39.5% of South African pharmacists perceived chiropractic as an alternative healthcare profession (Palmer 2008). Similarly, 37.0% of physiotherapists, 29.0% of osteopaths and 41.0% of manual therapists in the Netherlands perceived chiropractic as alternative medicine (Langworthy and Smink 2000).

A significant difference in the level of agreement between the chiropractors and physiotherapists on whether the other profession is an alternative healthcare service was noted. Physiotherapists agreed that chiropractic is an alternative healthcare service but the chiropractors disagreed that physiotherapy is an alternative healthcare service ( $p < .001$ ). Alternative medicine is defined as “non-mainstream practices that are used instead of conventional medicine” (Millstine 2021). The Health Professions Council of South Africa Act 56 of 1974 states that physiotherapy “may be performed as a Supplementary service to medicine” (HPCSA 2022). Therefore, physiotherapy is considered as complementary medicine as it is a “non-mainstream practice that is used together with conventional medicine” (Millstine 2021).

### **5.5.2 Accessibility and Medical Aid Cover**

A large percentage of chiropractors (81.9%,  $n=95$ ) believed that physiotherapy is accessible to all members of the public ( $p < .001$ ), with the vast majority of participants (98.3%,  $n=114$ ) having agreed that physiotherapy is included in medical aid cover ( $p < .001$ ). Physiotherapy is indeed a healthcare profession that offers treatment for people of all ages and is included in medical aid cover (SASP 2022).

More than half of the physiotherapy respondents (58.9%,  $n=112$ ) believed that chiropractic is included in medical aid cover ( $p < .001$ ). According to CASA (2022), most medical aids in South Africa cover chiropractic care. This finding corresponds favourably to Hunter (2004), in which 48.0% and 21.0% of physiotherapists identified

that chiropractic “should be part of standard medical aid” and “should be part of an additional package” respectively. The results of the current study were considerably lower than Maharaj (2009) in which 91.7% and 93.5% of provincial and national health portfolio committee members of South Africa agreed that chiropractic “should be part of standard medical aid” and “should be part of an additional medical aid package” respectively. Additionally, Palmer (2008) also found that 94.7% of South African pharmacists believed that chiropractic “should be part of a medical aid”.

Chiropractors agreed significantly more than physiotherapists that the other profession is accessible to all members of the public ( $p<.001$ ). Both professions agreed that the other profession is covered by medical aid with chiropractors having agreed significantly more than physiotherapists ( $p<.001$ ). The results suggest that chiropractors acknowledge that physiotherapy provides a healthcare service that is readily accessible to people of all ages. This could stimulate inter-professional relationships since any patient can be referred for physiotherapy when necessary.

The results also indicated that both professions are aware that there are medical aid schemes that will reimburse patients for chiropractic and physiotherapy care. This makes chiropractic and physiotherapy suitable for patients who wish to claim from medical aid instead of paying privately. As a result, this may make it convenient for patients to consider utilizing these healthcare services and may stimulate a referral relationship between chiropractors and physiotherapists.

### **5.5.3 Affordability**

Less than half of the physiotherapy participants (38.4%,  $n=73$ ) did not agree that chiropractic is affordable ( $p<.001$ ), which was higher than the 15.0% of physiotherapists in a study by Hunter (2004) who indicated that chiropractic is “too expensive”. Additionally, the results also reflect the findings by Maharaj (2009) in which 40.6% of provincial and national health portfolio committee members of South Africa did not agree that chiropractic is cost-effective. Similarly, 41.0% of physiotherapists, 39.0% of manual therapists and 39.0% of osteopaths and in the Netherlands perceived chiropractic as being too expensive (Langworthy and Smink 2000). However, by

contrast, 54.1% of South African pharmacists in a study by Palmer (2008) indicated that chiropractic is affordable.

Both professions disagreed that the other profession is affordable but chiropractors disagreed significantly more than physiotherapists ( $p=.040$ ). This may be a barrier to developing inter-professional relationships as each profession may be less likely to refer patients to the other profession based on their perception that patients may not be able to afford chiropractic and physiotherapy care.

#### **5.5.4 Role of Profession**

A great number of chiropractors (94.0%,  $n=109$ ) believed that physiotherapy is needed in South Africa and, similarly, 97.4% ( $n=113$ ) noted that the physiotherapy profession plays an important role in the healthcare system ( $p<.001$ ). By comparison, 100.0% of general practitioners in Jalandhar city, Punjab, India indicated that they recognize the need for physiotherapy (Vardhan *et al.* 2018). Similarly, Agni and Battin (2017) found that a total of 88.0% of general practitioners in Mumbai, India believed that physiotherapy plays a very important (54.7%) and important (33.3%) role in the healthcare system.

It was noted that 60.5% of physiotherapists ( $n=115$ ) in this study believed that chiropractic is needed in South Africa which corresponds with the 57.9% ( $n=110$ ) of participants who agreed that chiropractic plays an important role in the healthcare system ( $p<.001$ ). Similarly, Hunter (2004) and Palmer (2008) found that only 4.0% of physiotherapists and 1.4% of South African pharmacists respectively believed that chiropractic is not needed in South Africa which therefore suggested that the majority of participants acknowledged the role of the profession in the country.

When compared to Busse *et al.* (2011), 2.3% of North American orthopaedic surgeons indicated that they were unsure of the role of chiropractic in the healthcare system. Langworthy and Smink (2000) also found that 2.0% of physiotherapists and 11.0% of manual therapists believed that there is no need for chiropractic in the Netherlands. Additionally, Maharaj (2009) found that 77.8% of provincial and national health portfolio

committee members of South Africa believed that chiropractic is needed in the South African healthcare system.

Chiropractors in this study agreed significantly more than physiotherapists that the other profession plays an important role in the healthcare system ( $p<.001$ ). It was noted that chiropractors agreed significantly more than physiotherapists that the other profession is needed in South Africa ( $p<.001$ ). This suggests that there is mutual respect and inter-professional acceptance by both professions. However, chiropractors may wish to promote awareness among the physiotherapy profession about the benefits of chiropractic to correct possible misconceptions. This would help to foster inter-professional collaboration.

#### **5.5.5 Scientific Evidence**

Just more than half of the physiotherapists (51.6%,  $n=98$ ) agreed that chiropractic is based on scientific evidence ( $p<.001$ ). This contrasts the 5.0% of physiotherapists who perceived chiropractic to be “lacking scientific background” in a study by Hunter (2004). However, by comparison, Maharaj (2009) demonstrated that 61.3% of provincial and national health portfolio committee members of South Africa did not agree that chiropractic lacks scientific background and, similarly, only 12.2% of South African pharmacists indicated that chiropractic lacks scientific evidence (Palmer 2008).

Additionally, Busse *et al.* (2011) found that 11.5% of North American orthopaedic surgeons believed that chiropractic lacks scientific evidence and 3.4% indicated that more research on chiropractic treatment is necessary. Langworthy and Smink (2000) also noted that 10.0% of physiotherapists, 8.0% of osteopaths and 17.0% of manual therapists in the Netherlands felt that chiropractic lacks scientific basis.

In this study, 92.2% of chiropractors ( $n=107$ ) agreed that physiotherapy is based on scientific evidence ( $p<.001$ ). In comparison, Al-Eisa *et al.* (2016) found that 57.0% of physicians in Saudi Arabia had negative perceptions of physiotherapy, of which 22.0% attributed this to limited scientific evidence of the physiotherapy profession.

There was a significant agreement from both study groups that the other profession is based on scientific evidence. With respect to this statement, chiropractors agreed significantly more than physiotherapists ( $p < .001$ ). One can assume that since both professions perceive the other profession to be based on scientific evidence, this would indicate mutual respect and acceptance and support the development of a referral relationship between chiropractors and physiotherapists. There are numerous evidence-based articles of each profession in various scientific journals. Perhaps these articles should be made available to each profession to improve inter-professional awareness on the benefits of each profession.

### **5.5.6 Professional Council Registration**

With respect to professional council registration, 95.7% of chiropractors ( $n=111$ ) believed that the physiotherapy profession is registered with the Health Professions Council of South Africa which corresponds with the 94.8% of participants ( $n=110$ ) who did not agree that the physiotherapy profession is registered with the Allied Health Professions Council of South Africa ( $p < .001$ ).

In this study, 77.4% of physiotherapists ( $n=147$ ) believed that the chiropractic profession is registered with the Allied Health Professions Council of South Africa which corresponds with the 58.4% of participants ( $n=111$ ) who did not agree that the chiropractic profession is registered with the Health Professions Council of South Africa ( $p < .001$ ).

A significant difference in the level of agreement between the chiropractors and physiotherapists on whether the other profession is registered with the Health Professions Council of South Africa or Allied Health Professions Council of South Africa was noted. Physiotherapists disagreed that chiropractic is registered with the HPCSA whereas the chiropractors agreed that physiotherapy is registered with the HPCSA ( $p < .001$ ). Chiropractors therefore disagreed that physiotherapy is registered with the AHPCSA while physiotherapists agreed that chiropractic is registered with the AHPCSA ( $p < .001$ ).

The results indicate that chiropractors and physiotherapists are aware that each profession is registered with the relevant statutory council. Some roles of the HPCSA and AHPCSA are to ensure the wellbeing of the patients, grant professional status, set policies and standards of professional etiquette and ensure continuing professional development of practitioners (AHPCSA 2018; HPCSA 2016). This means that chiropractors and physiotherapists can trust that the other profession is highly qualified, reputable and regulated in providing healthcare to patients. This knowledge can help to motivate inter-professional respect, understanding and acceptance which would promote inter-professional relationships.

### 5.5.7 Summary of the Perceptions of Qualified Chiropractors and Physiotherapists in South Africa Regarding the Other Professional Practice

**Table 5.3: Comparing the perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice**

Chiropractors	Physiotherapists
<p>Agreed on:</p> <ul style="list-style-type: none"> <li>• Physiotherapy is a secondary healthcare service.</li> <li>• Physiotherapy is accessible to all members of the public.</li> <li>• Physiotherapy is included in Medical Aid cover.</li> <li>• Physiotherapy is needed in South Africa.</li> <li>• Physiotherapy plays an important role in the healthcare system.</li> <li>• Physiotherapy is based on scientific evidence.</li> <li>• Physiotherapy is registered with the Health Professions Council of South Africa.</li> </ul>	<p>Agreed on:</p> <ul style="list-style-type: none"> <li>• Chiropractic is an alternative healthcare service.</li> <li>• Chiropractic is included in Medical Aid cover.</li> <li>• Chiropractic is needed in South Africa.</li> <li>• Chiropractic plays an important role in the healthcare system.</li> <li>• Chiropractic is based on scientific evidence.</li> <li>• Chiropractic is registered with the Allied Health Professions Council of South Africa.</li> </ul>
<p>Disagreed on:</p> <ul style="list-style-type: none"> <li>• Physiotherapy is an alternative healthcare service.</li> <li>• Physiotherapy is registered with the Allied Health Professions Council of South Africa.</li> </ul>	<p>Disagreed on:</p> <ul style="list-style-type: none"> <li>• Chiropractic is affordable.</li> <li>• Chiropractic is registered with the Health Professions Council of South Africa.</li> </ul>

Naidoo and Bühler (2009) found that more chiropractic students than physiotherapy students had positive perceptions toward the other profession. However, the current

study found that both professions demonstrated overall positive perceptions of the other profession. This means that there is currently a greater awareness of each other's profession as compared to the past.

Hypothesis three: Both South African chiropractors and physiotherapists will have negative perceptions regarding the other professional practice.

Hypothesis three must be refuted as this study demonstrated that both South African chiropractors and physiotherapists generally had positive perceptions toward the other professional practice.

## **5.6 THE INTERACTION OF KNOWLEDGE, ATTITUDES AND PERCEPTIONS OF QUALIFIED CHIROPRACTORS AND PHYSIOTHERAPISTS IN SOUTH AFRICA REGARDING THE OTHER PROFESSIONAL PRACTICE AND ITS INFLUENCE ON INTER-PROFESSIONAL RELATIONSHIPS**

It was hypothesized that a lack of knowledge of the chiropractic or physiotherapy profession will result in negative attitudes and perceptions of that profession, thus preventing or limiting inter-professional relationships.

Inter-professional collaboration occurs when a team of various healthcare professionals work together to provide healthcare to satisfy the needs of patients, their families and the community (Ndibu Muntu Keba Kebe *et al.* 2020). According to Ansa *et al.* (2020), inter-professional collaboration enables role clarity, encourages patient referrals and allows for enhanced collaborative management of patients.

### **5.6.1 Referral of Patients to the Other Profession**

In this study, it was found that a significant 81.9% of chiropractors ( $n=95$ ) referred patients to physiotherapists, which contrasts with the 55.3% of physiotherapists ( $n=105$ ) who referred patients to chiropractors ( $p<.001$ ).

These findings compare favourably to Slabbert (2014) who demonstrated that 89.6% of chiropractors had referred patients to physiotherapists. Slabbert (2014) also found that 49.3% of physiotherapists referred to chiropractors, which is lower than the findings of the present study. Hunter (2004) reported that 67.0% of physiotherapists referred patients to chiropractors, which compares favourably with the previously mentioned 55.3% of physiotherapists in this study who referred to chiropractors.

When compared to a study by Naidoo and Bühler (2009), a similar pattern was noted among chiropractic and physiotherapy students. More chiropractic students (70.0% first year and 85.0% final year students) than physiotherapy students (45.0%) indicated that they would refer patients to the other profession (Naidoo and Bühler 2009).

However, Slabbert (2014) and Hunter (2004) also found that 46.0% and 33.0% of physiotherapists respectively had never referred patients to a chiropractor which compares favourably to the 44.7% of physiotherapists in this study who reported that they never referred patients to chiropractors.

Based on the current study findings, it appears that more chiropractors refer patients to physiotherapists than vice versa. This study found that both professions had positive attitudes and perceptions and were knowledgeable about the other profession. Hence, it would seem that a referral relationship between chiropractors and physiotherapists would be common. In cases where referral does not happen, perhaps patient treatment goals have been achieved and as result physiotherapists may not have had the need to refer patients for chiropractic care. However, this lack of referral may limit inter-professional exposure and thus restrict inter-professional relationships between the two professions.

### **5.6.2 Reasons for Referring a Patient to the Other Profession**

Significant findings relating to the reasons for referring a patient to the other profession were noted. A greater percentage of chiropractors (69.8%,  $n=81$ ) than physiotherapists (44.2%,  $n=84$ ) referred patients to the other profession depending on the condition with which the patient presented ( $p<.001$ ). These findings correspond to that of Slabbert (2014) in which 66.7% of chiropractors compared to 42.5% of physiotherapists had referred patients to other healthcare practitioners depending on the patient's condition.

Although both professions treat patients presenting with similar conditions, the results indicate that there may be a need for a second opinion from the other profession.

A greater 6.0% of chiropractors ( $n=7$ ), compared to a lesser 1.6% of physiotherapists ( $n=3$ ), considered patient finances as a cause for referral to the other profession ( $p=.046$ ). This compares favourably with Slabbert (2014) who found that 2.1% of chiropractors, compared to 1.1% of physiotherapists, had referred patients to other healthcare practitioners due to patient finances. The current results suggest that the services provided by some practitioners may be too expensive. As a result, these patients may be referred for care that is more affordable.

Of interest, it was also found that 68.1% of chiropractors ( $n=79$ ), compared to the 34.7% of physiotherapists ( $n=66$ ), referred patients the other profession for collaborative treatment ( $p<.001$ ). This implies that the chiropractic profession is more amenable to engage in inter-professional collaboration than the physiotherapy profession. This may also reflect why more chiropractors than physiotherapists refer patients to the other profession than vice versa.

A large percentage of chiropractors (45.7%,  $n=53$ ), compared to physiotherapists (30.5%,  $n=58$ ), identified the best interests of the patient as a reason for referral ( $p=.007$ ). This indicates a degree of mutual respect between both professions that they are able to refer a patient for appropriate care to another qualified practitioner to enhance the patient's well-being.

A greater 29.3% of chiropractors ( $n=34$ ), in contrast to a lesser 14.7% of physiotherapists ( $n=28$ ), reported that a limited scope of practice to help the patient warranted a referral to the other profession ( $p=.002$ ). These results differed from that of Slabbert (2014) who found that 2.1% of chiropractors, compared to 14.9% of physiotherapists, had referred patients to other healthcare practitioners due to a limited scope of practice. This suggests that there may be cases when the scope of practice restricts the healthcare that a patient requires. It is evident that both professions are able to identify when it is necessary to refer a patient for appropriate management of their condition. This indicates a degree of mutual respect and acceptance between both professions.

In comparison, more chiropractors (5.2%,  $n=6$ ) than physiotherapists (0.5%,  $n=1$ ) referred a patient to get rid of the patient ( $p=.013$ ). A possible reason for this may be patient non-compliance. Perhaps the patient is not actively participating in their healing process and as a result is referred to another practitioner to encourage co-operation.

### **5.6.3 Conditions Requiring Referral to the Other Profession**

The Allied Health Professions Council of South Africa Act 1982 states that South African chiropractors can provide “treatment and prevention of any physical defect, illness or deficiency that is related to spinal, pelvic, spino-visceral and general neuromusculoskeletal disorders in any person” (AHPCSA 2018). The Health Professions Council of South Africa Act 56 of 1974 states that the scope of South African physiotherapists which “may be performed as a Supplementary service to medicine includes orthopaedics, paediatrics, geriatrics, neurology and neurosurgery, respiratory disease and thoracic surgery, cardiovascular diseases and surgery, obstetrics and gynaecology, intensive care units, sports medicine and rehabilitation” (HPCSA 2022).

With respect to conditions requiring patient referral to the other profession, significant findings were observed. A larger percentage of physiotherapists (42.6%,  $n=81$ ), compared to a smaller 11.2% of chiropractors ( $n=13$ ), referred patients to the other profession for neck pain ( $p<.001$ ). This corresponds favourably with the work of Slabbert (2014) in which a total of 14.6% of chiropractors and 54.0% of physiotherapists referred patients with neck pain to other healthcare professionals six months prior. Both professions are able to treat neck pain. The present study findings indicate that some practitioners are able to identify when it is necessary to refer patients to the other profession. The results show that both professions may be receptive to the idea of the other profession’s intervention in the patient’s management. This once again requires a degree of mutual understanding and acceptance of the other profession.

Similarly, more physiotherapists (44.7%,  $n=85$ ) than chiropractors (12.9%,  $n=15$ ) referred patients who suffered from low back pain ( $p<.001$ ). This was also observed in a study by Slabbert (2014) in which more physiotherapists (56.2%) compared to

chiropractors (25.0%) referred low back pain patients to other healthcare practitioners six months prior. Low back pain can be treated by chiropractors and physiotherapists. The current results suggest that both professions recognize the role of the other profession in patient treatment. Hence, these practitioners have a degree of mutual respect and trust of the other profession.

More chiropractors (34.5%,  $n=40$ ), compared to physiotherapists (13.7%,  $n=26$ ), referred patients with chronic pain disorders ( $p<.001$ ). Chronic pain disorders may be challenging to treat and manage due to its longstanding nature. A team-based approach may therefore prove to be efficient and beneficial in controlling the patient's condition. This may be the reason why some practitioners from both professions consider it necessary to refer to the other profession.

A greater 31.0% ( $n=36$ ), 21.6% ( $n=25$ ) and 32.8% ( $n=38$ ) of chiropractors referred patients to physiotherapists for sport injuries, joint sprains and muscle/ligament strains respectively compared to the lesser 5.8% ( $n=11$ ), 5.8% ( $n=11$ ) and 2.1% ( $n=4$ ) of physiotherapists who referred patients to chiropractors for the respective conditions ( $p<.001$ ). These results differed from the findings of Slabbert (2014) who found that 29.1% and 22.9% of chiropractors and 51.7% and 33.3% of physiotherapists referred patients to various healthcare professionals for sport-related injuries and sprains respectively, six months prior. The chiropractic results were also higher than the 14.0% of general practitioners in Mumbai, India who referred patients to physiotherapists for sport injuries (Agni and Battin 2017). The present study findings suggest that while both professions are qualified to treat sport injuries, joint sprains and muscle/ligament strains, there is a degree of inter-professional respect and understanding which leads to patients being referred for appropriate healthcare.

A total of twelve chiropractors (10.3%) compared to one physiotherapist (0.5%) referred patients with gynaecological conditions ( $p<.001$ ). Similarly, 7.3% of general practitioners in Mumbai, India referred women's health patients to physiotherapists (Agni and Battin 2017). Unlike physiotherapy, the chiropractic scope of practice does not include treating gynaecological conditions. This may explain why more chiropractors referred patients to physiotherapists than vice versa.

With respect to respiratory ( $p<.001$ ) and cardiovascular conditions ( $p=.001$ ), it was also found that more chiropractors (47.4%,  $n=55$  and 8.6%,  $n=10$ ) in comparison to physiotherapists (2.1%,  $n=4$  and 1.1%,  $n=2$ ) referred patients to the other profession. A similar pattern was observed in a study by Slabbert (2014) in which more chiropractors (52.0% and 70.8%) than physiotherapists (49.3% and 39.1%) referred patients to various healthcare practitioners for respiratory and cardiovascular conditions respectively, six months prior. However, Agni and Battin (2017) found that only 6.7% of general practitioners in Mumbai, India referred patients to physiotherapists for cardiorespiratory conditions. Physiotherapists are well known for their role in treating and managing cardiovascular and respiratory conditions (Farah, Groot and Pavlova 2022). Based on the results from the present study, this may be the reason that more chiropractors referred patients for physiotherapy. The chiropractic scope of practice does not include the treatment of cardiovascular and respiratory conditions which may explain why fewer physiotherapists referred patients to chiropractors.

A larger percentage of chiropractors (17.2%,  $n=20$ ) than physiotherapists (4.7%,  $n=9$ ) referred patients with neurological conditions ( $p<.001$ ). This is considerably lower than the results demonstrated by Slabbert (2014) in which 64.6% of chiropractors compared to 58.6% of physiotherapists referred patients to various healthcare practitioners for neurological conditions respectively, six months prior. The chiropractic result of 17.2% corresponds with the 16.7% of general practitioners in Mumbai, India who referred patients with neurological conditions to physiotherapists (Agni and Battin 2017). Both professions are able to treat neurological conditions. The present study findings indicate that some practitioners are able to identify when it is necessary to refer patients to the other profession. This requires a degree of mutual understanding and acceptance of the other profession.

By comparison, more chiropractors (74.1%,  $n=86$ ) than physiotherapists (0.5%,  $n=1$ ) referred patients to the other profession for post-operative rehabilitation ( $p<.001$ ). Physiotherapists play an important role in facilitating healing after surgical procedures by providing rehabilitation (Aldhuhoori *et al.* 2021). The results suggest that chiropractors are well informed that physiotherapists can provide post-operative rehabilitation and this awareness encouraged patient referral to physiotherapists. This

indicates that chiropractors acknowledge and respect the role of physiotherapy after surgery.

#### **5.6.4 Reasons for Non-Referral to the Other Profession**

From the findings it was noted that having no contact with the other profession, no need for referral, possessing the relevant skills and expertise to manage a patient effectively, an overlap of scope of practice and patient finances were reasons for not referring patients to the other profession by both chiropractors and physiotherapists. In addition, physiotherapists also reported poor inter-professional relationships with chiropractors, limited scientific evidence for chiropractic, inadequate knowledge about chiropractic and the absence of the chiropractic profession in the public health sector were reasons for the non-referral of patients. Chiropractors also stated they experienced a poor attitude from physiotherapists toward the profession of chiropractic.

In this study, it is evident that there are barriers to inter-professional collaboration between chiropractors and physiotherapists which prevents referral patterns. Rawlinson *et al.* (2021) reported that barriers to inter-professional collaboration in primary care included a lack of clear roles and poor communication. Looking at the current study, insufficient knowledge and being unfamiliar with the roles of the chiropractic profession in providing healthcare has limited appropriate referrals by physiotherapists.

In a study conducted in Ontario, Canada, Etherington *et al.* (2021) found that physical separation and professional hierarchies among operating room health professionals, was a hindrance to inter-professional collaboration. Similarly, chiropractors and physiotherapists reported that they possessed the relevant skills to provide for the healthcare needs of the patient. This may either suggest that both professions consider themselves to be competent and qualified to not have a need to refer patients or perhaps patients have responded favourably to their healthcare services. Additionally, both professions reported not having contact with the other profession which deterred patient referrals. Chiropractic is not integrated in the public healthcare sector in South Africa which would undoubtedly reduce inter-professional interactions between the

chiropractic profession and physiotherapists practicing in the public health sector (Davies 2018).

Negative emotions, varying perceptions and diverse personality of team members are additional barriers to inter-professional collaboration (Etherington *et al.* 2021). Physiotherapists in this study reported poor relationships with chiropractors, which may have been influenced by the personality of both professions and potential negative emotions and conflicting perceptions. Similarly, chiropractors reported a poor attitude from physiotherapists regarding the chiropractic profession which could be associated with these barriers (Etherington *et al.* 2021).

Based on the literature presented and the results of the present study, it is imperative that both professions work together to break down the barriers of inter-professional collaboration. This will prevent professional individualism and will encourage inter-professional relationships to allow for the delivery of optimal, holistic healthcare (Ellapen *et al.* 2018).

#### **5.6.5 Receiving Patient Referrals from the Other Profession**

It was found that 69.8% of chiropractors ( $n=81$ ) compared to 32.1% of physiotherapists ( $n=61$ ) had patients referred to them by the other profession ( $p<.001$ ). These results are comparable to Slabbert (2014) who found that a total of 68.7% of chiropractors and 48.2% of physiotherapists had received referrals from the other profession. In addition, Gordon (2012) found that 57.5% of chiropractors received patient referrals from physiotherapists. Hunter (2004) demonstrated that 52.0% of physiotherapists reported receiving patients from chiropractors which is higher than the 32.1% of physiotherapists in this study.

From the present study findings, it is evident that more chiropractors are receiving patient referrals from physiotherapists than vice versa. The physiotherapy results could be due to chiropractors having achieved the treatment goals and not requiring further referral or perhaps there may be limited inter-professional exposure. The chiropractic results suggest that there is trust and respect from the physiotherapy profession with regards to chiropractors contributing to the healthcare of a patient. This trust and

respect may help to foster and establish inter-professional relationships between the two professions.

#### **5.6.6 Conditions of Patients Received**

Significant findings with respect to the conditions that were referred to the other profession by chiropractors and physiotherapists were noted. A larger number of chiropractors (62.1%,  $n=72$ ) compared to 17.9% of physiotherapists ( $n=34$ ) had patients referred to them by the other profession for neck pain ( $p<.001$ ). This is considerably lower than the findings by Slabbert (2014), in which 72.9% of chiropractors and 95.3% of physiotherapists received patients with neck pain from other healthcare practitioners six months prior. Considering that chiropractors and physiotherapists treat neck pain, the findings suggest that there are cases when the other profession can play a role in the management of that patient. Thus, one can assume that these practitioners are aware abilities of the other profession.

It was also found that more chiropractors (44.0%,  $n=51$ ) than physiotherapists (11.6%,  $n=22$ ) had patients referred to them by the other profession for whiplash ( $p<.001$ ). These results are lower than the findings demonstrated by Slabbert (2014) in which 62.5% of chiropractors and 88.5% of physiotherapists received patients from other healthcare practitioners for whiplash six months prior. This highlights the level of inter-professional awareness and understanding between the two professions.

Low back pain was the reason for 64.7% of chiropractors ( $n=75$ ) having received patients from physiotherapists which was evidently more than the 18.4% of physiotherapists ( $n=35$ ) who received patients with the same condition from chiropractors ( $p<.001$ ). This contrasts with the findings of Slabbert (2014) in which 77.1% of chiropractors and 96.5% of physiotherapists received low back pain patients from other healthcare providers six months prior. Low back pain is common and can be treated by both chiropractors and physiotherapists. The present results suggest that both professions are able to trust that the other will be able to accommodate the health needs of the patient. Hence, these practitioners have a degree of mutual respect and trust of the other profession.

More chiropractors (34.5%,  $n=40$ ) than physiotherapists (14.7%,  $n=28$ ) received patients presenting with chronic pain disorders ( $p<.001$ ). As previously mentioned, chronic pain disorders may be challenging to treat and manage due to its longstanding nature. Multidisciplinary healthcare may prove beneficial to all parties concerned.

With respect to sport injuries ( $p=.009$ ) and joint sprains ( $p=.006$ ), a larger number of chiropractors (32.8%,  $n=38$  and 30.2%,  $n=35$ ) compared to physiotherapists (19.5%,  $n=37$  and 16.8%,  $n=32$ ) had patients referred to them for these conditions respectively. Compared to the findings of Slabbert (2014), these results are considerably lower than the 60.5% and 52.0% of chiropractors and 91.9% and 94.2% of physiotherapists who had patients referred to them by other healthcare practitioners for sport-related injuries and sprains respectively, six months prior. Although sport injuries and joint sprains are common ailments that may be treated by both professions, the current results suggest that there is a degree of inter-professional respect and understanding between chiropractors and physiotherapists which has resulted in patient referrals to the other profession for appropriate healthcare.

By comparison, a greater percentage of physiotherapists (10.5%,  $n=20$ ) than chiropractors (0.9%,  $n=1$ ) had patients referred to them for respiratory conditions ( $p=.001$ ). This was lower than the work of Slabbert (2014) who found that 14.6% of chiropractors and 88.5% of physiotherapists had received respiratory patients from other healthcare practitioners six months prior. The present findings show that chiropractors are confident in the role that physiotherapists play in respect of the treatment of respiratory illnesses.

Neurological conditions and disc herniation were also the reasons for more chiropractors (32.8%,  $n=38$  and 53.4%,  $n=62$ ) than physiotherapists (11.1%,  $n=21$  and 10.5%,  $n=20$ ) having received patient referrals respectively ( $p<.001$ ). This contrasted with the findings of Slabbert (2014) who indicated that 54.2% of chiropractors and 83.9% of physiotherapists had patients with neurological conditions referred to them by other healthcare practitioners six months prior. Both professions are trained to treat neurological conditions and disc herniation. The results indicate that both professions respect the abilities of the other profession in the treatment and management of these conditions.

It was found that a larger percentage of chiropractors (34.5%,  $n=40$ ) than physiotherapists (9.5%,  $n=18$ ) received temporomandibular joint disorder patients from the other profession ( $p<.001$ ). This shows that although both professions can treat temporomandibular joint disorders, neither profession is reluctant to refer patients to the other profession. Once again, this highlights a degree of inter-professional respect and acknowledgement.

More physiotherapists (19.5%,  $n=37$ ) compared to the 3.4% of chiropractors ( $n=4$ ) had patients requiring post-operative rehabilitation referred to them by the other profession ( $p<.001$ ). Post-operative rehabilitation can be provided by chiropractors and physiotherapists, thus inter-professional referrals suggest that there is a sense of mutual respect and understanding, with chiropractors being more inclined to motivate such referrals.

### **5.6.7 Communication Regarding a Referred Patient**

It is interesting to note that 87.3% of chiropractors ( $n=89$ ) communicated with the physiotherapy profession regarding feedback of a patient that was referred by them or to them by physiotherapists. This is higher than the 69.0% of physiotherapists who communicated with the chiropractic profession regarding a referred patient ( $p=.001$ ). These findings were remarkably higher than that of Slabbert (2014), in which 64.6% of chiropractors and 37.9% of physiotherapists communicated with the referring profession about a patient. A possible reason for this increase could be that over the years, there has been a greater understanding and recognition of the other profession. Inter-professional communication is fundamental for favourable inter-professional cooperation (Olde Bekkink, Farrell and Takayesu 2018). Based on the current results, it appears that both professions are collaborating in the co-management of patients.

### **5.6.8 Patient Enquiries**

With respect to patient enquiries about the other profession, significant results were found. More chiropractors (44.0%,  $n=51$ ) than physiotherapists (24.7%,  $n=47$ ) outlined the enquired profession's scope of practice ( $p<.001$ ). These findings correspond with Slabbert (2014), in which more chiropractors (22.9%) than physiotherapists (21.8%) outlined the enquired profession's scope of practice in response to a patient enquiry. It

is important to consider that insufficient knowledge of the scope of practice of the other profession may restrict patient referrals. Incorrect knowledge passed on to a patient would impact the patient's perception of the other profession which may prevent or limit referrals (Ellapen *et al.* 2018).

Similarly, a greater percentage of chiropractors (85.3%,  $n=99$ ), compared to physiotherapists (56.8%,  $n=108$ ), outlined the difference between the chiropractic and physiotherapy professions ( $p<.001$ ). Therefore, a patient's education of each profession depends on the knowledge, attitudes and perceptions of their practitioner, and the consistency and the interpretation of the information that is shared (Wilson, Swincer and Vemulpad 2007). Inadequate practitioner knowledge, negative attitudes and negative perceptions may prevent referral or the patient from seeking care from the relevant profession when it may be required (Ellapen *et al.* 2018).

It was noted that more physiotherapists (17.9%,  $n=34$ ) than chiropractors (2.6%,  $n=3$ ) indicated that they inform the patient that they do not know enough about the other profession ( $p<.001$ ). This compares favourably with the findings of Slabbert (2014), who found that more physiotherapists (19.5%) than chiropractors (2.1%) indicated that they advised the patient that they did not know enough about the other profession. The results from the present study indicate that there is a need for greater inter-professional awareness between chiropractors and physiotherapists.

A larger number of chiropractors (19.0%,  $n=22$ ), compared to physiotherapists (6.3%,  $n=12$ ), reported that they inform the patient that they can treat the same condition as the other profession ( $p=.001$ ). This contrasted with Slabbert (2014), who found that more physiotherapists (4.6%) than chiropractors (2.1%) informed the patient that they could treat the same condition as the other profession. This suggests that some chiropractors and physiotherapists may not want to recommend the other profession to their patients which could be linked to competing roles as both professions treat patients with similar complaints (Langworthy and Smink 2000).

### **5.6.9 Party That Would Benefit from Inter-Professional Relationships**

In terms of the benefit of inter-professional relationships between chiropractors and physiotherapists, significant findings were noted. A greater percentage of chiropractors (89.7%,  $n=104$ ) compared to physiotherapists (81.6%,  $n=155$ ) believed that inter-professional relationships between both professions would be beneficial for the patient ( $p=.001$ ). Similarly, a larger 82.8% of chiropractors ( $n=96$ ) compared to 70.5% of physiotherapists ( $n=134$ ) agreed that the physiotherapy profession would benefit from inter-professional relationships between chiropractors and physiotherapists ( $p=.001$ ). It is also seen that more chiropractors (83.6%,  $n=97$ ) than physiotherapists (74.7%,  $n=142$ ) believed that inter-professional relationships between both professions would be beneficial for the chiropractic profession ( $p=.002$ ).

These results compare favourably with Hunter (2004) in which 88.0% of physiotherapists indicated that “good co-operation” between both professions would benefit their patients as well as both professions. This is further supported by Naidoo and Bühler (2009) that chiropractors and physiotherapists should be part of a multidisciplinary team. Final year chiropractic students in a study by Naidoo and Bühler (2009) acknowledged the roles of both professions in providing healthcare and felt that inter-professional collaboration between the chiropractic and physiotherapy professions would be more beneficial to patients.

Since both professions believe that inter-professional relationships between chiropractors and physiotherapists would be beneficial for the chiropractic profession, the physiotherapy profession and the patient, this creates an opportunity to better educate the other profession on the roles of their profession to promote inter-professional understanding and acceptance. This will allow both professions to co-exist within a multidisciplinary team and work cohesively to provide optimal healthcare for patients.

#### **5.6.10 The Influence of Knowledge, Attitudes and Perceptions on Inter-Professional Relationships Between the Chiropractic and Physiotherapy Professions**

Knowledge directly influences attitudes and perceptions (Zhu and Xie 2015). An individual's perception depends on his/her knowledge which impacts his/her attitudes (Zhu and Xie 2015). A lack of knowledge or information may result in negative attitudes and incorrect perceptions (Zhu and Xie 2015).

From the results obtained in this study, it can be seen that chiropractors had good knowledge about the physiotherapy profession, having achieved a knowledge score of greater than 70.0% for six out of seven questions. This indicates that chiropractors are well informed about the physiotherapy profession. Chiropractors, in general, displayed positive attitudes toward physiotherapy. It was also noted that, in general, chiropractors had positive perceptions regarding physiotherapy. These findings demonstrate the link between knowledge, attitudes, and perceptions.

With respect to inter-professional relationships, there is evidence that chiropractors are collaborating or are inclined to collaborate with physiotherapists for the treatment and management of patients with various conditions. Therefore, there appears to be a referral relationship between the two professions. This is further supported by the majority of chiropractors having indicated that inter-professional relationships between chiropractors and physiotherapists are beneficial for patients, the chiropractic profession and the physiotherapy profession. This suggests that chiropractors trust, have a good understanding and respect the role of physiotherapy in patient management which would encourage inter-professional relationships. Thus, one can assume that existing inter-professional relationships between chiropractors and physiotherapists are influenced by good knowledge, positive attitudes, and positive perceptions of chiropractors toward physiotherapy.

In this study, physiotherapists demonstrated adequate knowledge about the chiropractic profession, having achieved a knowledge score of greater than 70.0% for three out of seven questions. This indicates that physiotherapists are adequately informed about the chiropractic profession, but there is potential for this knowledge to be enhanced. It was noted that physiotherapists in general displayed positive attitudes

toward chiropractic. It was also found that in general, physiotherapists had positive perceptions regarding chiropractic. Once again, this shows the influence of knowledge on attitudes and perceptions. The findings suggest that physiotherapists have a good foundation to establish inter-professional relationships with chiropractors.

Inter-professional relationships between the physiotherapy and chiropractic professions varied from physiotherapist to physiotherapist, with some receiving patients while others refer to the other profession. Most of the physiotherapists indicated that they communicate with the chiropractor regarding a referred patient.

Although the majority of physiotherapists in this study indicated that inter-professional relationships between chiropractors and physiotherapists are beneficial for patients, the chiropractic profession and the physiotherapy profession, there is evidence that the inter-professional relationships may be limited. This may be due to limited exposure to chiropractic as chiropractic does not fall within mainstream healthcare and is therefore excluded from the public health sector. Therefore, it appears that a referral relationship between physiotherapists and chiropractors may be more likely to occur if the physiotherapist practices within the private health sector. Another important factor to consider is whether the physiotherapists practice within the biopsychosocial paradigm which focuses on the patient holistically.

Thus, one can assume that although knowledge, attitudes and perceptions may influence inter-professional relationships between physiotherapists and chiropractors, other factors may also play a role in determining the extent of this relationship.

#### **5.6.11 Summary**

Although there appears to be a referral relationship between chiropractors and physiotherapists which may be attributed to good knowledge and awareness and positive attitudes and positive perceptions of the other profession, inter-professional relationships between the two professions may be limited by certain factors.

Hypothesis four: A lack of knowledge of the chiropractic or physiotherapy profession will result in negative attitudes and perceptions of that profession, thus preventing or limiting inter-professional relationships.

Hypothesis four must be accepted as this study demonstrated that both South African chiropractors and physiotherapists generally had good knowledge, positive attitudes and positive perceptions toward the other professional practice. Therefore, one can assume that the inverse would be true.

# **CHAPTER SIX CONCLUSION AND RECOMMENDATIONS**

## **6.1 INTRODUCTION**

This chapter will discuss the conclusions drawn from the study, study limitations that were encountered and recommendations that should be considered for future research relating to this field of study.

## **6.2 CONCLUSION**

This study highlighted the influence of knowledge, attitudes, and perceptions toward developing inter-professional relationships between qualified chiropractors and physiotherapists in South Africa. Chiropractors and physiotherapists in South Africa generally demonstrated good knowledge, positive attitudes, and positive perceptions toward the other profession. However, inter-professional relationships may be limited by other factors such as insufficient inter-professional awareness and exposure and practicing within different health paradigms.

Both professions acknowledged the role of the other profession within the South African healthcare system. While chiropractors agreed that they are currently working closely with a physiotherapist, the physiotherapists did not agree that they currently work closely with chiropractors. Despite this, both professions agreed that they would like to work closely with the other profession. Inter-professional education should therefore be considered as part of the university curriculum and networking within a multidisciplinary team should be encouraged to promote inter-professional awareness to enhance or develop inter-professional relationships between the two professions, thus promoting the delivery of holistic patient-centred care.

## **6.3 LIMITATIONS AND RECOMMENDATIONS**

The limitations of the study and recommendations are as follows:

1. The impact of the COVID-19 pandemic may have had a direct influence on the ability to participate in this study and some practitioners may have no longer been practicing at the time of data collection.
2. The chiropractic and physiotherapy response rate was poor and, as a result, it was necessary to amend the sample size. Physiotherapists were recruited

based on their registration initially with Medpages and then the South African Society of Physiotherapy. However, it is not compulsory for physiotherapists to be registered with the aforementioned associations. Although the Health Professions Council of South Africa is the statutory council for physiotherapy, the researcher was advised to circulate the questionnaires to physiotherapists via Medpages. Therefore, it would be beneficial for future studies to consider distributing questionnaires to all physiotherapists via the HPCSA, if possible, to ensure maximum representation of the sample.

3. Although an appropriate sampling method was selected to represent the entire South African population of chiropractors and physiotherapists, the generalizations that were drawn cannot be assumed to represent the entire targeted population (Datt and Chetty 2016).
4. While the purpose of conducting a focus group and pilot study was to ensure content validity and reliability, clarity, adaptability and eligibility of the online questionnaire, it cannot be assumed that all participants in the main study interpreted each question similarly (Peytchev *et al.* 2010).
5. It may be considered that the respondents may have only participated in this study due to an interest in this research topic, the incentive of receiving a CPD point (chiropractors), and affiliation with their profession.
6. The online data collection process may have posed a challenge for participants who were unfamiliar with the process of completing questionnaires online and those who did not have access to data to participate.
7. Educational programmes should be provided to enhance awareness of the two professions to promote inter-professional collaboration and the formation of a multidisciplinary team.
8. These educational programmes should be arranged at a university level to promote tertiary inter-professional education to stimulate future inter-professional relationships between the chiropractic and physiotherapy professions.
9. It is recommended that future qualitative studies be conducted to gain an in-depth understanding of the knowledge, attitudes, and perceptions of qualified chiropractors and physiotherapists in South Africa regarding the other professional practice.

## REFERENCES

- Agni, P. and Battin, S. 2017. Awareness of physiotherapy among general practitioners: a pilot study. *International Journal of Physiotherapy*, 4(4): 253-261. Available: <https://www.ijphy.org/index.php/journal/article/view/374> (Accessed 14 July 2021).
- Alduhoori, F. Z., Walton, L. M., Bairapareddy, K. C., Amaravadi, S. K. and Alaparathi, G. K. 2021. Physiotherapy Practice for Management of Patients Undergoing Upper Abdominal Surgery in United Arab Emirates – A National Survey. *Journal of Multidisciplinary Healthcare*, 14: 2513-2526. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8449636/> (Accessed 30 May 2022).
- Aldous, C., Rheeder, P. and Esterhuizen, T. 2013. *Writing your first clinical research protocol*. Cape Town: Juta and Company Ltd.
- Al-Eisa, E. S., Al-Hoqail, H., Al-Rushud, A. S., Al-Harhi, A., Al-Mass, B., Al-Harbi, B. M., Al-Azzaz, S., Alghadir, A. H. and Iqbal, Z. A. 2016. Awareness, perceptions and beliefs about physiotherapy held by physicians working in Saudi Arabia: a cross-sectional study. *Journal of Physical Therapy Science*, 28(12): 3435-3439. Available: <https://pubmed.ncbi.nlm.nih.gov/28174468/> (Accessed 14 July 2021).
- Ali, Z. and Bhasker, S. B. 2016. Basic statistical tools in research and data analysis. *Indian Journal of Anaesthesia*, 60(9): 662-669. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5037948/> (Accessed 7 December 2021).
- Allied Health Professions Council of South Africa. 2018. *AHPCSA*. Available: <https://ahpcsa.co.za/> (Accessed 30 May 2022).
- Allied Health Professions Council of South Africa. 2018. *Promotion of Access to Information Manual in Terms of Section 14 of the Promotion of Access to Information ("PAIA"), Act 2 of 2000*. Available: [https://ahpcsa.co.za/wp-content/uploads/2018/07/AHPCSA-PAIA-Manual\\_2018.pdf](https://ahpcsa.co.za/wp-content/uploads/2018/07/AHPCSA-PAIA-Manual_2018.pdf) (Accessed 1 February 2022).

Allied Health Professions Council of South Africa. 2018. *Regulations in Terms of the Associated Health Service Professions Act, 1982*. Available: [https://ahpcs.co.za/wp-content/uploads/2015/10/Regulations-1982\\_as-amended\\_2.pdf](https://ahpcs.co.za/wp-content/uploads/2015/10/Regulations-1982_as-amended_2.pdf) (Accessed 25 March 2022).

Alotaibi, B., Yassin, Y., Mushi, A., Maashi, F., Thomas, A., Mohamed, G., Hassan, A. and Yezli, S. 2019. Tuberculosis knowledge, attitude and practice among healthcare workers during the 2016 Hajj. *PLoS One*, 14(1). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6347151/> (Accessed 16 July 2021).

American Nurses Association. n.d. *Scope of Practice*. Available: <https://www.nursingworld.org/practice-policy/scope-of-practice/> (Accessed 20 April 2022).

Anieto, E. M., Ativie, R., Okafor, C. J., Agono, J., Onah, V., Ogu, U., Nwadiibe, I. B. and Kalu, M. E. 2019. Knowledge and Perception of Physiotherapy among Clinical Students in Various Health Care Disciplines of a Nigerian College of Medicine and Health Sciences. *Indian Journal of Physiotherapy and Occupational Therapy*, 13(3): 198-203. Available: [https://www.researchgate.net/publication/334392643\\_Knowledge\\_and\\_Perception\\_of\\_Physiotherapy\\_among\\_Clinical\\_Students\\_in\\_Various\\_Health\\_Care\\_Disciplines\\_of\\_a\\_Nigerian\\_College\\_of\\_Medicine\\_and\\_Health\\_Sciences](https://www.researchgate.net/publication/334392643_Knowledge_and_Perception_of_Physiotherapy_among_Clinical_Students_in_Various_Health_Care_Disciplines_of_a_Nigerian_College_of_Medicine_and_Health_Sciences) (Accessed 30 March 2022).

Ansa, B. E., Zechariah, S., Gates, A. M., Johnson, S. W., Heboyan, V. and De Leo, G. 2020. Attitudes and Behavior towards Interprofessional Collaboration among Healthcare Professionals in a Large Academic Medical Center. *Healthcare (Basel)*, 8(3). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7551229/> (Accessed 29 May 2022).

Bailey, E., Heneghan, N. R., Cassidy, N. J., Falla, D. and Rushton, A. B. 2020. Clinical effectiveness of manipulation and mobilisation interventions for the treatment of non-specific neck pain: protocol for a systematic review and meta-analysis. *BMJ Open*, 10(10). Available: <https://bmjopen.bmj.com/content/10/10/e037783> (Accessed 26 June 2021).

Banerjee, A. and Chaudhury, S. 2010. Statistics without tears: Populations and samples. *Industrial Psychiatry Journal*, 19(1): 60-65. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3105563/> (Accessed 7 June 2021).

Bello, A. I. 2012. Global Overview of the Models of Physiotherapy Practice: A need for integration towards better patient care. *African Journal of Physiotherapy and Rehabilitation Sciences*, 4(1&2): 51-56. Available: <https://www.ajol.info/index.php/ajprs/article/viewFile/82209/72369> (Accessed 26 June 2021).

Bhandari, P. 2020. *An introduction to quantitative research*. Available: <https://www.scribbr.com/methodology/quantitative-research/> (Accessed 7 June 2021).

Bitter, J., van Veen-Berkx, E., Gooszen, H. G. and van Amelsvoort, P. 2013. Multidisciplinary teamwork is an important issue to healthcare professionals. *Team Performance Management*, 19(5/6): 263-278. Available: [https://www.researchgate.net/publication/262970191\\_Multidisciplinary\\_teamwork\\_is\\_an\\_important\\_issue\\_to\\_healthcare\\_professionals](https://www.researchgate.net/publication/262970191_Multidisciplinary_teamwork_is_an_important_issue_to_healthcare_professionals) (Accessed 24 April 2020).

Bridges, D. R., Davidson, R. A., Soule Odegard, P., Maki, I. V. And Tomkowiak, J. 2011. Interprofessional Collaboration: three best practice models of interprofessional education. *Medical Education Online*, 16. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3081249/> (Accessed 4 April 2020).

Brown, B. T., Bonello, R., Fernandez-Camaano, R., Eaton, S., Graham, P. L. and Green, H. 2014. Consumer Characteristics and Perceptions of Chiropractic and Chiropractic Services in Australia: Results from a Cross-sectional Survey. *Journal of Manipulative and Physiological Therapeutics*, 37(4): 219-229. Available: [https://www.researchgate.net/publication/261105778\\_Consumer\\_Characteristics\\_and\\_Perceptions\\_of\\_Chiropractic\\_and\\_Chiropractic\\_Services\\_in\\_Australia\\_Results\\_From\\_a\\_Cross-Sectional\\_Survey](https://www.researchgate.net/publication/261105778_Consumer_Characteristics_and_Perceptions_of_Chiropractic_and_Chiropractic_Services_in_Australia_Results_From_a_Cross-Sectional_Survey) (Accessed 25 April 2022).

Burgess, L. 2018. *Everything you need to know about chiropractic: What is chiropractic manipulation?* Available: <https://www.medicalnewstoday.com/articles/308917.php> (Accessed 10 August 2019).

Busari, J. O., Moll, F. M. and Duits, A. J. 2017. Understanding the impact of interprofessional collaboration on the quality of care: a case report from a small-scale resource limited health care environment. *Journal of Multidisciplinary Healthcare*, 10: 227-234. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472431/> (Accessed 22 May 2022).

Busse, J. W., Jim, J., Jacobs, C., Ngo, T., Rodine, R., Torrance, D., Kulkarni, A. V., Petrisor, B., Drew, B. and Bhandari, M. 2011. Attitudes towards chiropractic: an analysis of written comments from a survey of North American orthopaedic surgeons. *Chiropractic and Manual Therapies*, 19(25). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3212887/> (Accessed 20 June 2020).

Callanen, M. 2020. *Chiropractic specialities offering a wider range of patient care.* Available: <https://www.chiroeco.com/chiropractic-specialties/> (Accessed 28 August 2020).

Cambridge English Dictionary. 2022. *Attitude.* Available: <https://dictionary.cambridge.org/dictionary/english/attitude?q=Attitudes> (Accessed 12 June 2022).

Cambridge English Dictionary. 2022. *Knowledge.* Available: <https://dictionary.cambridge.org/dictionary/english/knowledge> (Accessed 12 June 2022).

Cambridge English Dictionary. 2022. *Perception.* Available: <https://dictionary.cambridge.org/dictionary/english/perception?q=Perceptions> (Accessed 12 June 2022).

Carlesso, L. C., MacDermid, J. C., Gross, A. R., Walton, D. M. and Santaguida, P. L. 2014. Treatment preferences amongst physical therapists and chiropractors for the management of neck pain: results of an international survey. *Chiropractic and Manual Therapies*, 22(11). Available: <https://chiromt.biomedcentral.com/articles/10.1186/2045-709X-22-11> (Accessed 15 March 2020).

Castin, M. 2019. *Physical Therapy Specialities Every Physical Therapist Should Know About* (WebPT). Available: <https://www.webpt.com/blog/post/physical-therapy-specialities-every-pt-should-know-about/> (Accessed 1 April 2020).

Chartered Society of Physiotherapy. 2022. *What is physiotherapy?* Available: <https://www.csp.org.uk/careers-jobs/what-physiotherapy> (Accessed 12 June 2022).

Chiropractic Association of South Africa. 2022. *Conditions & Treatment*. Available: <https://chiropractic.co.za/conditions-treatment/> (Accessed 25 March 2022).

Chiropractic Association of South Africa. 2022. *Studying Chiropractic*. Available: <https://chiropractic.co.za/student-information/> (Accessed 25 March 2022).

Chung, C. L. R., Manga, J., McGregor, M., Michailidis, C., Stavros, D. and Woodhouse, L. J. 2012. Interprofessional Collaboration and Turf Wars How Prevalent Are Hidden Attitudes? *The Journal of Chiropractic Education*, 26 (1): 32-39. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3391774/> (Accessed 28 December 2021).

Crossman, A. 2019. *Pilot Study in Research*. Available: <https://www.thoughtco.com/pilot-study-3026449> (Accessed 16 April 2020).

d'Hotman de Villiers, J. 2015. The perception, knowledge and utilisation of research and its role in the chiropractic profession as determined by chiropractors attending the World Federation of Chiropractic Biennial Conference 2013. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/1681> (Accessed 8 July 2018).

Darlow, B., Coleman, K., McKinlay, E., Donovan, S., Beckingsale, L., Gray, B., Nesor, H., Perry, M., Stanley, J. and Pullon, S. 2015. The positive impact of interprofessional education: a controlled trial to evaluate a programme for health professional students. *BMC Medical Education*, 15(98). Available: <https://pubmed.ncbi.nlm.nih.gov/26041132/> (Accessed 22 May 2022).

Datt, S. And Chetty, P. 2016. *Sampling plan in a business research*. Available: <https://www.projectguru.in/sampling-plan-within-business-research/> (Accessed 16 April 2020).

Davies, N. 2018. Perceptions of chiropractors in the eThekweni municipality on the integration of chiropractic into the public healthcare sector of South Africa. M.Tech., Durban University of Technology. Available: [https://openscholar.dut.ac.za/bitstream/10321/3065/1/DAVIESN\\_2018.pdf](https://openscholar.dut.ac.za/bitstream/10321/3065/1/DAVIESN_2018.pdf) (Accessed 2 February 2022).

Doshi, D., Jiandani, M., Gadgil, R. and Shetty, N. 2017. Physiotherapy Awareness in Medical and Non Medical Population: A Social Survey. *International Journal of Physiotherapy and Research*, 5(2): 1971-1975. Available: <https://www.ijmhr.org/ijpr.5.2/IJPR.2017.119.pdf> (Accessed 15 July 2021).

Durban University of Technology. 2022. *Chiropractic 2022 Handbook*. Available: <https://www.dut.ac.za/wp-content/uploads/handbooks/HSC%20Chiro.pdf> (Accessed 31 March 2022).

Ellapen, T. J., Paul, Y., Swanepoel, M. and Strydom, G. L. 2018. Do biokineticists transgress on physiotherapists' scope of profession? Evidence-based analysis of two physical rehabilitation disciplines in South Africa. *African Journal for Physical Activity and Health Sciences*, 24(3): 316-331. Available: <https://www.ajol.info/index.php/ajpherd/article/view/177622> (Accessed 15 July 2021).

Ellapen, T. J., Swanepoel, M., Qumbu, B. T., Strydom, G. L., and Paul, Y. 2018. Interprofessional knowledge and perceptions of selected South African healthcare practitioners towards each other. *African Journal of Health Professions Education*, 10(3): 148-152. Available: [https://www.researchgate.net/publication/329559714\\_Interprofessional\\_knowledge\\_and\\_perceptions\\_of\\_selected\\_South\\_African\\_healthcare\\_practitioners\\_towards\\_each\\_other](https://www.researchgate.net/publication/329559714_Interprofessional_knowledge_and_perceptions_of_selected_South_African_healthcare_practitioners_towards_each_other) (Accessed 15 July 2021).

Engel, R. M., Brown, B. T., Swain, M. S. and Lystad, R. P. 2014. The provision of chiropractic, physiotherapy and osteopathic services within the Australian private health-care system: a report of recent trends. *Chiropractic and Manual Therapies*, 22(3). Available: <https://chiromt.biomedcentral.com/articles/10.1186/2045-709X-22-3> (Accessed 15 March 2020).

Epstein, R. M. and Street Junior, R. L. 2011. The Values and Value of Patient-Centered Care. *Annals of Family Medicine*, 9(2). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3056855/> (Accessed 11 May 2020).

Etherington, C., Burns, J. K., Kitto, S., Brehaut, J. C., Britton, M., Singh, S. and Boet, S. 2021. Barriers and enablers to effective interprofessional teamwork in the operating room: A qualitative study using the Theoretical Domains Framework. *PLoS One*, 16(4). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8061974/> (Accessed 31 May 2022).

Fabrigar, L. R., Petty, R. E., Smith, S. M. and Crites Junior, S. L. 2006. Understanding knowledge effects on attitude-behaviour consistency: the role of relevance, complexity, and amount of knowledge. *Journal of Personality and Social Psychology*, 90(4): 556-577. Available: <https://pubmed.ncbi.nlm.nih.gov/16649855/> (Accessed 15 July 2021).

Farah, R., Groot, W. and Pavlova, M. 2022. Knowledge, attitudes and practices of cardiopulmonary rehabilitation among physiotherapists in Lebanon. *Bulletin of Faculty of Physical Therapy*, 27(2). Available: <https://bfpt.springeropen.com/articles/10.1186/s43161-021-00060-w> (Accessed 30 May 2022).

Ford, T. W. 2013. Chiropractic and public health: A study on the perceptions and attitudes of chiropractors on health promotion and disease prevention in South Africa. M.Tech., Durban University of Technology. Available: [https://openscholar.dut.ac.za/bitstream/10321/965/1/FORD\\_2013.pdf](https://openscholar.dut.ac.za/bitstream/10321/965/1/FORD_2013.pdf) (Accessed 21 February 2022).

Fuller, J. 2017. The new medical model: a renewed challenge for biomedicine. *Canadian Medical Association Journal*, 189(17). Available: <https://doi.org/10.1503/cmaj.160627> (Accessed 11 May 2020).

George, T. 2021. *What is a Focus Group? Step-by-step Guide & Examples*. Available: <https://www.scribbr.com/methodology/focus-group/> (Accessed 12 June 2022).

Gliedt, J. A., Schneider, M. J., Evans, M. W., King, J. and Eubanks Junior, J. E. 2017. The biopsychosocial model and chiropractic: a commentary with recommendations for the chiropractic profession. *Chiropractic and Manual Therapies*, 25(16). Available: [https://www.researchgate.net/publication/317415046\\_The\\_biopsychosocial\\_model\\_and\\_chiropractic\\_A\\_commentary\\_with\\_recommendations\\_for\\_the\\_chiropractic\\_profession/download](https://www.researchgate.net/publication/317415046_The_biopsychosocial_model_and_chiropractic_A_commentary_with_recommendations_for_the_chiropractic_profession/download) (Accessed 2 February 2019).

Gordon, J. 2012. A study to explore the perceptions that South African chiropractors have regarding the perceived role and impact of research within the profession. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/725?mode=full> (Accessed 21 February 2022).

Hammerich, K., Stuber, K., Hogg-Johnson, S., Abbas, A., Harris, M., Lauridsen, H. H., Lemeunier, N., Maiers, M., McCarthy, P., Morales, V., Myburgh, C., Petrini, V., Pohlman, K. and Mior, S. 2019. Assessing attitudes of patient-centred care among students in international chiropractic educational programs: a cross-sectional survey. *Chiropractic and Manual Therapies*, 27(46). Available: <https://doi.org/10.1186/s12998-019-0263-x> (Accessed 15 March 2020).

Hartvigsen, J. and French, S. D. 2020. So, what is chiropractic? Summary and reflections on a series of papers in Chiropractic and Manual Therapies. *Chiropractic and Manual Therapies*, 28(4). Available: <https://doi.org/10.1186/s12998-019-0295-2> (Accessed 15 March 2020).

Hassem, T., Israel, N., Bemath, N. and Variava, T. 2022. COVID-19: Contrasting experiences of South African physiotherapists based on patient exposure. *South African Journal of Physiotherapy*, 78(1). Available: <https://sajp.co.za/index.php/sajp/article/view/1576/2813> (Accessed 10 March 2022).

Havelka, M., Lucanin, J. D. And Lucanin, D. 2009. Biopsychosocial Model – The Integrated Approach to Health and Disease. *Collegium Antropologicum*, 33(1): 303-310. Available: [https://www.researchgate.net/publication/24395493\\_Biopsychosocial\\_model\\_-\\_The\\_integrated\\_approach\\_to\\_health\\_and\\_disease](https://www.researchgate.net/publication/24395493_Biopsychosocial_model_-_The_integrated_approach_to_health_and_disease) (Accessed 11 May 2020).

Health & Care Professions Council. 2022. Scope of practice. Available: <https://www.hcpc-uk.org/standards/meeting-our-standards/scope-of-practice/#:~:text=Your%20scope%20of%20practice%20is,practising%20safely%2C%20lawfully%20and%20effectively> (Accessed 20 April 2022).

Health Professions Council of South Africa. 2016. *Benefits of registering with the HPCSA*. Available: <https://www.hpcsa-blogs.co.za/benefits-of-registering-with-the-hpcsa/#:~:text=Registering%20with%20the%20HPCSA%20confers,overall%20standards%20within%20the%20professions.&text=The%20right%20to%20practise%20your%20profession%3B&text=Ensuring%20no%20unqualified%20person%20practises%20your%20profession%3B&text=Recognising%20you%20as%20a%20competent,a%20reward%20for%20services%20rendered>. (Accessed 30 May 2022).

Health Professions Council of South Africa. 2022. *About Us: Overview*. Available: <https://www.hpcsa.co.za/?contentId=463&actionName=About%20Us> (Accessed 1 February 2022).

Health Professions Council of South Africa. 2022. *Health Professions Act 56 of 1974: Regulations defining the scope of the profession of physiotherapy*. Available: [https://www.hpcsasa.co.za/Uploads/PPB/Rules%20and%20Regulations/regulations\\_gnr2301\\_76.pdf](https://www.hpcsasa.co.za/Uploads/PPB/Rules%20and%20Regulations/regulations_gnr2301_76.pdf) (Accessed 12 June 2022).

Heslop, S. J. 2008. The knowledge and perceptions of Paediatricians in South Africa with respect to Chiropractic. M.Tech., Durban University of Technology. Available: [https://openscholar.dut.ac.za/bitstream/10321/376/1/Heslop\\_2008.pdf](https://openscholar.dut.ac.za/bitstream/10321/376/1/Heslop_2008.pdf) (Accessed 21 May 2022).

Hunter, S. J. 2004. The perceptions and attitudes of South African physiotherapists about the chiropractic profession. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/2846> (Accessed 8 July 2018).

Ismail, F., Booyesen, N., Yelverton, C. and Peterson, C. 2021. Characteristics of chiropractic patients treated at the University of Johannesburg chiropractic student clinic and relevance to the educational process. *The Journal of Chiropractic Education*, 35(2): 215-221. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8528433/#i1042-5055-35-2-215-b08> (Accessed 11 May 2022).

Jahn, W. T. 2011. The 4 basic ethical principles that apply to forensic activities are respect for autonomy, beneficence, non-maleficence and justice. *Journal of Chiropractic Medicine*, 10(3): 225-226. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4863255/> (Accessed 12 June 2022).

Jones-Harris, A. R. 2010. Are chiropractors in the UK primary healthcare or primary contact practitioners?: A mixed methods study. *Chiropractic & Osteopathy*, 18(28). Available: <https://chiromt.biomedcentral.com/articles/10.1186/1746-1340-18-28> (Accessed 12 June 2021).

Kaliyadan, F. and Kulkarni, V. 2019. Types of Variables, Descriptive Statistics, and Sample Size. *Indian Dermatology Online Journal*, 10(1): 82-86. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6362742/> (Accessed 6 December 2021).

Keyter, K. 2010. The perceptions of South African chiropractors, regarding their professional identity. M.Tech., Durban University. Available: <https://openscholar.dut.ac.za/handle/10321/520> (Accessed 21 February 2022).

Kim, T. K. 2015. T test as a parametric statistic. *Korean Journal of Anesthesiology*, 68(6): 540-546. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4667138/> (Accessed 7 December 2021).

Knaap, M. 2019. The *difference between Physiotherapy and Chiropractic*. Available: <https://mandyknaap.co.za/the-difference-between-physiotherapy-and-chiropractic/> (Accessed 26 June 2021).

Kuipers, S. J., Cramm, J. M. and Nieboer, A. P. 2019. The importance of patient-centered care and co-creation of care for satisfaction with care and physical and social well-being of patients with multi-morbidity in the primary care setting. *BMC Health Services Research*, 19(13). Available: <https://doi.org/10.1186/s12913-018-3818-y> (Accessed 11 May 2020).

Lamprecht, A. and Padayachy, K. 2019. The epidemiology of work-related musculoskeletal injuries among chiropractors in the eThekweni municipality. *Chiropractic and Manual Therapies*, 27(18): <https://chiromt.biomedcentral.com/articles/10.1186/s12998-019-0238-y> (Accessed 20 April 2022).

Langworthy, J. M. and Smink, R. D. 2000. Chiropractic through the eyes of physiotherapists, manual therapists, and osteopaths in The Netherlands. *The Journal of Alternative and Complementary Medicine*, 6(5): 437-443. Available: <https://pubmed.ncbi.nlm.nih.gov/11059506/> (Accessed 3 February 2020).

Lavrakas, P. J. 2008. *Cross-sectional Survey Design*. Available: <https://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n120.xml> (Accessed 7 June 2021).

Lavrakas, P. J. 2008. *Questionnaire*. Available: <http://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n424.xml> (Accessed 7 June 2021).

Maharaj, P. 2009. The knowledge and perceptions of provincial and national health portfolio committee members of South Africa regarding the chiropractic profession. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/456> (Accessed 26 March 2022).

Martin Ebenezer, C., Goh, C. X. H., Jemeela, S., Manoj Abraham, M. and Jabbar, M. S. 2019. Awareness and Knowledge of Physiotherapy among Medical and Health Sciences Students: A Cross-Sectional Study. *Research Journal of Pharmacy and Technology*, 12(4): 1695-1706. Available: <https://riptonline.org/HTMLPaper.aspx?Journal=Research%20Journal%20of%20Pharmacy%20and%20Technology;PID=2019-12-4-38> (Accessed 30 March 2022).

Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R. and Bastos, J. L. 2016. Sampling: how to select participants in my research study? *Anais Brasileiros de Dermatologia*, 91(3): 326–330. Available: <https://doi.org/10.1590/abd1806-4841.20165254> (Accessed 20 February 2020).

McCubbin, T. 2017. Complementary and Alternative Medicine in an Integrated Health Care Delivery System: Users of Chiropractic, Acupuncture, and Massage Services. *The Permanente Journal*, 21. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5528844/> (Accessed 11 May 2022).

McHugh, M. L. 2013. The Chi-square test of independence. *Biochemia Medica*, 23 (2): 143-149. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3900058/> (Accessed 7 December 2021).

McLeod, S. 2018. *Questionnaire: Definition, Examples, Design and Types*. Available: <https://www.simplypsychology.org/questionnaires.html> (Accessed 7 June 2021).

McLeod, S. 2019. *What a p-value tells you about statistical significance*. Available: <https://www.simplypsychology.org/p-value.html> (Accessed 8 January 2022).

Millstine, D. 2021. *Overview of Integrative, Complementary, and Alternative Medicine*. Available: [https://www.msmanuals.com/professional/special-subjects/integrative,-complementary,-and-alternative-medicine#:~:text=Alternative%20medicine%20refers%20to%20non,relationship%2C%20and%20the%20whole%20person](https://www.msmanuals.com/professional/special-subjects/integrative,-complementary,-and-alternative-medicine/overview-of-integrative,-complementary,-and-alternative-medicine#:~:text=Alternative%20medicine%20refers%20to%20non,relationship%2C%20and%20the%20whole%20person). (Accessed 29 May 2022).

Molyneux, C. 2022. Patient-centred care and the biopsychosocial model. *Wounds UK*, 18(1): 69-71. Available: <https://www.wounds-uk.com/journals/issue/657/article-details/patient-centred-care-and-biopsychosocial-model> (Accessed 18 June 2022).

Naidoo, M. 2008. A survey to determine the knowledge and perceptions of biokineticists with respect to the chiropractic profession. M.Tech., Durban University of Technology. Available: <https://ir.dut.ac.za/handle/10321/442> (Accessed 25 March 2022).

Naidoo, N. and Bühler, L. 2009. The perceptions, attitudes and knowledge of physiotherapy and chiropractic students regarding each others' professional practice. *South African Journal of Physiotherapy*, 65(2): 32-37. Available: [https://www.researchgate.net/publication/307847637\\_The\\_perceptions\\_attitudes\\_and\\_knowledge\\_of\\_physiotherapy\\_and\\_chiropractic\\_students\\_regarding\\_each\\_others\\_professional\\_practice](https://www.researchgate.net/publication/307847637_The_perceptions_attitudes_and_knowledge_of_physiotherapy_and_chiropractic_students_regarding_each_others_professional_practice) (Accessed 16 July 2021).

Ndibu Muntu Keba Kebe, N., Chiochio, F., Bamvita, J. and Fleury, M. 2020. Variables associated with interprofessional collaboration: a comparison between primary healthcare and specialized mental health teams. *BMC Family Practice*, 21(4). Available: <https://bmcfampract.biomedcentral.com/articles/10.1186/s12875-019-1076-7> (Accessed 14 July 2021).

Norful, A. A., de Jacq, K., Carlino, R. and Poghosyan, L. 2018. Nurse Practitioner-Physician Comanagement: A Theoretical Model to Alleviate Primary Care Strain. *Annals of Family Medicine*, 16(3): 250-256. Available: <https://pubmed.ncbi.nlm.nih.gov/29760030/> (Accessed 4 July 2021).

Odebiyi, D. O., Omotunde, A. O., Aiyejusunle, C. B. and Olalekan, T. A. 2008. Knowledge and Perception of Physiotherapy by Final Year Medical Students of a Nigerian University. *Nigerian Quarterly Journal of Hospital Medicine*, 18(3): 156-161. Available: [https://www.researchgate.net/publication/23637907\\_Knowledge\\_and\\_perception\\_of\\_physiotherapy\\_by\\_final\\_year\\_medical\\_students\\_of\\_a\\_Nigerian\\_university](https://www.researchgate.net/publication/23637907_Knowledge_and_perception_of_physiotherapy_by_final_year_medical_students_of_a_Nigerian_university) (Accessed 25 March 2022).

Olawale, O. A. and Adjabeng, M. T. 2014. Awareness and knowledge of physiotherapy among the general public in an African market in Accra metropolis, Ghana. *Indian Journal of Physical Therapy*, 2(1): 32-36. Available: <https://www.semanticscholar.org/paper/AWARENESS-AND-KNOWLEDGE-OF-PHYSIOTHERAPY-AMONG-THE-Olawale-Adjabeng/735042ffb61d285cacbeb9143c34bbe97ce081cb#paper-header> (Accessed 26 March 2022).

Olde Bekkink, M., Farrell, S. E. and Takayesu, J. K. 2018. Interprofessional communication in the emergency department: residents' perceptions and implications for medical institutions. *International Journal of Medical Education*, 9: 262-270. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6387781/#:~:text=Introduction,either%20be%20intentional%20or%20unintentional> (Accessed 30 May 2022).

Palmer, D. C. 2008. A study to determine the perceptions, attitudes and knowledge of selected South African pharmacists on the chiropractic profession. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/366> (Accessed 8 July 2018).

Paradis, E., O'Brien, B., Nimmon, L., Bandiera, G. and Martimianakis, M. A. 2016. Design: Selection of Data Collection Methods. *Journal of Graduate Medical Education*, 8(2): 263-264. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4857496/> (Accessed 7 June 2021).

Park, Y. S., Konge, L. and Artino Junior, A. R. 2020. The Positivism Paradigm of Research. *Academic Medicine*, 95(5): 690-694. Available: [https://journals.lww.com/academicmedicine/fulltext/2020/05000/the\\_positivism\\_paradigm\\_of\\_research.16.aspx](https://journals.lww.com/academicmedicine/fulltext/2020/05000/the_positivism_paradigm_of_research.16.aspx) (Accessed 7 June 2021).

Paul, A. and Mullerpatan, R. 2015. Review of Physiotherapy Awareness across the Globe. *International Journal of Health Sciences and Research*, 5(10): 294-301. Available: [https://www.ijhsr.org/IJHSR\\_Vol.5\\_Issue.10\\_Oct2015/43.pdf](https://www.ijhsr.org/IJHSR_Vol.5_Issue.10_Oct2015/43.pdf) (Accessed 16 July 2021).

Peytchev, A., Conrad, F. G., Couper, M. P. and Tourangeau. 2010. Increasing Respondents' Use of Definitions in Web Surveys. *Journal of Official Statistics*, 26(4). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3570267/> (Accessed 12 June 2022).

Ponto, J. 2015. Understanding and Evaluating Survey Research. *Journal of the Advanced Practitioner in Oncology*, 6(2): 168-171. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4601897/> (Accessed 7 June 2021).

Rana, R. and Singhal, R. 2015. Chi-square test and its application in hypothesis testing. *Journal of the Practice of Cardiovascular Sciences*, 1(1): 69-71. Available: <https://www.j-pcs.org/article.asp?issn=2395-5414;year=2015;volume=1;issue=1;spage=69;epage=71;aualast=Rana> (Accessed 8 December 2021).

Rawlinson, C., Carron, T., Cohidon, C., Arditi, C., Hong, Q. N., Pluye, P., Peytremann-Bridevaux, I. and Gilles, I. 2021. *An Overview of Reviews on Interprofessional Collaboration in Primary Care: Barriers and Facilitators*. Available: <https://www.ijic.org/articles/10.5334/ijic.5589/#:~:text=Main%20barriers%20referred%20to%20lack,other%20professionals'%20skills%20and%20contribution> (Accessed 30 May 2022).

Reeves, S., Perrier, L., Goldman, J., Freeth, D. and Zwarenstein, M. 2013. Interprofessional education: effects on professional practice healthcare outcomes. *Cochrane Database of Systematic Reviews*, (3). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6513239/> (Accessed 28 May 2020).

Riva, J. J., Muller, G. D., Hornich, A. A., Mior, S. A., Gupta, A. and Burnie, S. J. 2010. Chiropractors and collaborative care: An overview illustrated with a case report. *The Journal of the Canadian Chiropractic Association*, 54(3): 147-154. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2921780/> (Accessed 4 July 2021).

Rowe, M. and Sauls, B. 2020. The use of smartphone apps in clinical practice: A survey of South African physiotherapists. *South African Journal of Physiotherapy*, 76(1). Available: <https://sajp.co.za/index.php/sajp/article/view/1327> (Accessed 10 March 2022).

Ryan, A. T., San Too, L. and Bismark, M. M. 2018. Complaints about chiropractors, osteopaths, and physiotherapists: a retrospective cohort study of health, performance, and conduct concerns. *Chiropractic and Manual Therapies*, 26(12). Available: <https://doi.org/10.1186/s12998-018-0180-4> (Accessed 15 March 2020).

Salsbury, S. A., Vining, R. D., Gosselin, D. and Goertz, C. M. 2018. Be good, communicate, and collaborate: a qualitative analysis of stakeholder perspectives on adding a chiropractor to the multidisciplinary rehabilitation team. *Chiropractic and Manual Therapies*, 26(29). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6014012/> (Accessed 4 July 2021).

Sanders, T., Foster, N. E., Bishop, A. and Nio Ong, B. 2013. Biopsychosocial care and the physiotherapy encounter: physiotherapists' accounts of back pain consultations. *BMC Musculoskeletal Disorders*, 14(65). Available: <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/1471-2474-14-65> (Accessed 16 June 2020).

Sima, B. T., Belachew, T. and Abebe, F. 2019. Health care providers' knowledge, attitude and perceived stigma regarding tuberculosis in a pastoralist community in Ethiopia: a cross-sectional study. *BMC Health Services Research*, 19(19). Available: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-3815-1> (Accessed 12 June 2021).

Slabbert, J. G. L. 2014. An investigation of the factors affecting referral of patients between chiropractors and physiotherapists in the eThekweni municipality. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/960> (Accessed 8 July 2018).

South African Society of Physiotherapy. 2022. *Become a Physiotherapist*. Available: <https://www.saphysio.co.za/about-us/become-a-physiotherapist/> (Accessed 25 March 2022).

South African Society of Physiotherapy. 2022. *Definition and Scope of PT*. Available: <https://www.saphysio.co.za/about-us/definition-and-scope-of-pt/> (Accessed 2 February 2022).

South African Society of Physiotherapy. 2022. *OMPTG Home*. Available: <https://www.saphysio.co.za/omptg-home/> (Accessed 21 June 2022).

Thomas, L. 2020. *Cross-Sectional Study: Definitions, Uses and Examples*. Available: <https://www.scribbr.com/methodology/cross-sectional-study/> (Accessed 7 June 2021).

Thondhlana, S. S. 2018. Knowledge, utilisation and perceptions of the chiropractic profession by general practitioners in Harare, Zimbabwe. M.Tech., Durban University of Technology. Available: <https://openscholar.dut.ac.za/handle/10321/3071> (Accessed 12 June 2022).

Turhan, N. S. 2020. Karl Pearson's chi-square tests. *Educational Research and Reviews*, 15(9): 575-580. Available: <https://files.eric.ed.gov/fulltext/EJ1267545.pdf> (Accessed 7 December 2021).

University of KwaZulu-Natal. n.d. *Discipline of Physiotherapy Programmes Offered*. Available: <https://physiotherapy.ukzn.ac.za/undergraduatecurriculum/> (Accessed 16 June 2020).

van Dulmen, S. A., Lukersmith, S., Muxlow, J., Santa Mina, E., Nijhuis-van der Sanden, M. W. G. and van der Wees, P. J. 2013. *Supporting a person-centred approach in clinical guidelines. A position paper of the Allied Health Community – Guidelines International Network (G-I-N)*. Available: <https://onlinelibrary.wiley.com/doi/abs/10.1111/hex.12144> (Accessed 11 May 2020).

Vardhan, S., Sharma, M., Lamba, D. and Raj, I. J. S. 2018. Awareness of Physiotherapy Among General Practitioners in a District of Punjab. *International Journal of Current Research*, 10(5): 69154-69156. Available: <https://www.journalcra.com/article/awareness-physiotherapy-among-general-practitioners-district-punjab> (Accessed 19 May 2022).

Viti, A., Terzi, A. and Bertolaccini, L. 2015. A practical overview on probability distributions. *Journal of Thoracic Disease*, 7(3). Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4387424/> (Accessed 8 December 2021).

Wade, D. T. and Halligan, P. W. 2004. Do biomedical models of illness make for good healthcare systems? *BMJ (online)*, 329: 1398-1401. Available: [https://www.researchgate.net/publication/8135718\\_Do\\_Biomedical\\_Models\\_Of\\_Illness\\_Make\\_For\\_Good\\_Healthcare\\_Systems](https://www.researchgate.net/publication/8135718_Do_Biomedical_Models_Of_Illness_Make_For_Good_Healthcare_Systems) (Accessed 11 May 2020).

Wade, D. T. and Halligan, P. W. 2017. The biopsychosocial model of illness: a model whose time has come. *Clinical Rehabilitation*, 31(8): 995-1004. Available: <https://journals.sagepub.com/doi/full/10.1177/0269215517709890> (Accessed 26 June 2021).

Walker, B. F., Armson, A., Hodgetts, C., Jacques, A., Chin, F. E., Kow, G., Lee, H. J., Wong, M. K. and Wright, A. 2017. Knowledge, attitude, influences and use of complementary and alternative medicine (CAM) among chiropractic and nursing students. *Chiropractic and Manual Therapies*, 25(29). Available: <https://chiromt.biomedcentral.com/articles/10.1186/s12998-017-0160-0> (Accessed 20 June 2020).

Westin, D., Tangberg, T., John, C. and Axen, I. 2013. GPs opinions and perceptions of chiropractic in Sweden and Norway: a descriptive survey. *Chiropractic and Manual Therapies*, 21(29). Available: <https://pubmed.ncbi.nlm.nih.gov/24128386/> (Accessed 16 July 2021).

Wikström-Grotell, C. 2021. Physiotherapy and physiotherapy education – from an international to a global and value-based perspective. *European Journal of Physiotherapy*, 23(3): 133-134. Available: <https://www.tandfonline.com/doi/full/10.1080/21679169.2021.1907967> (Accessed 20 April 2022).

Williams, M. Y. 2019. *Migration of South African health care professionals*. Available: <https://physio.uwc.ac.za/pov/2019/05/06/migration-of-south-african-health-care-professionals/> (Accessed 18 June 2022).

Wilson, K., Swincer, K. and Vemulpad, S. 2007. Public Perception of Chiropractic: A Survey. *Chiropractic Journal of Australia*, 37(4): 135-140. Available: [https://www.researchgate.net/publication/234066062\\_Public's\\_Perception\\_of\\_Chiropractic\\_A\\_Survey](https://www.researchgate.net/publication/234066062_Public's_Perception_of_Chiropractic_A_Survey) (Accessed 12 June 2022).

World Federation of Chiropractic. 2001. *Definition of Chiropractic*. Available: [https://www.wfc.org/website/index.php?option=com\\_content&view=article&id=90&Itemid=110](https://www.wfc.org/website/index.php?option=com_content&view=article&id=90&Itemid=110) (Accessed 12 June 2021).

Yetzer, T. and Disney, H. 2017. A biopsychosocial approach in physical therapy to treat a patient with chronic osteoarthritic associated knee pain. *Trends in Medicine*, 17. Available: [https://www.oatext.com/A-biopsychosocial-approach-in-physical-therapy-to-treat-a-patient-with-chronic-osteoarthritic-associated-knee-pain.php#Article\\_Info](https://www.oatext.com/A-biopsychosocial-approach-in-physical-therapy-to-treat-a-patient-with-chronic-osteoarthritic-associated-knee-pain.php#Article_Info) (Accessed 16 July 2021).

Zhu, X. and Xie, X. 2015. *Effects of Knowledge on Attitude Formation and Change Toward Genetically Modified Foods*. Available: <https://onlinelibrary.wiley.com/doi/10.1111/risa.12319> (Accessed 31 May 2022).

# APPENDICES

## APPENDIX A: FOCUS GROUP LETTER OF INFORMATION



**Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

**Purpose:**

The purpose of this focus group is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

**Procedure:**

Participation in this focus group is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the focus group, you will be required to provide informed

consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The focus group will be conducted on the QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms and conditions of the the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the focus group. You will be required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this focus group.

**Benefits:**

The results of this focus group will be used to help address any difficulties that any of the participants may have faced whilst completing the questionnaire to ensure that information will be accurately obtained in the main study regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Withdrawal from the study:**

You may withdraw from the focus group at any time for any reason, without any consequences.

**Remuneration:**

Participation in this focus group is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this focus group is free of charge.

**Confidentiality:**

All feedback obtained from the focus group will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of

Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from participation in the focus group.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidutt [REDACTED] my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy) [REDACTED] my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] or the Institutional Research Ethics Administrator on [REDACTED]. Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Liganiso on [REDACTED].

## APPENDIX B: FOCUS GROUP INFORMED CONSENT FORM



### Statement of Agreement to Participate in the Focus Group:

- I hereby confirm that I have been informed by the researcher, Micaela Ravidutt, about the nature, conduct, benefits and risks of this focus group– Research Ethics Clearance Number: **123/20**.
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the focus group.
- I am aware that the results of the focus group, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a focus group report.
- In view of the requirements of research, I agree that the data collected during this focus group can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the focus group.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the focus group.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

## APPENDIX C: FOCUS GROUP CONFIDENTIALITY STATEMENT



### IMPORTANCE NOTICE:

**THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE FOCUS GROUP, BEFORE THE FOCUS GROUP MEETING CONVENES.**

### DECLARATION

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaire feedback will be coded and kept anonymous in the research process.
3. None of the information shall be communicated with any other individual or organization outside of this specific focus group as to the decisions of this focus group.
4. The information from this focus group will be made public in terms of journal publication, which will in no way identify any participants of this research.

## APPENDIX D: PILOT STUDY LETTER OF INFORMATION



### **Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

### **The Purpose:**

The purpose of this pilot study is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

### **Procedure:**

Participation in this pilot study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the pilot study, you will be required to provide informed consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The pilot study will be conducted on the QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms and conditions of the the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the pilot study. You will be required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this pilot study.

**Benefits:**

The pilot study will assess the eligibility of the questionnaire before carrying out the main study. Once you have completed the questionnaire, you will be requested to provide appropriate feedback which will then be adapted into the final questionnaire to be distributed to the research population.

**Withdrawal from the study:**

You may withdraw from the pilot study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this pilot study is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All feedback obtained from the pilot study will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injuries are expected from this study.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidutt [REDACTED], my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy [REDACTED]) my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] or the Institutional Research Ethics Administrator on [REDACTED]. Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Linganiso on [REDACTED].

## APPENDIX E: PILOT STUDY INFORMED CONSENT FORM



### Statement of Agreement to Participate in the Research Pilot Study:

- I hereby confirm that I have been informed by the researcher, **Micaela Ravidutt**, about the nature, conduct, benefits and risks of this pilot study – Research Ethics Clearance Number: **123/20**.
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the pilot study.
- I am aware that the results of the pilot study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a pilot study report.
- In view of the requirements of research, I agree that the data collected during this pilot study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the pilot study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the pilot study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

## APPENDIX F: PILOT STUDY CONFIDENTIALITY STATEMENT



### **IMPORTANCE NOTICE:**

**THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE PILOT STUDY, BEFORE THE PILOT STUDY MEETING CONVENES.**

### **DECLARATION**

1. All information contained in the research documents and any information discussed during the pilot study meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaire feedback will be coded and kept anonymous in the research process.
3. None of the information shall be communicated with any other individual or organization outside of this specific pilot study as to the decisions of this pilot study.
4. The information from this pilot study will be made public in terms of journal publication, which will in no way identify any participants of this research.

## APPENDIX G: MAIN STUDY LETTER OF INFORMATION



### **Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

### **The purpose of the study:**

The purpose of this study is to obtain information regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

### **Procedure:**

Participation in this study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the study, you will be required to provide informed consent prior to accessing the questionnaire.

The questionnaire should take approximately fifteen minutes to complete and will be provided via the QuestionPro Survey online link. The questionnaire will be kept confidential and anonymous. You will have a maximum of one month to complete the questionnaire via the QuestionPro Survey. The data will be secured on the

QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor.

**Risks:**

There will be no risks to you, if you participate in this study.

**Benefits:**

The results of this study will be used to help stimulate inter-professional education between physiotherapy and chiropractic professions to encourage interdisciplinary understanding and acceptance.

**Withdrawal from the study:**

You may withdraw from the study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this study is entirely voluntary and will be awarded 1 CPD point to Chiropractors from the Allied Health Professions Council of South Africa.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All the answers obtained from the QuestionPro Survey online questionnaire will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed and there will be no link between the online questionnaire and you, the participant. The data obtained will be secured on the QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor. The data will be downloaded from the QuestionPro Survey and stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from this study.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidutt [REDACTED] my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy) [REDACTED] my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] or the Institutional Research Ethics Administrator [REDACTED]. Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Linganiso on [REDACTED].

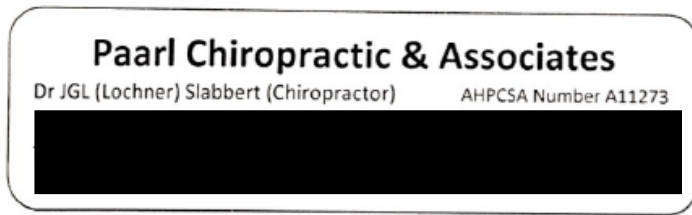
## APPENDIX H: MAIN STUDY INFORMED CONSENT FORM



### Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, **Micaela Ravidutt**, about the nature, conduct, benefits and risks of this study – Research Ethics Clearance Number: **123/20**.
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

## APPENDIX I: PERMISSION LETTER FROM DR J. G. L. SLABBERT



To whom it may concern

**Re: Micaela Ravidutt**

With this letter I give permission to above-mentioned student to use and adapt the questionnaire used by me for my dissertation.

Please feel free to contact me should there be any questions.

Kind regards

Dr JGL Slabbert (Chiropractor)

28/11/2019

[Handwritten signature]

## APPENDIX J: CHIROPRACTIC FOCUS GROUP QUESTIONNAIRE

### Focus Group: Chiropractors

You are invited to participate in my focus group for my study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. It will take approximately 15 minutes to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Micaela Ravidutt via email [REDACTED]. Thank you very much for your time and support.

#### LETTER OF INFORMATION

**Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

**Purpose:**

The purpose of this focus group is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that

questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

**Procedure:**

Participation in this focus group is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the focus group, you will be required to provide informed consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The focus group will be conducted on QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms and conditions of the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the focus group. You will be required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this focus group.

**Benefits:**

The results of this focus group will be used to help address any difficulties that any of the participants may have faced whilst completing the questionnaire to ensure that information will be accurately obtained in the main study regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Withdrawal from the study:**

You may withdraw from the focus group at any time for any reason, without any consequences

CONSEQUENCES.

**Remuneration:**

Participation in this focus group is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this focus group is free of charge.

**Confidentiality:**

All feedback obtained from the focus group will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from participation in the focus group.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidu [REDACTED] my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy) [REDACTED] my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] or the Institutional Research Ethics Administrator [REDACTED]. Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Langaniso on [REDACTED]

**INFORMED CONSENT**

Statement of Agreement to Participate in the Focus Group:

I hereby confirm that I have been informed by the researcher Micaela Ravidutt

Thereby committing that have been informed by the researcher, in detail, regarding, about the nature, conduct, benefits and risks of this focus group– Research Ethics Clearance Number: 123/20

- I have also received, read and understood the above written information (Participant Letter of Information) regarding the focus group.
- I am aware that the results of the focus group, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a focus group report.
- In view of the requirements of research, I agree that the data collected during this focus group can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the focus group.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the focus group.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

### **CONFIDENTIALITY STATEMENT**

IMPORTANCE NOTICE:

THIS FORM IS TO BE READ AND AGREED TO BY EVERY MEMBER PARTICIPATING IN THE FOCUS GROUP, BEFORE THE FOCUS GROUP MEETING CONVENES.

#### **DECLARATION**

All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

The returned questionnaire feedback will be coded and kept anonymous in the research process.

None of the information shall be communicated with any other individual or organization outside of this specific focus group as to the decisions of this focus group.

The information from this focus group will be made public in terms of journal publication. which will in no way identify any participants of this research.

participation, which will not be used for any purposes other than the research.  
Once this form has been read and agreed to, please acknowledge agreement.

---

•

Are you currently registered as a Chiropractor with the Allied Health Professions Council of South Africa (AHPCSA)?

Yes

No

---

•

Are you currently practicing as a Chiropractor within South Africa?

Yes

No

---

• Informed Consent

I agree to participate

I do not agree to participate

---

• Confidentiality Statement

I agree to maintain focus group confidentiality as stated above

I do not agree to maintain focus group confidentiality as stated above

---

Which age bracket do you fall into?

- <26
  - 26-35
  - 36-45
  - 46-55
  - 56-65
  - >65
- 

What is your gender?

- Male
  - Female
- 

How many years have you been qualified as a Chiropractor?

- <5 years
  - 6-<11 years
  - 11-<16 years
  - 16-<21 years
  - 21-30 years
  - >30 years
-

**Where do you practice?**

- Private Practice
  - Hospital/Clinic Setting
  - Multidisciplinary Setting
- 

**Locality of your practice?**

- Suburb
  - Central Business District
  - Rural
- 

**Do you practice on your own?**

- Yes
  - No
- 

**If NO to the above question, in which type of practice do you work? (Group = more than 3 Chiropractors)**

- Duo-practice
  - Group-practice
-

Which province are you from?

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

Did you obtain any other qualifications?

- Yes
  - No
- 

If YES to the above question, please specify what other qualifications you have

---

How many registered Physiotherapists do you think there are in South Africa? (Select ONE option only)

- <2000
  - 2001-4000
  - 4001-6000
  - 6001-8000
  - 8001-9000
  - >9000
- 

What qualification does a Physiotherapist obtain once qualified in South Africa? (Select ONE option only)

- Diploma
  - National Higher Diploma
  - Bachelor's Degree
  - Master's Degree
  - PhD
-

At which institution(s) can Physiotherapy be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
  - University of KwaZulu-Natal
  - University of the Free State
  - University of Pretoria
  - University of Johannesburg
  - University of Witwatersrand
  - University of Stellenbosch
  - University of Western Cape
  - University of Cape Town
  - Sefako Makgatho Health Science University
- 

How many years of studying do you think is required in order to qualify as a Physiotherapist in South Africa? (Select ONE option only)

- <1 year
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
-

Indicate which of the following procedures you think a Physiotherapist may perform on a patient.  
(Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR, Temp)
  - Cardiovascular Exam
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Orthopaedic Exam
  - Genito-urinary Exam
  - Radiological Exam
-

Indicate what treatment modalities you think a Physiotherapist utilizes in the treatment and management of a patient. (Tick ALL that apply)

- Massage
  - Acupressure and Acupuncture
  - Cryotherapy/Cold Application
  - Thermotherapy/Heat Application
  - Biofeedback
  - Exercise and Rehabilitation Programmes
  - Electrotherapy (IFC/TENS/Ultrasound)
  - Hydrotherapy
  - Traction
  - Dry Needling
  - Joint Mobilization
  - Joint Manipulation
  - Soft Tissue Manipulation
  - Relaxation Techniques
  - Patient Education
  - Nutritional Advice
  - Ergonomic Advice
-

Indicate which of the following conditions a Physiotherapist may treat. (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
  - Temporomandibular Joint Issues
  - Post-operative Rehabilitation
-

Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree
Physiotherapists are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists can perform the same treatment as Chiropractors without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy and Chiropractic are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy and Chiropractic are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy may be effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments has been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments has been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Indicate your responses to the following statements regarding your perceptions on the Physiotherapy profession:

The Physiotherapy profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...should be included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you ever refer patients to a Physiotherapist?

- Yes
- No

If you answered YES to the above question, indicate the PRINCIPLE reason for referring a patient:

(Select ONE option only)

Reason for referring a patient to a Physiotherapist:

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - More qualified health care provider
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of a patient
- 

-  
If you answered YES to the above question, indicate for which of the following condition(s) you refer a patient to a Physiotherapist: (Tick ALL that apply)

Conditions for which you refer a patient to a Physiotherapist

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
-

Does a Physiotherapist ever refer patients to you?

- Yes
  - No
- 

If you answered YES to question 28, Indicate for which of the following condition(s) Physiotherapist(s) refer patients to you: (Tick ALL that apply)

Conditions for which a patient has been referred to you by a Physiotherapist

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
- 

Do you communicate with the Physiotherapist regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
  - No
-

Indicate your agreement that you consider Physiotherapists to be competition for Chiropractors

- Strongly disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly agree
- 

Should a patient enquire about Physiotherapy, what is your response(s)? (Select the option(s) that best applies to you)

- Give your professional opinion
  - Outline the enquired professions scope of practice
  - Say that you don't know enough
  - Tell the patient that you can treat the same condition
- 

Indicate your agreement that inter-professional relationships between Chiropractors and Physiotherapists are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

## APPENDIX K: PHYSIOTHERAPY FOCUS GROUP QUESTIONNAIRE

### Focus Group: Physiotherapists

You are invited to participate in my focus group for my study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. It will take approximately 15 minutes to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Micaela Ravidutt via email at [REDACTED]. Thank you very much for your time and support.

#### LETTER OF INFORMATION

**Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

**Purpose:**

The purpose of this focus group is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in

attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

**Procedure:**

Participation in this focus group is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the focus group, you will be required to provide informed consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The focus group will be conducted on QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms and conditions of the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the focus group. You will be required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this focus group.

**Benefits:**

The results of this focus group will be used to help address any difficulties that any of the participants may have faced whilst completing the questionnaire to ensure that information will be accurately obtained in the main study regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Withdrawal from the study:**

You may withdraw from the focus group at any time for any reason, without any consequences.

**Remuneration:**

Participation in this focus group is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this focus group is free of charge.

Participation in this focus group is free of charge.

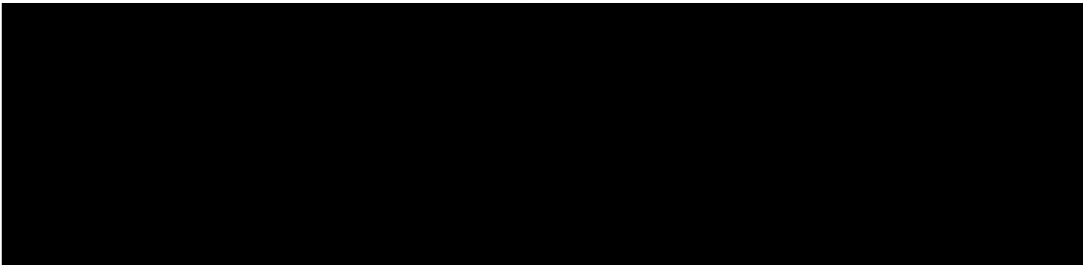
**Confidentiality:**

All feedback obtained from the focus group will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from participation in the focus group.

**Persons to contact in the event of any problems or queries:**



**INFORMED CONSENT**

**Statement of Agreement to Participate in the Focus Group:**

I hereby confirm that I have been informed by the researcher, Micaela Ravidutt, about the nature, conduct, benefits and risks of this focus group– Research Ethics Clearance Number: 123/20

- I have also received, read and understood the above written information (Participant Letter of Information) regarding the focus group.
- I am aware that the results of the focus group, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a focus group report.
- In view of the requirements of research, I agree that the data collected during this focus group can be processed in a computerised system by the researcher.
- I may at any stage without prejudice withdraw my consent and

I may, at any stage, without prejudice, withdraw my consent and participation in the focus group.

- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the focus group.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

### **CONFIDENTIALITY STATEMENT**

IMPORTANCE NOTICE:

THIS FORM IS TO BE READ AND AGREED TO BY EVERY MEMBER PARTICIPATING IN THE FOCUS GROUP, BEFORE THE FOCUS GROUP MEETING CONVENES.

#### **DECLARATION**

All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

The returned questionnaire feedback will be coded and kept anonymous in the research process.

None of the information shall be communicated with any other individual or organization outside of this specific focus group as to the decisions of this focus group.

The information from this focus group will be made public in terms of journal publication, which will in no way identify any participants of this research. Once this form has been read and agreed to, please acknowledge agreement.

•

Are you currently registered as a Physiotherapist with the Health Professions Council of South Africa (HPCSA)?

Yes

No

• Are you currently practicing as a Physiotherapist within South Africa?

Yes

No

---

• Informed Consent

I agree to participate

I do not agree to participate

---

• Confidentiality Statement

I agree to maintain focus group confidentiality as stated above

I do not agree to maintain focus group confidentiality as stated above

---

Which age bracket do you fall into?

<26

26-35

36-45

46-55

56-65

>65

---

What is your gender?

- Male
  - Female
- 

How many years have you been qualified as a Physiotherapist?

- <5 years
  - 6-<11 years
  - 11-<16 years
  - 16-<21 years
  - 21-30 years
  - >30 years
- 

Where do you practice?

- Private Practice
  - Hospital/Clinic Setting
  - Multidisciplinary Setting
- 

Locality of your practice?

- Suburb
  - Central Business District
  - Rural
-

Do you practice on your own?

- Yes
  - No
- 

**If NO to the above question, in which type of practice do you work? (Group = more than 3 Physiotherapists)**

- Duo-practice
  - Group-practice
- 

Which province are you from?

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

Did you obtain any other qualifications?

- Yes
- No

---

If YES to the above question, please specify what other qualifications you have

How many registered Chiropractors do you think there are in South Africa? (Select ONE option only)

- <200
- 201-400
- 401-600
- 601-800
- 801-1000
- >1000

What qualification does a Chiropractor obtain once qualified in South Africa? (Select ONE option only)

- Diploma
  - National Higher Diploma
  - Bachelor's Degree
  - Master's Degree
  - PhD
- 

At which institution(s) can Chiropractic be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
  - University of KwaZulu-Natal
  - University of the Free State
  - University of Pretoria
  - University of Johannesburg
  - University of Witwatersrand
  - University of Stellenbosch
  - University of Western Cape
  - University of Cape Town
  - Sefako Makgatho Health Science University
-

How many years of studying do you think is required in order to qualify as a Chiropractor in South Africa? (Select ONE option only)

- <1 year
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
- 

Indicate which of the following procedures you think a Chiropractor may perform on a patient. (Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR Temp)
  - Cardiovascular Exam
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Orthopaedic Exam
  - Genito-urinary Exam
  - Radiological Exam
-

Indicate what treatment modalities you think a Chiropractor utilizes in the treatment and management of a patient. (Tick ALL that apply)

- Massage
  - Acupressure and Acupuncture
  - Cryotherapy/Cold Application
  - Thermotherapy/Heat Application
  - Biofeedback
  - Exercise and Rehabilitation Programmes
  - Electrotherapy (IFC/TENS/Ultrasound)
  - Hydrotherapy
  - Traction
  - Dry Needling
  - Joint Mobilization
  - Joint Manipulation
  - Soft Tissue Manipulation
  - Relaxation Techniques
  - Patient Education
  - Nutritional Advice
  - Ergonomic Advice
-

Indicate which of the following conditions a Chiropractor may treat. (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
  - Temporomandibular Joint Issues
  - Post-operative Rehabilitation
-

Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Chiropractors are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors can perform the same treatment as Physiotherapists without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic may be effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments has been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments has been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Chiropractic Profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Indicate your responses to the following statements regarding your perceptions on the Chiropractic profession:

The Chiropractic profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...should be included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you ever refer patients to a Chiropractor?

- Yes
- No

If you answered YES to the above question, indicate the PRINCIPLE reason for referring a patient:

(Select ONE option only)

Reason for referring a patient to a Chiropractor:

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - More qualified health care provider
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of a patient
- 

If you answered YES to the above question, indicate for which of the following condition(s) you refer a patient to a Chiropractor: (Tick ALL that apply)

Conditions for which you refer a patient to a Chiropractor

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
-

Does a Chiropractor ever refer patients to you?

- Yes
  - No
- 

If you answered YES to question 28, indicate for which of the following condition(s) Chiropractor(s) refer patients to you: (Tick ALL that apply)

Conditions for which a patient has been referred to you by a Chiropractor:

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Sports Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Disc Herniation
- 

Do you communicate with the Chiropractor regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
  - No
-

Indicate your agreement that you consider Chiropractors to be competition for Physiotherapists

- Strongly disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly agree
- 

Should a patient enquire about Chiropractic, what is your response(s)? (Select the option(s) that best applies to you)

- Give your professional opinion
  - Outline the enquired professions scope of practice
  - Say that you don't know enough
  - Tell the patient that you can treat the same condition
- 

Indicate your agreement that inter-professional relationships between Physiotherapists and Chiropractors are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## APPENDIX L: FOCUS GROUP CONCERNS AND RECOMMENDATIONS

(Inclusion criteria → questions i-v)

1. Include the Durban University of Technology Logo.
2. Keep the introduction to the questionnaire concise.
3. Question numbers do not appear in the questionnaire.
4. Reword question 4 and include “other” as an option for participants who are not employed in a clinic setting.
5. Add an open-ended question to specify if participants selected “other” in question 4.
6. Reword questions 5, 6, 7 and 8.
7. Elaborate or include examples of qualifications obtained in question 9.
8. Reword question 10.
9. Replace “procedures” with “examinations” in question 15 and include incorrect answer choices.
10. Reword question 16 and include additional and incorrect answer choices
11. Include additional and incorrect answer choices in question 17.
12. Clarify the treatment mentioned in statement 18.3.
13. Add statement 18.7 “You already work closely with a Chiropractor/Physiotherapist”.
14. Include “holistic care of the patient”, “collaborative treatment” and “best interests of the patient” in question 21 and allow participants to select multiple answer options.
15. The answer choices for questions 22 and 24 should be the same as question 17.
16. Add an open-ended question to allow participants to elaborate if “no” was selected in question 20.
17. Include “not applicable” as an option in question 25.
18. Reword/clarify question 26.
19. Reword question 27 and include an additional answer choice.

## APPENDIX M: CHIROPRACTIC PILOT STUDY QUESTIONNAIRE



### Pilot Study: Chiropractors

You are invited to participate in my pilot study for my study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. There are 24 questions in this questionnaire which will take approximately 15 minutes to complete.

If you have questions at any time about the survey or the procedures, you may

contact Micaela Ravidutt by email at [REDACTED]

Thank you very much for your time and support.

## LETTER OF INFORMATION

### **Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

### **The Purpose:**

The purpose of this pilot study is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

### **Procedure:**

Participation in this pilot study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the pilot study, you will be required to provide informed consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The pilot study will be conducted on QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms

and conditions of the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the pilot study. You will be required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this pilot study.

**Benefits:**

The pilot study will assess the eligibility of the questionnaire before carrying out the main study. Once you have completed the questionnaire, you will be requested to provide appropriate feedback which will then be adapted into the final questionnaire to be distributed to the research population.

**Withdrawal from the study:**

You may withdraw from the pilot study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this pilot study is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All feedback obtained from the pilot study will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injuries are expected from this study.

**Persons to contact in the event of any problems or queries:**

## INFORMED CONSENT

### Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Micaela Ravidutt, about the nature, conduct, benefits and risks of this pilot study – Research Ethics Clearance Number: 123/20
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the pilot study.
- I am aware that the results of the pilot study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a pilot study report.
- In view of the requirements of research, I agree that the data collected during this pilot study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the pilot study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the pilot study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

## CONFIDENTIALITY STATEMENT

### IMPORTANCE NOTICE:

**THIS FORM IS TO BE READ AND AGREED TO BY EVERY MEMBER PARTICIPATING IN THE PILOT STUDY, BEFORE THE PILOT STUDY MEETING CONVENES.**

## DECLARATION

- All information contained in the research documents and any information discussed during the pilot study meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
- The returned questionnaire feedback will be coded and kept anonymous in the research process.
- None of the information shall be communicated with any other individual or organization outside of this specific pilot study as to the decisions of this pilot study.
- The information from this pilot study will be made public in terms of journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please acknowledge agreement.

- 
- i) Are you currently registered as a Chiropractor with the Allied Health Professions Council of South Africa (AHPCSA)?

Yes

No

- 
- ii) Are you currently practicing as a Chiropractor within South Africa?

Yes

No

• iii) Informed Consent

- I agree to participate
  - I do not agree to participate
- 

• iv) Confidentiality Agreement

- I agree to maintain pilot study confidentiality as stated above
  - I do not agree to maintain pilot study confidentiality as stated above
- 

• 1) Which age bracket do you fall into?

- <26
  - 26-35
  - 36-45
  - 46-55
  - 56-65
  - >65
- 

• 2) What is your gender?

- Male
  - Female
-

• 3) How many years have you been qualified as a Chiropractor?

- <5 years
  - 6-<11 years
  - 11-<16 years
  - 16-<21 years
  - 21-30 years
  - >30 years
- 

• 4) In which setting do you practice?

- Private Practice
  - Hospital/Clinic Setting
  - Multidisciplinary Setting
  - Other
- 

• 5) If other, please specify

---

• 6) Where is your practice located?

- Suburb
  - Central Business District
  - Rural
-

• 7) Do you practice with other Chiropractors?

- Yes
  - No
- 

• 7.1) If YES, in what type of practice do you work? (Group = more than 3 Chiropractors)

- Duo-practice
  - Group-practice
- 

• 8) Which province do you practice in?

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

• 9) Did you obtain any other tertiary qualifications, post graduate qualifications or complete any short courses/training (e.g. basic CPD courses)?

- Yes
  - No
-

- 9.1) If YES, please specify what other qualifications or courses you have obtained or completed.

---

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- 10) How many registered Physiotherapists do you think there are in South Africa? (Select ONE option only)

- <2000
  - 2001-4000
  - 4001-6000
  - 6001-8000
  - 8001-9000
  - >9000
- 

- 11) What qualification does a Physiotherapist obtain once qualified in South Africa? (Select ONE option only)

- Diploma
  - National Diploma
  - Bachelor's Degree
  - Master's Degree
  - PhD
-

• 12) At which institution(s) can Physiotherapy be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
  - University of KwaZulu-Natal
  - University of the Free State
  - University of Pretoria
  - University of Johannesburg
  - University of Witwatersrand
  - University of Stellenbosch
  - University of Western Cape
  - University of Cape Town
  - Sefako Makgatho Health Science University
- 

• 13) How many years of studying do you think is required in order to qualify as a Physiotherapist in South Africa? (Select ONE option only)

- <1 year
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
-

• 14) Indicate which of the following examinations you think a Physiotherapist may perform on a patient. (Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR, Temp)
  - Cardiovascular Exam
  - Obtain Blood Samples
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Nerve Conduction Studies/Electromyography
  - Orthopaedic Exam
  - Diagnostic Ultrasound/CT/MRI
  - Radiological Exam
  - X-Ray Interpretation
  - Genito-Urinary Exam
-

• 15) Indicate what treatment modalities you think a Physiotherapist may perform for the treatment and management of a patient. (Tick ALL that apply)

- Massage
- Acupressure/Acupuncture
- Cryotherapy/Cold Application
- Thermotherapy/Heat Application
- Biofeedback
- Exercise and Rehabilitation Programmes
- Electrotherapy (IFC/TENS/Ultrasound)
- Hydrotherapy
- Traction
- Dry Needling
- Intravenous Therapy/Biopuncture
- Joint Mobilization
- Joint Manipulation
- Soft Tissue Manipulation
- Surgery
- Blood Transfusion
- Vaccination
- Prescription Medication
- Relaxation Techniques
- Patient Education
- Nutritional Advice

Ergonomic Advice

---

**\* 16) Indicate which of the following conditions a Physiotherapist may treat. (Tick ALL that apply)**

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-

• 17) Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Physiotherapists are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists can perform the same treatment (i.e. manipulation, soft tissue therapy etc.) as Chiropractors without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy and Chiropractic are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy and Chiropractic are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy may be effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments has been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments has been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
You already work closely with a Physiotherapist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

• 18) Indicate your responses to the following statements regarding your perceptions on the Physiotherapy profession. The Physiotherapy profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

• 19) Do you ever refer patients to a Physiotherapist?

- Yes
- No

• 19.1) If you answered YES, indicate the reason(s) for referring a patient to a Physiotherapist: (Tick ALL that apply)

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - Holistic care of the patient
  - Collaborative treatment
  - More qualified health care provider
  - Best interests of the patient
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of the patient
-

• 19.2) If you answered YES: indicate for which of the following condition(s) you refer a patient to a Physiotherapist: (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-

- 19.3) If you answered NO: please provide the reason(s) for not referring a patient to the Physiotherapist:

---

---

- 20) Does a Physiotherapist ever refer patients to you?

Yes

No

---

• 20.1) If you answered YES: Indicate for which of the following condition(s) Physiotherapist(s) refer patients to you: (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-

• 21) Do you communicate with the Physiotherapist regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
  - No
  - Not Applicable
- 

• 22) Indicate your agreement that you consider there to be an overlap between the scope of practice of Physiotherapists and Chiropractors

- Strongly disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly agree
- 

• 23) Should a patient enquire about Physiotherapy, how do you approach this question? (Select the option(s) that best applies to you)

- Give your professional opinion
  - Outline the enquired professions scope of practice
  - Outline the difference between the chiropractic and physiotherapy professions
  - Say that you don't know enough
  - Tell the patient that you can treat the same condition
-

- 24) Indicate your agreement that inter-professional relationships between Chiropractors and Physiotherapists are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

## APPENDIX N: PHYSIOTHERAPY PILOT STUDY QUESTIONNAIRE



### Pilot Study: Physiotherapists

You are invited to participate in my pilot study for my study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. There are 24 questions in this questionnaire which will take approximately 15 minutes to complete.

If you have questions at any time about the survey or the procedures, you may contact Micaela Ravidutt by email at [REDACTED]

Thank you very much for your time and support.

## LETTER OF INFORMATION

### **Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

### **The Purpose:**

The purpose of this pilot study is to address the structure of the questionnaire, content reliability and validity as well as any difficulties that any of the participants may face whilst completing the questionnaire in order to be able to obtain information regarding the participants' knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice during the main study.

### **Procedure:**

Participation in this pilot study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the pilot study, you will be required to provide informed consent and agree to the confidentiality agreement prior to accessing the questionnaire.

The pilot study will be conducted on QuestionPro Survey. If you are interested in participating in this study, then you will be requested to agree to the terms and conditions of the QuestionPro Survey software. By agreeing to the terms and conditions, you are agreeing to participate in the pilot study. You will be

required to provide feedback regarding the questionnaire via email to the researcher.

**Risks:**

There will be no risks to you, if you participate in this pilot study.

**Benefits:**

The pilot study will assess the eligibility of the questionnaire before carrying out the main study. Once you have completed the questionnaire, you will be requested to provide appropriate feedback which will then be adapted into the final questionnaire to be distributed to the research population.

**Withdrawal from the study:**

You may withdraw from the pilot study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this pilot study is entirely voluntary and without remuneration.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All feedback obtained from the pilot study will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed. The questionnaire feedback will be stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injuries are expected from this study.

**Persons to contact in the event of any problems or queries:**



## INFORMED CONSENT

### Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Micaela Ravidutt, about the nature, conduct, benefits and risks of this pilot study – Research Ethics Clearance Number: 123/20
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the pilot study.
- I am aware that the results of the pilot study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a pilot study report.
- In view of the requirements of research, I agree that the data collected during this pilot study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the pilot study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the pilot study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

## CONFIDENTIALITY STATEMENT

### IMPORTANCE NOTICE:

**THIS FORM IS TO BE READ AND AGREED TO BY EVERY MEMBER PARTICIPATING IN THE PILOT STUDY, BEFORE THE PILOT STUDY MEETING CONVENES.**

## DECLARATION

- All information contained in the research documents and any information discussed during the pilot study meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
- The returned questionnaire feedback will be coded and kept anonymous in the research process.
- None of the information shall be communicated with any other individual or organization outside of this specific pilot study as to the decisions of this pilot study.
- The information from this pilot study will be made public in terms of journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please acknowledge agreement.

---

- i) Are you currently registered as a Physiotherapist with the Health Professions Council of South Africa (HPCSA)?

- Yes
  - No
- 

- ii) Are you currently practicing as a Physiotherapist within South Africa?

- Yes
  - No
- 

- iii) Informed Consent

- I agree to participate
  - I do not agree to participate
-

• iv) Confidentiality Agreement

- I agree to maintain pilot study confidentiality as stated above
  - I do not agree to maintain pilot study confidentiality as stated above
- 

• 1) Which age bracket do you fall into?

- <26
  - 26-35
  - 36-45
  - 46-55
  - 56-65
  - >65
- 

• 2) What is your gender?

- Male
  - Female
- 

• 3) How many years have you been qualified as a Physiotherapist?

- <5 years
  - 6-<11 years
  - 11-<16 years
  - 16-<21 years
  - 21-30 years
  - >30 years
-

---

• 4) In which setting do you practice?

- Private Practice
- Hospital/Clinic Setting
- Multidisciplinary Setting
- Other

---

• 5) If other, please specify

---

• 6) Where is your practice located?

- Suburb
- Central Business District
- Rural

---

• 7) Do you practice with other Physiotherapists?

- Yes
- No

---

• 7.1) If YES, in what type of practice do you work? (Group = more than 3 Physiotherapists)

- Duo-practice
  - Group-practice
-

• 8) Which province do you practice in?

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

• 9) Did you obtain any other tertiary qualifications, post graduate qualifications or complete any short courses/training (e.g. basic CPD courses)?

- Yes
  - No
- 

• 9.1) If YES, please specify what other qualifications or courses you have obtained or completed.

---

• 10) How many registered Chiropractors do you think there are in South Africa? (Select ONE option only)

- <200
  - 201-400
  - 401-600
  - 601-800
  - 801-1000
  - >1000
- 

• 11) What qualification does a Chiropractor obtain once qualified in South Africa? (Select ONE option only)

- Diploma
  - National Higher Diploma
  - Bachelor's Degree
  - Master's Degree
  - PhD
-

• 12) At which institution(s) can Chiropractic be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
  - University of KwaZulu-Natal
  - University of the Free State
  - University of Pretoria
  - University of Johannesburg
  - University of Witwatersrand
  - University of Stellenbosch
  - University of Western Cape
  - University of Cape Town
  - Sefako Makgatho Health Science University
- 

• 13) How many years of studying do you think is required in order to qualify as a Chiropractor in South Africa? (Select ONE option only)

- <1 year
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
-

• 14) Indicate which of the following examinations you think a Chiropractor may perform on a patient. (Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR, Temp)
  - Cardiovascular Exam
  - Obtain Blood Samples
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Nerve Conduction Studies/Electromyography
  - Orthopaedic Exam
  - Diagnostic Ultrasound/CT/MRI
  - Radiological Exam
  - X-Ray Interpretation
  - Genito-Urinary Exam
-

\* 15) Indicate what treatment modalities you think a Chiropractor may perform for the treatment and management of a patient. (Tick ALL that apply)

- Massage
- Acupressure and Acupuncture
- Cryotherapy/Cold Application
- Thermotherapy/Heat Application
- Biofeedback
- Exercise and Rehabilitation Programmes
- Electrotherapy (IFC/TENS/Ultrasound)
- Hydrotherapy
- Traction
- Dry Needling
- Intravenous Therapy/Biopuncture
- Joint Mobilization
- Joint Manipulation
- Soft Tissue Manipulation
- Surgery
- Blood Transfusion
- Vaccination
- Prescription Medication
- Relaxation Techniques
- Patient Education
- Nutritional Advice

Ergonomic Advice

---

• 16) Indicate which of the following conditions a Chiropractor may treat. (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-

• 17) Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Chiropractors are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors can perform the same treatment (i.e. manipulation, soft tissue therapy etc..) as Physiotherapists without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic may be effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments has been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments has been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
You already work closely with a Chiropractor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 18) Indicate your responses to the following statements regarding your perceptions on the Chiropractic profession. The Chiropractic Profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 19) Do you ever refer patients to a Chiropractor?

Yes

No

• 19.1) If you answered YES: indicate the reason(s) for referring a patient to a Chiropractor: (Tick ALL that apply)

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - Holistic care of the patient
  - Collaborative treatment
  - More qualified health care provider
  - Best interests of the patient
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of the patient
-

• 19.2) If you answered YES: indicate for which of the following condition(s) you refer a patient to a Chiropractor: (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-



• 20.1) If you answered YES: Indicate for which of the following condition(s) Chiropractor(s) refer patients to you: (Tick ALL that apply)

- Neck Pain
  - Whiplash
  - Low Back Pain
  - Chronic Pain Disorders
  - Organ Failure
  - Sport Injuries
  - Joint Sprains
  - Muscle/Ligament Strains
  - Gynaecological Conditions
  - Respiratory Conditions
  - Cardiovascular Conditions
  - Gastrointestinal Conditions
  - Neurological Conditions
  - Psychological Disorders
  - Disc Herniation
  - Temporomandibular Joint Disorders
  - Post-operative Rehabilitation
-

• 21) Do you communicate with the Chiropractor regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
  - No
  - Not Applicable
- 

• 22) Indicate your agreement that you consider there to be an overlap between the scope of practice of Chiropractors and Physiotherapists

- Strongly disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly agree
- 

• 23) Should a patient enquire about Chiropractic, how do you approach this question? (Select the option(s) that best applies to you)

- Give your professional opinion
  - Outline the enquired professions scope of practice
  - Outline the difference between the chiropractic and physiotherapy professions
  - Say that you don't know enough
  - Tell the patient that you can treat the same condition
-

- 24) Indicate your agreement that inter-professional relationships between Chiropractors and Physiotherapists are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

## APPENDIX O: PILOT STUDY CONCERNS AND RECOMMENDATIONS

(Inclusion criteria → questions i-v)

1. Reduce the size the Durban University of Technology Logo to improve resolution in the introduction.
2. Include a question “In which sector do you practice?”
3. Reconsider the purpose of questions 9 and 9.1.
4. Separate acupressure and acupuncture in question 15 and couple acupressure with ischaemic compression.
5. The first line of questions 15, 16, 17, 18, 19 and 20 appears to be hidden in the questionnaire resulting in the participant having to manually scroll up to access the beginning of the question.

**APPENDIX P: GATEKEEPER PERMISSION FROM ACTING HEAD OF  
DEPARTMENT OF CHIROPRACTIC**

4004

To : To Whom It May Concern

From : Dr L. O'Connor Acting HoD Chiropractic

RE : Permission

Date : 1 February 20201

Permission is given to Miss M. Ravidutt [REDACTED] to conduct her research and store her research information in the Chiropractic Department at the Durban University of Technology for a period of five yea.

The title of the research study is: **The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.**

Supervisor: Prof S.S. Maharaj

co-supervisor: Dr C. Prince

Yours sincerely,



Dr L. O'Connor  
Acting HoD: Chiropractic  
M. Tech Chiropractic

# APPENDIX Q: GATEKEEPER PERMISSION FROM AHPCSA

3/26/2021

Gmail - Chiropractic Research: Micaela Ravidutt



Micaela Ravidutt [REDACTED]

## Chiropractic Research: Micaela Ravidutt



Fri, Mar 26, 2021 at 11:45 AM

Dear Ms Ravidutt

Consent granted, provided that the information to be distributed is provided to me as per the template provided to you previously and that the allocation of CEUs to any participant will be as per the procedures discussed below, thank you.

Kind regards

[LEGAL NOTICE](#)

[PRIVACY POLICY](#)

[AHPCSA WEBSITE](#)



**DR LOUIS MULLINDER**

**REGISTRAR: ALLIED HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA**



[Quoted text hidden]

## APPENDIX R: GATEKEEPER PERMISSION FROM MEDPAGES

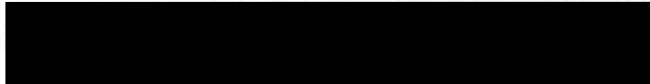
3/26/2021

Gmail - Micaela Ravidutt: Gatekeeper's Permission



---

### Micaela Ravidutt: Gatekeeper's Permission



Fri, Mar 26, 2021 at 10:56 AM

Dear Micaela,

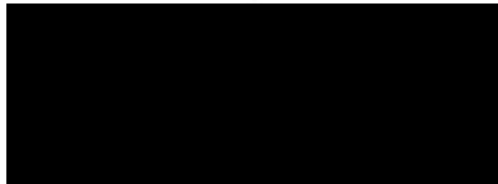
Thank you for your email.

As discussed telephonically we have quoted on sending out an email communication to all Physiotherapist in SA. The email will be sent out on your behalf and all responses will be directed at the reply address supplied. An unsubscribe will also be added to the email as with the new POPIA law its require for all commination to have an opt out.

Just also note that this will be a once off send and any additional email repeats will be charged.

**RAY-ANN FISHER**

Targeted Communications Manager



[WWW.MEDPAGES.INFO](http://WWW.MEDPAGES.INFO)

[Quoted text hidden]

## APPENDIX S: GATEKEEPER PERMISSION FROM SASP



Chiropractic Research

Jul 27, 2021 at 9:32 PM

Dear Micaela

Your request has been approved;

I am copying my colleague, Thandeka who will assist you further with the process of loading the research/distributing to our members.


Please correspond with her further as to how you would like to proceed.

Wishing you all the best with your research.

Kind Regards,

The South African Society Of Physiotherapy



NOTE: PLEASE DO NOT PRINT THIS EMAIL UNNECESSARILY  TO GO GREEN!

*"The information contained in this email is **legally privileged and confidential** and may contain personal information. It is meant solely for the **intended recipient** and access by anyone else is unauthorised. If you are not the intended recipient, any processing of the email or the information contained therein is **prohibited and unlawful**. You are then requested to delete and/or destroy it and **notify the sender**. No warranty is given that this email is free of viruses or that the content is not corrupt. By sending us information via email, you consent to the risks involved in using email and you expressly give us consent to process the personal information contained therein*

*(which will be processed in terms of our **Privacy Policy**, a copy of which is available on request)".*

[Quoted text hidden]

## APPENDIX T: ETHICS APPROVAL LETTER



Institutional Research Ethics Committee  
Research and Postgraduate Support Directorate  
2<sup>nd</sup> Floor, Berwyn Court  
Gate 1, Steve Biko Campus  
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375  
Email: [lvishad@dut.ac.za](mailto:lvishad@dut.ac.za)  
[http://www.dut.ac.za/research/institutional\\_research\\_ethics](http://www.dut.ac.za/research/institutional_research_ethics)

[www.dut.ac.za](http://www.dut.ac.za)

5 March 2021



Dear Ms Ravidutt

**The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice**  
**Ethical Clearance number IREC 123/20**

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the data collection tool has been approved. Kindly ensure that participants used for the pilot study are not part of the main study.

Please note that **FULL APPROVAL** is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'JK Adam', written over a horizontal line.

Prof J K Adam  
Chairperson: IREC

## APPENDIX U: CHIROPRACTIC MAIN STUDY QUESTIONNAIRE



### Main Study: Chiropractors

You are invited to participate in my research study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. There are 24 questions in this questionnaire which will take approximately 15 minutes to complete. If you have questions at any time about the survey or the procedures, you may contact Micaela Ravidutt by email at [micaelarav20@gmail.com](mailto:micaelarav20@gmail.com)

#### **CPD Procedure**

From the AHPCSA, upon completion of the survey you become eligible to receive 1 CEU for taking part in research. ***To claim, make sure you print the "participant information" page with your details provided on it, but do not send this to the AHPCSA, simply file this in your portfolio.***

Kindly complete the participant information page available at the end of the questionnaire then submit to the researcher via email

[REDACTED] to obtain the researcher's signature and file in your portfolio.

Thank you very much for your time and support.

### LETTER OF INFORMATION

#### **Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)  
**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)  
**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)  
**Institution:** Durban University of Technology

**The purpose of the study:**

The purpose of this study is to obtain information regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Procedure:**

Participation in this study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the study, you will be required to provide informed consent prior to accessing the questionnaire.

The questionnaire should take approximately fifteen minutes to complete and will be provided via the QuestionPro Survey online link. The questionnaire will be kept confidential and anonymous. You will have a maximum of one month to complete the questionnaire via QuestionPro Survey. The data will be secured on QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor.

**Risks:**

There will be no risks to you, if you participate in this study.

**Benefits:**

The results of this study will be used to help stimulate inter-professional education between physiotherapy and chiropractic professions to encourage interdisciplinary understanding and acceptance.

**Withdrawal from the study:**

You may withdraw from the study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this study is entirely voluntary and will be awarded 1 CPD point to Chiropractors from the Allied Health Professions Council of South Africa.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All the answers obtained from the QuestionPro Survey online questionnaire will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed and there will be no link between the online questionnaire and you, the participant. The data obtained will be secured on QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor. The data will be downloaded from QuestionPro Survey and stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from this study.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidutt [REDACTED] my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy) [REDACTED] my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] or the Institutional Research Ethics Administrator on [REDACTED] Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Linganiso [REDACTED]

**INFORMED CONSENT****Statement of Agreement to Participate in the Research Study:**

- I hereby confirm that I have been informed by the researcher, **Micaela Ravidutt**, about the nature, conduct, benefits and risks of this study – Research Ethics Clearance Number: **IREC 123/20**
  - I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
  - I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
  - In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
  - I may, at any stage, without prejudice, withdraw my consent and participation in the study.
  - I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
  - I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.
- 

• i) Are you currently registered as a Chiropractor with the Allied Health Professions Council of South Africa (AHPCSA)?

Yes

No

---

• ii) Are you currently practicing as a Chiropractor within South Africa?

Yes

No

---

• iii) Did you participate in the focus group study for this research?

Yes

No

---

• iv) Did you participate in the pilot study for this research?

Yes

No

---

• v) Informed Consent

I agree to participate

I do not agree to participate

---

• 1) Indicate your age bracket.

<26

26-35

36-45

46-55

56-65

>65

---

• 2) What is your gender?

Male

Female

---

---

• 3) How many years have you been qualified as a Chiropractor?

- <6 years
- 6-<11 years
- 11-<16 years
- 16-<21 years
- 21-30 years
- >30 years

---

• 4) In which setting do you practice?

- Private Practice
- Hospital/Clinic Setting
- Multidisciplinary Setting
- Other

---

• 5) If other, please specify

---

• 6) In which sector do you practice?

- Public Sector
- Private Sector
- Both Public and Private Sector

• 7) Where is your practice located?

- Suburb
  - Central Business District
  - Rural
- 

• 8) Do you practice with other Chiropractors?

- Yes
  - No
- 

• 8.1) In what type of practice do you work? (Group = more than 2 Chiropractors)

- Duo-practice
  - Group-practice
- 

• 9) Which province do you practice in?

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

---

• 10) How many registered Physiotherapists do you think there are in South Africa? (Select ONE option only)

- <2000
- 2000-4000
- 4001-6000
- 6001-8000
- 8001-9000
- >9000

---

• 11) What qualification does a Physiotherapist obtain once qualified in South Africa? (Select ONE option only)

- Diploma
- National Higher Diploma
- Bachelor's Degree
- Master's Degree
- PhD

• 12) At which institution(s) can Physiotherapy be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
  - University of KwaZulu-Natal
  - University of the Free State
  - University of Pretoria
  - University of Johannesburg
  - University of the Witwatersrand
  - University of Stellenbosch
  - University of Western Cape
  - University of Cape Town
  - Sefako Makgatho Health Science University
- 

• 13) How many years of studying do you think is required in order to qualify as a Physiotherapist in South Africa? (Select ONE option only)

- <2 years
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
-

• 14) Indicate which of the following examinations you think a Physiotherapist may perform on a patient. (Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR, Temp)
  - Cardiovascular Exam
  - Obtain Blood Samples
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Nerve Conduction Studies/Electromyography
  - Orthopaedic Exam
  - Diagnostic Ultrasound/CT/MRI
  - Radiological Exam
  - X-Ray Interpretation
  - Genito-Urinary Exam
-

• 15) Indicate what treatment modalities you think a Physiotherapist may perform for the treatment and management of a patient. (Tick ALL that apply)

- Massage
- Acupressure/Ischaemic Compression
- Cryotherapy/Cold Application
- Thermotherapy/Heat Application
- Biofeedback
- Exercise and Rehabilitation Programmes
- Electrotherapy (IFC/TENS/Ultrasound)
- Hydrotherapy
- Traction
- Dry Needling
- Acupuncture
- Intravenous Therapy/Biopuncture
- Joint Mobilization
- Joint Manipulation
- Soft Tissue Manipulation
- Surgery
- Blood Transfusion
- Vaccination
- Prescription Medication
- Relaxation Techniques
- Patient Education

Nutritional Advice

Ergonomic Advice

---

• 16) Indicate which of the following conditions a Physiotherapist may treat. (Tick ALL that apply)

Neck Pain

Whiplash

Low Back Pain

Chronic Pain Disorders

Organ Failure

Sport Injuries

Joint Sprains

Muscle/Ligament Strains

Gynaecological Conditions

Respiratory Conditions

Cardiovascular Conditions

Gastrointestinal Conditions

Neurological Conditions

Psychological Disorders

Disc Herniation

Temporomandibular Joint Disorders

Post-operative Rehabilitation

---

• 17) Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Physiotherapists are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapists can perform the same treatment (i.e. manipulation, soft tissue therapy etc.) as Chiropractors without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy is effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments have been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments have been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You already work closely with a Physiotherapist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

- 18) Indicate your responses to the following statements regarding your perceptions on the Physiotherapy profession: The Physiotherapy profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 19) Do you ever refer patients to a Physiotherapist?

- Yes
- No

• 19.1) Indicate the reason(s) for referring a patient to a Physiotherapist. (Tick ALL that apply)

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - Holistic care of the patient
  - Collaborative treatment
  - More qualified health care provider
  - Best interests of the patient
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of a patient
-

• 19.2) Indicate for which of the following condition(s) you refer a patient to a Physiotherapist. (Tick ALL that apply)

- Neck Pain
- Whiplash
- Low Back Pain
- Chronic Pain Disorders
- Organ Failure
- Sport Injuries
- Joint Sprains
- Muscle/Ligament Strains
- Gynaecological Conditions
- Respiratory Conditions
- Cardiovascular Conditions
- Gastrointestinal Conditions
- Neurological Conditions
- Psychological Disorders
- Disc Herniation
- Temporomandibular Joint Disorders
- Post-operative Rehabilitation

• 19.3) Please provide the reason(s) for not referring a patient to the Physiotherapist.

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• 20) Does a Physiotherapist ever refer patients to you?

- Yes
- No
- 

• 20.1) Indicate for which of the following condition(s) Physiotherapist(s) refer patients to you. (Tick ALL that apply)

- Neck Pain
- Whiplash
- Low Back Pain
- Chronic Pain Disorders
- Organ Failure
- Sport Injuries
- Joint Sprains
- Muscle/Ligament Strains
- Gynaecological Conditions
- Respiratory Conditions
- Cardiovascular Conditions
- Gastrointestinal Conditions
- Neurological Conditions
- Psychological Disorders
- Disc Herniation
- Temporomandibular Joint Disorders
- Post-operative Rehabilitation

- 
- 21) Do you communicate with the Physiotherapist regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
- No

- 
- 22) Indicate your agreement that you consider there to be an overlap between the scope of practice of Chiropractors and Physiotherapists

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

- 
- 23) Should a patient enquire about Physiotherapy, how do you approach this question? **(Select the option(s) that apply to you)**

- Give your professional opinion
- Outline the enquired professions scope of practice
- Outline the difference between the chiropractic and physiotherapy professions
- Say that you don't know enough
- Tell the patient that you can treat the same condition

- 24) Indicate your agreement that inter-professional relationships between Chiropractors and Physiotherapists are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## APPENDIX V: PHYSIOTHERAPY MAIN STUDY QUESTIONNAIRE



### Main Study: Physiotherapists

You are invited to participate in my research study entitled: 'The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice'. There are 24 questions in this questionnaire which will take approximately 15 minutes to complete. If you have questions at any time about the survey or the procedures, you may contact Micaela Ravidutt by email at [REDACTED]

Thank you very much for your time and support.

#### LETTER OF INFORMATION

**Title of the study:**

The knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Principle Investigator/Researcher:** Micaela Ravidutt (Student Intern)

**Name of Supervisor:** Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy)

**Name of Co-Supervisor:** Doctor Cleo Prince (M.Tech: Chiropractic)

**Institution:** Durban University of Technology

**The purpose of the study:**

The purpose of this study is to obtain information regarding the knowledge, attitudes and perceptions of qualified Chiropractors and Physiotherapists in South Africa regarding the other professional practice.

**Procedure:**

Participation in this study is voluntary. If you are interested in participating in this study, then you will be requested to read this letter of information. Once you have read and understood the purpose of the study, you will be required to provide informed consent prior to accessing the questionnaire.

The questionnaire should take approximately fifteen minutes to complete and will be provided via the QuestionPro Survey online link. The questionnaire will be kept confidential and anonymous. You will have a maximum of one month to complete the questionnaire via QuestionPro Survey. The data will be secured on QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor.

**Risks:**

There will be no risks to you, if you participate in this study.

**Benefits:**

The results of this study will be used to help stimulate inter-professional education between physiotherapy and chiropractic professions to encourage interdisciplinary understanding and acceptance.

**Withdrawal from the study:**

You may withdraw from the study at any time for any reason, without any consequences.

**Remuneration:**

Participation in this study is entirely voluntary and will be awarded 1 CPD point to Chiropractors from the Allied Health Professions Council of South Africa.

**Cost of the study:**

Participation in this study is free of charge.

**Confidentiality:**

All the answers obtained from the QuestionPro Survey online questionnaire

will be confidential and will only be handled by the researcher and the supervisors. Your name will not be disclosed and there will be no link between the online questionnaire and you, the participant. The data obtained will be secured on QuestionPro Survey and will only be accessible to the researcher, the supervisor and the co-supervisor. The data will be downloaded from QuestionPro Survey and stored for a period of five years in the Department of Chiropractic at the Durban University of Technology on a password protected USB after which it will be deleted.

**Research-related Injury:**

No injury is expected from this study.

**Persons to contact in the event of any problems or queries:**

Please contact the researcher: Micaela Ravidutt [REDACTED] my supervisor: Professor Sonill Sooknunan Maharaj (PhD: Physiotherapy) [REDACTED] my co-supervisor: Doctor Cleo Prince (M.Tech: Chiropractic) [REDACTED] the Institutional Research Ethics Administrator [REDACTED] Complaints can be reported to the Director (RPS): Research, Innovation and Engagement Dr Linganiso on [REDACTED]

## INFORMED CONSENT

**Statement of Agreement to Participate in the Research Study:**

- I hereby confirm that I have been informed by the researcher, **Micaela Ravidutt**, about the nature, conduct, benefits and risks of this study – Research Ethics Clearance Number: **IREC 123/20**
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the

during this study can be processed in a computerised system by the researcher.

- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
  - I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
  - I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.
- 

• i) Are you currently registered as a Physiotherapist with the Health Professions Council of South Africa (HPCSA)?

- Yes
- No
- 

• ii) Are you currently practicing as a Physiotherapist within South Africa?

- Yes
- No
- 

• iii) Did you participate in the focus group study for this research?

- Yes
- No
- 

• Did you participate in the pilot study for this research?

- Yes
- No
-

• v) Informed Consent

- I agree to participate
  - I do not agree to participate
- 

• 1) Indicate your age bracket.

- <26
  - 26-35
  - 36-45
  - 46-55
  - 56-65
  - >65
- 

• 2) What is your gender?

- Male
  - Female
- 

• 3) How many years have you been qualified as a Physiotherapist?

- <6 years
  - 6-<11 years
  - 11-<16 years
  - 16-<21 years
  - 21-30 years
  - >30 years
-

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• 4) In which setting do you practice?

- Private Practice
- Hospital/Clinic Setting
- Multidisciplinary Setting
- Other

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• 5) If other, please specify

---

• 6) In which sector do you practice?

- Public Sector
- Private Sector
- Both Public and Private Sector

---

• 7) Where is your practice located?

- Suburb
- Central Business District
- Rural

---

• 8) Do you practice with other Physiotherapists?

- Yes
- No

---

• 8.1) In what type of practice do you work? (Group = more than 2 Physiotherapists)

- Duo-practice
- Group-practice

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• 9) Which province do you practice in?

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

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• 10) How many registered Chiropractors do you think there are in South Africa? (Select ONE option only)

- <200
- 200-400
- 401-600
- 601-800
- 801-1000
- >1000

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• 11) What qualification does a Chiropractor obtain once qualified in South Africa? (Select ONE option only)

- Diploma
- National Higher Diploma
- Bachelor's Degree
- Master's Degree
- PhD

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• 12) At which institution(s) can Chiropractic be studied in South Africa? (Tick ALL that apply)

- Durban University of Technology
- University of KwaZulu-Natal
- University of the Free State
- University of Pretoria
- University of Johannesburg
- University of the Witwatersrand
- University of Stellenbosch
- University of Western Cape
- University of Cape Town
- Sefako Makgatho Health Science University

• 13) How many years of studying do you think is required in order to qualify as a Chiropractor in South Africa? (Select ONE option only)

- <2 years
  - 2 years
  - 3 years
  - 4 years
  - 5 years
  - >5 years
-

• 14) Indicate which of the following examinations you think a Chiropractor may perform on a patient. (Tick ALL that apply)

- Medical and family history taking
  - Vital signs (BP, PR, RR, Temp)
  - Cardiovascular Exam
  - Obtain Blood Samples
  - Respiratory Exam
  - Abdominal Exam
  - Neurological Exam
  - Nerve Conduction Studies/Electromyography
  - Orthopaedic Exam
  - Diagnostic Ultrasound/CT/MRI
  - Radiological Exam
  - X-Ray Interpretation
  - Genito-Urinary Exam
-

• 15) Indicate what treatment modalities you think a Chiropractor may perform for the treatment and management of a patient. (Tick ALL that apply)

- Massage
- Acupressure/Ischaemic Compression
- Cryotherapy/Cold Application
- Thermotherapy/Heat Application
- Biofeedback
- Exercise and Rehabilitation Programmes
- Electrotherapy (IFC/TENS/Ultrasound)
- Hydrotherapy
- Traction
- Dry Needling
- Acupuncture
- Intravenous Therapy/Biopuncture
- Joint Mobilization
- Joint Manipulation
- Soft Tissue Manipulation
- Surgery
- Blood Transfusion
- Vaccination
- Prescription Medication
- Relaxation Techniques
- Patient Education

Nutritional Advice

Ergonomic Advice

---

• 16) Indicate which of the following conditions a Chiropractor may treat. (Tick ALL that apply)

Neck Pain

Whiplash

Low Back Pain

Chronic Pain Disorders

Organ Failure

Sport Injuries

Joint Sprains

Muscle/Ligament Strains

Gynaecological Conditions

Respiratory Conditions

Cardiovascular Conditions

Gastrointestinal Conditions

Neurological Conditions

Psychological Disorders

Disc Herniation

Temporomandibular Joint Disorders

Post-operative Rehabilitation

---

• 17) Indicate your agreement with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Chiropractors are competent in musculoskeletal and neurological examination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors are competent in managing and treating patients with neuromusculoskeletal conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractors can perform the same treatment (i.e. manipulation, soft tissue therapy etc..) as Physiotherapists without additional training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are similar professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic and Physiotherapy are complimentary professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic is effective for some patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic causes more harm than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physiotherapy treatments have been shown to be superior to Chiropractic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chiropractic treatments have been shown to be superior to Physiotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would like to work closely with the Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You already work closely with a Chiropractor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 18) Indicate your responses to the following statements regarding your perceptions on the Chiropractic profession: The Chiropractic profession...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
...is a primary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is a secondary health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is an alternative health care service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is accessible to all members of the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is needed in South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is included in Medical Aid cover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is based on scientific evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...plays an important role in the health care system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...is registered with the Allied Health Professions Council of South Africa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

- 19) Do you ever refer patients to a Chiropractor?

- Yes
- No
-

• 19.1) Indicate the reason(s) for referring a patient to a Chiropractor. (Tick ALL that apply)

- Condition dependent
  - Patient finances
  - Personal reasons
  - Second opinion
  - Holistic care of the patient
  - Collaborative treatment
  - More qualified health care provider
  - Best interests of the patient
  - Your scope of practice is limited in helping the patient
  - Wish to get rid of a patient
-

• 19.2) Indicate for which of the following condition(s) you refer a patient to a Chiropractor. (Tick ALL that apply)

- Neck Pain
- Whiplash
- Low Back Pain
- Chronic Pain Disorders
- Organ Failure
- Sport Injuries
- Joint Sprains
- Muscle/Ligament Strains
- Gynaecological Conditions
- Respiratory Conditions
- Cardiovascular Conditions
- Gastrointestinal Conditions
- Neurological Conditions
- Psychological Disorders
- Disc Herniation
- Temporomandibular Joint Disorders
- Post-operative Rehabilitation

---

• 19.3) Please provide the reason(s) for not referring a patient to the Chiropractor

---

• 20) Does a Chiropractor ever refer patients to you?

- Yes
- No

---

• 20.1) Indicate for which of the following condition(s) Chiropractor(s) refer patients to you: **(Tick ALL that apply)**

- Neck Pain
- Whiplash
- Low Back Pain
- Chronic Pain Disorders
- Organ Failure
- Sport Injuries
- Joint Sprains
- Muscle/Ligament Strains
- Gynaecological Conditions
- Respiratory Conditions
- Cardiovascular Conditions
- Gastrointestinal Conditions
- Neurological Conditions
- Psychological Disorders
- Disc Herniation
- Temporomandibular Joint Disorders
- Post-operative Rehabilitation

- 
- 21) Do you communicate with the Chiropractor regarding feedback of the patient(s) that you had referred to him/her OR vice versa if the patient had been referred to you?

- Yes
- No

- 
- 22) Indicate your agreement that you consider there to be an overlap between the scope of practice of Chiropractors and Physiotherapists

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

- 
- 23) Should a patient enquire about Chiropractic, how do you approach this question? **(Select the option(s) that apply to you)**

- Give your professional opinion
  - Outline the enquired professions scope of practice
  - Outline the difference between the chiropractic and physiotherapy professions
  - Say that you don't know enough
  - Tell the patient that you can treat the same condition
-

- 24) Indicate your agreement that inter-professional relationships between Chiropractors and Physiotherapists are beneficial for:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Physiotherapy profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Chiropractic profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---