An investigation of the factors affecting referral of patients between chiropractors and physiotherapists in the eThekwini municipality

BY

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I, John George Lochner Slabbert, do declare that this dissertation is representative of my own work in both concept and execution.

Approved for final submission

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Dedication

To all my future patients who I will treat and manage: I will always keep your best interests at heart, vigorously and restlessly aim to find what you seek, stay empathetic and use my head, heart and hands to continuously serve you as best I can.

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During my years of study, I would like to thank

The Lord Jesus Christ who has carried and guided my through this process and blessed me with the abilities to complete what I set out to do. Without You nothing is possible, and with You nothing is impossible.

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Abstract

Objectives: Collaboration between health care practitioners has many advantages including a focus on disease prevention and health promotion, improving service access and the provision of multidisciplinary health care teams. To achieve this ideal health care provision, understanding the current landscape of referral/interaction between practitioners and the factors which influence this network are important. This enables effective delivery of health care demanded by the public. As identified factors impacting the inter-referral of patients between practitioners are contextual, they differ in different contexts. Thus, this study aimed to investigate the factors affecting the referral of patients between chiropractors and physiotherapists in the eThekwini municipality.

Methods: This IRB approved, cross-sectional, questionnaire based survey, required practising chiropractors and physiotherapists in the eThekwini municipality to receive a questionnaire. This researcher developed, focus group refined and piloted questionnaire was delivered to the practitioners for completion, with a letter of information and informed consent. Questionnaires and letters were collected for purposes of data analysis.SPSS version 20was used to analyse the data. Factors which were found to be statistically significant were further tested in a multivariate logistic regression model in order to control for confounding factors.

Results: The 46% of the sampled physiotherapists had never referred a patient to a chiropractor, where 44% of chiropractors had occasionally referred a patient to a physiotherapist. The principle reason for referring a patient (for both practitioners) was dependent on the condition the patient presents with.It was apparent that practice location / geographic location and practice type impacted on the referral of patients. Additionally, the influence of referral by the paradigm of training, viz. the biomedical or biopsychosocial models, could not be excluded.

Conclusions: It is necessary for both professions to look at increasing the degree of inter-professional collaboration and activities in order to ensure a better understanding of each others' professions.

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Introduction

1.1 Introduction

This chapter introduces the topic of factors affecting referral patterns of patients between chiropractors and physiotherapists in the eThekwini municipality and creates a background for the study.

1.2 Background

To achieve an ideal healthcare infrastructure, it is important to understand the factors that influence patient referrals between healthcare professionals, particularly since the public are now demanding multidisciplinary healthcare (Langworthy and Birkelid, 2001).This is important because when healthcare professionals work collaboratively, there are several potential advantages which include a focus on preventing disease and promoting health, so as to improve health service access for the patient as well as having synergistic healthcare professionals working in multidisciplinary teams to the benefit of the patient (Boon *et al.,* 2004; Baird *et al.,* 2008). Therefore, research has attempted to identify factors which impact the inter-referral of patients between health care professionals (Joyce and Kuperstein, 2005; Matteson and Bomonti, 2005; Greene *et al.,* 2006; Pillay, 2006; Smith *et al.,* 2006; Allareddy *et al.,* 2007). This was done, so that the identified factors could be modified, so as to enhance enablers or detract from disablers within the referral network and be used to affect a positive and effective inter-professional relationship between health care professionals. As a result, Smith *et al.,* (2006) stated that future studies must focus on identifying facilitators and barriers in order to develop positive inter-professional referral relationships.

In the South African context, chiropractors and physiotherapists share common ground in terms of the treatment they offer patients, the treatment options and the outcomes they wish to achieve for the benefit of the patient. Both professionals use

manipulations, the aim of which is to restore joint function, improve posture, and relieve pain (Basmajian and Nyberg, 1993; Differences between Physiotherapists and Chiropractors, 2011). Additionally, it has also been noted that the manual professions of osteopathy, physiotherapy, chiropractic care and massage share a common philosophy, which centres on the integrity of the spine as an important factor in ensuring patient health (Basmajian and Nyberg, 1993; The Difference between Chiropractic, Physiotherapy and Osteopathic therapy, 2011). Based on the similarities between the professions, one could assume that inter-referral between chiropractors and physiotherapists would be high. It was, however, determined by Fiandeiro (2008) that an unbalanced referral pattern between chiropractors and physiotherapists exists. Similarly, Hughes *et al.,* (2011) stated in their study that almost 60% of physiotherapists did not consider chiropractic and osteopathy to be appropriate healthcare professions or alternative therapies appropriate for patient referral.

Different beliefs on the certain factors could indicate that there is discordance between the professions (chiropractic and physiotherapy) in terms of the factors influencing referral of patients to between chiropractors and physiotherapists, which may include, but may not be limited to: Economic, organizational and scientific differences (Barrett, 2004; Brussee, Assendelft and Breen, 2001); Malpractice litigation issues (Greene et al., 2006); The perceived market share (Greene et al., 2006); Poor knowledge about the other profession(Greene *et al.,* 2006; Joyce and Kuperstein, 2005); patient assessment procedures clinical documentation (Smith *et al.,* 2006); communication and openness to discussion of patient problems (Allareddy *et al.,*2007); Geographic constraints (e.g. practice location (Temoshok, 2004)); The lack of confidence in another practitioner when a second opinion is requested, needed or required (Sawyer, Bergmann and Good, 1989); Definition of integrative approach to patient care (Matteson and Bomonti, 2005; Jamison, 1987); Past experience (Clemence and Seamark, 2003); Practitioner related factors (Pillay, 2006; Muto *et al.,* 1996; Jamison, 1995); Patient related factors (Alonso, 2004; Shekelle, Markovich and Louie, 1995); Beliefs on the effectiveness of the other professionals' profession (Hughes *et al*., 2011).

These factors were previously determined by Baird *et al.,* (2008), who described inter-professional collaboration as the process by which a collective action by different professionals is structured to coordinate and improve the services they render to patients. Both Smith *et al.,* (2006) and Allareddy *et al.,* (2007) have indicated that if a comprehensive system is not in place, there is likely to be a break in the continuity of patient care to the detriment of the patient.

However, in order to achieve this ideal healthcare infrastructure, it is important to understand the current landscape and pattern of referral and interaction between various different healthcare practitioners, as well as the factors which influence this referral network. In the South African context, Fiandeiro (2008) demonstrated an unbalanced referral pattern between chiropractors and physiotherapists (a chiropractor would more commonly refer patients to a physiotherapist, than a physiotherapist would to a chiropractor), but did not consider the factors influencing these referral patterns, therefore limiting the ability of either practitioner group to be able to influence the referral network effectively in the interests of the patient.

Therefore, this study investigated and discussed the factors affecting referral patterns between participating chiropractors and physiotherapists in the eThekwini municipality.

1.3 Aims and Objectives

The aim of this study was to investigate the factors affecting the referral of patients between chiropractors and physiotherapists in the eThekwini municipality.

The First Objective:

> To determine the demographic characteristics of the practicing chiropractors in the eThekwini municipality.

The Second Objective:

> To determine the demographic characteristics of the practicing physiotherapists in the eThekwini municipality.

The Third Objective:

To establish the inter-referral pattern[1] between chiropractors and physiotherapists.

Null Hypothesis One was as follows:

Referral of patients between chiropractors and physiotherapists do not take place / are limited.

Null Hypothesis Two was as follows:

Referral patterns of patients between chiropractors and physiotherapists are not congruent with the literature.

The Fourth Objective

To determine how certain factors influence the referral of patients between chiropractors and physiotherapists.

Null Hypothesis Three was as follows:

Factors identified in literature do not influence referral of patients between chiropractors and physiotherapists.

1.4 Rationale and Benefits of the study

In order to achieve an ideal healthcare infrastructure with appropriate communication (Langworthy and Birkelid, 2001), collaboration (Baird *et al.,* 2008) an understanding of each other's professions is necessary (Langworthy and Birkelid, 2001; Baird *et al.,* 2008). Both Smith *et al.,* (2006) and Allareddy *et al.,* (2007) have indicated that if there is discordance between these factors, a comprehensive referral system will not be in place, increasing the likelihood of a continuity break in patient care, to the detriment of the patient. This is in contrast to patients / general public demanding improved health care services (Langworthy and Birkelid, 2001), which requires that

[1]Note: by stating inter-referral patterns in the aims, it was not assumed that there is a referral pattern. The research set out to establish if there is indeed such a pattern.

there be a continuity and effective collaboration between the healthcare services (Baird *et al.,* 2008).

Therefore, research has attempted to identify factors which impact on the inter-referral of patients between healthcare professionals in multiple contexts (Joyce and Kuperstein, 2005; Matteson and Bomonti, 2005; Greene *et al.,* 2006; Pillay, 2006; Smith *et al.,* 2006; Allareddy *et al.,* 2007). Without understanding the impact of these factors, Greene *et al.,* (2006) concluded that efficiency, quality, continuity and patient safety are all negatively affected.

This negative impact stems from the multitude of healthcare issues that patients bring to the healthcare table and because there is no single profession which can claim to be able to treat all conditions (O'Connel, 2001). Clemence and Seamark (2003) also stated that closer collaboration between any two professions would result in better management of problematic patients and may prevent wasting of resources. Efficient collaboration could therefore not only improve the outcomes for patient care, but also result in the most cost-effective manner in reaching a common goal (Beauchamp and Childress, 2001; Matteson and Bomonti, 2005).

Since no guidelines or criteria exist for referral of patients with a neuromuscular disorders to a manual therapist / practitioner (chiropractor physiotherapist) in primary care (Cup *et al.,* 2007), it could be stated that current referral practices seem arbitrary and show considerable variation. It has, therefore, been recommended that studies must focus on identifying factors and their enablers and disablers to allow for the development of positive inter-professional referral relationships (Smith *et al.,* 2006). Therefore, the aim of this study was to understand the effect of selected factors as they impact on the referral patterns between chiropractors and physiotherapists.

The outcomes of this study could thus allow for healthcare decision makers within the South African healthcare industry to determine which factors affecting referral of patients need to be enhanced because of their positive effect on patient care. And concurrently diminished or removed the detrimental factors from within the professional interactions of the two professions in order to negate their detrimental

effect on patient referral. The spillover of this may result in improved communication levels between practitioners, care integration at different levels for specific conditions, management and holistic care of specific conditions by the practitioners for the benefit of the patients in their charge (Baird *et al.,* 2008).

1.5 Summary

This chapter provided an introduction to the study, presenting its context and setting, the aim and objectives and the relevant hypotheses as well as the limitations and benefits of the study. Chapter Two will provide an expansion of the current literature that has been discussed thus far in order to expand the reader's understanding of the rationale behind the study. Chapter Three will detail the study design, which includes the materials and methods. Chapter Four will present the results achieved as well as the discussion of these results in the context of the current literature. Chapter Five includes the conclusions and Chapter Six the subsequent recommendations for future studies.

Chapter Two

Literature Review

2.1 Introduction

2.1.1 Outline of this chapter

Chapter Two provides an overview of the current literature in order to enhance the reader's understanding of the rationale behind studying the referral patterns between chiropractors and physiotherapists. This chapter will also give the reader a brief overview of the chiropractic and physiotherapy profession, and discuss factors which have been identified in the literature that affect the referral of patients inter-professionally.

2.1.2 The different systems in medicine

2.1.2.1 The Biomedical approach

The first model or the Biomedical model, sees biological factors as the principle or primary factors in the cause and persistence of disease (Engel, 1977; Weisberg *et al*., 1999; Double, 2002; Tauber, 2002). Within this model, a patient complaint is seen to result from a specific disease state and manifested as a biologic disorder or consequence thereof (Double, 2002). Thus, clinical and specific objective tests target diseased systems, with the aim of correcting the organic pathologic condition, and in appropriate cases, removing the causative organism. As a result, psychological factors are viewed as either an irrelevant or secondary influence on disease. By analogy, the mind would be considered reactive to, but disconnected from, the disease processes manifesting in the body (Engel, 1977; Weisberg *et al*., 1999; Tauber, 2002).

Examples of practitioners within this paradigm have been identified as general practitioners (GP) and physiotherapists (Van Den Brink-Muinen, 2000; Double, 2004). Therefore, a physiotherapist is seen as a manual therapist, who is primarily concerned with the assessment, diagnosis, and treatment of disease and disability

(Basmajian and Nyberg, 1993). Physiotherapy is thus based upon principles of medical science and is generally held to be within the sphere of conventional (rather than alternative) medicine (Basmajian and Nyberg, 1993).

Practitioners, like physiotherapists, who belong to this Biomedical model follow a reductionistic approach to caring for their patient. Thus they are “mechanical in their processes” and “disease directed in their thought process” as opposed to patient centered (Van Den Brink-Muinen, 2000; Tauber, 2002; Pillay, 2006). In this respect reductionism builds descriptions of systems out of the component subsystems, ignoring the potential and / or real relationships between them (Esfeld, 1998; Petros, 2003; Pillay, 2006). Thus, the whole is analyzed by its component parts, in order that the nature of the part and, ultimately, of the whole, might be understood (Tauber, 2002). An example would be the approach of a watchmaker to a watch, whereby the watchmaker is able to dismantle the watch into its component parts in order to find, resolve and repair the problem causing improper functioning of the watch. By reassembling the parts in their allotted sequences and relationships, the watchmaker is able to rebuild the watch to its former state. Contextually, it can be seen that the application of this model to a patient makes the model an uncomfortable fit as it does not allow for interdependence that characterizes bodily functions unlike that of a mechanical watch (Esfeld, 1998; Petros, 2003; Pillay, 2006).

Based on the above example, the reductionistic approach is characterized by the following essential elements:

- To find absolute truth within the clinical setting (Service, 1999; Ben-Ayre, 2006; Breen *et al*., 2006). This places medicine firmly into the scientific realm, where the approach to the patient is characterized by an algorithmic process with respect to assessment, diagnosis and treatment (Dov, 2002; Petros, 2003; Wynia *et al*., 2003). This approach highlights the need of the practitioner to exactly define the patient’s condition in order to apply the literature identified treatment that has been associated with or prescribed for the specific condition (Dov, 2002; Laszlo, 2002).

- There are linear relationships that define cause and effect in a particular direction (Wynia *et al*., 2003). This implies that any condition is specifically associated with a particular cause, a set of particular signs and symptoms and a particular intervention (Delkeskamp-Hayes and Cutter, 1993). This linear causality emphasizes past history and past clinical presentation and how it relates to current clinical context when the patient is assessed (Dov, 2002). It, however, excludes the variables not reported in the past as well as those that are not assessed or are not able to be assessed within the parameters of the physiotherapist's knowledge, experience or understanding in the present (Petros, 2003; Ben-Ayre, 2006; Breen *et al*., 2006).

- Taking the above two bullet points into consideration, patient assessment, diagnosis and treatment are seen as objective, measureable, clinical and true to the patients context when they present (Dov, 2002), with little room left for doubt and possibility (Service, 1999; Ben-Ayre, 2006; Breen *et al*., 2006).

- This results in the outcome of the patient assessment and diagnosis as well as treatment and prognosis being "defined and delimited, predictable, stable, governed and closed" by the knowledge that surrounds the condition of each presenting patient (Petros, 2003; Dov, 2002; Pillay, 2006).

With this reductionistic process, there is a change in the emphasis of the characteristics by which the physiotherapist approaches the therapist-patient relationship, in that the holistic principles of patient care (Ben-Ayre, 2006; Breen *et al*., 2006) change to a more logical and step-by–step approach, which is governed by the physiotherapist's own paradigm and excludes that which the patient actually brings to the relationship (Service, 1999). This has been seen to lead to a paternal, authoritative and rigid medical system, in which the patient is treated much as a child would be treated by a parent (Laszlo, 2002; Tauber, 2002).

Further to the above, the reductionistic approach allows for independent levels of patient care, where inter-dependence, collaboration and collective patient care is limited in order to achieve effective patient care (Covey, 1999). However, as a result

of the lack of inter-dependence, the approach to treatment tends to be mono-therapeutic as opposed to inter-disciplinary/multidisciplinary (Service, 1999; Tauber, 2002). The latter of which has been shown to be cost intensive (Dagenais and Haldeman, 2012) and often, inappropriate for patient care (Tauber, 2002; Fox and Butler, 2004).

In summary then, literature (Service, 1999; Tauber, 2002), seems to suggest that the physiotherapist's view on patient interactions is defined as non-holistic as there is a potential negation of key factors that could play a role in the patient's state of illness (Walach, 2005). In negating these factors it becomes probable that they may overlook the need for patient referral. This is because it is a value-based decision as opposed to one that is purely fact or algorithm based (Psaty *et al*., 1996; Laszlo, 2002). This would be disadvantageous to the patient especially when there are other practitioners or healthcare personnel that could assist, or be more effective in the treatment of the patient's condition than the physiotherapist would or could do alone (Tauber, 2002).

The only factor that may modify the physiotherapist's focus outside of their non-holistic approach, is the possibility that they refer patients to those that fall within their paradigm (as based on their algorithm) and thus, the communication between practitioners within allopathic medicine is normally seen to be good or at least expected (Tauber, 2002). On the converse however, practitioners falling outside of the allopathic ambit, such as those classified as Complementary Alternative Medicine (CAM) practitioners, fall outside of the scope of the structured allopathic approach and thus referrals are limited and small in number (Snyderman, 2002), as a result of incongruence between their operational paradigms.

2.1.2.2 The Biopsychosocial model

On the other hand, the Biopsychosocial or patient centered model attempts to incorporate, that which is best from the Biomedical model (Tauber, 2002) and combines this with a combination of biologic, psychological, social, and cultural influencers that are essential in causing, maintaining, perpetuating and exacerbating disease (Lindau *et al*., 2003; Spiro and Norton, 2003; Laszlo, 2002). Practitioners

within this model are predominantly the complementary alternative healthcare professionals (Laine and Davidoff, 1996) for example chiropractors (www.ahpcsa.org.za, 2006).

Practitioners of the Biopsychosocial model follow a holistic approach which is characterized by an inductively reasoned approach to the patient's problem (Lindau *et al*., 2003). Within this context, holism is a concept that is opposed to reductionism (Keating and Coyle, 1992); where the reductionist believes that any whole can be analyzed according to its component parts (Petros, 2003) and the holist attempts to maintain the whole as the primary concept which is often more than the aggregate sum of its parts (Keating and Coyle, 1992; Esfeld, 1998).

Thus, the practitioner following the Biopsychosocial model has the following characteristics:

- They work within inter-dependent levels, where patient care is enhanced by communication between practitioners. In this way poly-therapeutic / multi-disciplinary treatment is achieved (Covey, 1999; Tauber 2002).

- In contrast to the Biomedical model, before arriving at the correct diagnosis for a patient, the practitioner may wade through many incorrect diagnoses. In this manner, the practitioner is dependent on what the patient reports (history), what is found in the clinical assessment and how these interact and combine. Only after this process has been refined, is the diagnosis reached and the patient treated with the aim of breaking the cycle of disease at multiple points. This implies that the practitioner will find the diagnosis in-between "truth and the untruth", between "fact and intuition" (Skytner, 2001; Standish, 2001; Laszlo, 2002; Pillay, 2006).

- Therefore, when assessing a patient, the practitioner has to be "responsive, dynamic, multi-stable, self-governed" and thus able to accept changes within the context of the pathogenesis of the disease and the doctor-patient relationship (Lazlo, 2002). This "relative instability" of the doctor-patient interaction should be based on one or more of the environment, intra-personal

interactions, inter-personal interactions and the patient's psychological state. These all play a role in the manifestation of disease (Lazlo, 2002; Borrell-Carió, 2004; Pillay, 2006). Thus the practitioner must operate without hindrance or restriction and must consider all options to allow the patient to receive appropriate care (Lazlo, 2002). In order to do this the practitioner is required to be empathetic in order to foster and enable an effective doctor-patient relationship, which enhances the process of healthcare for the patient (Borrell-Carió, 2004; Pillay, 2006).

- As patients present with a variety of illnesses, a mechanistic paradigm is "narrow-minded", and has been reported to lead to inappropriate management of the patient (Skytner, 2001). By contrast a Biopsychosocial paradigm is muted to be better able to deal with patients that present with multiple disease processes (Standish, 2001; Laszlo, 2002) or at various stages of the disease pathogenesis (Skytner, 2001; Petros, 2003). This is of particular relevance where there are inherent limitations to the type of conditions treated by any one particular profession, as can be seen for example in the chiropractic profession where specialization is defined by the neuromusculoskeletal system and thus referral and / or co-management is required for any non-neuromusculoskeletal disorders or diseases which lie outside the scope of this profession (www.ahpcsa.co.za, 2011).

- Within the collaborative and multi-disciplinary milieu of the Biopsychosocial paradigm, practitioners, like chiropractors are forced to realize their limited intellectual and/or clinical capability (linked to scope of practice) (www.ahpcsa.co.za, 2011) and that other factors outside of this may play a dynamic and key role when managing patients (Skytner, 2001; Standish, 2001). Thus, no single methodology is correct, but rather a mixture of methodologies. This will lead to an appropriate diagnosis and therefore care (Laszlo, 2002; Petros, 2003).

The complexities of this model of healthcare are summarized in Figure 2.1, as taken from Temoshok (2004).

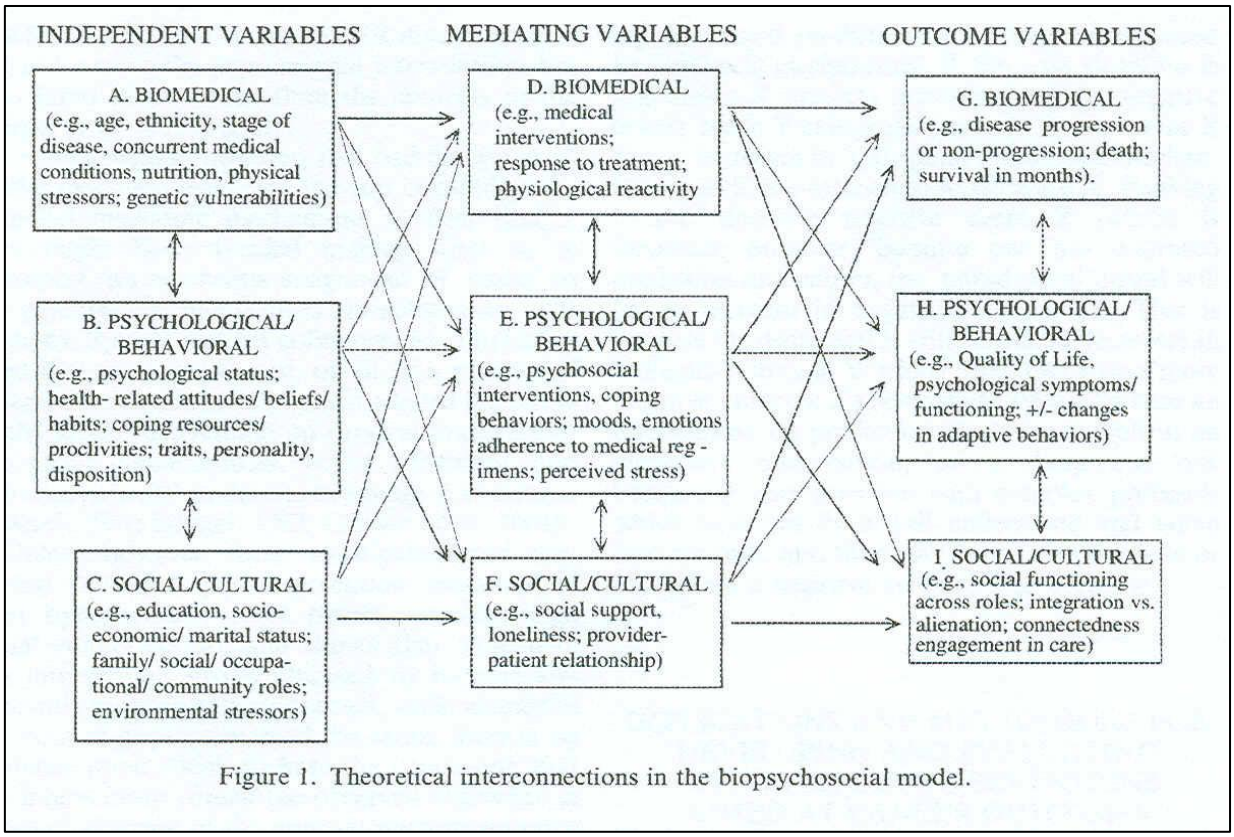


Figure 2.1 Theoretical interconnections in the Biopsychosocial model (adapted from Temoshok, 2004).

Due to the holistic view of doctor-patient interactions (Figure 2.1), Temoshok (2004) characterizes the basis for this view in patient terms. This emphasizes the inter-dependence required to effectively assess, diagnose and treat patients and begins to outline why literature suggests that practitioners in this milieu are thought to be more aware of other practitioners and how they contribute to the healthcare environment (Snyderman, 2002). This facilitates and is facilitated by increased communication between practitioners, which increases in response to patients' expectations of this form of care (Snyderman, 2002). This may be as a result of the Biopsychosocial model being influenced by attitudes, people's perceptions, cultural beliefs or religion/traditions (Ben-Ayre, 2006; Breen *et al*., 2006).

It can, therefore, be seen that there is a potential for inherent conflict between the two dominant paradigms within healthcare. However, with patient demand expecting cost effective, collaborative healthcare (Snyderman, 2002; Gofin and Gofin, 2011; Birn, Pillay and Holtz, 2009; Samb, 2010), it is necessary for medicine in general to consider merging the best practices of each into one multi-disciplinary approach.

2.1.3 Multidisciplinary / collaborative approach to patient care

Boon *et al.,* (2004) has indicated that the term “integrative healthcare” or inter-professional collaboration may mean different things to different people because it has not been defined as clearly as the Biomedical or Biopsychosocial models, but rather by a set of principles. Bridges *et al.,* (2011) defined inter-professional collaboration in their publication as a “partnership between a team of health providers and a client (patient) in a participatory collaborative and co-ordinated approach to shared decision making around health and social issues.”

This multidisciplinary approach, is receiving increased support as evidence mounts in terms of the inter-professional collaborative environment and the benefits if offers. This includes increased access to healthcare, improved outcomes for patients with chronic diseases, less conflict among care providers, better use of clinical resources, and easier recruitment of care providers and lower rates of staff turnover rates (Buring *et al.,* 2009; Interprofessional Care Steering Committee, 2007; Hind *et al.,* 2003). It is also attractive to both the patient and the health provision regulators (Bridges *et al*., 2011). Additionally, patient-centered collaborative practice helps to promote the active participation of each medical discipline in patient care (Karim and Ross, 2008). Further, it enhances patient and family-centered goals and values, provides mechanisms for continuous communication among caregivers, optimizes staff participation in clinical decision making within and across disciplines, and fosters respect for disciplinary contributions from all professionals (Karim and Ross, 2008; College of Health Disciplines, 2010).

This supports the assertion by Langworthy and Birkelid (2001), who summarized their article by indicating that to optimize the benefits of multidisciplinary patient management, better communication and greater understanding between the disciplines is needed. This was later supported by Clemence and Seamark (2003), who stated that closer working relationships between any two medical professions would result in better management of problematic patients and prevent wasting of resources. This not only improves the outcomes for patient care, but also results in the most cost-effective manner in reaching a common goal (Beauchamp and Childress, 2001; Matteson and Bomonti, 2005; Gofin and Gofin, 2011; Birn, Pillay

and Holtz, 2009; Samb, 2010). Thus, multi-disciplinary care provides patients with therapeutic options within an environment where healthcare providers and patients are informed and increased communication limits the fragmentation of care, while optimizing the continuity and quality of care offered to patients suffering from multiple chronic conditions (Burnie *et al*., 2010).

In order to achieve this, two key principles for collaborative, multi-disciplinary care were stated in the report (Chapman-Smith, 2011): trust (between providers and between patients and collaborating providers) and patient-centered focus. Collaboration should enable patient participation in clinical decision making and management, and be respectful of patient choice (Mior *et al*., 2010; Chapman-Smith, 2011). The report also offered three main areas which should be the focused on when providing collaborative care, building trust and patient-centeredness (Mior *et al*., 2010; Chapman-Smith, 2011):

- Communication by means of a common language used within an agreed format for referral notes, feedback notes and general communication;
- Constant communication on patient status was identified as being critical for the collaborative relationship;
- Practice parameters based on the use of agreed clinical practice guidelines, within the set scope of practice (outlining type, frequency and duration of care).

However, without a comprehensive system, there is likely to be a break in the continuity of patient care (Smith *et al*., 2006; Allareddy *et al.,* 2007). Kirkaldy-Willis and Bernard (1999) stated that an entire team of professionals need to work together to successfully solve certain low back conditions and that no one practitioner can manage all aspects of low back pain. They advise that practitioners should learn from one another and to be humble enough to recognize their own limitations. Some clinical cues presented by the patient fall entirely within the practitioners' scope of practice, whereas others may be considered to be partially or completely beyond the practitioners' experience and expertise (Forrest *et al*., 2006). The latter instance should prompt the practitioner to refer the patient to a practitioner with the needed specialized skills (Forrest *et al*., 2006). This is, however, difficult to achieve when the healthcare system is split into practitioners from two opposing paradigms –

Biomedical and Biopsychosocial – as these two systems serve opposing roles with the focus on the disease and the patient respectively (Engel, 1977; Weisberg *et al*., 1999; Double, 2002; Laszlo, 2002; Tauber, 2002; Lindau *et al*., 2003; Spiro and Norton, 2003).

Thus, the development of communication between physiotherapists and chiropractors may be reduced or enhanced, partly from the vantage point of the manner in which the respective practitioners have been trained to operate within healthcare; or it may be related to the patients who have been "trained by" and accepting of a particular model of care, and therefore, do not understand or demand that which may produce better care for themselves and their condition (Alonso, 2004).

The question then arises of how one might start addressing this problem. Therefore, the next section touches on inter-professional education as a possible tool to assist in integrating service provision within the healthcare sector.

2.1.4 Inter-professional education

Inter-professional education is defined as education which occurs when two or more professions learn with-, from-and/or about each other to improve collaborative practice and the quality of patient care delivered to the patients seen by the respective professions (Riva *et al.,* 2011). Thus, inter-professional care is underscored by effective inter-professional education which works to improve the quality of patient care, focuses on the needs of service users and care providers, involves service users and care providers, encourages professions to learn with, from and about each other, respects the integrity and contribution of each profession, enhances practice within professions and increases professional satisfaction (Buring *et al.,* 2009; Hind *et al.,* 2003; Karim and Ross, 2008). This is achieved through the overarching goal of inter-professional education, which is to promote inter-professional collaborative patient-centered practice (Karim and Ross, 2008).

Karim (2011) stated that multidisciplinary patient care and its attendant attitudes as well as perceptions regarding other healthcare professionals, starts at the level of the educational institute. Thus, changes in attitudes, values, philosophy, and culture within healthcare needs to begin at the level of education (Lerner *et al.,* 2009; Karim, 2011). Therefore, healthcare providers are required to have a clear and effective understanding of the characteristics of multi-disciplinary care and the foundation from which educational and curricular models can be developed (Lerner *et al.,* 2009). These educational models however, need to be underpinned by change in the required and associated policies surrounding practice and specifically multi-disciplinary care for it to succeed. This would require countering the competitive and individualistic focus that traditionally characterizes education (Grant, 2006). This is particularly true as in the multidisciplinary model of education, it includes the student perspective within the health services, student achievement in the context of healthcare and the patient perspective; all of which are inextricably interwoven within the multi-disciplinary healthcare relationship/environment (Lerner *et al.,* 2009; Karim, 2011).

How then do the chiropractic and physiotherapy professions relate to multi-disciplinary / collaborative care and to what measure do these professions enable this paradigm in their interactions with each other and in the best interests of the patient? Thus the next section looks at each profession individually, providing a short background and a current perspective, followed by what the literature suggests are enablers of enhanced communication between the professions as a proxy measure for the degree of collaborative practice between the professions.

2.2 Chiropractic

In 1895, the world was introduced to chiropractic, a fledgling beginning of a healthcare profession that based its existence on a simple premise: vertebral subluxations interfere with health and well-being (Keating, 1992). This original idea is the basic foundation of the chiropractic premise of health and disease (Keating, 1992; Tetrault, 2004; Leach, 2004). Thus, for the most part of its history, chiropractic care has been classified as a complementary therapeutic paradigm separate from, or marginal to, the mainstream healthcare system (Pollentier and Langworthy, 2007).

According to Vallone *et al.,* (2010), over the last decade however, CAM healthcare providers, including chiropractors, have made significant inroads into healthcare. This seems to have warranted the scrutiny of leaders in the field of conventional western medicine (Pollentier and Langworthy, 2007). In 2012, chiropractors have been noted to reside in over 100 countries, with most countries (predominantly outside of the first world countries) having only one chiropractor for every hundred thousand to ten million people (Tetrault, 2004). Depending on education, geographic location, scope of practice, as well as consumer preference, chiropractors may assume the role of primary care for families who are pursuing a more natural and holistic approach to healthcare for their families (Vallone *et. al*., 2010).

Thus, since chiropractic as a healthcare profession is more than 100 years old, one might question why chiropractic is not more overtly involved in the public health sector. The answer may be found in its growth and development (Keating, 1992). During its first century, the chiropractic profession was known for its independence and relative isolation from other healthcare professions (Keating, 1992). This was partly by choice but also partly by barriers placed in its way (Chapman-Smith, 2009). Several political and sociological barriers are possible explanations for this (Keating, 1992; Coulter, 1992).An example of this is the 1969 APHA (American Public Health Association) resolution, which encouraged legislation to prevent chiropractors from participating in public health programs. APHA also promoted the concept that chiropractic was a health-hazard (Baird *et al*., 2008).

The above practice was re-inforced by the American Medical Association (AMA) (Baird *et al*., 2008), who had long standing policies against chiropractic, stating that it would be unethical for medical doctors to integrate with chiropractors. This prevention of integration was known as the “consultation clause” (Baird *et al*., 2008). This, along with the Committee on Quackery (created by the AMA), was to contain and eliminate chiropractic (Keating, 1992). These actions were based on a 1966 AMA policy, which described chiropractic as unscientific and irrational, a health-hazard and lacking in necessary training and background. Understandably, these statements created an unwelcome environment for chiropractors who wished to participate in public health activities and broader integrated care systems (Baird *et al*., 2008). These historical roots, as well as the classification of chiropractic into

CAM therapies, distanced chiropractic from medicine in two ways. The first in terms of the paradigm of operation, where chiropractic was rejected and therefore elected to follow a Biopsychosocial paradigm of development, but was isolated in this approach as medicine tried to contain the development of chiropractic. The second was more pragmatic, where there was active resistance to the development of the profession and active aggression which limited the chiropractic professions integration into the medical milieu (Baird *et al*., 2008).

Concurrent to the isolated development of the chiropractic profession'scurrent position in healthcare. The medical profession generally has also been halted from further isolating the profession (Keating *et al*, 1992). These two factors have subsequently resulted in the first chiropractic content being accepted into a medical journal in 1980 (Baird *et al*., 2008).

Thus, the chiropractic profession is now defined by Haldeman (2005) and the World Federation of Chiropractic (2001) as: "a healthcare profession concerned with the diagnosis, treatment, and prevention of disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health." This is congruent with the Chiropractic Association of South Africa (http://www.chiropractic.co.za, 2012) and the Allied Health Professions Council of South Africa (www.ahpcsa.gov.za, 2012). The definition of chiropractic thus centers around the concept that chiropractic is a health profession which focuses on the assessment, diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system considering that within the patient context, these disorders have wide ranging effects on body systems and functioning. As a result, there is an emphasis on manual treatments (e.g. adjustments of joints and soft-tissue manipulation) (Chapman-Smith, 2000; Definition of Chiropractic, 2009).

Therefore, in the South African context, chiropractors focus on the treatment of musculoskeletal structures like ligaments, tendons and joints, particularly in and around the spine (Haldeman, 2005; Bergmann, Peterson and Lawrence, 1993; Bergmann and Peterson, 2011), in order to relieve pain, realign the spine, adjust posture and to restore joint function to optimize health. Chiropractors use manipulation techniques as their principle modality, which is supplemented by

various manual therapy techniques (Basmajian and Nyberg, 1993; Paris, 2000; Redwood and Cleveland, 2003). The chiropractic practice is predominantly focused on the spine and spine related conditions and to a lesser extent on extremity conditions (Brantingham *et al*., 2009; Brantingham *et al*., 2011), unless they are considered to be related to the spine. By contrast, physiotherapy practice would almost reflect the inverse (Basmajian and Nyberg, 1993; Differences between Physiotherapists and Chiropractors, 2011).

Thus it is seen that the chiropractic profession has been and continues to be committed to integration into mainstream education, research and evidence-based practice (Gatterman, 1990; Gatterman, 1995; Chapman-Smith, 2009; Haldeman, 2005; Dagenais and Haldeman, 2012). This is evidenced by increased collaborations (internationally) between chiropractors and the medical profession, in both hospital and community-based private practice setting (Suleman, 2001; Chapman-Smith, 2011: Kopansky-Giles *et al*., 2007). Some examples of increased collaboration occurring across the world include the following:

- Across the United States of America, chiropractors are now found in military and veteran's administration hospital/health centers (Chapman-Smith, 2011). Chiropractors are integrated into the healthcare teams at a teaching hospital and a government-funded health centre in Canada (Kopansky-Giles *et al*., 2007; Suleman, 2001).
- For spinal trauma patients in Denmark's Lillebaelt Hospital, chiropractic services are available to the specialized spine care centre and often see these patients first.

Research evidence and a body of consistent clinical guidelines supporting spinal manipulation for mechanical back, neck pain and headaches have assisted and may be the principle reason for the increased level of collaboration than in the past(Accident Compensation Corporation, 1997; The Norwegian Back Pain Network, 2002; Australian Acute Musculoskeletal Pain Guidelines Group, 2003; Airaksinen *et al.,* 2006; Nielens *et al.,* 2006; van Tulder *et al.,* 2006; Dagenais *et al*., 2008; Chapman-Smith, 2011).

New government policy in Canada requires all health science students to have formal inter-professional education in their curricula (Riva *et al.,* 2011). This is thought to aid in understanding the roles of all health professionals, thus promoting collaborative work (Kopansky-Giles *et al*., 2007; Suleman, 2001; Chapman-Smith, 2009; Riva *et al.,* 2011).

Chiropractic and other complementary services are integrated with medical care at Harvard, and the pilot trial has shown greatly improved outcomes for patients with chronic back pain (Chapman-Smith, 2009). There is evidence that a growing number of chiropractors are collaborating or being integrated into multidisciplinary care environments, although chiropractors typically practice independently of other healthcare providers (Burnie *et al*., 2010).

In the South African context however, certain warnings were highlighted for the future of chiropractic. When Myburgh and Mouton (2007) interviewed patients about chiropractic, they found that chiropractic was socially desirable and a healthcare utility that benefitted patients. Notwithstanding this, some patients were confused by the lack of integration between chiropractic and other healthcare disciplines which resulted in uncertainty with regard to the status the chiropractor could claim educationally and/or professionally (Myburgh and Mouton, 2007).

2.1.5 Physiotherapy

Coughlin (2000) noted that massage as a self-healing modality has been used since the beginning of time. This is evidenced by records outlining massage of an injured bodily area or the “pinching the wounded area”. These roots provided a beginning for the evolution of the massage that we know today and also gave rise to the evolution pain relieving therapies. Additionally, with the development of language, customs and teaching in various civilizations, manual therapy as a healing practice has developed into a recognized profession (Basmajian and Nyberg, 1993; Paris and Stanley, 2000; Fiandeiro, 2008).

Physical therapy (physiotherapy), as we know it today, was first applied in the United States of America. It was in the treatment of infantile paralysis in the early 1900’s. It

was further developed during the First World War, where manual therapists were employed to assist with the restoration of physical performance (the military personnel and civilians). Thus, formal physiotherapy training was underway by 1918, and in 1921 the American Physical Therapy Association was established (Scully and Barnes, 1989; Fiandeiro, 2008).

In similar terms to chiropractic, physiotherapy aims to restore functionality, mobility, independence to patients. In order to achieve this, physiotherapists mainly practice in a hospital setting where the patient will present with an illness or injury which limits their movement and has a negative impact on their quality of life. Therapeutic exercise, passive and active movements, massage, transverse friction, connective tissue massage, electrotherapy, cryotherapy, heat, hydrotherapy as well as mechanical aids such as prosthetics and braces are some of the different tools a physiotherapist will use (Medical, Dental and Supplementary Health Service Professions Act 56 of 1974; Basmajian and Nyberg, 1993; Kitchen and Bazin, 1996; Differences between Physiotherapists and Chiropractors, 2011).

Thus, by definition, physiotherapy is defined (The Physiotherapy Site, 2011) as a "healthcare profession concerned with human function and movement and maximizing potential. In order to achieve this, physiotherapy uses physical approaches to promote, maintain and restore physical, psychological and social well-being, taking account of variations in health status". Physiotherapy is considered a more mainstream profession (Biomedical paradigm based) and has historically been more involved in public health (Paris, 2000; Micozzi *et al*., 2005).

The South African Medical and Dental Council states that Physiotherapy is regulated to provide various services to the public. These services include offering secondary services to neurology, neurosurgeons, orthopaedics, respiratory disease, thoracic and cardiovascular surgeries, gynaecology and obstetrics, intensive care units, work and sport rehabilitation, paediatrics and geriatrics, other medical and surgical fields as well as community care (Medical, Dental and Supplementary Health Service Professions Act 56 of 1974; Dagenais and Haldeman, 2012). This integration with other medical professions is based on an algorithm of interaction that has developed

within the Biomedical model and allows for integration of what has been termed generally as “allopathic” care (Keating, 1992).

2.4 Commonalities between the chiropractic and physiotherapy professions

Irrespective of the differences between the professional paradigms and historical roots of chiropractic and physiotherapy (Baird *et al*., 2008), they share some common ground in terms of the patients they treat, conditions seen, treatment options and the outcomes they wish to achieve for their patients (Basmajian and Nyberg, 1993; Paris, 2000):

- Both use varying grades of manipulation, aiming to restore joint function, improve posture, and relieve pain (Differences between Physiotherapists and Chiropractors, 2011; Dagenais and Haldeman, 2012).
- The manual professions of osteopathy, physiotherapy, chiropractic care and massage share a common philosophy, which centers around the integrity of the axial and appendicular structures as an important factor in ensuring patient health (Isaacs and Bookhout, 2002; The Difference between Chiropractic, Physiotherapy and Osteopathic therapy, 2011).
- The issues around the safety of manual practices, quality control, integration of these practices and standards of practice are also similar (Lawrence and Meeker, 2007).

Based on these similarities one would assume that inter-referral between chiropractors and physiotherapists would be high, however Fiandeiro (2008) found an unbalanced referral pattern between chiropractors and physiotherapists. In accordance, Hughes *et al.,* (2011) stated in their study that almost 60% of physiotherapists did not consider chiropractic and osteopathy to be alternative therapy which would or should attract patient referrals. This re-inforces the possibility that the impact of training within a particular paradigm or historical roots may negatively impact in inter-professional collaboration and contrasts the work of Breuner (2002), who believes that chiropractic care for many families is no longer considered an alternative of healthcare but rather another form of routine healthcare for the prevention of diseases and the promotion of health. Hence the integration of CAM into conventional care is starting to take place (Lawrence and Meeker, 2007).

There may, however, be many more factors impacting on referral. This is based on the perceptual model framework by Hayes (1994); Robbins (1996); Bergh *et al.,* (1999) and Forrest *et al.,* (2006), where factors could be related to:

- The practitioner (e.g. practitioner personal or professional preferences),
- The patient (e.g. patient preferences) and
- The environment (e.g. paradigm, training).

Thus, the following section will look at each profession highlighting possible referral enablers / disablers for each of the chiropractic and physiotherapy professions.

2.5 Factors which affect referral

Forrest *et al.,* (2006) stated that practitioners' referral decisions are influenced by a complex mix of patient, physician, and healthcare system structural characteristics. It would, therefore, seem that there are different factors impacting the decision to refer a patient. These are inadvertently related to the perception that the referring practitioner has of the professional to whom he/she is referring. Thus, when considering the effect of any factors, the perception that these factors create is of importance (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane, 1996; Atkinson *et al.,* 2000).

Without understanding the impact of perception (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999; Eysenck and Keane, 1996) and the factors that affect referral, Greene *et al.* (2006) concluded that efficiency, quality, continuity and patient safety are negatively affected. This negative impact stems from the multitude of healthcare issues that patients bring to the healthcare table and because there is no single profession which can claim to be able to treat all conditions (O'Connel, 2001).

A summary follows of the factors having a positive effect on patient referral:

1. A proper definition of the individual components of an integrative approach to patient care, is a critical component to positive referral patterns (Matteson and Bomonti, 2005; Bridges *et al*., 2011). An example from Jamison (1987) claimed that inter-professional referrals are refined once there is a clear delineation of the scope of practice of the respective and involved professions. This may further be enhanced by clear guidelines and definition within the multi-disciplinary / collaborative medical model (Bridges et al., 2011).
2. Allareddy *et al.,* (2007) includes: good communication (verbal, written and body language), focus on keeping the patients' best interest at heart and openness to discussing the patients healthcare with other providers; as factors that should be considered as positive enablers of the multi-disciplinary / collaborative medical model.
3. This is further facilitated by a good working knowledge of the various physical / manual therapies, as well as recognition of the practitioner's ability to diagnose and believe in their effectiveness (Joyce and Kuperstein, 2005).
4. Pragmatically, it is also supported by the need for a second opinion either on the side of the practitioner or the patient (Sawyer, Bergmann and Good, 1989; Forrest *et al.*, 2006; Langley, Minkin and Till, 1997).
5. Following on from the process related directly to referral, practitioner related (Pillay, 2006) identifiers may aid positively in referral. These include gender (Muto *et al.,* 1996), age, personal experience with the other profession, perception of the other profession (Jamison, 1995), level of practitioner training and perceived as well as real clinical self-efficacy (Forrest *et al.,* 2006). Practitioner's time constraints in clinical practice have also been identified, with increased time being a positive enabler (Langley, Minkin and Till, 1997).

6. Similarly, patient related identifiers that may aid positively in referral include: patient request (Alonso, 2004), the patient's place of residence, gender, level of education and income of the patient (Shekelle, Markovich and Louie, 1995; Tatalias, 2006). Additionally, Langley, Minkin and Till (1997) identified

patient's knowledge, education, attitude, sophistication and recent good experiences as positive influencers, whereas clinical cues presented by the patient and their type of insurance-coverage may also affect referral positively (Forrest *et al*., 2006).

7. Having considered process and person related factors, environmental factors must also be considered (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999; Eysenck and Keane, 1996). In this context Langley, Minkin and Till (1997) identified several non-medical factors that positively influence a practitioners' decision to refer a patient, these included, but may not be limited to medico-legal issues, medical advances in knowledge and its application to patient problems, community influence, expectations of friends, family requests for referral, hospital or clinic regulations.

Thus, it is ultimately the context as well as the practitioner patient relationship within the given context that determines the effect of positive factors on patient referral (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999; Eysenck and Keane, 1996).

By contrast, a summary of factors having a negative effect on patient referral can be identified as follows:

Firstly, from a contextual vantage point, economic, organizational and scientific differences between professions and/or a generalized lack of understanding between professions (Barrett, 2004; Brussee, Assendelft and Breen, 2001) have been known to affect referrals negatively.

In addition to the over-riding paradigm concerns, the following more pragmatic factors are also highlighted in the literature:

1. Malpractice litigation issues, the possible market threat alternative care providers pose to their practice (either profession), poor knowledge about the profession and the lack of cultural authority of health professions also play a role in referral patterns (Greene *et al.,* 2006).

2. From a practitioner vantage point, a lack of a proper patient assessment and arrival at a comprehensive and appropriate differential diagnosis list and / or incomplete clinical documentation (Smith *et al*., 2006) limits referral options. This may be indirectly or directly linked to the availability of the practitioner and/or the practitioner's caliber, attributes, experience and reputation (Langley, Minkin and Till, 1997).

3. Langley, Minkin and Till (1997) also identified the following patient factors that may disable referral patterns: travel difficulties, poor patient relationships with the practitioner, poor patient compliance, in addition to the patient's age and degree of independence (Shekelle, Markovich and Louie, 1995; Tatalias, 2006). Finally, the patient's time constraints, socioeconomic status, finances, occupation and/or social support all have the possibility to negatively influence the referral pattern possibilities (Shekelle, Markovich and Louie, 1995; Tatalias, 2006).

4. From an environmental vantage point, literature identifies the following factors that may disable referral patterns:
    1. Geographic constraints (e.g. practice location (Temoshok, 2004)), financial considerations, poor knowledge and/or understanding of the other profession, bias towards alternative medicine and / or poor communication between the two providers.
    2. Brussee *et al.,* (2001) added factors which negatively affect communication between practitioners as disablers to effective integration: confusing terminology, limited knowledge of the other profession's scope of practice, and bad experiences in previous communications.
    3. Clinical uncertainty, solo or small group practices may define their scope of practice more broadly than their counterparts (Forrest *et al*., 2006).
    4. Cost, wasted resources and / or free medical care (Langley, Minkin and Till, 1997).

Lastly, there are a group of factors that may either enable or disable inter-referral and interactions between two medical professions. Their effect is based on their vantage point at the time of the interaction between the practitioner and the patient at the time that that interaction occurs. These include, but may not be limited to:

1. Past experience – either positive or negative respectively (Clemence and Seamark, 2003).
2. Effectiveness of the other profession (Hughes *et al.,* 2011).
3. The level of communication, as well as the strength of the communication, between practitioners is essential (Brusse *et al*., 2001).
4. The above three factors link directly to the practitioner's uncertainty or confidence in practice (Langley, Minkin and Till, 1997).
5. Practitioner's interests, capabilities, experience and knowledge (Langley, Minkin and Till, 1997).
6. The practitioner's style of practice, treatment policy and thus integration into the healthcare sector surrounding his practice (Langley, Minkin and Till, 1997).
7. The practitioner's wishes, expectations and beliefs (Langley, Minkin and Till, 1997).

Additionally, Langley, Minkin and Till (1997) identified several non-medical factors that either positively or negatively influenced a practitioners' decision to refer a patient, outside practitioner or patient experience. These include:

1. The patients presenting problem, which may or may not be compounded by the patient's general health status. A change in the patients' condition as a result of uncontrolled circumstances.
2. The practitioner's geographic location and access to resources for example hospital beds, laboratory tests and admitting privileges (Langley, Minkin and Till, 1997).
3. The lack of knowledge and therefore distrust of each others' attitudes or skills or approach to patient care. This characterizes or stereotypes individuals within an opposing healthcare profession (i.e. chiropractic or medical profession), brining about significant challenges to increased collaboration. These include professional biases, provider competition, philosophical differences, perceived lack of research supporting the profession, lack of

knowledge (of each others' education, clinical skills and scope of practice) and cost (Langley, Minkin and Till, 1997; Chapman-Smith, 2011).

All these factors were considered by Pillay (2006), when he summarized reasons why referral between chiropractors and general practitioners (GP) in the South African context were very low. Based on the outcomes of his study, it was determined that the use of different terminology; the chiropractor not reporting back to the GP about treatment outcomes and advice given; not knowing what a chiropractor does and having had a bad experience in previous communication; were the most common factors that had resulted in the low referral from GPs to chiropractors and limited the inter-referral rates between the professions. These factors may then also be factors that influence the relationship between the chiropractic and the physiotherapy professions, as the physiotherapy profession is closely positioned to GPs in terms of the paradigm of operation within the medical milieu (Van Den Brink-Muinen, 2000; Double, 2004).

Thus, these factors may be equally applicable in decreasing or increasing the likelihood of multi-disciplinary / collaborative practice between the two professions.

2.6 Conclusion

Therefore, an enabling environment, which has a synergistic influence on knowledge and skills, define an inter-professional collaborative practice (Riva *et al.,* 2011). This form of practice however demands practitioners to be accountable, responsible, assertive, autonomous coordinated in their approach and cooperative. All of these factors would assist in improving communication, mutual trust and respect between the professions (Bridges *et al*., 2011). These practitioner attributes, would assist in achieving the common goal of a functional and dynamic inter-professional team to improve patient outcomes. Also these collaborative interactions would achieve increased sharing of knowledge and skills in order to improve the quality of patient care (Vernon, 1991; Miller and Gemmell, 2004; Bridges *et al*., 2011).

Good communication, patient interest and openness to discussion are essential to successful co-management of patients in such environments (Vernon, 1991; Miller and Gemmell, 2004). Co-management has also been found to be a key factor for developing a chiropractor's involvement within a collaborative care setting. This co-management often involves an acute or chronic musculoskeletal condition (Burnie *et al.,* 2010). Bridges *et al.,* (2011) added that members who see their roles as important to the team, open communication, the existence of autonomy and quality of resources will determine team effectiveness.

Therefore, Chapman-Smith (2011) identifies the key problem for multidisciplinary and collaborative management of patients as that which is directly related to the health professionals' knowledge about each other's education, competencies and potential role in integrated care system. This is, however, a contradiction in terms, when one considers that the demands by patients on the healthcare system are increasing (Myburgh and Mouton, 2007). Chronic diseases are on the rise (Dagenais and Haldeman, 2012), and patients and their families want to be actively engaged in managing their health conditions, expecting the right care at the right time (Sawni and Thomas, 2007). Thus, healthcare organizations are feeling pressured to provide more timely services, while at the same time working with finite human and financial resources. For these reasons, new ways of approaching care are needed, and different solutions will be required to meet future demand (Karim and Ross, 2008).

This concurs with Winterstein (2002), who stated that primary care, multidisciplinary and collaborative management requires the following:

1. Accountability – inherent in this is the need to effectively, efficiently and with due regard for the patient examine and diagnose the patient to arrive at the most likely diagnosis.
2. Integrated health services – inherent in this is the recognition of the value of other providers, ability to work with other providers and awareness of the need to refer to other providers when indicated to achieve the best outcomes for the patient.

However, as there are no guidelines/criteria exist for the multidisciplinary and collaborative management of patients, and therefore, also for the referral of patients

with a neuromuscular disorders (Cup *et al*., 2007), it could be stated that current referral practices seem arbitrary and show considerable variation. Although previous research has shown that neck and back pain respond better to spinal manipulation in conjunction with physiotherapy than to either modality by itself, very little research has focused on the effectiveness of combining spinal manipulation with other treatment modalities (Kirkaldy-Willis and Bernard, 1999).It is, therefore, advised that each multidisciplinary initiative should include a structured, preliminary and ongoing education component. This can only be addressed by requiring more inter-professional education and collaboration starting at an undergraduate level (Chapman-Smith, 2009). This is particularly true as a lack of referrals does not promote an effective and efficient use of healthcare facilities and systems and could potentially drain resources available to the healthcare community (Beauchamp and Childress, 2001). It is, therefore, important for the healthcare providers and those managing healthcare to assess the patterns of referral in order to understand the effectiveness of the healthcare system (Tauber, 2002).

It has thus been recommended that future studies should focus on identifying facilitators (enablers) and barriers (disablers) to developing positive inter-professional referral relationships (Smith *et al*., 2006). A greater understanding might permit the development of more appropriate, fairer or more cost-effective alternative options for patients (Langley, Minkin and Till, 1997). However, it is also noted that collaborative and integrated care brings considerable challenges for both providers and patients, but also huge opportunities for quality care and patient and professional satisfaction (Chapman-Smith, 2011).

Therefore, in view of the fact that Fiandeiro (2008) found unbalanced referral patterns between chiropractors and physiotherapists, but did not attempt to identify possible reasons for the unbalanced referral patterns, it was the aim of this study to understand the effect of selected factors as they impact the referral patterns between chiropractors and physiotherapists.

Thus, Chapter Three will describe the Methodological approaches utilized in this study in order to meet the aims and objectives.

Chapter Three

Methodology

3.1 Introduction

This chapter deals with the research methodology employed and the procedure used to collect data. The process of statistical analysis is also discussed in this chapter.

Primary data, which refers to the data collected from the participant responses (questionnaires) and the data obtained once the statistical analysis was completed, was collected and analyzed through the completion of the questionnaire. The questionnaire was specifically developed for this study. Secondary data refers to that data which were obtained from sources outside of this study (e.g. Internet, journals, books).

3.2 Methods

3.2.1 Study design

The research design of this study was a cross sectional, descriptive survey (Fink and Kosecoff, 1985), which was based on a self-administered questionnaire (Salant and Dillman, 1994), attempting to determine the effect of selected factors on the referral of patients between chiropractors and physiotherapists. The questionnaire was developed using literature (Allareddy *et al.,* (2007); Alonso, (2004); Baird *et al.,* (2008); Barrett, (2004); Brussee, Assendelft and Breen, (2001); Clemence and Seamark, (2003); Greene *et al.,* (2006); Hughes *et al.,*(2011); Jamison, (1987); Jamison, (1995); Joyce and Kuperstein, (2005); Muto *et al.,* (1996); Pillay, (2006); Sawyer, Bergmann and Good, (1989); Shekelle, Markovich and Louie, (1995); Smith *et al.,* (2006); Temoshok, (2004); Matteson and Bomonti, (2005) and amended during an expert group meeting and pilot study to ensure that the questionnaire was contextualized to meet the outcomes of this study. The questionnaire used in this

study was then personally delivered to each participant and personally collected once it was completed in full.

Based on the above study design, Ethical Clearance was given by the Durban University of Technology's Institutional Research and Ethics Committee (Appendix I). This clearance indicates that the study as approved complied with the principles outlined in the Declarations of Helsinki, Nuremburg and Belmont (Johnson, 2005).

3.2.2 Advertising/recruitment

No formal advertising was utilized in this study, as all participants were approached based on their registration with the Allied Health Professions Council of South Africa (AHPCSA)/ Health Professions Council of South Africa (HPCSA). These registration records are records of public domain, and therefore, were accessible to the researcher (Allied Health Professions Act 63 of 1982 (as amended); Health Professions Act 56 of 1974).

3.2.3 Telephonic/Personal Interview

Before participants were approached for participation in this study, a request to approach chiropractors and physiotherapists was sent to the Chiropractic Association of South Africa (CASA) and to the South African Society of Physiotherapy (SASP) respectively (done via email to the associations). This request was granted by the respective bodies (Appendix G and H respectively).

Before the questionnaire was delivered to each participant, telephonic contact was made with each participant and the study was explained. This was the first stage where the participants could agree or disagree to participate in the study. If the participant agreed, an appointment was made with the participant, so that the questionnaire could be delivered. If the participant declined to participate then they did not meet the inclusion criteria of the study and were excluded.

3.2.4. Sampling Procedure

3.2.4.1 Sampling method for Expert Group meeting.

This was done by purposive sampling (Mouton, 1996; Brink, 2006), to obtain between eight to ten participants. The reason for the use of purposive sampling was to ensure a wide variety in age, practice experience, practice type, patient interaction experience, research experience (particularly questionnaire research), statistical experience and language within the expert group (Morgan, 1998(a), Morgan, 1998(b), Morgan 1998(c); Salant and Dillman, 1994). This sampling method ensured that the expert group consisted of members representative of the specific areas of expertise related to the research. Thus, the relevance of the questions could be critically assessed so as to enhance the questionnaires face validity (Bernard, 2000).

3.2.4.2 Sampling method for the Pilot study

This was done by random selection (Mouton, 1996; Brink, 2006) from the chiropractors and physiotherapists who were eligible for the main study.

3.2.4.3 Sampling method for the Main study

This encompassed total sample selection (Mouton, 1996; Brink, 2006), where all registered chiropractors (only private sector) and physiotherapists (public and private sectors) in the eThekwini municipality and registered with the AHPSCA and HPSCA respectively were approached.

There were 250 HPCSA-registered physiotherapists in Durban (Find a Physiotherapist, 2011; Health Professions Act 56 of 1974) and 80 AHPCSA-registered chiropractors (Find a Chiropractor, 2011; CASA 2012; Allied Health Professions Act 63 of 1982 (as amended)) at the time of the study.

3.2.5 Research tool – Questionnaire development procedure

The data collection method used in this study was by means of a questionnaire. De Vos (2001) defined a questionnaire as a research tool with questions or statements allowing the participant to respond accordingly. A questionnaire can be either structured (possible answers are provided from which the participant choose) or unstructured (the participant is required to answer the question in his/her own words) (Babbie, 2001). The researcher developed a combined structured and unstructured questionnaire for this study.

The literature from which the questionnaire was adapted and developed in order to meet the aims and objectives of this study included the following publications: Allareddy *et al.,* (2007); Alonso, (2004); Baird *et al.,*(2008); Barrett, (2004); Brussee, Assendelft and Breen, (2001); Clemence and Seamark, (2003); Greene *et al.,*(2006); Hughes *et al.,*(2011); Jamison, (1987); Jamison, (1995); Joyce and Kuperstein, (2005); Muto *et al.,*(1996); Pillay, (2006); Sawyer, Bergmann and Good, (1989); Shekelle, Markovich and Louie, (1995); Smith *et al.,*(2006); Temoshok, (2004); Matteson and Bomonti, (2005). Data from these publications were converted into possible questions and the questionnaire was developed around the areas related to referral patterns between chiropractors and physiotherapists.

The above was followed by an expert group outlined below.

3.2.6 Expert group

3.2.6.1 Expert group inclusion criteria

In order to the meet the requirements for the purposive sampling as well as the guidelines for an expert group (Salant and Dillman, 1994; Morgan, 1998(a); Morgan, 1998(b); Morgan, 1998(c)), the following criteria were laid out in terms of the participants required for the expert group. It was noted that any one participant may represent one or more category (e.g. person with questionnaire experience may also have been a patient).

Thus, the group included:

- At least two patients;
- At least one medical practitioner in private practice;
- At least one medical practitioner in the public sector;
- At least two practicing chiropractors;
- At least two practicing physiotherapists (private practice);
- At least two practicing physiotherapists (public sector);
- At least one Master's student (someone who has completed a questionnaire study);
- At least one person with research experience utilizing questionnaires.

3.2.6.2 Expert group exclusion criteria

- Any practitioner invited that declined the invitation to participate.
- Any practitioner who did not voluntarily sign the Letter of Information and Informed Consent Form (Appendix A) to participate in the expert group.

3.2.6.3 Expert group meeting procedure

The purpose of the expert group meeting was to determine the validity of the questionnaire that the researcher had developed (Bernard, 2000; Stewart, 2007; Litossoeliti, 2003). In this context, the simplest type of validity is face validity, which is determined by agreement between researchers and those with a vested interest in the questionnaire (expert group participants), that 'on the face of it' the tool seems valid (Mouton, 1996; Bernard, 2000). This is followed by construct validity which expert group members develop by ensuring congruency between the constructs (aims and objectives) that the research sets out to document and the measurement tool (questionnaire) and what it would achieve (Bernard, 2000; Stewart, 2007; Litossoeliti, 2003). Therefore, construct validity is expressed as the point at which the content of the questionnaire is considered effective, and well rounded enough to be able to assess a particular concept (Mouton, 1996) that aligns with the outcomes of the study. The latter form of validity allows for the determination of reliability in that a well constructed questionnaire will allow for collection of data that reliably reflects the

information needed to draw appropriate conclusions from the data (Mouton, 1996; Bernard, 2000; Stewart, 2007; Litossoeliti, 2003).

Once the researcher finalized the questionnaire (Appendix M), individuals meeting the inclusion criteria for the expert group were contacted. These individuals were approached personally or contacted telephonically in order to establish whether they would consider participation in the proposed expert group meeting.

If the identified individuals declined, they then did not meet the inclusion criteria to this study and were no longer considered (if they met the criteria for the main study group, they were still be eligible for this). If the identified individuals agreed to the expert meeting and met the inclusion criteria checklist, they were included in the expert group.

Once the expert group was established according to the inclusion criteria, arrangements were made and the meeting formalized. These arrangements included: establishing a date and time, booking an appropriate venue, arranging refreshments, stationery and audiovisual personal/equipment (Morgan, 1998(a); Morgan, 1998 (b) and Morgan, 1998(c)).

Once everyone had arrived at the arranged time, the meeting commenced. The researcher, opened the meeting by welcoming all participants and explained the procedure and meaning for the meeting. All the participants were required to read and sign the Letter of Information and Informed Consent Form (Appendix A) as well as the Confidentiality Statement (Appendix B). During this period all participants were able to ask questions pertaining to the study, their input into the study as well as issues of confidentiality and anonymity (Mouton, 1996; Morgan 1998(a), Morgan, 1998 (b); Morgan, 1998(c)) (as the expert group was video recorded (Silverman, 2001)).

The video of the expert group meeting has been attached in the form of a DVD as Appendix Q. This video is for examination purposes only and will not be available in the final published dissertation in order to comply with the confidentiality surrounding the expert group. Therefore it is requested that this recording not be copied or distributed in any way. This excerpt will not appear in the final dissertation.

Only once all participants were satisfied and happy to proceed, the researcher handed out the questionnaire (Appendix M). The questionnaire was discussed sequentially (viz. question by question) (Steward *et al*, 2007; Litossoeliti, 2003) and changes to the questions were made based on the advice / concerns raised by the members of the expert group. All changes to the questionnaire, however, required a group consensus before the changes were made (Morgan, 1998(a); Morgan, 1998 (b); Morgan, 1998(c)). During this meeting, refreshments and stationery were provided.

3.2.6.4 Expert group amendments

The members of the expert group meeting were requested to discuss the order of the questions and the questions themselves to determine if the main study participants would find it easy and straightforward to complete. It was decided that some of the questions must be reworded in order to improve clarity thereof. Some of the options as possible answers were changed or left as open ended questions to improve simplicity of the answering process. Certain questions were moved around in order to improve the flow of the questionnaire. Related questions were grouped together to save space. (Steward *et al*, 2007; Litossoeliti, 2003). (Refer to Appendix N for the affected changes).

The outcomes of the expert group resulted in the development of the post expert group questionnaire (Appendix J).

3.2.7 Pilot study

3.2.7.1 Pilot study inclusion criteria

- Practicing Chiropractors registered with the AHPCSA
- Practicing Physiotherapists registered with the HPCSA.
- The chiropractors and physiotherapist had to have been practicing within the eThekwini municipality (defined by 031 dialing code) at the time of the study.

3.2.7.2 Pilot study exclusion criteria

- Were required to meet the same criteria as the main study group (See Section 3.2.9).
- Any practitioner that participated in the expert group, which also met the criteria for the main study group.
- Any practitioner who did not voluntarily sign the Letter of Information and Informed Consent Form (Appendix C) to participate in the pilot study.
- Any practitioner approached who declined the invitation to participate.

3.2.7.3 Pilot study procedure

The aim of the pilot study was to serve as a trial run before the questionnaires were distributed to the main study participants (Fink and Kosekoff, 1985).After the questionnaire was finalized during the expert group meeting (Appendix J), the questionnaire was delivered to a pilot study group. Before completion of the questionnaire, the Letter of Information and Informed Consent Form had to be read and signed (Appendix C) by the pilot group participants. This was done to mimic the time and process in the main study group, to determine whether any problems were found either with the procedure or the questionnaire (Hicks, 2004; Fink and Kosekoff, 1985; Trochim, 2000). The questionnaire was hand-delivered to the respective practices and was collected on another arranged date if the practitioner could not complete it at that time.

Feedback from the pilot study group was used to make changes to the post expert group questionnaire (Appendix J), as suggested by the pilot procedure participants (Appendix O).

3.2.7.4 Pilot study amendments

Most of the pilot study members thought that the subject presented in this study was extremely interesting and that the topics raised in the questionnaire were adequately covered. All the members thought that the meaning of most questions (but not all) was clear. The problematic questions thus identified were then changed accordingly. The questionnaire was roughly divided into four sections: personal/demographic information; referral-related questions; which practitioner is referring which specific conditions to which profession and when; perception / knowledge based questions.

The changes recommended by the pilot study participants therefore yielded the post pilot questionnaire (Appendix K).

3.2.8 Discussion of the final questionnaire (Appendix L)

The final questionnaire (Appendix L) as described above was then submitted to the Durban University of Technology Institutional Research and Ethics Committee for approval of the questionnaire for use in this study (approval as per Appendix I).

Therefore, the questionnaire was finally divided into four sections:

- personal / demographic information (18 questions);
- referral-related questions (10 questions);
- questions around which practitioner is referring which specific conditions to which profession and when (6 questions);
- questions on perception / knowledge of the other profession (8 questions).

3.2.9 Main study

3.2.9.1 Main study inclusion criteria

- Chiropractors registered with the AHPCSA and practicing.
- Physiotherapists registered with the HPCSA and practicing.
- Had to have been practicing within the eThekwini municipality (defined by 031 dialing code) at the time of the study.

3.2.9.2 Main study exclusion criteria

- Any practitioner who did not voluntarily sign the Letter of Information and Informed Consent Form (Appendix E or F, English or Afrikaans respectively) to participate in the main study.
- Any practitioner not practicing within the eThekwini municipality (defined by 031 dialing code) at the time of the study.
- Any practitioner that participated in either the expert group meeting or in the pilot study, which also met the main study group requirements.
- Any practitioner approached who declined the invitation to participate.

3.2.9.3 Main study procedure / Data collection procedure

After the questionnaire and operating procedure of the study were finalized during the expert group meeting and pilot study, the questionnaires (Appendix L) were delivered to the main study participants.

The identified practitioners were contacted, either telephonically or via email, to let them know about the research study and the request for an interview. Practitioners were able to decline the invitation to participate in the study. This was then recorded as a non-response (Lapane, Quilliam and Hughes, 2007).

The questionnaires were then delivered to the willing participants, either by email, post or personally (as determined at the telephonic interview with the participants). The participants were requested to sign the Letter of Information and Informed Consent Form (Appendix E or F, English and Afrikaans respectively) before completing the questionnaires. In all, it was estimated that participants took approximately 15 minutes to complete the questionnaire.

After completion of the questionnaire, the participants were required to return the completed questionnaire either to the researcher, who offered to collect it, or via email or post. If the questionnaire was collected by the researcher, he requested that the participant place the Letter of Information and Informed Consent Form (Appendix E or F, English and Afrikaans respectively) into a sealed box containing only the Letter of Information and Informed Consent Forms and the questionnaire into another sealed box containing only questionnaires. This was done to ensure anonymity (Mouton, 1996). Also, this ensured participant confidentiality as the boxes remained sealed until all data had been collected and was ready for data capture. (Thereafter, the questionnaires and Letters of Information and Informed Consent Form were stored on a locked cabinet).

In the event of postage or email, the participants were asked to separately mail the Letter of Information and Informed Consent Form and the questionnaire to a neutral third party in order that the researcher was unable to connect the Letters of Information and Informed Consent Form to the returned questionnaire. The above two mechanisms assisted in maintaining the participants' anonymity (Mouton, 1996).

To ensure a high return rate of the completed questionnaires (Appendix L), the participants were reminded telephonically or via email about the research and the research deadlines (Lapane, Quilliam and Hughes, 2007).

Confidentiality was maintained by the coding of the questionnaires as the data was captured onto an excel spreadsheet. During this time, the questionnaires (Appendix L) and Letters of Information and Informed Consent (Appendix E or F (English and Afrikaans)) were stored in a locked cabinet to which only the researcher and the research supervisor had access. All data collected at the completion of the study was stored in a sealed box within the Chiropractic Department. This is to be shredded after the agreed to time (15years) as required by the Durban University of Technology Institutional Research and Ethics Committee.

Statistical analysis of the completed questionnaires took place upon the return of the questionnaires in the form of data capture on an excel spreadsheet, prior to analysis by the latest version of SPSS (SPSS 20).

3.2.10 Measurement frequency

The questionnaire was administered once and was based on affirmative responses to the Letters of Information and Informed Consent Form (Appendix E and F). The neutral third party was able to track who had and had not completed the questionnaire, which allowed the researcher to contact practitioners that had not completed the questionnaire. Also, this assisted in ensuring that no duplicate questionnaires were handed out or received. Additionally, communication between the neutral third party and the researcher therefore ensured that follow up phone calls / emails to participants that had completed the questionnaire were not made.

3.2.11 Statistical analysis of the data

SPSS version 20 was used to analyze the data.

For the first three objectives, which were purely descriptive, data was summarized using mean, standard deviation and range in the case of continuous data, and using frequency tables and bar charts in the case of categorical data.

The last objective aimed to determine factors which influence referral patterns. A *p*-value < 0.05 was used to indicate statistical significance. Individual hypothesis tests between factors of interest and the outcome of referral pattern were conducted at the 95% level of significance using chi square tests, ANOVA tests and t-tests, as appropriate (Esterhuizen, 2012). Factors which were found to be statistically significant were further tested in a multivariate logistic regression model in order to control for confounding factors. This was done separately for chiropractors and physiotherapists (Esterhuizen, 2012).

3.3 Conclusion

This chapter described the methodology that was used to conduct this study. How the initial questionnaire was developed, and amendments (as reflected in the appropriate appendices) that were made to it and procedural changes after the

expert group meeting and pilot study. The statistical methods used were also presented.

Chapter Four

Results and discussion

4.1 Introduction

This chapter represents the results as obtained from the data collection process. Bar graphs and tables are used to graphically present the data, with a short description accompanying each figure. Results are organised as they relate to the respective objectives (one to four) of the study. It should be noted that although unconventional, the chapter presents the results and discussion per objective, due to the large complexity of the various objectives.

4.2 Data

The data collection process occurred only once – at the time of completion of the questionnaire, or at the time as arranged with the practitioner. The objective of data collection is to produce reliable data. Primary data was collected and analysed through the completion of the questionnaire - which was specifically developed for this study. Secondary data refers to the data that was obtained from sources outside of this study (e.g. internet, journals, and books) (Pillay, 2006).

4.3 Abbreviations specific to this chapter

The following abbreviations appear in this chapter:

AECC	:	Anglo-European College of Chiropractic
GP	:	General Practitioner
MEDUNSA	:	Medical University of South Africa
N	:	Number
n/a	:	not applicable
Q	:	Question number
SA	:	Republic of South Africa
SMS	:	Short message service
Std	:	Standard
UK	:	United Kingdom

USA	:	United States of America
df	:	Differential
Sig.	:	Significant

4.4 Practitioner participation

4.4.1 Consort diagrams

The total sample population were 332 practitioners that were invited to participate in this study. A high as possible response rate was sought, to minimise bias and to enable the findings to be generalised across other professions (Lapane, Quilliam and Hughes, 2007). This, along with a recommendation from a statistician, indicated that a 70% and higher response rate was shown to adequately address these concerns (Esterhuizen, 2012). This meant that the required target population was 233 practitioner responses.

The number of chiropractors and physiotherapists who participated in this study is revealed in the consort diagram (Figures 4.1 and 4.2). These figures have been developed utilising the guidelines that were published by Moher, Schultz and Altman (2001):

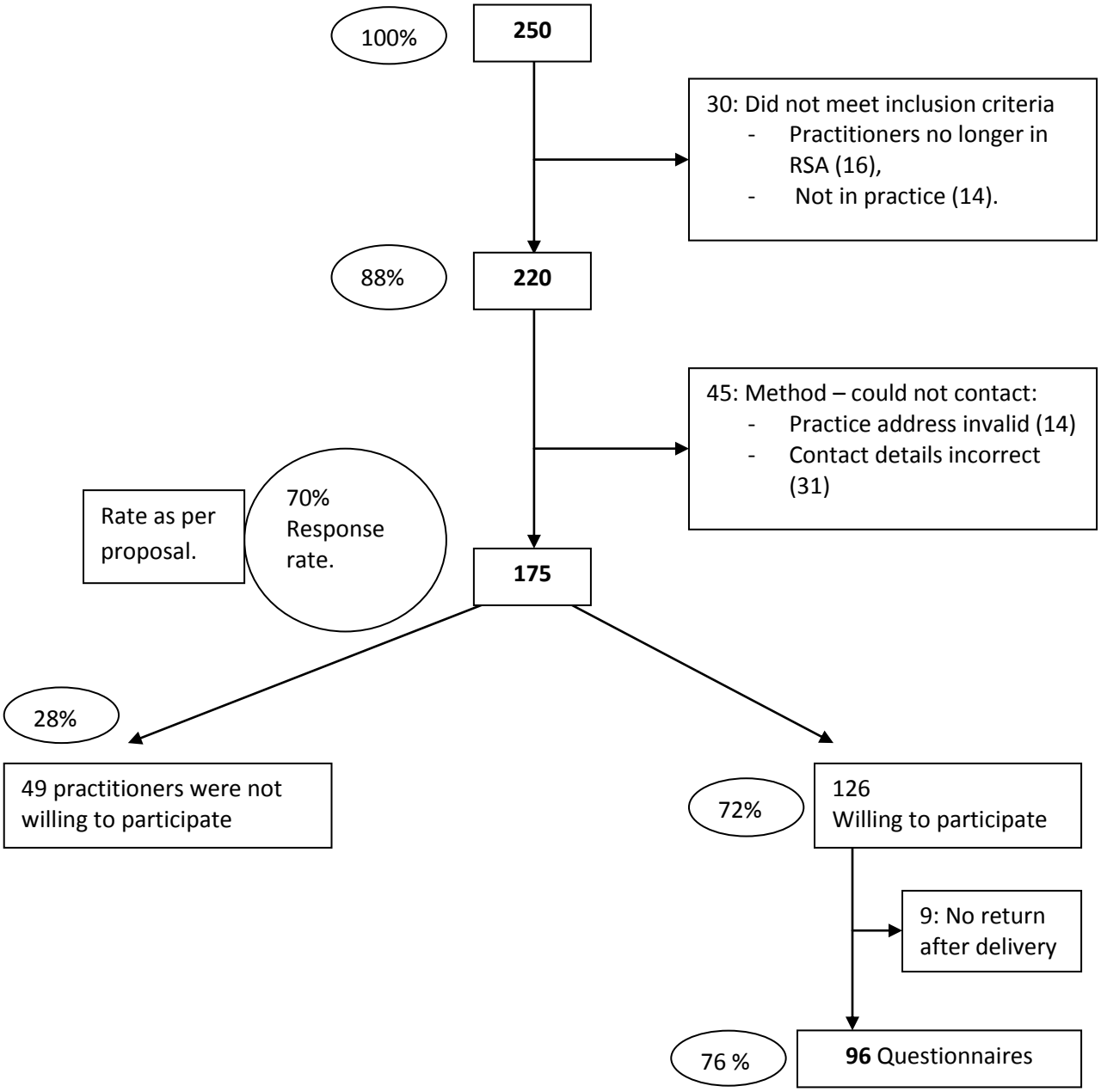


Figure 4.1: Physiotherapist's Consort diagram (adapted from Moher, Schultz and Altman, 2001).

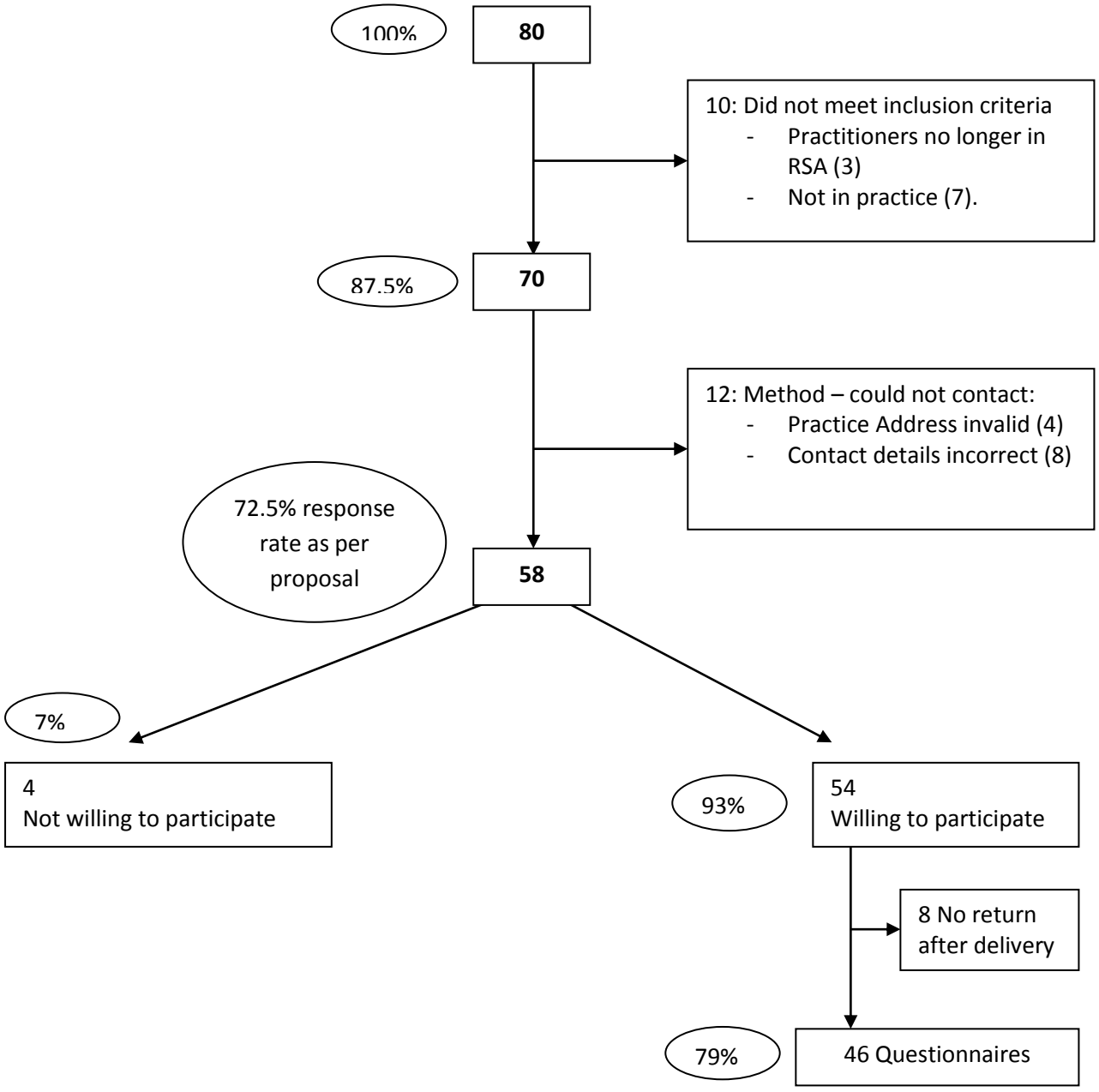


Figure 4.2 Chiropractors' Consort diagram (adapted from Moher, Schultz and Altman, 2001).

4.4.2 Response rate

There were 80 registered chiropractors and 250 registered physiotherapists within the eThekwini region at the time of the study (Find a Chiropractor, 2011 and Find a Physiotherapist, 2011). It was, however, determined, after analysis of each of the registered practitioners that several no longer met the inclusion criteria for the study as they had:

- Incorrect contact details being recorded on the service provider lists (Section 3.2.9.2 refers to the exclusion criteria of the Main study). According to the literature, this has been noted as a possible factor affecting response rates (Coppa, Caldwell, Atwal, Brett-Richards and Coleman, 2007). It is therefore suggested by Caldwell *et al*., (2007), that studies which show a high attrition based on this factor need to interpret their results with caution as the representativeness of the sample cannot be determined accurately (Caldwell *et al.* 2007);
- Emigrated, with the result that they now resided outside of the study parameters (see Main study exclusion criteria, section 3.2.9.2);
- Retirement/no longer in active practice, the latter implying that the practitioner was either a lecturer, worked as a medical representative or in another capacity which precluded active practice (see Main study exclusion criteria, Section 3.2.9.2);
- Been involved in the development of this research or at any point along the process of proposal approval and ethics clearance. Chiropractors and physiotherapists being involved in the study (either the focus group, pilot study or through proposal approval for this study (see Main study exclusion criteria, section 3.2.9.2));
- Unwillingness to take part in the study, and therefore, not willing to sign the Letter of Information and Informed Consent Form (Appendix F) (see Main study exclusion criteria, Section 3.2.9.1/ 3.2.9.2).
- Questionnaires being sent after the conclusion of the study, which for pragmatic and logistical reasons resulted in the exclusion of the response from the analysis.

This left a total sample group of 54 chiropractors and 126 physiotherapists that participated in the study, indicating that 93% (54/58) and 72% (126/175) of the samples respectively responded to and participated in the study. This allowed for the attainment of the minimum response rate determined by the Institutional Research and Ethics Committee, which required a 70% response rate in each of the two categories of participants (please see response rate, section 3.2.4.3). By comparison to previous studies done on the chiropractic profession and various other population groups within the South African context, this study was able to achieve significantly higher response rates (Reubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005; Kew, 2006). This is similar to more global studies which indicated lower response rates, especially when their questionnaires that were distributed through the post, where response rates of 59% (Lindstrom, 2007), 43% (Caldwell, Coleman, Copp, Bell and Ghazi, 2007 and Copp, Caldwell, Atwal, Brett-Richards and Coleman, 2007) and 38% (Lindorff-Larsen, Rasmussen, Kondrup, Staun and Ladefoged, 2007), were achieved. Also, the results of this study are higher when compared to those that were self administered which noted that a 55% (Tharaldsen, Olsen and Rundmo, 2007), 52% (Ross-Adjie, Leslie and Gillman, 2007), 75% (Riley, Stewart and Grace, 2007) and 55% (Chelenyane and Endacott, 2006) response rates where averagely achieved.

Therefore, based on the literature, the outcomes of this study may be generalized to the greater chiropractic and physiotherapy professions within contexts that are similar to the eThekwini municipal region (Caldwell et al. 2006; Symon, McStea and Murphy-Black, 2005; Watson, Hewitson, Brett, Bukach and Evans, 2006; Lapane, Quilliam and Hughes, 2007).

Factors that may have assisted in attaining a good response rate in this study seem to have been directed at negating the following parameters (Dyer, 1997):

- Practitioner's time constraints in practice (Symon*et al*., 2005), as the questionnaire was delivered to the practice and then collected at a later agreed to date (Lindstrom, 2007; Caldwell, Coleman, Copp, Bell and Ghazi, 2007; Copp, Caldwell, Atwal, Brett-Richards and Coleman, 2007; Lindorff-Larsen, Rasmussen, Kondrup, Staun and Ladefoged, 2007). This negated the need of the practitioner to access their computers / internet / email, which are

time consuming activities within a practice setting. It further allowed the practitioner to ask questions around the study in a face-to-face encounter with the researcher, which facilitated the process of understanding and the collection of the questionnaire negated the need to fax, email or post the questionnaire. These latter activities have also been noted to decrease response rates either due to time or the inability of the practitioner to understand how to return questionnaires electronically (Dyer, 1997; Kasprzyk *et al.,* 2001; Russell, *et al.*, 2004; Rattan, 2007).

- A lack of familiarity with the questionnaire design (Symon *et al*., 2005; Rieder, 2010), was decreased negated in this study, as the researcher was able to respond to the practitioner questions at both the delivery and collection time points, allowing for a reference point for the respondents.
- It has been stated by Suter *et al*. (2007) that reminding participants to complete the questionnaires are linked with higher response rates.
- A physiotherapist occupying a more junior grade post in a practice setting might mean that the physiotherapist is more likely to move around between posts in order to build up clinical experience (Caldwell *et al*., 2007). This could be a possible deterrence to a high response rate as the graduate physiotherapists' address might be out of date.
- Form-filling fatigue (Symon *et al*., 2005), although noted as a problem, does not seem to have affected this particular study even though several questionnaire studies have been completed within this population group over the preceding years (Evans, 2012; Ford, 2012; Gordon, 2012).

It is of interest though that the suggestion by Jepson *et al.* (2005) (indicating that long questionnaires decrease response rates) did not seem to influence this study negatively. This suggests that the personal interaction between the researcher and the participants as discussed above would seem to have countered the possible negative impact of the questionnaire length. Based on the above discussion, it is therefore suggested that the high response rates may have limited the possibility of biased findings (Watson *et al*., 2006) as the sample represents a large proportion of the possible respondents in each of the two population groups in this study (Watson *et al*., 2006). It is, however, acknowledged that a possibility exists that non-respondents had a less favourable perception of the research and referral interaction

between the professions (Lapane *et al*., 2007 and Suter *et al*., 2007), which means that when considering the results, caution needs to be applied in catering for a possible predominance of negative responses in those electing not to participate.

4.5 Results

4.5.1 Objective One:

Objective One was to determine the demographic characteristics of the practicing chiropractors in the eThekwini municipality.

4.5.1.1 Age

The mean age of the chiropractors was 35.3 years with a standard deviation of 9.4 years (as seen in Table 4.1).

Table 4.1: Age[a]

N	Valid	48
	Missing	0
Mean		35.35
Std. Deviation		9.364
Minimum		25
Maximum		68
a. Occupation = Chiropractor		

4.5.1.2 Gender

The results indicated that there were slightly more females than males in the chiropractic practitioner sample (54% female) (Table 4.2).

Table 4.2: Gender[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	22	45.8	45.8	45.8
	Female	26	54.2	54.2	100.0
	Total	48	100.0	100.0	
a. Occupation = Chiropractor					

4.5.1.3 Area of interest

Most of the chiropractic practitioners in the sample were shown to have a generalised interest (family practice orientation) (31.3%) as compared to the remaining practitioners that indicated that they had an area of particular interest

(almost “specialty” area) in which they focused on in their practice (as seen in Table 4.3).

Table 4.3: Area of interest[a]

	Frequency	Percent	Valid Percent	Cumulative Percent
Diversified	1	2.1	2.1	2.1%
Family	1	2.1	2.1	4.2%
Foot and gait	1	2.1	2.1	6.3%
General and Orthopaedics	5	10.4	10.4	16.7%
General	15	31.3	31.3	48%
Headaches	1	2.1	2.1	50.1%
Laser therapy	1	2.1	2.1	52.2%
Paediatrics	7	14.6	14.6	66.8%
Posture	1	2.1	2.1	68.9%
Shoulder rehabilitation	1	2.1	2.1	71%
Sport/Rehabilitation	12	25.0	25.0	96%
Well being	2	4.2	4.2	100%
Total	48	100.0	100.0	
a. Occupation = Chiropractor				

4.5.1.4 Country of qualification

Most of the chiropractors qualified in South Africa (91.7%) (Table 4.4).

Table 4.4: Country of qualification[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SA	44	91.7	91.7	91.7%
	UK	1	2.1	2.1	93.8%
	USA	3	6.3	6.3	100%
	Total	48	100.0	100.0	
a. Occupation = Chiropractor					

4.5.1.5 Institution of qualification

From the results it is seen that 89.6% of the chiropractors in the sample qualified at Durban University of Technology (Table 4.5).

Table 4.5: Institution of qualification[a]

	Frequency	Percent	Valid Percent	Cumulative Percent
AECC	1	2.1	2.1	2.1%
Durban University of Technology	43	89.6	89.6	91.7%

National Chiropractic College	1	2.1	2.1	93.2%
Palmer college	2	4.2	4.2	97.5%
University of Johannesburg	1	2.1	2.1	100%
Total	48	100.0	100.0	
a. Occupation = Chiropractor				

4.5.1.6 Amount of chiropractors with other qualifications

Only 20.8% of the chiropractors that responded to this questionnaire held other qualifications (Table 4.6).

Table 4.6: Number of chiropractors with other qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	20.8	20.8	20.8
	No	38	79.2	79.2	100.0
	Total	48	100.0	100.0	

4.5.1.7 Category of other qualification held by chiropractors

Of those that held additional qualifications, 4.2% of the chiropractors in the study had an additional qualification in alternative medicine (Table 4.7).

Table 4.7: Category of other qualification held by chiropractors [a]

	Frequency	Percent	Valid Percent	Cumulative Percent
Administration	1	2.1	2.1	2.1%
Alternative medicine	2	4.2	4.2	6.3%
Education	1	2.1	2.1	8.4%
Medicine/Medical technologies	1	2.1	2.1	10.5%
None	38	79.2	79.2	89.7%
Paediatric chiropractic	1	2.1	2.1	91.8%
Para-medical	1	2.1	2.1	93.9%
Pilates	1	2.1	2.1	96%
Public relations/Marketing	1	2.1	2.1	98.1%
Sports chiropractic	1	2.1	2.1	100%
Total	48	100.0	100.0	

a. Occupation = Chiropractor

4.5.1.8 Time in practice

The average time in practice for chiropractors in the sample was 9 years with a standard deviation of 8 years (Table 4.8).

Table 4.8: Time in practice

Years in practice		
N	Valid	48
	Missing	0
Mean		9.0417
Std. Deviation		7.79787
Minimum		1.00

Maximum	34.00

4.5.1.9 Type of practice

Figure 4.3 shows the type of practice descriptions within which chiropractors were involved.

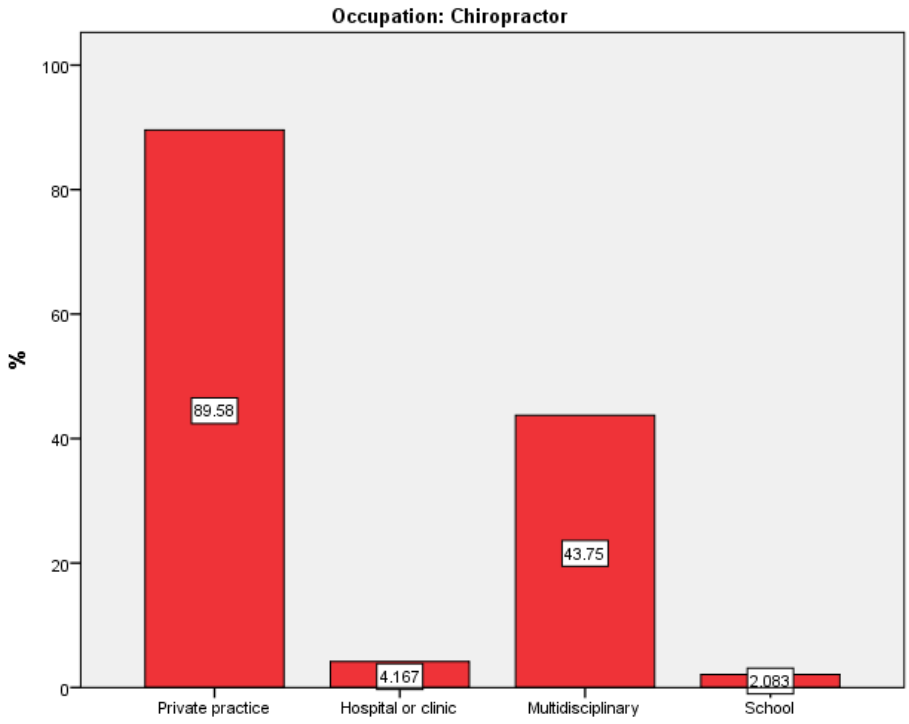


Figure 4.3: Type of practice

4.5.1.10 Practice location

Figure 4.4 shows that 89.58% of the chiropractors in the sample worked in residential suburbs as compared to the Central Business District.

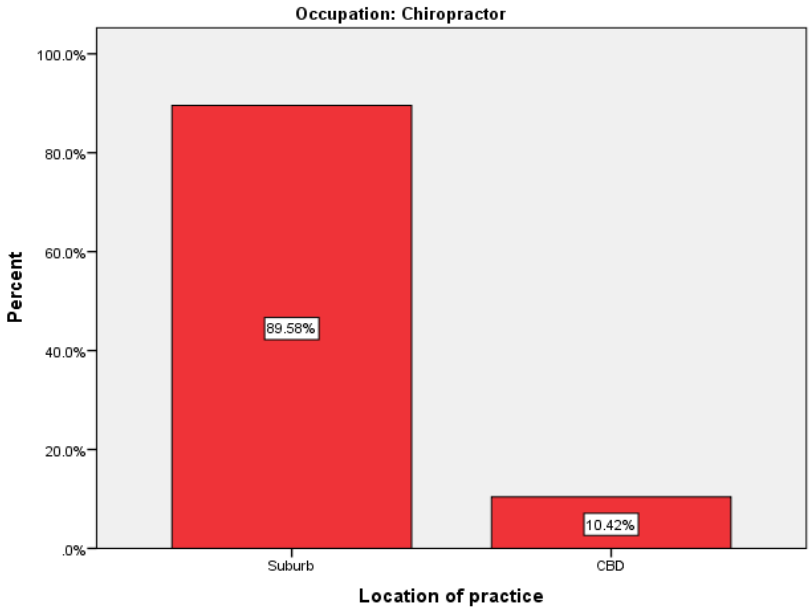


Figure 4.4: Practice location

4.5.1.11 Part time or full time in practice

Figure 4.5 shows that 80% of chiropractors from the study were practicing full time.

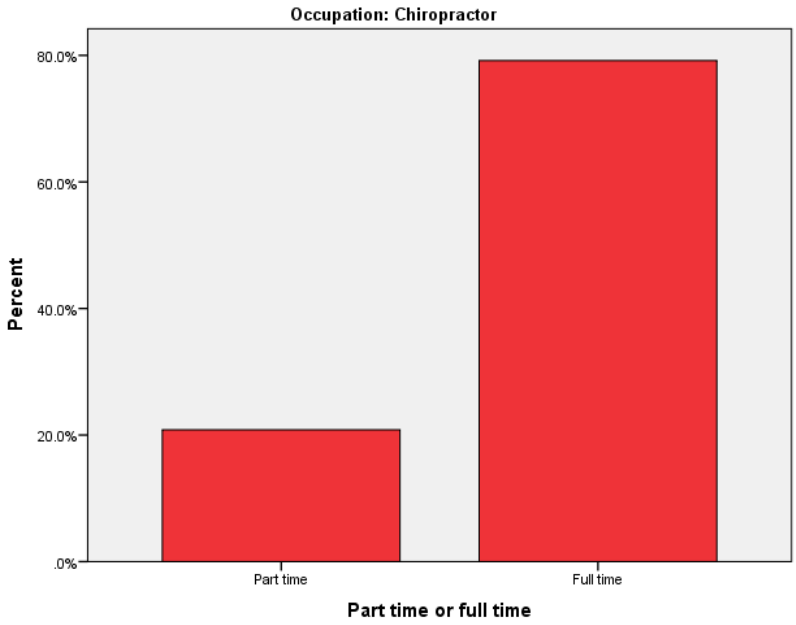


Figure 4.5: Part time or full time in practice

4.5.1.12 Involvement with other health care activities

Figure 4.6 shows which health care and professional activities the chiropractors pursued.

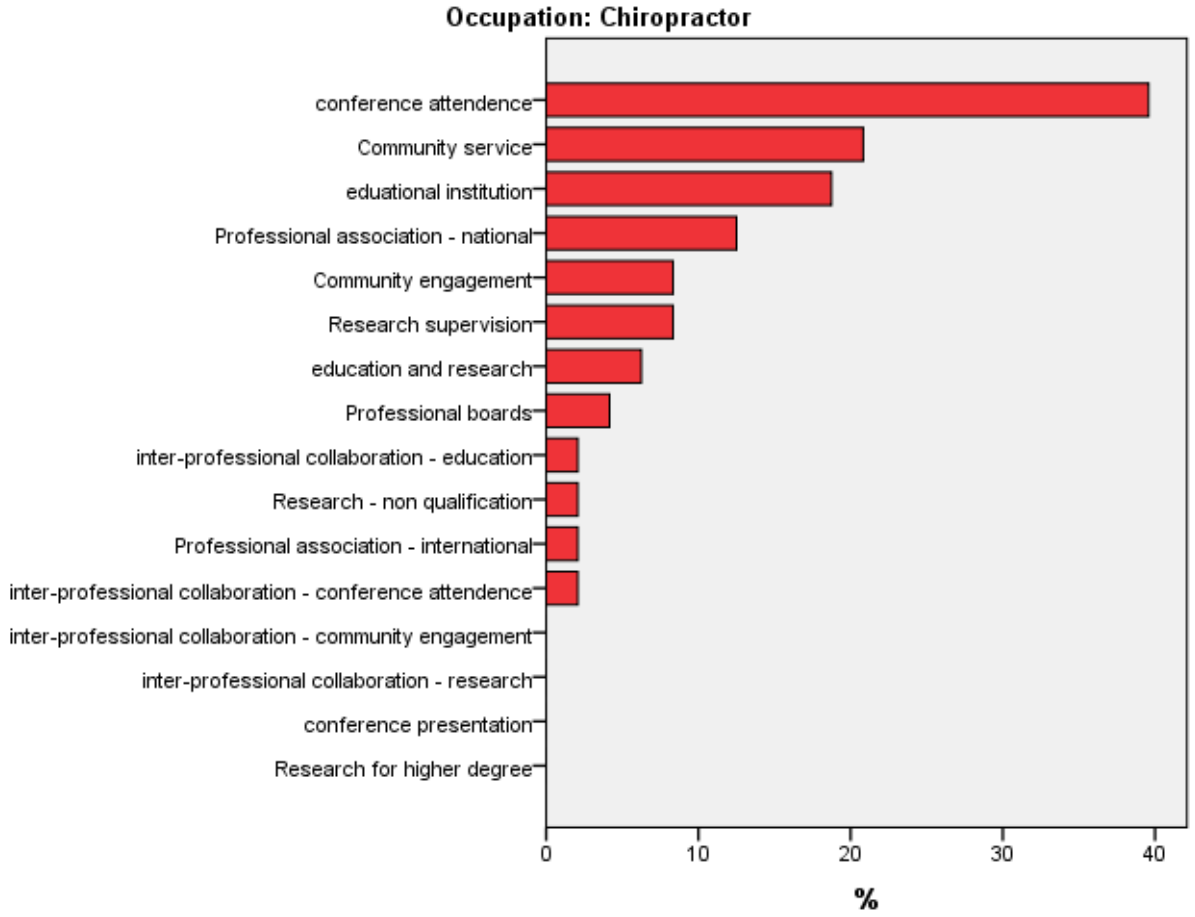


Figure 4.6: Involvement with other health care activities

4.5.1.13 Proximity to other health care providers

Table 4.9 gives a summary of the perceived proximity of other practitioners to the chiropractors in the sample.

Table 4.9: Proximity to other health care practitioners[a]

	0-2 km		2-4 km		4-6 km		>8km		Unsure		No answer	
	n	%	n	%	n	%	n	%	n	%	n	%
Chiropractor	37	77.1%	3	6.2%	4	8.3%	3	6.2%	1	2.1%	0	0.0%
GP	44	91.7%	2	4.2%	2	4.2%	0	0.0%	0	0.0%	0	0.0%

Homeopath	29	60.4%	6	12.5%	4	8.3%	4	8.3%	5	10.4%	0	0.0%
Physiotherapist	35	72.9%	8	16.7%	2	4.2%	1	2.1%	2	4.2%	0	0.0%
a. Occupation = Chiropractor												

4.5.1.14 Knowledge about the extra-practice activities of the nearest physiotherapist

Figure 4.7 shows that 37.5% of chiropractors knew the interests of the physiotherapists nearest to them other than that of their practice. Additionally, 50% of the chiropractors stated that being involved with other activities had a positive impact on the decision to refer to physiotherapists. The findings also indicate that 95.83% of the chiropractors indicated that chiropractors and physiotherapists should be able to practice within the same multidisciplinary setting.

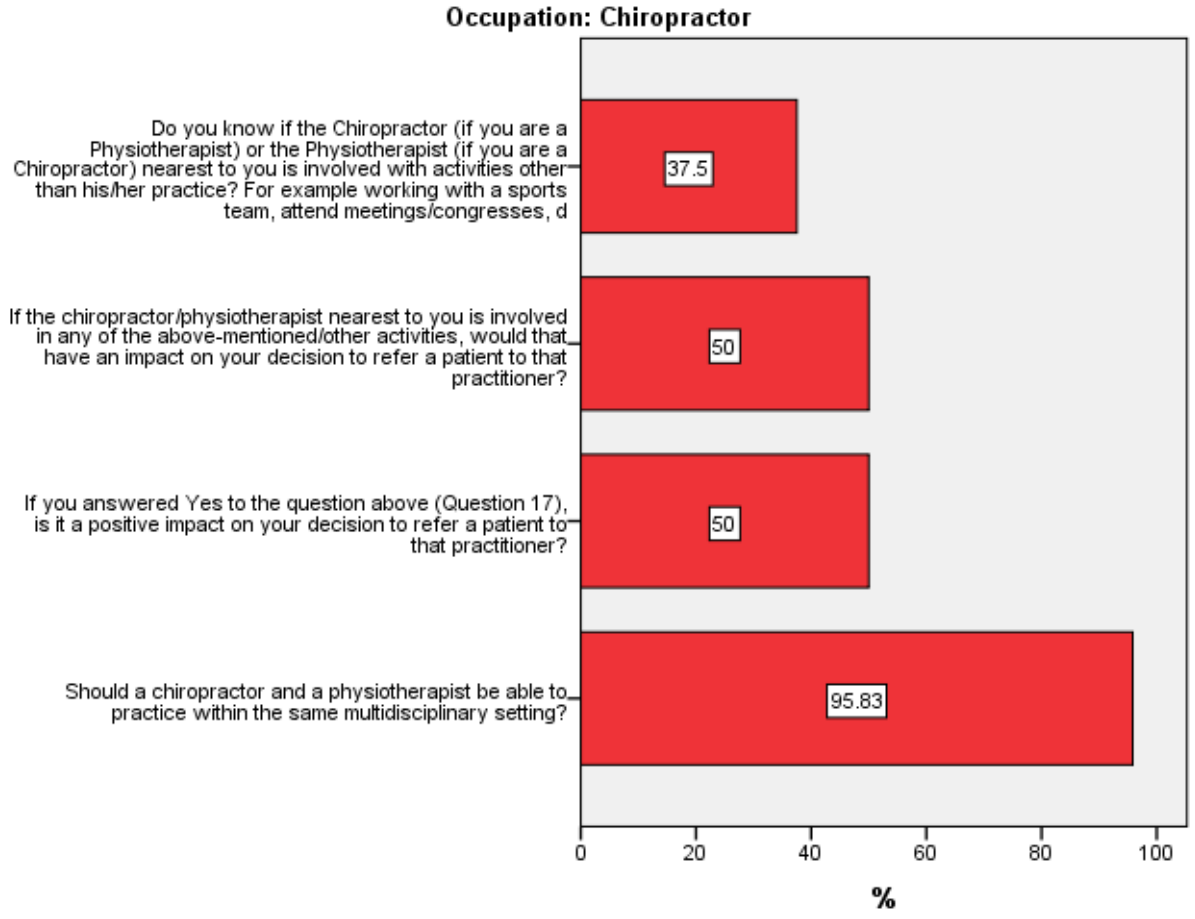


Figure 4.7: Knowledge about the extra-practice activities of the nearest physiotherapist

4.5.1.15 Sharing practice with other health care providers

Figure 4.8 shows the number of chiropractors who share their practice with other disciplines.

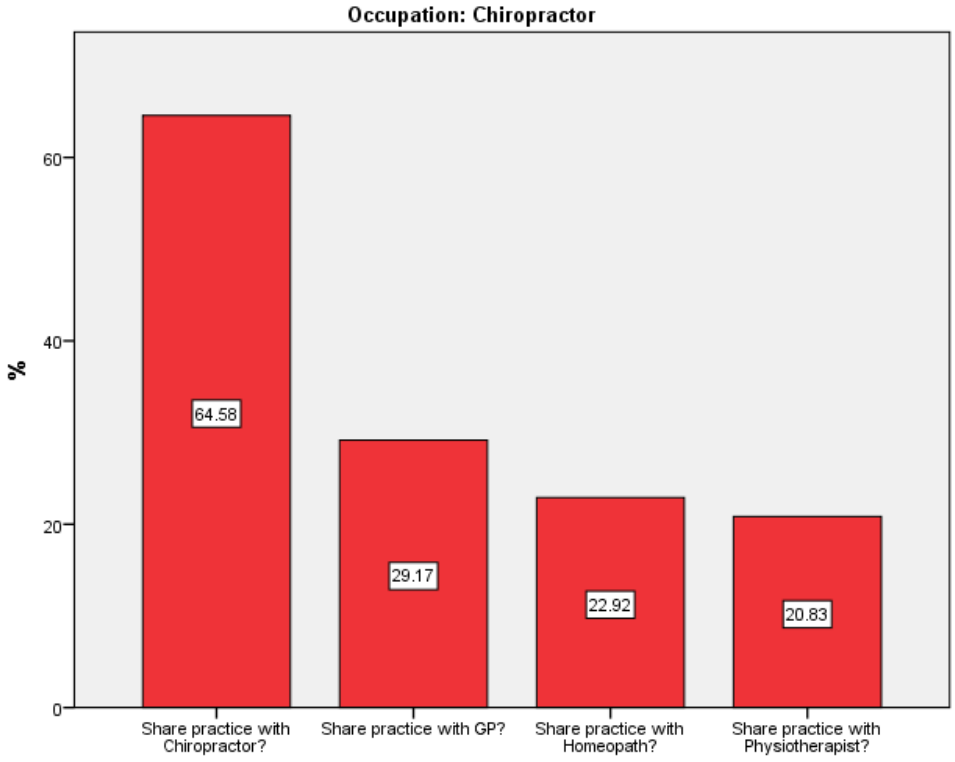


Figure 4.8: Sharing practice with other health care providers

4.5.1.16 Professional contact with a physiotherapist

Figure 4.9 shows that more than 50% of chiropractors from the study only have referral-related professional contact with a physiotherapist. Thus, the interactions with physiotherapists seem to only be related to a patient being referred for particular conditions.

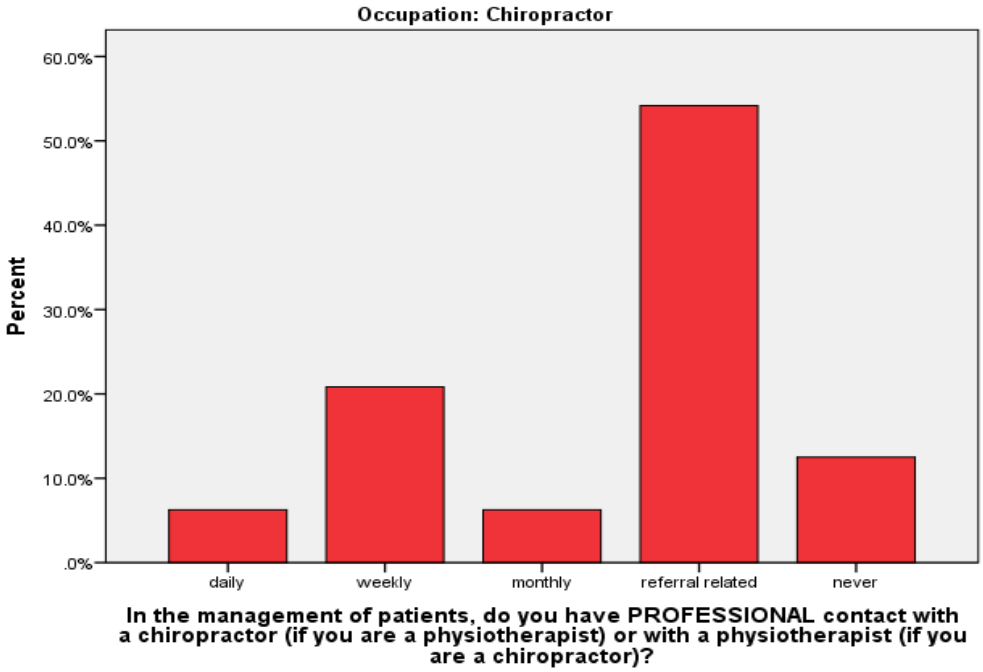


Figure 4.9: Professional contact with a physiotherapist

4.5.1.17 Personal contact with a physiotherapist

Figure 4.10 shows that 54.17% of chiropractors from the sample had been treated by a physiotherapist.

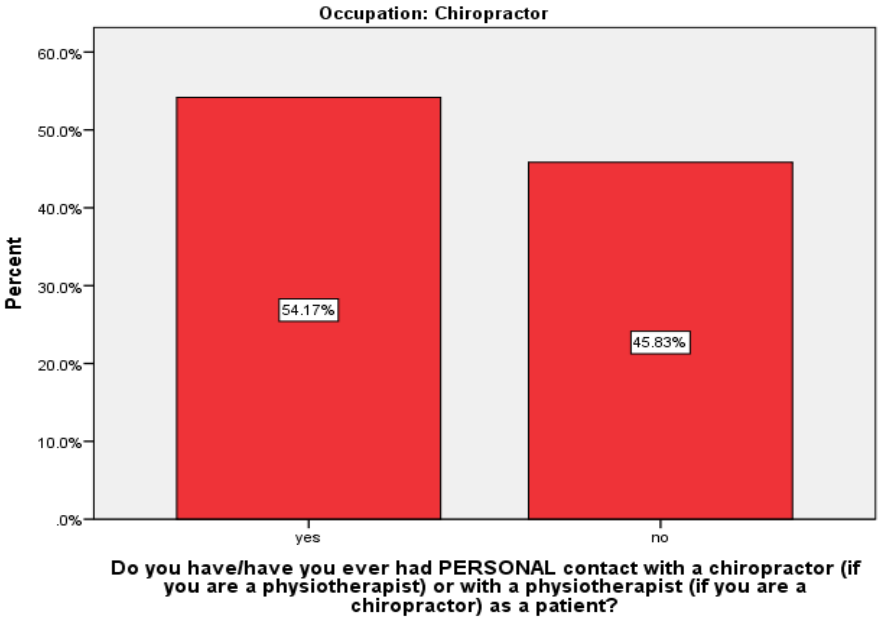


Figure 4.10: Personal contact with a physiotherapist

4.5.1.18 Satisfaction with treatment received

Figure 4.11 shows that 41.67% of the chiropractors who have received physiotherapy treatment were satisfied with the outcomes of the care that they had received. 47.92% of chiropractors did not answer this question.

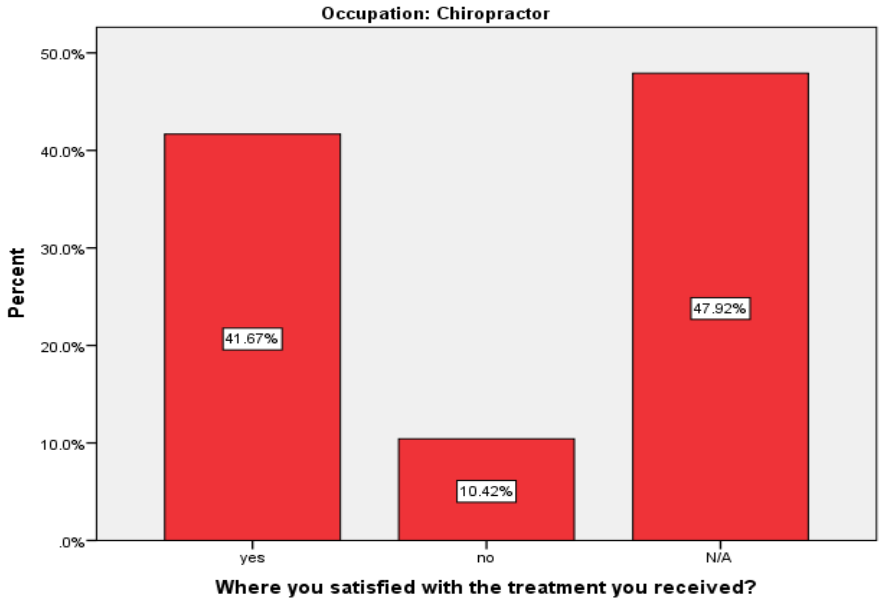


Figure 4.11: Satisfaction with treatment received

4.5.1.19 Summary of Objective One

The following is a summary of the descriptive data collected from the chiropractors who participated in the sample of the study and compares this summary with information available about the total sample population as derived from other studies that have utilised this group before.

The mean age of chiropractors was 35.3 years of age (range 25-68). This compares favourably with (Evans, 2012), who found that most of the chiropractic respondents in her study (44.19%) fell between the ages of 31-40 years of age, with the age ranging from 26 to 67 years of age. Additionally, this also reflects that results obtained by Gordon (2012), who noted that chiropractic respondents were between the ages of 24 and 75, and the mean age of 36.4 years. This further agrees with another research done in South Africa by Mahomed (2007), who indicated a mean age of chiropractic respondents to be 34.2 years and research done by Keyter (2010), who showed that most chiropractic respondents fell between the ages of 30 and 39 years. Similarly, Khoosal (2007) found 64.1% of her participants were in the 25-35 age-group.

These results are in keeping with the findings in Schwarz (2007), Suter *et al.* (2007) and Black (2008). However, the findings contrast with research by Ailliet, Rubinstein and de Vet (2010) as well as Doyle (2011), who showed the mean age of responding chiropractors to be 44 years of age. A possible reason for the lower age mean in the South African context may be due to the fact that the Durban University of Technology and the University of Johannesburg had their first graduate chiropractors in 1994 and 1999 respectively (Till and Till, 2000; Brantingham and Snyder, 1999). It could therefore be stated that the results of this study are likely to be representative of the entire population, as based on the variable of age.

The majority of the chiropractic respondents in this study were female (54%). This is lower than the representation that Evans (2012) achieved in her study, where she reported more female (60.47%) then male (37.21%) respondents and Pohlman *et al*. (2010) in which 74% of the respondents in their study were female. It is, however

more in line with research done by Mahomed (2007), in which 55% of the chiropractic respondents were female as well as the results achieved Rieder (2010), Fyfe (2006) and Newell and Cunliffe (2003). However, this is in contrast with the responses achieved in Gordon's (2012) study in which 58% of the respondents were male and similarly, a study by Schwarz and Hondras (2007), which also reported a male dominance.

However, when looking at the contextual reality in South Africa, the gender ratio of chiropractors registered with the AHPCSA (2008), shows that there were 62% male and 38% female registered chiropractors at the time this study was undertaken. This correlates with research done by Keyter (2010), which showed that 60.8% of the respondents were male and research carried out by Doyle (2011) that indicated a similar percentage of male respondents (61.1%). A slightly lesser percentage (54.7%) of the respondents in Khoosal's (2007) study was also male.

The variations in the findings, therefore, seem to suggest that the geographic distribution of genders within the population group under study; the location and extent of the study and the particular focus area of the study may have an impact on the response rate by gender (Dyer, 1997). The gender range did not have as great a gender bias as compared to Evans (2012), which was a paediatric study and therefore may, have attracted greater female responses or to Keyter (2010), which was related to the principle identity of the Chiropractic profession in South Africa, which seemed to have appealed to a greater male population. It could, therefore, be stated that the results of this study are likely to be representative of the entire population, as based on the variable of gender.

In this study, 31.3% of the chiropractors had a generalised (general family practice) field of interest. This concurs with the work of Evans (2012), who found that more than half of the respondents (51.16%) worked in a multidisciplinary practice, 39.53% of them worked in a solo practice and very a small number (11.63%) in a chiropractic group practice. This also compares favourably with Keyter (2010) who showed that 58.3% of the respondents were in private practice and 37.5% were involved with a multidisciplinary practice and research by Pohlman *et al*. (2010) which showed that

most chiropractic respondents worked in a multidisciplinary-practice (48%). Khoosal (2007) found that 46.5% of chiropractors in her study were in a solo practice.

Of the sample, 91.7% of the practitioners qualified in the Republic of South Africa and of that sample, 89.6% at DUT. These results compare favourably with Evans (2012), who found that more than three quarters (79.07%) of the respondents went to the DUT, whilst 6.98% studied at UJ, whilst very few of the respondents studied abroad (2.33%).This finding is similar to the percentage of RSA qualified practitioners that Khoosal (2007) indicated. These results are not unexpected as the majority of respondents held an M.Tech: Chiropractic qualification, which is in line with the requirement to obtain a legal license to practice in South Africa (Allied Health Professions Act 63 of 1982 (as amended) (www.ahpcsa.co.za, 2011)).

In addition to the M.Tech: Chiropractic qualification, only 20.8% had another qualification, of which 4.2% were in the alternative medicine field. This is not dissimilar to Keyter (2010), who showed that 37.5% of the respondents held additional qualifications. A possible reason for the difference in the responses may well be related to the two distinct fields of enquiry in the respective studies, where Keyter (2010) investigated the perception of practitioners with regards to their professional identity, compared to this study which aimed to determine which factors would influence referral patterns.

Approximately 40% of the chiropractors attend conferences. Thirty five percent of those who knew of physiotherapists who were involved in any activities other than his/her practice (e.g. conference). About 50% of the chiropractors indicated that if a physiotherapist was involved in extra-practice activities, they were more likely to refer a patient to that physiotherapist. A paucity of literature exists in this context, and therefore, a comparison to the literature is not possible.

The mean time in practice was 9 years, of which 89.58% of chiropractors were in private practice. Of these 80% were in full time practice and 89.58% of the chiropractors practiced in a residential suburb. These results seem to be on average, slightly higher than Evans (2012), who indicated that just more than one third of the respondents (37.21%) had been practicing between 1 to 5 years, whilst almost 14%

of the respondents had been practicing for more than 16 years and Keyter (2010) and Gordon (2012) who showed that 46.7% and 42.3% of respondents had been in practice for less than 5 years respectively. However, it compares more favourably with Mahomed (2007), who showed that chiropractors had been in practice for an average of 7.4 years. Yet the results of this study are significantly lower than the results obtained by Pohlman et al. (2010), Ailliet, Rubinstein and de Vet (2010) and Doyle (2011) who showed that chiropractors had been in practice for an average of 14.6, 18 and 13.6 years respectively. This confirms the 51.8% of the chiropractors who participated in Khoosal's (2007) study who had been in practice for less than 5 years.

High proportions (64.58%) of chiropractors share their practice with another chiropractor and 20.38% share their practice with a physiotherapist. In this context, Evans (2012) reported that of those respondents who worked in a multidisciplinary practice (51.16% of total sample), 53.49% did not identify which practitioner types where involved in the multidisciplinary practice, whereas of the 46.51% that did respond and identify the practitioner types, the following was observed:

- 32.56% of chiropractors practiced with a range of professionals, the most common being a biokineticist (16.28%) followed by homeopaths, GP's and physiotherapists.
- By contrast, the other two thirds of the respondents only had one other practitioner type that was associated with their practice.

The results of this study, also seem to compare favourably with those obtained by Pillay (2006), where it was found that "sharing of practices" was more common between chiropractors and homeopaths than between chiropractors and other chiropractors or between homeopaths and other homeopaths.

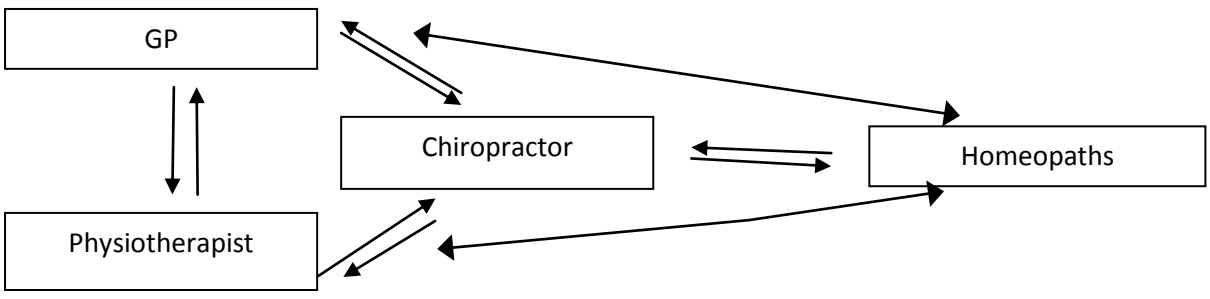


Figure 4.12 Practitioner interactions (as taken from Pillay, 2006)

It was inferred by Pillay (2006), that it is possible that as a result of the CAM therapies not being included in mainstream medicine that chiropractic as a profession is trying to access referrals by the seemingly closer co-operation between themselves and the allopathic professions studied in his research. This awareness, according to Pillay (2006) would be likely as the market share of patients is best accessed through the portal of health care (Grumbach *et al*., 1995). Nevertheless, chiropractic is still supportive of the CAM profession of homeopathy with which a common base is shared. Furthermore, it would seem to suggest and support the assertion that chiropractic is attempting to gain increased credibility amongst both patients and the allopathic community as a result of closer relationships and ties (Chapman-Smith, 2005)and may translate into increased numbers of referrals.

Therefore, it is interesting to note that more than 50% of chiropractic respondents had limited interaction with physiotherapists and that these interactions were based on referral-related contact with a physiotherapist. This contrasts with 54.17% of chiropractors reporting to have been treated by a physiotherapist before and 41.67% stating that they were satisfied by the outcomes of the treatment received. Therefore, there seems to be some recognition within the chiropractic respondent group, indicating that market share may play a role in referral of patients (Grumbach *et al*., 1995).

Therefore, based on the ***demographics of the chiropractors*** that participated in this study, it would seem that:

- As Pillay, (2006), Muto *et al*., (1996) and Jamison (1995) indicate that increased age would be of benefit in improving referral patters; there may be a negative influence to have responding practitioners that are younger in terms of the number of referrals. Conversely, because younger practitioners are more likely to be more open to changes and changed educational and social environments, their age may facilitate increased referrals (Bergh and

Theron, 1999). Therefore, age is not a conclusive factor to influencing referrals.

- Muto *et al.,* (1996) additionally identifies gender as an influencing factor of referrals, with females referring to a greater extent than males. Therefore, it is anticipated that with the gender being slightly in favour of females that there would be a positive increase in the referrals.
- No literature seems to discuss the effect of ethnicity on referrals, therefore, it is not possible to suggest the outcomes of this research based on gender.
- A paucity of literature is available discussing the effect of the particular training institution on referrals (Forrest *et al.,* 2006), but it might be considered that if professions train together that it would enable the possibility of increasing referrals. In this instance chiropractors do not train with physiotherapists, therefore, this may be a disabler for referral (Forrest *et al.,* 2006; Bergh and Theron, 1999).
- Time in practice is seen as an enabler for referrals and may be linked to age and increased practice / patient management experience (Jamison, 1995; Langley, Minkin and Till, 1997). With the young group of respondents, it is possible that this enabler of referrals may be negated as the overall age and experience of the group are young / immature respectively.
- Years studied, seem to enable referral (Langley, Minkin and Till, 1997; Forrest *et al.,* 2006), the particular respondents in this group seem to have studied for an above average period of time, thus it is expected that the respondents would be positively influenced to refer patients. This is only enhanced to a small degree by additional studies within the group, which would further enhance the referral mechanism.

It is therefore anticipated that the participants in this study will show a favourable trend to referral of patients, as most of the factors that enable referral are present in the group, with few detractors to referral patterns.

4.5.2 Objective Two

Objective Two was to determine the demographic characteristics of the practicing physiotherapists in the eThekwini municipality.

4.5.2.1 Age

The physiotherapists had a mean age of 36 years with a standard deviation of 12 years (Table 4.10). The minimum age of participating physiotherapist is 23 years of age.

Table 4.10: Age[a]

N	Valid	87
	Missing	0
Mean		36.28
Std. Deviation		12.091
Minimum		23
Maximum		69
a. Occupation = Physiotherapist		

4.5.2.2 Gender

Most of the physiotherapists (82%) in the sample were female (Table 4.11).

Table 4.11: Gender[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	18.4	18.4	18.4
	Female	71	81.6	81.6	100.0
	Total	87	100.0	100.0	
a. Occupation = Physiotherapist					

4.5.2.3 Area of speciality

The largest group of physiotherapists (27.6%) in the sample specialized in the area of Sport/Rehabilitation (Table 4.12).

Table 4.12: Area of speciality[a]

	Frequency	Percent	Valid Percent	Cumulative Percent
Cardiology	1	1.1	1.1	1.1
Cerebral palsy	1	1.1	1.1	2.2
General	14	16.1	16.1	18.3
General and Orthopaedics	22	25.3	25.3	43.6
Hand rehabilitation	1	1.1	1.1	44.7
Musculoskeletal	1	1.1	1.1	45.8
Neurological rehabilitation	4	4.6	4.6	50.4
Neuromusculoskeletal	1	1.1	1.1	51.5
Orthopaedic manipulative therapy	15	17.2	17.2	67.7
Paediatrics	2	2.3	2.3	70.0
Respiratory	1	1.1	1.1	71.1
Sport/Rehabilitation	24	27.6	27.6	100
Total	87	100.0	100.0	
a. Occupation = Physiotherapist				

4.5.2.4 Country of qualification

The vast majority of physiotherapists (94.3%) in the sample qualified in South Africa (Table 4.13).

Table 4.13: Country of qualification[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ireland	1	1.1	1.1	1.1%
	SA	82	94.3	94.3	95.4%
	UK	4	4.6	4.6	100.0%
	Total	87	100.0	100.0	
a. Occupation = Physiotherapist					

4.5.2.5 Institute of qualification

Most of the physiotherapists (49.4%) in the sample qualified at the University of Durban Westville (Table 4.14). MEDUNSA refers to the University of Limpopo and the University of Durban Westville refers to the University of Kwazulu-Natal (UKZN).

Table 4.14: Institution of qualification[a]

	Frequency	Percent	Valid Percent	Cumulative Percent
Brighton University	1	1.1	1.1	1.1
King Edward VIII Hospital	1	1.1	1.1	2.2
MEDUNSA	2	2.3	2.3	4.5
Middlesex Hospital	1	1.1	1.1	5.6
No answer	1	1.1	1.1	6.7
Trinity College	1	1.1	1.1	100
University of Cape Town	9	10.3	10.3	17
University of Durban Westville	43	49.4	49.4	66.4
University of East London	1	1.1	1.1	67.5
University of Pretoria	4	4.6	4.6	72.1
University of Stellenbosch	6	6.9	6.9	79
University of the Free State	4	4.6	4.6	83.6
University of the Western Cape	3	3.4	3.4	87
University of the Witwatersrand	10	11.5	11.5	98.5
Total		87	100.0 100.0	
a. Occupation = Physiotherapist				

4.5.2.6 Number of physiotherapists with other qualifications

Similarly to the chiropractic group, 71.3% of physiotherapists in the sample did not hold other qualifications (Table 4.15).

Table 4.15: Amount of physiotherapists with other qualifications[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	28.7	28.7	28.7
	No	62	71.3	71.3	100.0
	Total	87	100.0	100.0	
a. Occupation = Physiotherapist					

4.5.2.7 Category of other qualifications held by physiotherapists

A relatively small number of physiotherapists (4.6%) in the sample indicated that they had a qualification in Orthopaedic Manipulative Therapy (Table 4.16).

Table 4.16: Category of other qualification held by physiotherapists

	Frequency	Percent	Valid Percent	Cumulative Percent
Accounting/financial management	1	1.1	1.1	1.1
Administration	2	2.3	2.3	3.4
Hand rehabilitation	2	2.3	2.3	5.7
Humanities	1	1.1	1.1	6.8
Medicine/Medical technologies	2	2.3	2.3	9.1
Master in Orthopaedics	1	1.1	1.1	10.2
Masters in Physiotherapy	2	2.3	2.3	12.5
None	62	71.3	71.3	83.8
Orthopaedic Manipulative Therapy	4	4.6	4.6	88.4
Para-medical	2	2.3	2.3	90.7
Pilates	1	1.1	1.1	91.8
Public relations/Marketing	1	1.1	1.1	92.9
Services to the community	1	1.1	1.1	94
Sport Medicine	1	1.1	1.1	95.1
Sport Science	1	1.1	1.1	96.2
Theology	2	2.3	2.3	98.5
Yoga and Deep dry needling	1	1.1	1.1	100
Total	87	100.0	100.0	

4.5.2.8. Time in practice

The physiotherapists in the sample had been in practise for an average of 14 years (standard deviation 12 years) (Table 4.17).

Table 4.17: Time in practice[a]

N	Valid	87
	Missing	0
Mean		13.9310
Std. Deviation		12.05491
Minimum		1.00
Maximum		46.00
a. Occupation = Physiotherapist		

4.5.2.9 Type of practice

Figure 4.13 shows the type of practices that the physiotherapists came from and where involved in.

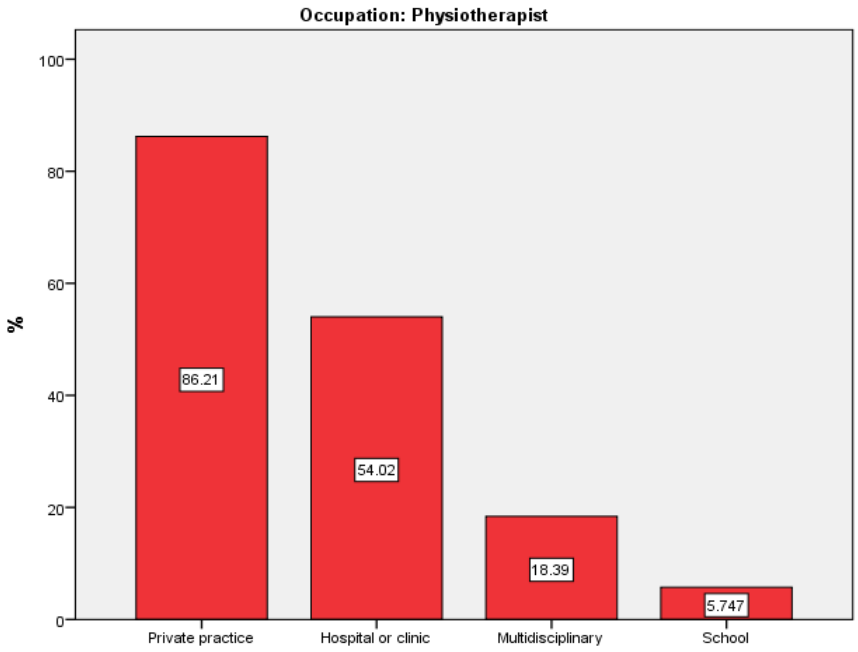


Figure 4.13: Type of practice

4.5.2.10 Practice location

Figure 4.14 shows the location of the physiotherapists' practices were predominantly located in residential suburbs.

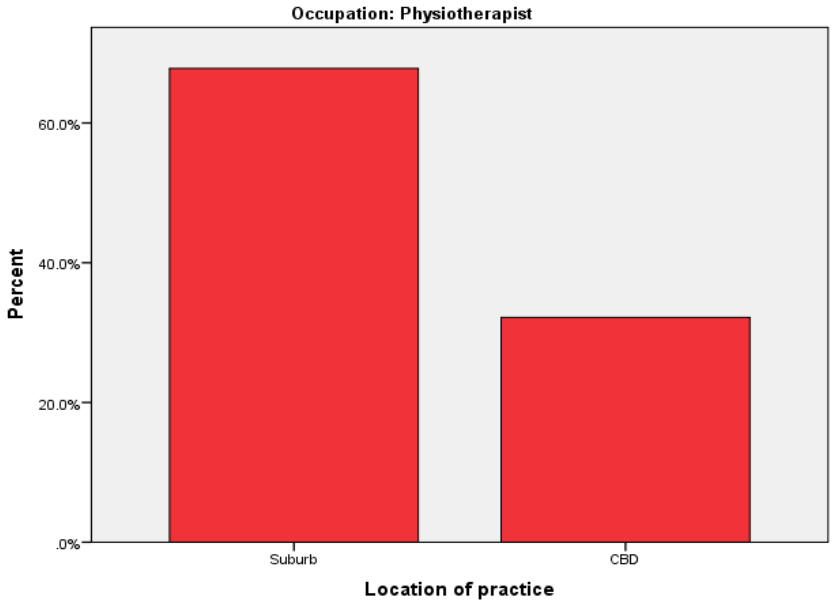


Figure 4.14: Practice location

4.5.2.11 Part time or full time in practice

Figure 4.15 shows that most physiotherapists practice full time.

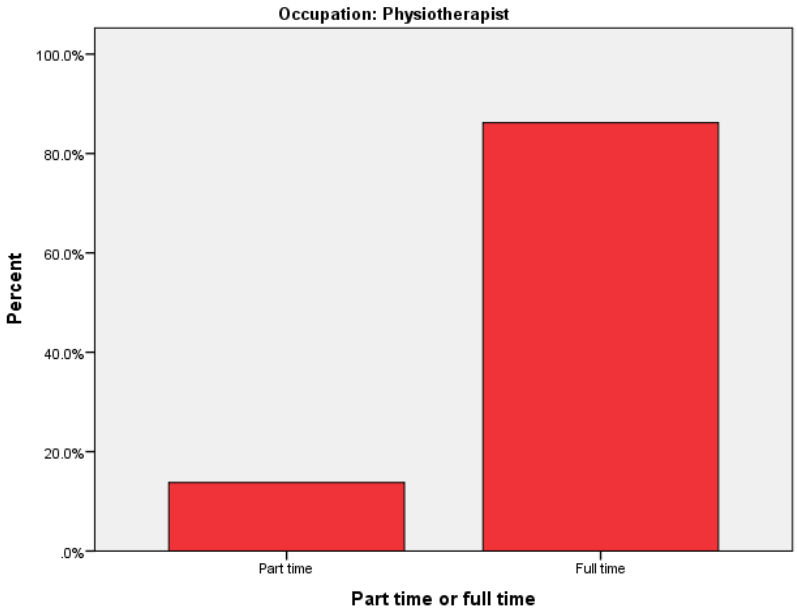


Figure 4.15: Part time or full time in practice

4.5.2.12 Involvement with other health care activities

Figure 4.16 shows which health care / professional activities the physiotherapists from the sample have been involved with.

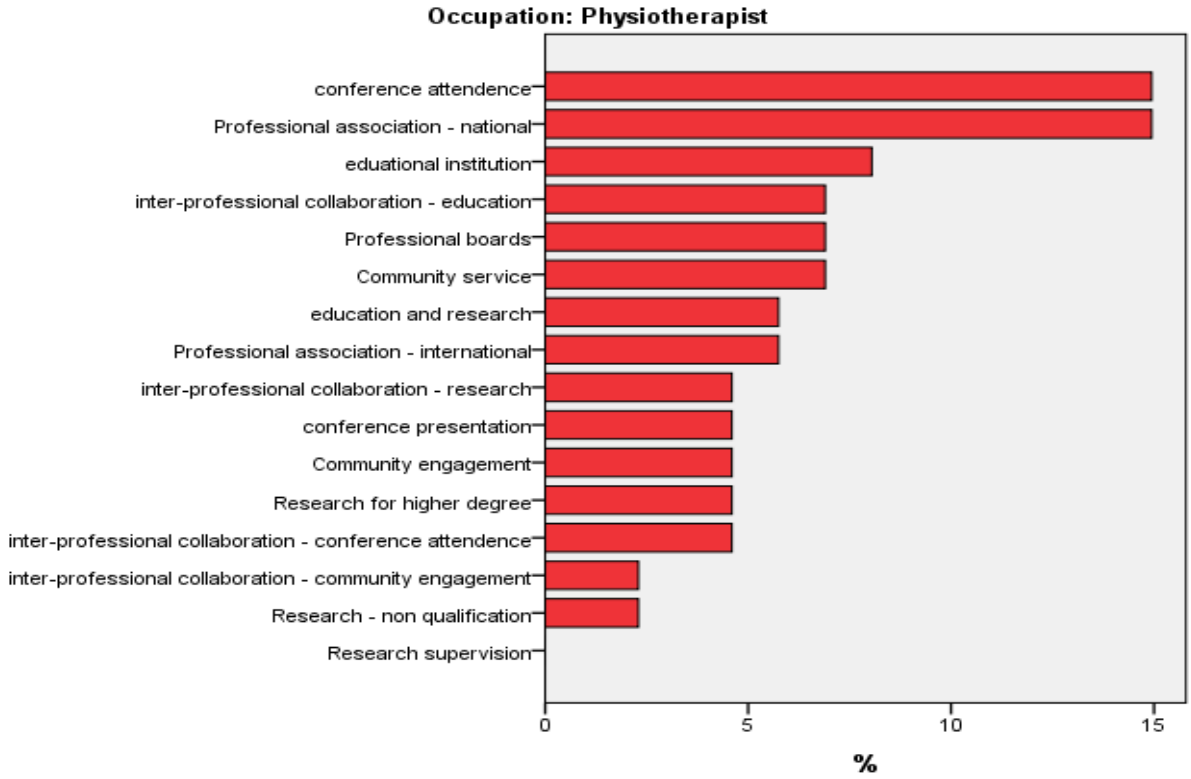


Figure 4.16: Involvement with other health care activities

4.5.2.13 Proximity to other health care practitioners

Table 4.18 highlights the proximity of other health care practitioners to the physiotherapists' practices.

Table 4.18: Proximity to other health care practitioners[a]

	0-2 km		2-4 km		4-6 km		>8km		Unsure		No answer	
	n	%	n	%	n	%	n	%	n	%	n	%
Chiropractor	50	57.5 %	10	11.5 %	8	9.2 %	4	4.6 %	13	14.9 %	2	2.3 %
GP	70	80.5 %	9	10.3 %	4	4.6 %	2	2.3 %	1	1.1%	1	1.1 %
Homeopath	25	28.7 %	13	14.9 %	7	8.0 %	2	2.3 %	34	39.1 %	6	6.9 %
Physiotherapist	63	72.4 %	6	6.9%	8	9.2 %	4	4.6 %	2	2.3%	4	4.6 %

a. Occupation = Physiotherapist

4.5.2.14 Knowledge about the extra-practice activities of the nearest chiropractor

Figure 4.17 shows, that 19.54% of physiotherapists in the sample knew that the chiropractor nearest to them was involved with activities other than their practice. Based on this, 41.38% of the physiotherapists said that being involved with other activities has a positive impact on the decision to refer to that chiropractor. To a lesser extent than the chiropractors, 59.77% of physiotherapists said that chiropractors and physiotherapist should be able to practice within the same multidisciplinary setting.

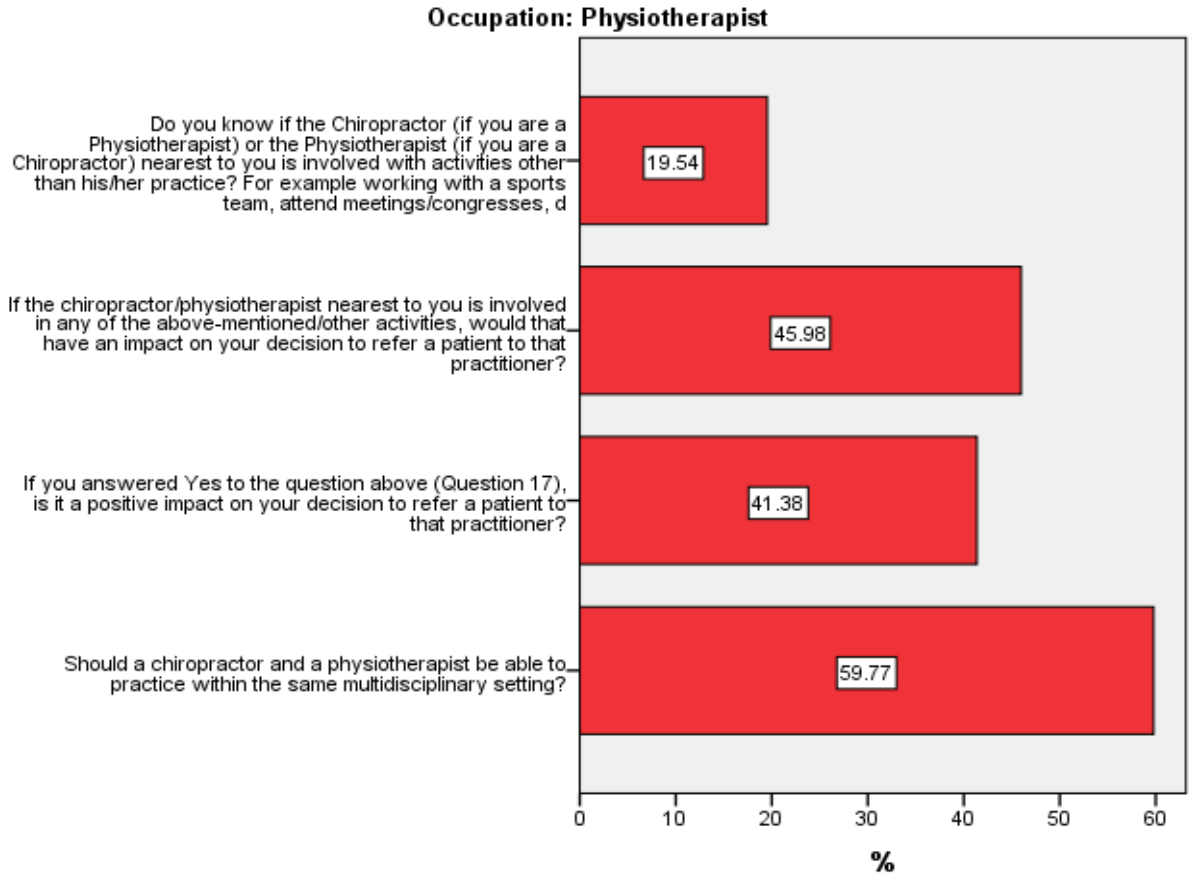


Figure 4.17: Knowledge about the extra-practice activities of the nearest chiropractor

4.5.2.15 Sharing practice with other health care providers

Figure 4.18 shows which health care providers the physiotherapists share their practices.

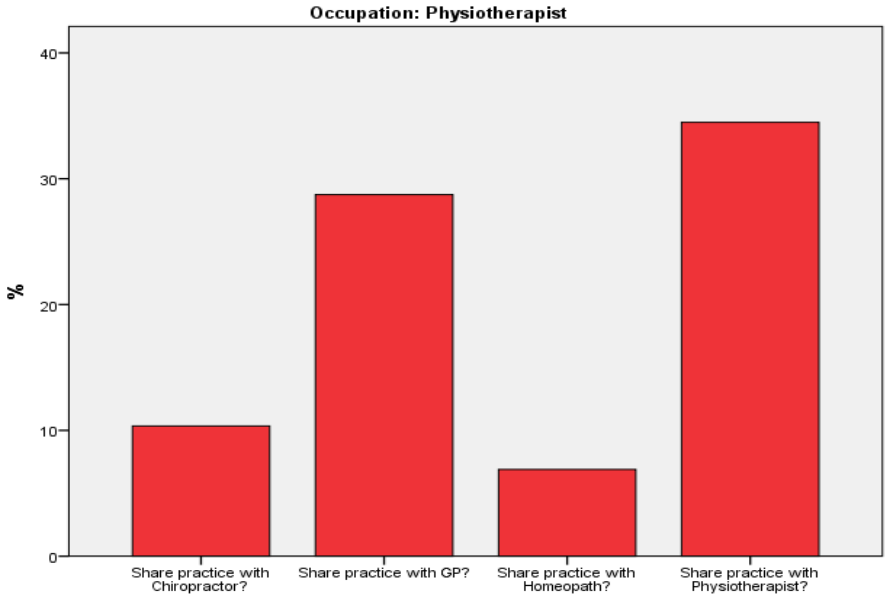


Figure 4.18: Sharing practice with other health care providers

4.5.2.16 Professional contact with a chiropractor

Figure 4.19 shows that the majority of the physiotherapists in the sample have never had professional contact with a chiropractor.

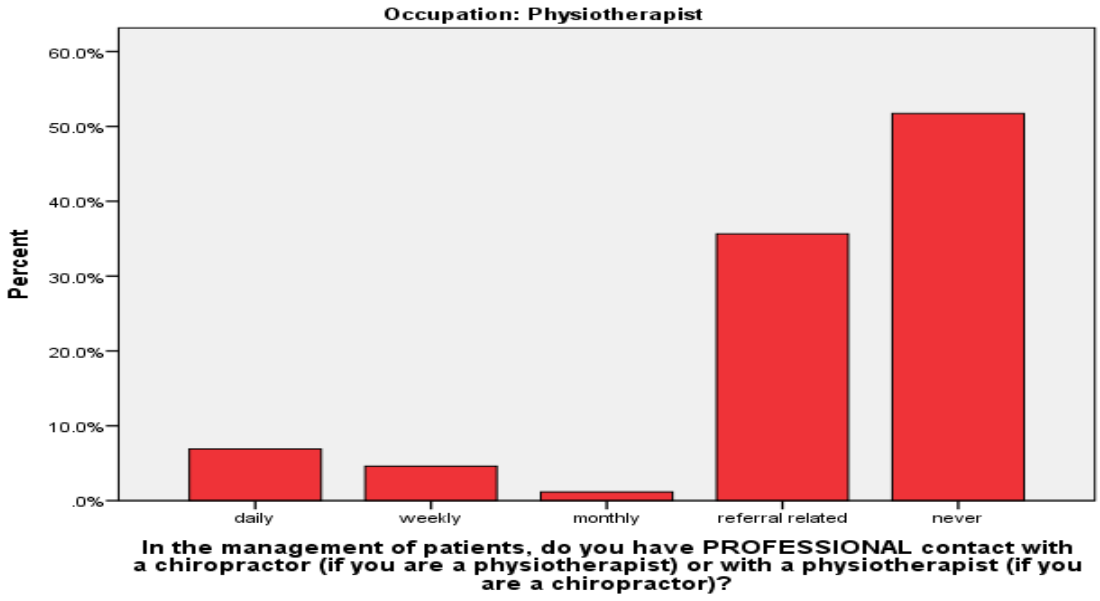


Figure 4.19: Professional contact with a chiropractor

4.5.2.17 Personal contact with a chiropractor

Similarly to the professional contact with a chiropractor, 72.41% of physiotherapists in the sample had not previously been treated by a chiropractor (Figure 4.20).

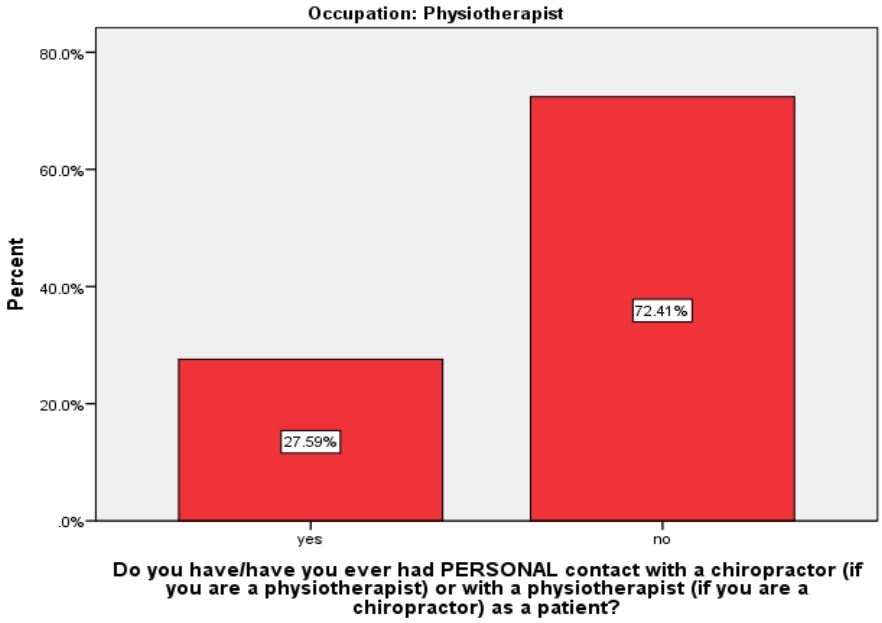


Figure 4.20: Personal contact with a chiropractor

4.5.2.18 Satisfaction with treatment received

Figure 4.21 shows the number of physiotherapists who had received treatment from a chiropractor and who were satisfied with the intervention. Of the physiotherapists who had received treatment, just over 20% indicated that their symptoms had improved and that they were happy with the care they received.

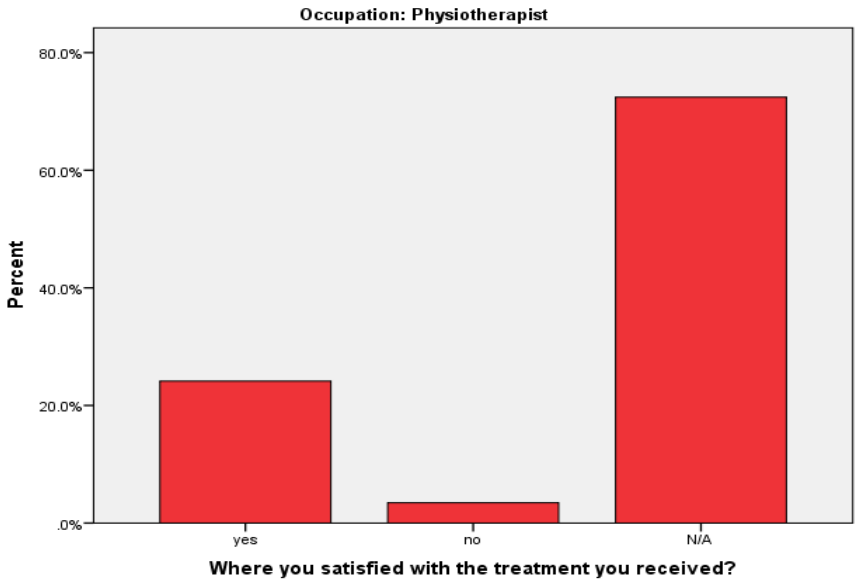


Figure 4.21: Satisfaction with treatment received

4.5.2.19 Summary of Objective Two

The following is a summary of the data collected from the physiotherapists who participated in the study.

The mean age of the physiotherapists was 36 years of age. This is comparable to the chiropractic respondents that had a mean age of 35.3 years of age. This compares favourably with the results achieved by Joseph (2011), who found that the majority of his respondents were between the ages of 21 and 40 years of age. A mean age was not reported in this study as the population was grouped by age ranges, therefore it is not possible to determine whether the mean age is truly comparable (Joseph, 2011).

The majority of physiotherapists taking part in this study were female (81.6%), which confirms the results obtained by Joseph (2011), where it was indicated that his research yielded a response of 89.5% from female physiotherapists. It also concurs with the 89% majority of the participants in Pereira's (2009) study, who were also female. This is in contrast to Fiandeiro (2008) who had 59.4% females participating in her study. The differences may be in part due to the mechanism and region of data collection within the studies, where Fiandeiro (2008) was localised to the greater Gauteng region, whereas Joseph (2011) and Pereira (2009) where national studies. It is therefore of interest that this study reflected the national norm more closely than the study by Fiandeiro (2008), even though this study was localised to the eThekwini region.

Based on the younger age, as well as the higher predominance of female respondents in this study, it would seem evident that a literature based premise would support a higher degree of referral from this group based on gender, but a lower referral pattern based on age and inexperience (Pillay, 2006; Muto et al., 1996; Jamison, 1995).

In terms of professional specialisation, 27.6% of the physiotherapists had a specific interest in the field of Sport/Rehabilitation, with 94.3% having qualified in the

Republic of South Africa (49.4% at the University of Durban – Westville/UKZN). In contrast, the results obtained in the study by Joseph (2011), indicated that physiotherapists obtained their qualifications predominantly from the University of Witwatersrand (36.4%), followed by 22.2% from the University of Pretoria, 13.0% from MEDUNSA/University of Limpopo, 9.9% from the University of Free State and 6.2% from foreign universities. The last few universities representing 4.3% from the University of Western Cape, 3.1% from both Stellenbosch and University of Cape Town and from the University of Durban Westville (1.9%). This may be related to the regional distribution of the sample (Dyer, 1997), with the study focus for Joseph (2011) having been in Gauteng, whereas this study was localised to the eThekwini region.

In addition, 28.7% of the physiotherapists had an additional qualification, of which 4.6% were in orthopaedic manual therapy. These latter percentages compare with those achieved by Fiandeiro (2008), who reported that 30% of the physiotherapists in Fiandeiro's (2008) had additional qualifications. The study by Joseph (2011) could not be compared as the study only asked questions related to training within health promotion and disease prevention and not generally about the training of the respondents.

In this study, the mean time in practice was 14 years, with 86.21% of physiotherapists in private practice and more than 80% in full time practices in residential suburbs (70%). By comparison, Joseph (2011) found that 38.9% of physiotherapists had 0-5 years of experience, 24.1% has 20 years and above, with a 16.7% in the 11-15 year group, 13.6% in the 6-10 year group and 6.8% in the 16-20 year group. It may, therefore, be possible to consider that the average years in practice was slightly lower in the physiotherapy group in Joseph's study as compared to this study, indicating that experience in practice may detract from overall referral patterns. However, when one compares these results to Fiandeiro's (2008) study, the average time in practice was 14 years, with the majority (44%) of physiotherapists in Fiandeiro's (2008) study having been in practice for longer than 15 years. These statistics also correlate well with Pereira's (2009) study, who found that the average time in practice of the participating physiotherapists were 13 years. When compared to the chiropractic respondents in this study, it may be possible to

have increased referrals as the experience and time in practice for the physiotherapy group is greater (Jamison, 1995; Langley, Minkin and Till, 1997).

In this study, 86.2% of physiotherapists from the sample worked in private practice, correlating well with the 86.7% found in Fiandeiro's (2008) study. Pereira (2009) had a similar finding, in that 77.8% of physiotherapists in her sample practised in a private practice setting. This, however, contrasts starkly with the respondents in Joseph's (2011) study, where

- 51.9% were located in private sectors;
- 33.3% of physiotherapists were based in tertiary/ academic hospitals;
- 3.7% in district hospitals;
- 3.7% in University or special school settings;
- 3.1% in regional hospitals;
- 2.5% in rehabilitation centres;
- 1.2% in community health centres and
- 0.6% in clinics.

The contrast in these results may be because of the recruitment methods utilised in the studies mentioned, in addition to the possibility that physiotherapists in private practice have more control over their time (than those in public employ and therefore, more able to respond (Jamison, 1995; Langley, Minkin and Till, 1997).

Approximately 15% of the physiotherapists reportedly attended conferences and 15% belong to a national professional association. A paucity of literature however, does not allow for comparing these results to another study.

A small percentage of physiotherapists (19.54%) knew of a chiropractor in their area that was involved in activities other than his/her practice, 41.38% indicated that if a chiropractor was indeed involved in extra-practice activities, it would positively impact on their decision to refer a patient to that chiropractor. More than 30% of the respondents share his/her practice with another physiotherapist and 10% share with a chiropractor. By contrast to the chiropractors, 50% of the physiotherapists have never had contact with a chiropractor before the time of the study, therefore only a

relatively small number (27.59%) had been treated by a chiropractor and just over 20% were satisfied by the treatment received.

Therefore, based on the ***demographics of the physiotherapists*** that participated in this study, it would seem that:

- With the predominance of young females in this population, the work of Pillay (2006), Muto *et al*., (1996) and Jamison (1995) would support a decreasing referral pattern. As was apparent in the chiropractic respondents, younger practitioners are more likely to be more open to changes and changes in educational and social environments, thus their age may facilitate increased referrals (Bergh and Theron, 1999). However with decreasing experience, this may counter the openness to increased referrals (Forrest *et al.,* 2006). Therefore, age may not be a conclusive factor to influencing referral, based on the literature interpretation of the demographics; further discussion will be presented in Objectives Three and Four.
- To add to an increasing referral pattern and because Muto *et al.,* (1996) identified the female gender as a positive influence of referral, it is suggested that this group of physiotherapists would be more likely to refer patients to other practitioners.
- No literature seems to discuss the effect of ethnicity on referrals therefore it is not possible to suggest the outcomes of this research based on gender.
- A paucity of literature is available discussing the effect of the particular training institution / training type on referrals (Forrest *et al.,* 2006). It might be considered though, that if professions train together that it would enable the possibility of increasing referrals. In this instance physiotherapists train at tertiary institutions that do not house chiropractic training, therefore this may be a disabler for referral (Forrest *et al.,* 2006; Bergh and Theron, 1999).
- Time in practice is seen as an enabler for referrals and may be linked to age and increased practice / patient management experience (Jamison, 1995; Langley, Minkin and Till, 1997). With the slightly older group of respondents (as compared to the chiropractic respondents), it is possible that age as an enabler of referrals may be enhanced as the overall age and experience of the group is greater than that for the chiropractic respondents.
- Years studied, seem to enable referrals (Langley, Minkin and Till, 1997; Forrest *et al.,* 2006). The particular respondents in this group seem to have studied for an above average period of time, thus it is expected that the

respondents would be positively influenced to refer patients. This is only enhanced to a small degree by additional studies within the group, which would further enhance the referral mechanism.

It is therefore anticipated that the participants in this study will refer patients, as most of the factors that enable referrals are present in the group.

4.5.3 Objective Three

Objective Three was to establish the current inter-referral pattern between chiropractors and physiotherapists.

4.5.3.1 Patient referral to chiropractors

Figure 4.22 shows the frequency at which chiropractors (blue) and physiotherapists (green) refer patients to a chiropractor.

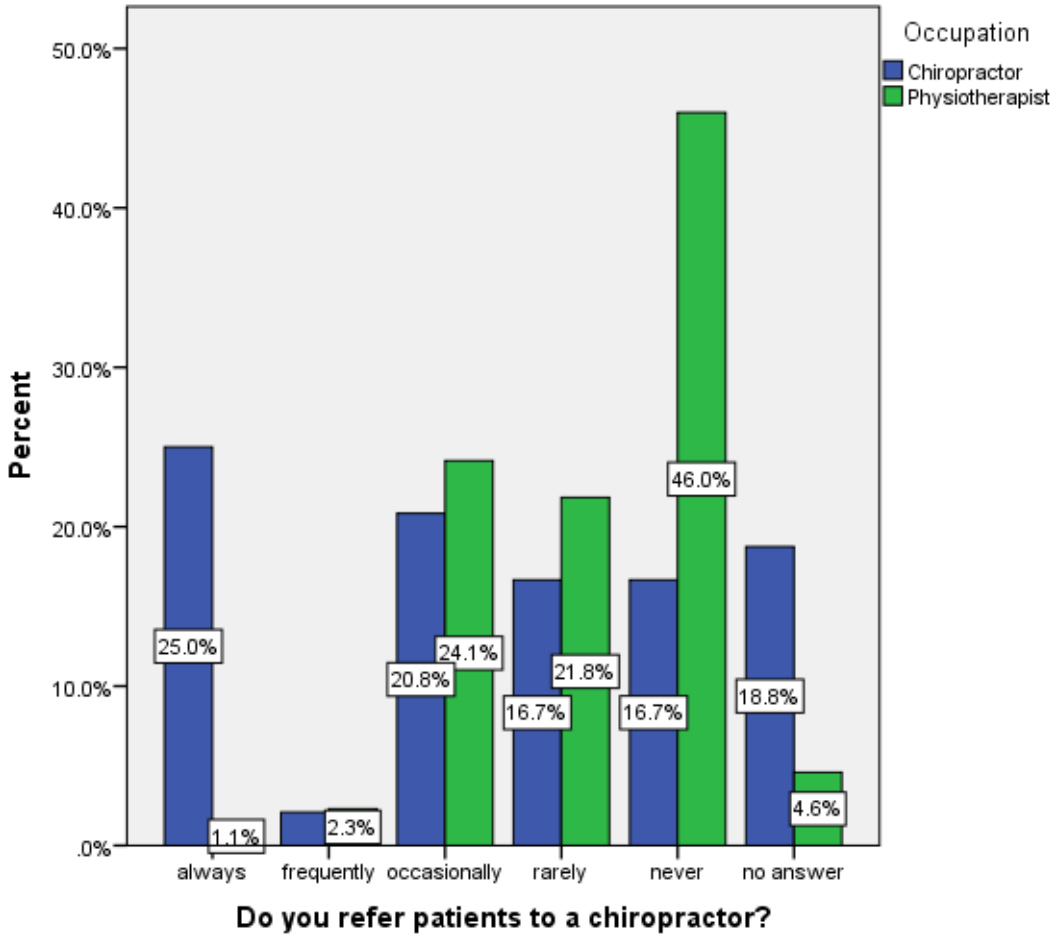


Figure 4.22: Patient referral to chiropractors

4.5.3.2 Patient referral to physiotherapists

Figure 4.23 shows the frequency at which chiropractors (blue) and physiotherapists (green) refer patients to a physiotherapist.

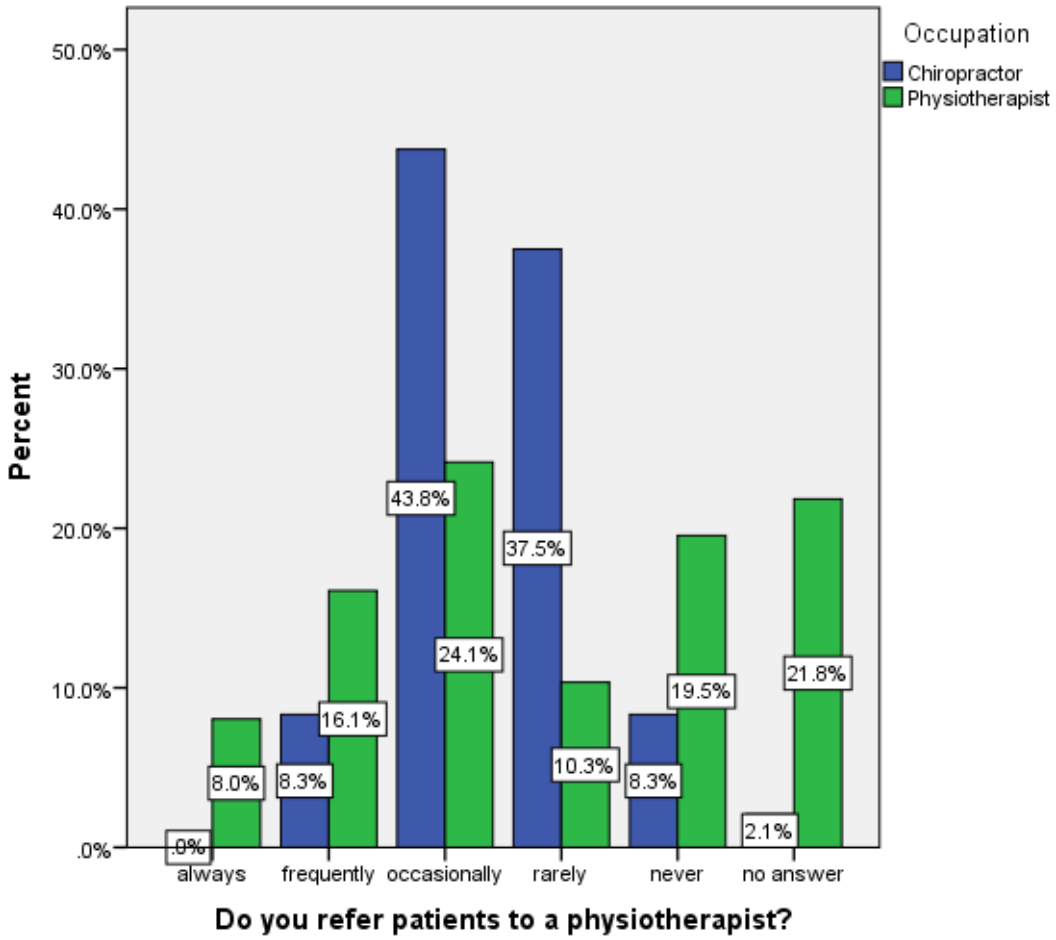


Figure 4.23: Patient referral to physiotherapists

4.5.3.3Is a report included when a patient is referred?

It was reported that 79.2% of chiropractors and 86.2% of physiotherapists included a letter/report when referring a patient (Table 4.19).

Table 4.19: Including a report when a patient is referred

	Do you include a letter/report when referring a patient?			Total
		Yes	No	
Chiropractor	Count	38	10	48
	% within Occupation	79.2%	20.8%	100.0%

Physiotherapist	Count	75	12	87
	% within Occupation	86.2%	13.8%	100.0%
Total	Count	113	22	135
	% within Occupation	83.7%	16.3%	100.0%

4.5.3.4 Principle reason for referral from your practice

Figure 4.24 provides the principle reasons why chiropractors (blue) and physiotherapists (green) refer patients.

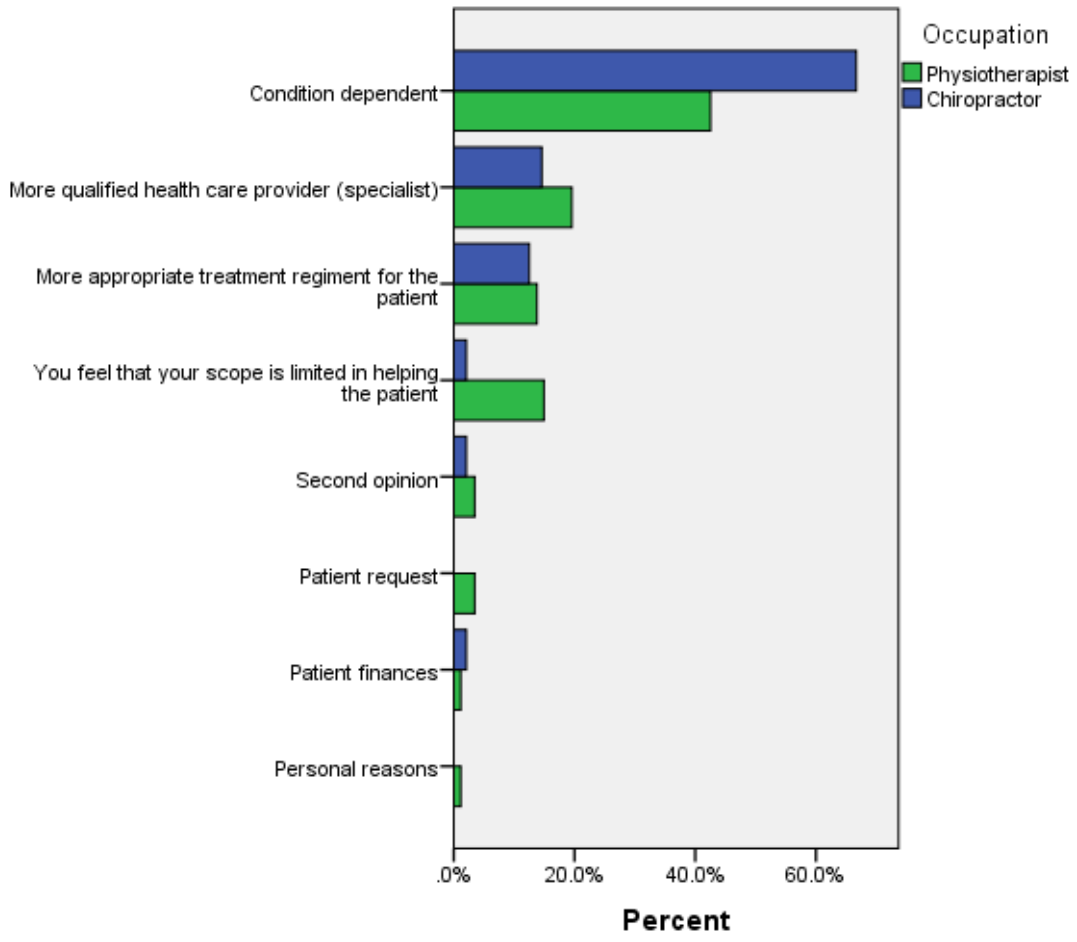


Figure 4.24: Principle reason for referral from your practice

Similar to Figure 4.21, but specific to chiropractors, Table 4.20 shows that the principle reason for a chiropractor to refer a patient is condition dependant (66.7%).

Table 4.20: Principle reason for referral of patients from your practice?[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Condition dependant	32	66.7	66.7	66.7
	More appropriate treatment regiment for the patient	6	12.5	12.5	79.2
	More qualified health care provider (specialist)	7	14.6	14.6	93.8
	Patient finances	1	2.1	2.1	95.9
	Second opinion	1	2.1	2.1	98
	You feel that your scope is limited in helping the patient	1	2.1	2.1	100
	Total	48	100.0	100.0	
a. Occupation = Chiropractor					

Similar to Figure 4.21, but specific to physiotherapists, Table 4.21 shows that the principle reason for a physiotherapist to refer a patient is condition dependant (42.5%).

Table 4.21: Principle reason for referral of patients from your practice?[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Condition dependant	37	42.5	42.5	42.5
	More appropriate treatment regiment for the patient	12	13.8	13.8	53.3
	More qualified health care provider (specialist)	17	19.5	19.5	73.8
	Patient finances	1	1.1	1.1	74.9
	Patient reasons	1	1.1	1.1	76
	Patient request	3	3.4	3.4	79.4
	Second opinion	3	3.4	3.4	82.8
	You feel that your scope is limited in helping the patient	13	14.9	14.9	100
	Total	87	100.0	100.0	
a. Occupation = Physiotherapist					

4.5.3.5 Report back from chiropractor

Figure 4.25 shows that chiropractors have the perception that report backs from fellow chiropractors tend to receive a more satisfying report than from physiotherapists.

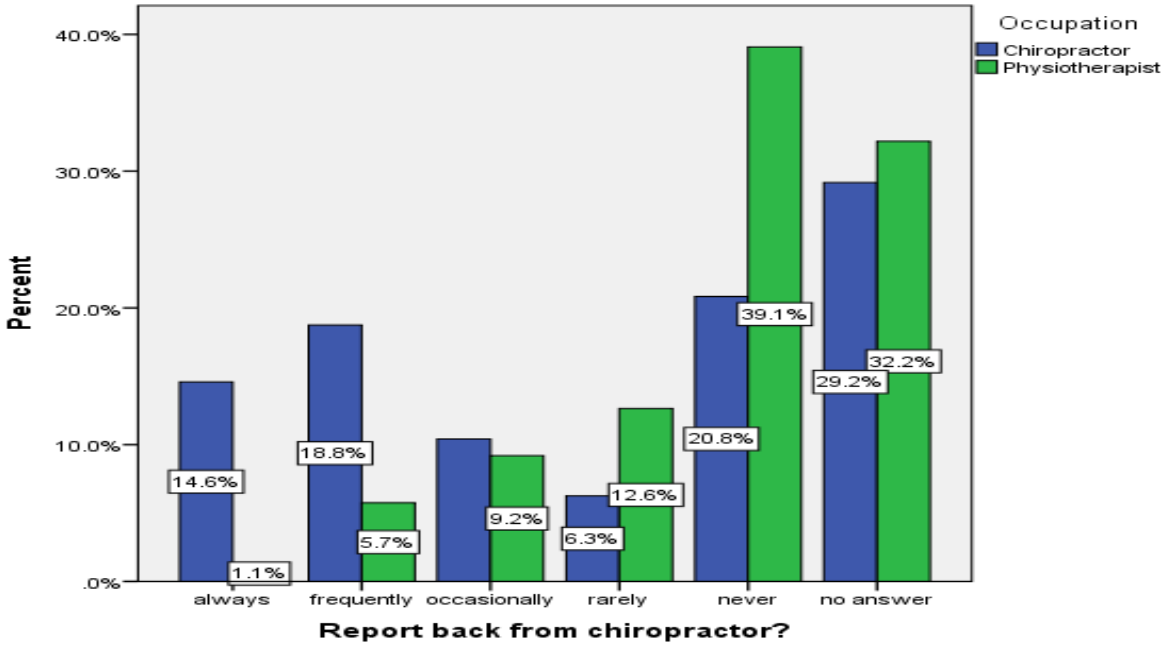


Figure 4.25: Report back from chiropractor

4.5.3.6 Report back from physiotherapist

Figure 4.26 shows that physiotherapists have the perception that they tend to get better reports back from other physiotherapists as compared to chiropractors.

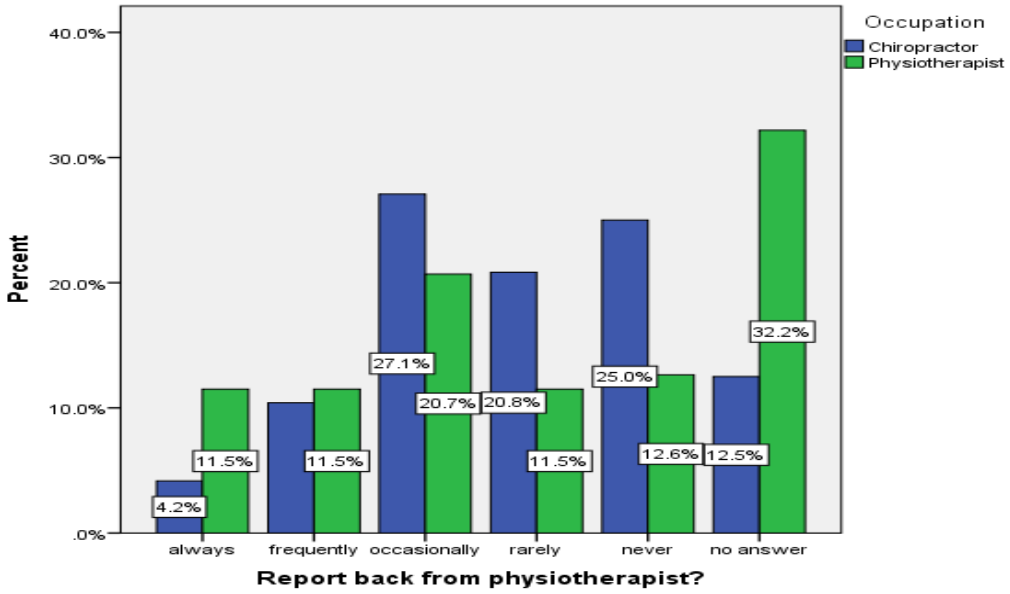


Figure 4.26: Report back from physiotherapist.

4.5.3.7 Format used when reporting back to the referring practitioner

Table 4.22 shows the format used by practitioners when reporting about the care of a patient. Reporting by means of a letter is most commonly used both by the chiropractor (41.7%) and the physiotherapist (55.2%).

Table 4.22: Format used when reporting back to the referring practitioner

		If the health care provider reports back to you, in which format do they most commonly interact?							Total
		Email	Fax	Letter	Social media	SMS	Telephone	No answer	
Chiropractor	Count	7	1	20	0	0	16	4	48
	% within Occupation	14.6 %	2.1 %	41.7 %	0.0 %	0.0 %	33.3 %	8.3 %	100.0 %
Physiotherapist	Count	3	3	48	1	2	29	1	87
	% within Occupation	3.4%	3.4 %	55.2 %	1.1 %	2.3 %	33.3 %	1.1 %	100.0 %
Total	Count	10	4	68	1	2	45	5	135
	% within Occupation	7.4%	3.0 %	50.4 %	0.7 %	1.5 %	33.3 %	3.7 %	100.0 %

4.5.3.8 Does the chiropractor return the referred patient to the original (referring) practitioner?

In approximtely one fifth (20.8% of the time a patient is referred to a chiropractor, that chiropractor will frequently return the patient to the care of the referring practitioner (Figure 4.27).

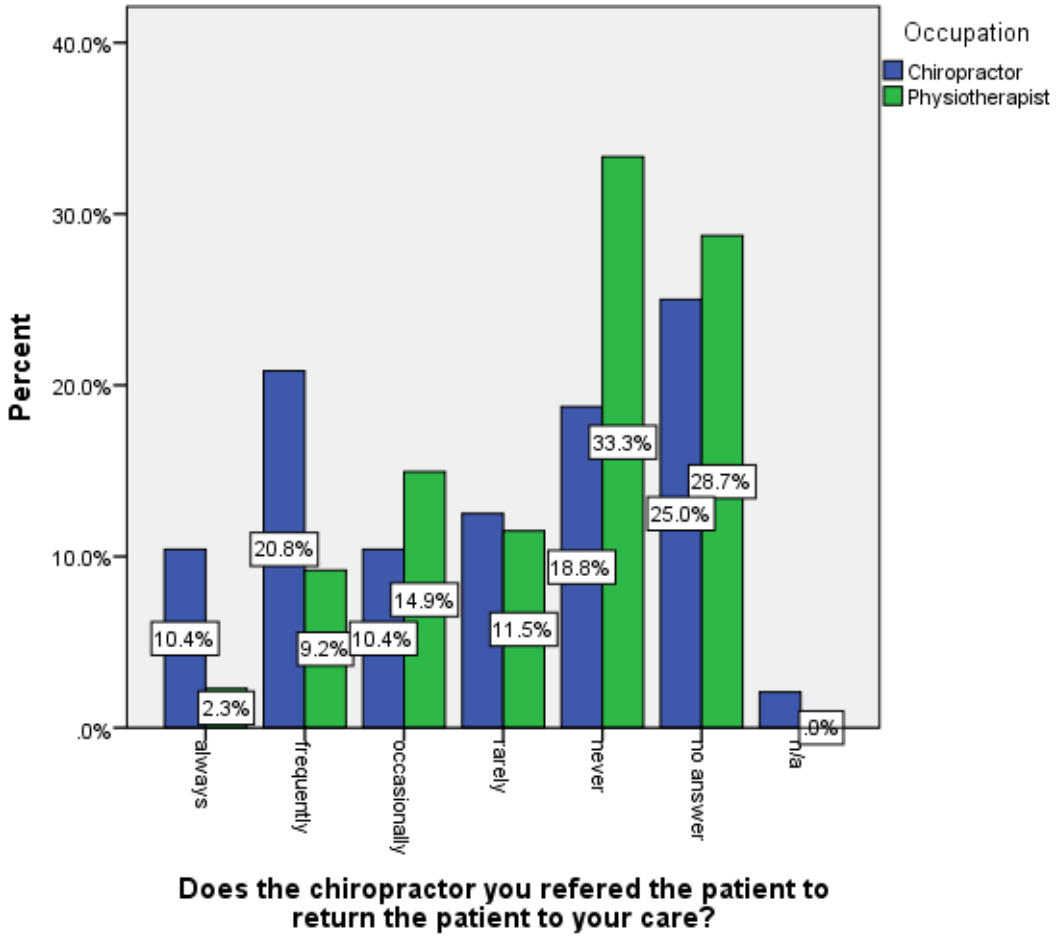


Figure 4.27: How often does a chiropractor return a referred patient to the original (referring) practioner?

4.5.3.9 Does the physiotherapist return the referred patient to the original (referring) practitioner?

Almost a thrid (29.2%) of the time, when a patient is referred to a physiotherapist, that physiotherapist will occasionally return the patient to the care of the referring practitioner (Figure 4.28).

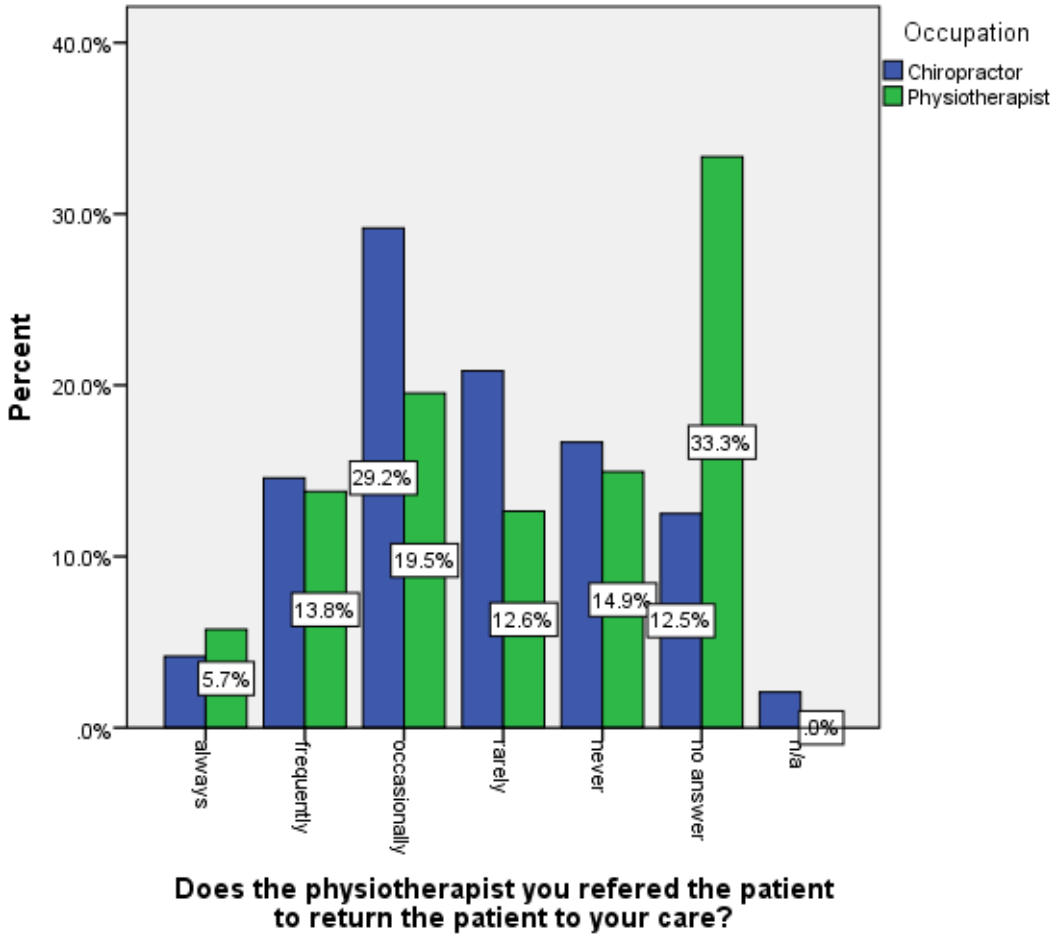


Figure 4.28: How often does a physiotherapist return a referred patient to the original (referring) practioner?

4.5.3.10 Frequency of receiving referrals from other practitioners

Table 4.23 shows how often chiropractors and physiotherapists (from the sample) receive referrals from chiropractors, General Practitioners (GP), homeopaths and physiotherapists respectively.

Table 4.23: Frequency of receiving referrals from other practitioners

		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you receive referrals from chiropractors?	Always	2	4.2%	1	1.1%
	Frequently	11	22.9%	4	4.6%
	Occasionally	12	25.0%	16	18.4%
	Rarely	3	6.2%	21	24.1%
	Never	12	25.0%	39	44.8%
	No answer	8	16.7%	6	6.9%

Table 4.23: Frequency of receiving referrals from other practitioners continued…..

		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you receive referrals from GPs?	Always	1	2.1%	23	26.4%
	Frequently	19	39.6%	49	56.3%
	Occasionally	17	35.4%	10	11.5%
	Rarely	5	10.4%	0	0.0%
	Never	6	12.5%	4	4.6%
	No answer	0	0.0%	1	1.1%
Do you receive referrals from homeopaths?	Always	2	4.2%	1	1.1%
	Frequently	7	14.6%	0	0.0%
	Occasionally	20	41.7%	10	11.5%
	Rarely	6	12.5%	11	12.6%
	Never	8	16.7%	56	64.4%
	No answer	5	10.4%	9	10.3%
Do you receive referrals from physiotherapists?	Always	0	0.0%	9	10.3%
	Frequently	4	8.3%	12	13.8%
	Occasionally	13	27.1%	22	25.3%
	Rarely	16	33.3%	12	13.8%
	Never	11	22.9%	9	10.3%
	No answer	4	8.3%	23	26.4%

4.5.3.11The frequency with which patients are returned to the care of the referring practitioner

Table 4.24 shows how often chiropractors and physiotherapists (from the sample) return the patient to the practitioner (chiropractor, GP, homeopath and physiotherapist, respectively) who referred the patient to them.

Table 4.24: The frequency with which patients are returned to the care of the referring practitioner

		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you return the patient to the care of the chiropractor?	Always	10	20.8%	9	10.3%
	Frequently	9	18.8%	6	6.9%
	Occasionally	8	16.7%	17	19.5%
	Rarely	3	6.2%	5	5.7%
	Never	5	10.4%	28	32.2%
	No answer	11	22.9%	22	25.3%
	N/A	2	4.2%	0	0.0%

Table 4.24: The frequency with which patients are returned to the care of the referring practitioner continued….

		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you return the patient to the care of the GP?	Always	8	16.7%	20	23.0%
	Frequently	17	35.4%	28	32.2%
	Occasionally	13	27.1%	23	26.4%
	Rarely	6	12.5%	6	6.9%
	Never	0	0.0%	7	8.0%
	No answer	2	4.2%	3	3.4%
	N/A	2	4.2%	0	0.0%
Do you return the patient to the care of the homeopath?	Always	11	22.9%	9	10.3%
	Frequently	14	29.2%	4	4.6%
	Occasionally	10	20.8%	7	8.0%
	Rarely	4	8.3%	2	2.3%
	Never	2	4.2%	40	46.0%
	No answer	5	10.4%	25	28.7%
	N/A	2	4.2%	0	0.0%
Do you return the patient to the care of the Physiotherapist?	Always	8	16.7%	10	11.5%
	Frequently	7	14.6%	15	17.2%
	Occasionally	15	31.2%	11	12.6%
	Rarely	7	14.6%	12	13.8%
	Never	4	8.3%	11	12.6%
	No answer	5	10.4%	28	32.2%
	N/A	2	4.2%	0	0.0%

4.5.3.12Reporting back to the practitioner who referred a patient

Table 4.25 shows the frequency at which the chiropractors and physiotherapist, from the sample, report back to the practitioner (chiropractor, GP, homeopath and physiotherapist, respectively) who referred the patient to them.

Table 4.25: Reporting back to the practitioner who referred a patient

		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you report back to the chiropractor that referred the patient to you?	Always	11	22.9%	16	18.4%
	Frequently	12	25.0%	8	9.2%
	Occasionally	3	6.2%	9	10.3%
	Rarely	3	6.2%	1	1.1%
	Never	5	10.4%	26	29.9%
	No answer	12	25.0%	27	31.0%
	N/A	2	4.2%	0	0.0%

Table 4.25: Reporting back to the practitioner who referred a patient continued…					
		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Do you report back to the GP that referred the patient to you?	Always	15	31.2%	38	43.7%
	Frequently	14	29.2%	20	23.0%
	Occasionally	11	22.9%	13	14.9%
	Rarely	2	4.2%	9	10.3%
	Never	2	4.2%	6	6.9%
	No answer	2	4.2%	1	1.1%
	N/A	2	4.2%	0	0.0%
Do you report back to the homeopath that referred the patient to you?	Always	16	33.3%	15	17.2%
	Frequently	12	25.0%	4	4.6%
	Occasionally	5	10.4%	5	5.7%
	Rarely	5	10.4%	1	1.1%
	Never	3	6.2%	34	39.1%
	No answer	5	10.4%	28	32.2%
	N/A	2	4.2%	0	0.0%
Do you report back to the physiotherapist that referred the patient to you?	Always	13	27.1%	23	26.4%
	Frequently	8	16.7%	11	12.6%
	Occasionally	10	20.8%	8	9.2%
	Rarely	4	8.3%	8	9.2%
	Never	5	10.4%	10	11.5%
	No answer	6	12.5%	27	31.0%
	N/A	2	4.2%	0	0.0%

4.5.3.13 Format used when reporting back to the referring practitioner

Table 4.26 shows the format chiropractors and physiotherapist, respectively, use when reporting back to the practitioner who referred them a patient.

Table 4.26: Format used when reporting back to the referring practitioner

		If you report back to the health care provider, in which format do you most commonly interact?						Total
		email	fax	letter	SMS	Telephone	n/a	
Chiropractor	Count	12	1	17	0	17	1	48
	% within Occupation	25.0%	2.1%	35.4%	0.0%	35.4%	2.1%	100.0%
Physiotherapist	Count	14	3	46	1	22	1	87
	% within Occupation	16.1%	3.4%	52.9%	1.1%	25.3%	1.1%	100.0%
Total	Count	26	4	63	1	39	2	135

	% within Occupation	19.3%	3.0%	46.7%	0.7%	28.9%	1.5%	100.0%

4.5.3.14 How often certain conditions were received as referrals

Table 4.27 shows how often chiropractors and physiotherapists, respectively, have received certain conditions as referrals from other practitioners within the last 6 months.

Table 4.27: How often certain conditions were received as referrals

Q34 In the last 6 months, how often were each of the conditions stated below referred to you?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Abdominal condition	Always	1	2.1%	4	4.6%
	Frequently	1	2.1%	12	13.8%
	Occasionally	6	12.5%	9	10.3%
	Rarely	9	18.8%	15	17.2%
	Never	26	54.2%	43	49.4%
	No answer	5	10.4%	4	4.6%
	N/A	0	0.0%	0	0.0%
Arthritis	Always	3	6.2%	27	31.0%
	Frequently	10	20.8%	33	37.9%
	Occasionally	11	22.9%	17	19.5%
	Rarely	10	20.8%	5	5.7%
	Never	10	20.8%	3	3.4%
	No answer	4	8.3%	2	2.3%
	N/A	0	0.0%	0	0.0%
Cardiovascular condition	Always	0	0.0%	7	8.0%
	Frequently	1	2.1%	10	11.5%
	Occasionally	3	6.2%	16	18.4%
	Rarely	3	6.2%	22	25.3%
	Never	36	75.0%	27	31.0%
	No answer	5	10.4%	5	5.7%
	N/A	0	0.0%	0	0.0%
Endocrine condition	Always	0	0.0%	3	3.4%
	Frequently	1	2.1%	3	3.4%
	Occasionally	1	2.1%	10	11.5%
	Rarely	5	10.4%	16	18.4%
	Never	36	75.0%	51	58.6%
	No answer	5	10.4%	4	4.6%
	N/A	0	0.0%	0	0.0%
Joint condition	Always	3	6.2%	34	39.1%
	Frequently	19	39.6%	36	41.4%
	Occasionally	9	18.8%	12	13.8%
	Rarely	6	12.5%	3	3.4%
	Never	6	12.5%	0	0.0%
	No answer	5	10.4%	2	2.3%
	N/A	0	0.0%	0	0.0%
Headaches	Always	9	18.8%	33	37.9%
	Frequently	18	37.5%	38	43.7%
	Occasionally	8	16.7%	9	10.3%
	Rarely	3	6.2%	3	3.4%
	Never	6	12.5%	2	2.3%
	No answer	4	8.3%	2	2.3%
	N/A	0	0.0%	0	0.0%
Low back pain (LBP)	Always	12	25.0%	52	59.8%
	Frequently	18	37.5%	29	33.3%
	Occasionally	7	14.6%	3	3.4%
	Rarely	4	8.3%	0	0.0%

	Never	4	8.3%	0	0.0%
	No answer	3	6.2%	3	3.4%
	N/A	0	0.0%	0	0.0%

Table 4.27: How often certain conditions were received as referrals continued...

Q34 In the last 6 months, how often were each of the conditions related to below referred to you?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Mild fracture	Always	1	2.1%	21	24.1%
	Frequently	0	0.0%	28	32.2%
	Occasionally	5	10.4%	24	27.6%
	Rarely	11	22.9%	7	8.0%
	Never	26	54.2%	4	4.6%
	No answer	5	10.4%	3	3.4%
	N/A	0	0.0%	0	0.0%
Neck pain	Always	13	27.1%	51	58.6%
	Frequently	17	35.4%	29	33.3%
	Occasionally	5	10.4%	3	3.4%
	Rarely	8	16.7%	0	0.0%
	Never	3	6.2%	0	0.0%
	No answer	2	4.2%	4	4.6%
	N/A	0	0.0%	0	0.0%
Neurological condition	Always	4	8.3%	28	32.2%
	Frequently	9	18.8%	30	34.5%
	Occasionally	13	27.1%	15	17.2%
	Rarely	8	16.7%	10	11.5%
	Never	9	18.8%	2	2.3%
	No answer	5	10.4%	2	2.3%
	N/A	0	0.0%	0	0.0%
Respiratory condition	Always	0	0.0%	34	39.1%
	Frequently	1	2.1%	30	34.5%
	Occasionally	6	12.5%	13	14.9%
	Rarely	4	8.3%	4	4.6%
	Never	32	66.7%	3	3.4%
	No answer	5	10.4%	3	3.4%
	N/A	0	0.0%	0	0.0%
Scoliosis	Always	3	6.2%	17	19.5%
	Frequently	8	16.7%	19	21.8%
	Occasionally	18	37.5%	26	29.9%
	Rarely	5	10.4%	13	14.9%
	Never	10	20.8%	7	8.0%
	No answer	4	8.3%	5	5.7%
	N/A	0	0.0%	0	0.0%
Skin problems	Always	1	2.1%	2	2.3%
	Frequently	1	2.1%	4	4.6%
	Occasionally	1	2.1%	7	8.0%
	Rarely	5	10.4%	20	23.0%
	Never	35	72.9%	49	56.3%
	No answer	5	10.4%	5	5.7%
	N/A	0	0.0%	0	0.0%
Spinal condition	Always	4	8.3%	29	33.3%
	Frequently	18	37.5%	35	40.2%
	Occasionally	8	16.7%	12	13.8%
	Rarely	6	12.5%	4	4.6%
	Never	8	16.7%	4	4.6%
	No answer	4	8.3%	3	3.4%
	N/A	0	0.0%	0	0.0%
Sports-related injury	Always	8	16.7%	30	34.5%
	Frequently	14	29.2%	37	42.5%
	Occasionally	7	14.6%	13	14.9%
	Rarely	5	10.4%	1	1.1%
	Never	9	18.8%	1	1.1%

	No answer	5	10.4%	5	5.7%
	N/A	0	0.0%	0	0.0%

Table 4.27: How often certain conditions were received as referrals continued ...

Q34 In the last 6 months, how often were each of the conditions related to below referred to you?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Sprain	Always	4	8.3%	29	33.3%
	Frequently	11	22.9%	43	49.4%
	Occasionally	10	20.8%	10	11.5%
	Rarely	6	12.5%	1	1.1%
	Never	13	27.1%	0	0.0%
	No answer	4	8.3%	4	4.6%
	N/A	0	0.0%	0	0.0%
Thoracic pain	Always	7	14.6%	30	34.5%
	Frequently	15	31.2%	36	41.4%
	Occasionally	11	22.9%	15	17.2%
	Rarely	3	6.2%	2	2.3%
	Never	8	16.7%	1	1.1%
	No answer	4	8.3%	3	3.4%
	N/A	0	0.0%	0	0.0%
Whiplash	Always	7	14.6%	29	33.3%
	Frequently	16	33.3%	32	36.8%
	Occasionally	7	14.6%	16	18.4%
	Rarely	4	8.3%	5	5.7%
	Never	10	20.8%	2	2.3%
	No answer	4	8.3%	3	3.4%
	N/A	0	0.0%	0	0.0%

4.5.3.15 How often certain conditions were seen first (i.e. not referred)

Table 4.28 shows how often chiropractors and physiotherapists, respectively, seen patients with certain conditions for the first time, i.e. the patient was not referred.

Table 4.28: How often certain conditions were seen first (i.e. not referred)

Q35 In the past 6months, how often has a patient, with one of the conditions stated below, presented to you first (i.e. the patient was not referred)?		Occupation			
		Chiropractor		Physiotherapist	
		Count	Column N %	Count	Column N %
Abdominal condition	Always	1	2.1%	2	2.3%
	Frequently	3	6.2%	1	1.1%
	Occasionally	7	14.6%	5	5.7%
	Rarely	15	31.2%	21	24.1%
	Never	19	39.6%	52	59.8%
	No answer	3	6.2%	6	6.9%
	N/A	0	0.0%	0	0.0%
Arthritis	Always	3	6.2%	16	18.4%
	Frequently	19	39.6%	34	39.1%
	Occasionally	16	33.3%	9	10.3%
	Rarely	4	8.3%	10	11.5%
	Never	4	8.3%	14	16.1%
	No answer	2	4.2%	4	4.6%
	N/A	0	0.0%	0	0.0%
Cardiovascular condition	Always	1	2.1%	2	2.3%
	Frequently	1	2.1%	3	3.4%
	Occasionally	3	6.2%	4	4.6%
	Rarely	10	20.8%	30	34.5%
	Never	30	62.5%	42	48.3%
	No answer	3	6.2%	6	6.9%
	N/A	0	0.0%	0	0.0%

Table 4.28: How often certain conditions were seen first (i.e. not referred) continued....

Q35 In the past 6months, how often has a patient, with one of the conditions stated below, presented to you first (i.e. the patient was not referred)?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Endocrine condition	Always	1	2.1%	4	4.6%
	Frequently	2	4.2%	1	1.1%
	Occasionally	1	2.1%	2	2.3%
	Rarely	10	20.8%	11	12.6%
	Never	31	64.6%	63	72.4%
	No answer	3	6.2%	6	6.9%
	N/A	0	0.0%	0	0.0%
Joint condition	Always	6	12.5%	22	25.3%
	Frequently	31	64.6%	31	35.6%
	Occasionally	6	12.5%	6	6.9%
	Rarely	1	2.1%	6	6.9%
	Never	2	4.2%	18	20.7%
	No answer	2	4.2%	4	4.6%
	N/A	0	0.0%	0	0.0%
Headaches	Always	10	20.8%	31	35.6%
	Frequently	34	70.8%	29	33.3%
	Occasionally	1	2.1%	8	9.2%
	Rarely	1	2.1%	2	2.3%
	Never	0	0.0%	13	14.9%
	No answer	2	4.2%	4	4.6%
	N/A	0	0.0%	0	0.0%
LBP	Always	18	37.5%	37	42.5%
	Frequently	29	60.4%	29	33.3%
	Occasionally	0	0.0%	3	3.4%
	Rarely	0	0.0%	3	3.4%
	Never	0	0.0%	11	12.6%
	No answer	1	2.1%	4	4.6%
	N/A	0	0.0%	0	0.0%
Mild fracture	Always	1	2.1%	9	10.3%
	Frequently	5	10.4%	12	13.8%
	Occasionally	10	20.8%	19	21.8%
	Rarely	18	37.5%	21	24.1%
	Never	10	20.8%	20	23.0%
	No answer	4	8.3%	6	6.9%
	N/A	0	0.0%	0	0.0%
Neck pain	Always	18	37.5%	35	40.2%
	Frequently	29	60.4%	30	34.5%
	Occasionally	0	0.0%	2	2.3%
	Rarely	0	0.0%	4	4.6%
	Never	0	0.0%	11	12.6%
	No answer	1	2.1%	5	5.7%
	N/A	0	0.0%	0	0.0%
Neurological condition	Always	6	12.5%	11	12.6%
	Frequently	17	35.4%	14	16.1%
	Occasionally	17	35.4%	27	31.0%
	Rarely	2	4.2%	16	18.4%
	Never	3	6.2%	14	16.1%
	No answer	3	6.2%	5	5.7%
	N/A	0	0.0%	0	0.0%
Respiratory condition	Always	0	0.0%	12	13.8%
	Frequently	3	6.2%	26	29.9%
	Occasionally	2	4.2%	17	19.5%
	Rarely	13	27.1%	12	13.8%
	Never	26	54.2%	15	17.2%
	No answer	4	8.3%	5	5.7%
	N/A	0	0.0%	0	0.0%

Table 4.28: How often certain conditions were seen first (i.e. not referred) continued....

Q35 In the past 6months, how often has a patient, with one of the conditions stated below, presented to you first (i.e. the patient was not referred)?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Scoliosis	Always	3	6.2%	14	16.1%
	Frequently	14	29.2%	15	17.2%
	Occasionally	21	43.8%	17	19.5%
	Rarely	7	14.6%	19	21.8%
	Never	1	2.1%	16	18.4%
	No answer	2	4.2%	6	6.9%
	N/A	0	0.0%	0	0.0%
Skin problems	Always	2	4.2%	2	2.3%
	Frequently	3	6.2%	3	3.4%
	Occasionally	0	0.0%	2	2.3%
	Rarely	7	14.6%	16	18.4%
	Never	33	68.8%	57	65.5%
	No answer	3	6.2%	7	8.0%
	N/A	0	0.0%	0	0.0%
Spinal condition	Always	9	18.8%	20	23.0%
	Frequently	25	52.1%	34	39.1%
	Occasionally	9	18.8%	8	9.2%
	Rarely	2	4.2%	6	6.9%
	Never	2	4.2%	15	17.2%
	No answer	1	2.1%	4	4.6%
	N/A	0	0.0%	0	0.0%
Sports-related injury	Always	12	25.0%	29	33.3%
	Frequently	28	58.3%	29	33.3%
	Occasionally	5	10.4%	6	6.9%
	Rarely	1	2.1%	6	6.9%
	Never	0	0.0%	13	14.9%
	No answer	2	4.2%	4	4.6%
	N/A	0	0.0%	0	0.0%
Sprain	Always	8	16.7%	29	33.3%
	Frequently	22	45.8%	30	34.5%
	Occasionally	12	25.0%	8	9.2%
	Rarely	4	8.3%	5	5.7%
	Never	1	2.1%	12	13.8%
	No answer	1	2.1%	3	3.4%
	N/A	0	0.0%	0	0.0%
Thoracic pain	Always	18	37.5%	25	28.7%
	Frequently	27	56.2%	35	40.2%
	Occasionally	2	4.2%	7	8.0%
	Rarely	0	0.0%	5	5.7%
	Never	0	0.0%	11	12.6%
	No answer	1	2.1%	4	4.6%
	N/A	0	0.0%	0	0.0%
Whiplash	Always	10	20.8%	22	25.3%
	Frequently	24	50.0%	30	34.5%
	Occasionally	9	18.8%	9	10.3%
	Rarely	4	8.3%	8	9.2%
	Never	0	0.0%	13	14.9%
	No answer	1	2.1%	5	5.7%
	N/A	0	0.0%	0	0.0%

4.5.3.16 How often certain conditions were referred

Table 4.29 shows how frequently patients with certain conditions were referred from chiropractors and physiotherapists respectively.

Table 4.29: How often certain conditions were referred

Q36 In the last 6 months, how often did you refer the conditions stated below?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Abdominal condition	Always	8	16.7%	16	18.4%
	Frequently	12	25.0%	8	9.2%
	Occasionally	13	27.1%	6	6.9%
	Rarely	5	10.4%	10	11.5%
	Never	7	14.6%	37	42.5%
	No answer	3	6.2%	10	11.5%
	N/A	0	0.0%	0	0.0%
Arthritis	Always	0	0.0%	2	2.3%
	Frequently	4	8.3%	13	14.9%
	Occasionally	18	37.5%	33	37.9%
	Rarely	13	27.1%	16	18.4%
	Never	8	16.7%	17	19.5%
	No answer	5	10.4%	6	6.9%
	N/A	0	0.0%	0	0.0%
Cardiovascular condition	Always	14	29.2%	18	20.7%
	Frequently	10	20.8%	8	9.2%
	Occasionally	10	20.8%	8	9.2%
	Rarely	2	4.2%	14	16.1%
	Never	10	20.8%	29	33.3%
	No answer	2	4.2%	10	11.5%
	N/A	0	0.0%	0	0.0%
Endocrine condition	Always	10	20.8%	15	17.2%
	Frequently	7	14.6%	8	9.2%
	Occasionally	10	20.8%	4	4.6%
	Rarely	5	10.4%	11	12.6%
	Never	13	27.1%	40	46.0%
	No answer	3	6.2%	9	10.3%
	N/A	0	0.0%	0	0.0%
Joint condition	Always	0	0.0%	6	6.9%
	Frequently	1	2.1%	10	11.5%
	Occasionally	9	18.8%	31	35.6%
	Rarely	21	43.8%	16	18.4%
	Never	12	25.0%	17	19.5%
	No answer	5	10.4%	7	8.0%
	N/A	0	0.0%	0	0.0%
Headaches	Always	2	4.2%	3	3.4%
	Frequently	0	0.0%	10	11.5%
	Occasionally	12	25.0%	28	32.2%
	Rarely	20	41.7%	19	21.8%
	Never	9	18.8%	17	19.5%
	No answer	5	10.4%	10	11.5%
	N/A	0	0.0%	0	0.0%
LBP	Always	1	2.1%	3	3.4%
	Frequently	0	0.0%	13	14.9%
	Occasionally	11	22.9%	33	37.9%
	Rarely	20	41.7%	16	18.4%
	Never	13	27.1%	12	13.8%
	No answer	3	6.2%	10	11.5%
	N/A	0	0.0%	0	0.0%
Mild fracture	Always	7	14.6%	19	21.8%
	Frequently	10	20.8%	17	19.5%
	Occasionally	16	33.3%	13	14.9%
	Rarely	7	14.6%	13	14.9%
	Never	4	8.3%	16	18.4%
	No answer	4	8.3%	9	10.3%
	N/A	0	0.0%	0	0.0%

Table 4.29: How often certain conditions were referred continued...

Q36 In the last 6 months, how often did you refer the conditions related to below?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Neck pain	Always	2	4.2%	3	3.4%
	Frequently	0	0.0%	14	16.1%
	Occasionally	5	10.4%	30	34.5%
	Rarely	20	41.7%	20	23.0%
	Never	17	35.4%	12	13.8%
	No answer	4	8.3%	8	9.2%
	N/A	0	0.0%	0	0.0%
Neurological condition	Always	1	2.1%	8	9.2%
	Frequently	6	12.5%	17	19.5%
	Occasionally	24	50.0%	26	29.9%
	Rarely	10	20.8%	16	18.4%
	Never	4	8.3%	13	14.9%
	No answer	3	6.2%	7	8.0%
	N/A	0	0.0%	0	0.0%
Respiratory condition	Always	4	8.3%	5	5.7%
	Frequently	11	22.9%	21	24.1%
	Occasionally	10	20.8%	17	19.5%
	Rarely	7	14.6%	21	24.1%
	Never	13	27.1%	15	17.2%
	No answer	3	6.2%	8	9.2%
	N/A	0	0.0%	0	0.0%
Scoliosis	Always	2	4.2%	3	3.4%
	Frequently	2	4.2%	9	10.3%
	Occasionally	7	14.6%	21	24.1%
	Rarely	16	33.3%	25	28.7%
	Never	17	35.4%	20	23.0%
	No answer	4	8.3%	9	10.3%
	N/A	0	0.0%	0	0.0%
Skin problems	Always	6	12.5%	15	17.2%
	Frequently	12	25.0%	6	6.9%
	Occasionally	7	14.6%	8	9.2%
	Rarely	3	6.2%	8	9.2%
	Never	16	33.3%	40	46.0%
	No answer	4	8.3%	10	11.5%
	N/A	0	0.0%	0	0.0%
Spinal condition	Always	1	2.1%	8	9.2%
	Frequently	8	16.7%	21	24.1%
	Occasionally	17	35.4%	28	32.2%
	Rarely	11	22.9%	9	10.3%
	Never	7	14.6%	14	16.1%
	No answer	4	8.3%	7	8.0%
	N/A	0	0.0%	0	0.0%
Sports-related injury	Always	0	0.0%	2	2.3%
	Frequently	3	6.2%	12	13.8%
	Occasionally	11	22.9%	31	35.6%
	Rarely	16	33.3%	16	18.4%
	Never	14	29.2%	14	16.1%
	No answer	4	8.3%	12	13.8%
	N/A	0	0.0%	0	0.0%
Sprain	Always	0	0.0%	2	2.3%
	Frequently	3	6.2%	7	8.0%
	Occasionally	8	16.7%	20	23.0%
	Rarely	21	43.8%	29	33.3%
	Never	12	25.0%	19	21.8%
	No answer	4	8.3%	10	11.5%
	N/A	0	0.0%	0	0.0%

Table 4.29: How often certain conditions were referred continued...

Q36 In the last 6 months, how often did you refer the conditions related to below?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Thoracic pain	Always	0	0.0%	4	4.6%
	Frequently	1	2.1%	10	11.5%
	Occasionally	5	10.4%	22	25.3%
	Rarely	20	41.7%	27	31.0%
	Never	17	35.4%	15	17.2%
	No answer	5	10.4%	9	10.3%
	N/A	0	0.0%	0	0.0%
Whiplash	Always	0	0.0%	2	2.3%
	Frequently	3	6.2%	16	18.4%
	Occasionally	5	10.4%	18	20.7%
	Rarely	18	37.5%	23	26.4%
	Never	18	37.5%	19	21.8%
	No answer	4	8.3%	9	10.3%
	N/A	0	0.0%	0	0.0%

4.5.3.17 The health care provider who received the majority of the chiropractor and physiotherapist's referrals respectively

Table 4.30 states which health care provider received the majority of the referrals from a chiropractor and a physiotherapist in the sample, within the last 6 months.

Table 4.30: The health care provider who received the majority of the chiropractor and physiotherapist's referrals respectively.

Q37 Please indicate which health care provider received the majority of your referrals for each of the conditions stated below.		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Abdominal condition	Chiropractor	1	2.1%	1	1.1%
	GP	31	64.6%	55	63.2%
	Homeopath	6	12.5%	2	2.3%
	Physiotherapist	0	0.0%	2	2.3%
	No answer	10	20.8%	27	31.0%
Arthritis	Chiropractor	6	12.5%	2	2.3%
	GP	15	31.2%	53	60.9%
	Homeopath	15	31.2%	3	3.4%
	Physiotherapist	1	2.1%	8	9.2%
	No answer	11	22.9%	21	24.1%
Cardiovascular condition	Chiropractor	1	2.1%	1	1.1%
	GP	35	72.9%	55	63.2%
	Homeopath	2	4.2%	1	1.1%
	Physiotherapist	0	0.0%	3	3.4%
	No answer	10	20.8%	27	31.0%
Endocrine condition	Chiropractor	0	0.0%	1	1.1%
	GP	28	58.3%	51	58.6%
	Homeopath	8	16.7%	3	3.4%
	Physiotherapist	1	2.1%	4	4.6%
	No answer	11	22.9%	28	32.2%
Joint condition	Chiropractor	11	22.9%	6	6.9%
	GP	6	12.5%	42	48.3%
	Homeopath	3	6.2%	0	0.0%
	Physiotherapist	11	22.9%	14	16.1%
	No answer	17	35.4%	25	28.7%
Headaches	Chiropractor	11	22.9%	3	3.4%
	GP	14	29.2%	53	60.9%
	Homeopath	9	18.8%	1	1.1%

	Physiotherapist	0	0.0%	9	10.3%
	No answer	14	29.2%	21	24.1%

Table 4.30: The health care provider who received the majority of the chiropractor and physiotherapist's referrals respectively

Q37 Please indicate which health care provider received the majority of your referrals for each of the conditions related to below.		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
LBP	Chiropractor	15	31.2%	11	12.6%
	GP	10	20.8%	42	48.3%
	Homeopath	3	6.2%	1	1.1%
	Physiotherapist	3	6.2%	10	11.5%
	No answer	17	35.4%	23	26.4%
Mild fracture	Chiropractor	2	4.2%	2	2.3%
	GP	30	62.5%	54	62.1%
	Homeopath	1	2.1%	1	1.1%
	Physiotherapist	2	4.2%	6	6.9%
	No answer	13	27.1%	24	27.6%
Neck pain	Chiropractor	17	35.4%	11	12.6%
	GP	7	14.6%	39	44.8%
	Homeopath	1	2.1%	1	1.1%
	Physiotherapist	4	8.3%	13	14.9%
	No answer	19	39.6%	23	26.4%
Neurological condition	Chiropractor	8	16.7%	1	1.1%
	GP	23	47.9%	49	56.3%
	Homeopath	2	4.2%	2	2.3%
	Physiotherapist	2	4.2%	12	13.8%
	No answer	13	27.1%	23	26.4%
Respiratory condition	Chiropractor	0	0.0%	1	1.1%
	GP	29	60.4%	53	60.9%
	Homeopath	3	6.2%	1	1.1%
	Physiotherapist	2	4.2%	10	11.5%
	No answer	14	29.2%	22	25.3%
Scoliosis	Chiropractor	13	27.1%	7	8.0%
	GP	7	14.6%	40	46.0%
	Homeopath	4	8.3%	1	1.1%
	Physiotherapist	7	14.6%	9	10.3%
	No answer	17	35.4%	30	34.5%
Skin problems	Chiropractor	2	4.2%	2	2.3%
	GP	21	43.8%	51	58.6%
	Homeopath	10	20.8%	3	3.4%
	Physiotherapist	1	2.1%	5	5.7%
	No answer	14	29.2%	26	29.9%
Spinal condition	Chiropractor	14	29.2%	2	2.3%
	GP	12	25.0%	49	56.3%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	6	12.5%	12	13.8%
	No answer	16	33.3%	24	27.6%
Sports-related injury	Chiropractor	11	22.9%	2	2.3%
	GP	5	10.4%	41	47.1%
	Homeopath	1	2.1%	0	0.0%
	Physiotherapist	14	29.2%	16	18.4%
	No answer	17	35.4%	28	32.2%
Sprain	Chiropractor	7	14.6%	2	2.3%
	GP	7	14.6%	44	50.6%
	Homeopath	2	4.2%	1	1.1%
	Physiotherapist	14	29.2%	13	14.9%
	No answer	18	37.5%	27	31.0%
Thoracic pain	Chiropractor	14	29.2%	11	12.6%
	GP	9	18.8%	39	44.8%
	Homeopath	1	2.1%	1	1.1%
	Physiotherapist	6	12.5%	11	12.6%
	No answer	18	37.5%	25	28.7%
Whiplash	Chiropractor	16	33.3%	6	6.9%
	GP	9	18.8%	44	50.6%
	Homeopath	0	0.0%	1	1.1%

	Physiotherapist	4	8.3%	11	12.6%
	No answer	19	39.6%	25	28.7%

4.5.3.18 Best equipped to treat the listed conditions

Table 4.31 showsthe chiropractors and physiotherapists' perceptions as to which practitioner is best equipped to treat the listed conditions.

Table 4.31: Best equipped to treat the listed conditions

Q38 Who do you think is the best equipped to treat conditions related to below?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Abdominal condition	Chiropractor	1	2.1%	0	0.0%
	GP	36	75.0%	72	82.8%
	Homeopath	9	18.8%	4	4.6%
	Physiotherapist	0	0.0%	4	4.6%
	No answer	2	4.2%	7	8.0%
Arthritis	Chiropractor	26	54.2%	1	1.1%
	GP	5	10.4%	17	19.5%
	Homeopath	10	20.8%	2	2.3%
	Physiotherapist	4	8.3%	61	70.1%
	No answer	3	6.2%	6	6.9%
Cardiovascular condition	Chiropractor	1	2.1%	0	0.0%
	GP	43	89.6%	71	81.6%
	Homeopath	1	2.1%	2	2.3%
	Physiotherapist	0	0.0%	7	8.0%
	No answer	3	6.2%	7	8.0%
Endocrine condition	Chiropractor	1	2.1%	0	0.0%
	GP	28	58.3%	64	73.6%
	Homeopath	16	33.3%	12	13.8%
	Physiotherapist	0	0.0%	4	4.6%
	No answer	3	6.2%	7	8.0%
Joint condition	Chiropractor	40	83.3%	4	4.6%
	GP	1	2.1%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	5	10.4%	74	85.1%
	No answer	2	4.2%	6	6.9%
Headaches	Chiropractor	44	91.7%	1	1.1%
	GP	1	2.1%	9	10.3%
	Homeopath	1	2.1%	0	0.0%
	Physiotherapist	0	0.0%	71	81.6%
	No answer	2	4.2%	6	6.9%
LBP	Chiropractor	44	91.7%	3	3.4%
	GP	2	4.2%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	0	0.0%	75	86.2%
	No answer	2	4.2%	6	6.9%
Mild fracture	Chiropractor	13	27.1%	0	0.0%
	GP	27	56.2%	30	34.5%
	Homeopath	1	2.1%	1	1.1%
	Physiotherapist	3	6.2%	49	56.3%
	No answer	4	8.3%	7	8.0%
Neck pain	Chiropractor	45	93.8%	2	2.3%
	GP	1	2.1%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	0	0.0%	76	87.4%
	No answer	2	4.2%	6	6.9%
Neurological condition	Chiropractor	34	70.8%	0	0.0%
	GP	10	20.8%	16	18.4%

	Homeopath	1	2.1%	0	0.0%
	Physiotherapist	0	0.0%	66	75.9%
	No answer	3	6.2%	5	5.7%

Table 4.31: Best equipped to treat the listed conditions.

Q38 Who do you think is the best equipped to treat conditions stated below?		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Respiratory condition	Chiropractor	1	2.1%	0	0.0%
	GP	37	77.1%	32	36.8%
	Homeopath	6	12.5%	1	1.1%
	Physiotherapist	2	4.2%	47	54.0%
	No answer	2	4.2%	7	8.0%
Scoliosis	Chiropractor	43	89.6%	9	10.3%
	GP	1	2.1%	10	11.5%
	Homeopath	0	0.0%	1	1.1%
	Physiotherapist	2	4.2%	61	70.1%
	No answer	2	4.2%	6	6.9%
Skin problems	Chiropractor	2	4.2%	0	0.0%
	GP	24	50.0%	58	66.7%
	Homeopath	20	41.7%	10	11.5%
	Physiotherapist	0	0.0%	13	14.9%
	No answer	2	4.2%	6	6.9%
Spinal condition	Chiropractor	40	83.3%	3	3.4%
	GP	4	8.3%	14	16.1%
	Homeopath	1	2.1%	1	1.1%
	Physiotherapist	1	2.1%	63	72.4%
	No answer	2	4.2%	6	6.9%
Sports-related injury	Chiropractor	39	81.2%	1	1.1%
	GP	1	2.1%	3	3.4%
	Homeopath	1	2.1%	0	0.0%
	Physiotherapist	5	10.4%	77	88.5%
	No answer	2	4.2%	6	6.9%
Sprain	Chiropractor	34	70.8%	2	2.3%
	GP	2	4.2%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	10	20.8%	76	87.4%
	No answer	2	4.2%	6	6.9%
Thoracic pain	Chiropractor	40	85.1%	7	8.0%
	GP	4	8.5%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	1	2.1%	71	81.6%
	No answer	2	4.3%	6	6.9%
Whiplash	Chiropractor	43	89.6%	1	1.1%
	GP	3	6.2%	3	3.4%
	Homeopath	0	0.0%	0	0.0%
	Physiotherapist	0	0.0%	76	87.4%
	No answer	2	4.2%	7	8.0%

4.5.3.19 Which health care provider is able to treat the listed conditions

Table 4.32 states which practitioner(s) is(are) able to treat the listed conditions within their scope of practice, according to the sampled chiropractors and physiotherapists.

Table 4.32: Which health care provider is able to treat the listed conditions

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Abdominal condition	GP	4	8.3%	27	31.0%
	Physiotherapist	0	0.0%	2	2.3%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Homeopath	5	10.4%	2	2.3%
	Chiropractor, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	0	0.0%	6	6.9%
	Chiropractor and Physiotherapist	1	2.1%	0	0.0%
	GP and Homeopath	31	64.6%	33	37.9%
	GP and Physiotherapist	0	0.0%	8	9.2%
	GP, Homeopath and Physiotherapist	0	0.0%	3	3.4%
	No answer	5	10.4%	3	3.4%
Arthritis	Chiropractor	1	2.1%	0	0.0%
	Physiotherapist	0	0.0%	10	11.5%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Homeopath	6	12.5%	0	0.0%
	Chiropractor, GP and Physiotherapist	2	4.2%	8	9.2%
	Chiropractor, Homeopath and Physiotherapist	3	6.2%	2	2.3%
	Chiropractor, GP, Homeopath and Physiotherapist	21	43.8%	25	28.7%
	Chiropractor and Physiotherapist	5	10.4%	5	5.7%
	GP and Homeopath	4	8.3%	0	0.0%
	GP and Physiotherapist	0	0.0%	16	18.4%
	GP, Homeopath and Physiotherapist	0	0.0%	13	14.9%
	Homeopath and Physiotherapist	0	0.0%	3	3.4%
	No answer	4	8.3%	3	3.4%
Cardiovascular condition	GP	11	22.9%	23	26.4%
	Homeopath	0	0.0%	1	1.1%
	Physiotherapist	0	0.0%	2	2.3%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Homeopath	1	2.1%	0	0.0%
	Chiropractor, GP and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	3	6.2%	3	3.4%
	Chiropractor and Physiotherapist	1	2.1%	0	0.0%
	GP and Homeopath	26	54.2%	13	14.9%
	GP and Physiotherapist	1	2.1%	21	24.1%
	GP, Homeopath and Physiotherapist	0	0.0%	18	20.7%
	No answer	4	8.3%	3	3.4%
Endocrine condition	GP	4	8.3%	28	32.2%
	Homeopath	0	0.0%	5	5.7%
	Physiotherapist	0	0.0%	2	2.3%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Homeopath	1	2.1%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	1	2.1%	0	0.0%
	Chiropractor and Physiotherapist	1	2.1%	1	1.1%
	GP and Homeopath	33	68.8%	34	39.1%
	GP and Physiotherapist	0	0.0%	6	6.9%
	GP, Homeopath and Physiotherapist	0	0.0%	5	5.7%
	No answer	6	12.5%	4	4.6%

Table 4.32: Which health care provider is able to treat the listed conditions continued ....

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Joint condition	Chiropractor	5	10.4%	1	1.1%
	Physiotherapist	0	0.0%	16	18.4%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Physiotherapist	5	10.4%	22	25.3%
	Chiropractor, Homeopath and Physiotherapist	1	2.1%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	6	12.5%	9	10.3%
	Chiropractor and Physiotherapist	24	50.0%	18	20.7%
	GP and Homeopath	1	2.1%	0	0.0%
	GP and Physiotherapist	0	0.0%	15	17.2%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	5	10.4%	3	3.4%
Headaches	Chiropractor	4	8.3%	0	0.0%
	Physiotherapist	0	0.0%	10	11.5%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Homeopath	3	6.2%	0	0.0%
	Chiropractor, GP and Physiotherapist	4	8.3%	19	21.8%
	Chiropractor and Homeopath	1	2.1%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	21	43.8%	27	31.0%
	Chiropractor and Physiotherapist	8	16.7%	15	17.2%
	GP and Homeopath	1	2.1%	1	1.1%
	GP and Physiotherapist	0	0.0%	9	10.3%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	3	3.4%
LBP	Chiropractor	8	16.7%	0	0.0%
	GP	0	0.0%	1	1.1%
	Physiotherapist	0	0.0%	7	8.0%
	Chiropractor and GP	2	4.2%	3	3.4%
	Chiropractor, GP and Physiotherapist	11	22.9%	36	41.4%
	Chiropractor, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	10	20.8%	10	11.5%
	Chiropractor and Physiotherapist	12	25.0%	20	23.0%
	GP and Physiotherapist	0	0.0%	5	5.7%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	5	10.4%	3	3.4%
Mild fracture	Chiropractor	2	4.2%	0	0.0%
	GP	9	18.8%	10	11.5%
	Physiotherapist	0	0.0%	16	18.4%
	Chiropractor and GP	4	8.3%	2	2.3%
	Chiropractor, GP and Physiotherapist	7	14.6%	10	11.5%
	Chiropractor, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	4	8.3%	4	4.6%
	Chiropractor and Physiotherapist	8	16.7%	2	2.3%
	GP and Homeopath	5	10.4%	0	0.0%
	GP and Physiotherapist	2	4.2%	36	41.4%
	GP, Homeopath and Physiotherapist	1	2.1%	3	3.4%
	No answer	6	12.5%	3	3.4%

Table 4.32: Which health care provider is able to treat the listed conditions continued ....

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Neck pain	Chiropractor	7	14.6%	0	0.0%
	GP	1	2.1%	0	0.0%
	Physiotherapist	0	0.0%	8	9.2%
	Chiropractor and GP	3	6.2%	2	2.3%
	Chiropractor, GP and Physiotherapist	11	22.9%	35	40.2%
	Chiropractor, GP, Homeopath and Physiotherapist	11	22.9%	11	12.6%
	Chiropractor and Physiotherapist	11	22.9%	21	24.1%
	GP and Physiotherapist	0	0.0%	6	6.9%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	3	3.4%
Neurological condition	Chiropractor	4	8.3%	0	0.0%
	GP	1	2.1%	0	0.0%
	Physiotherapist	0	0.0%	19	21.8%
	Chiropractor and GP	12	25.0%	2	2.3%
	Chiropractor, GP and Homeopath	2	4.2%	0	0.0%
	Chiropractor, GP and Physiotherapist	8	16.7%	7	8.0%
	Chiropractor, Homeopath and Physiotherapist	1	2.1%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	10	20.8%	10	11.5%
	Chiropractor and Physiotherapist	3	6.2%	4	4.6%
	GP and Homeopath	3	6.2%	0	0.0%
	GP and Physiotherapist	0	0.0%	38	43.7%
	GP, Homeopath and Physiotherapist	0	0.0%	4	4.6%
	No answer	4	8.3%	3	3.4%
Respiratory condition	GP	5	10.4%	0	0.0%
	Physiotherapist	0	0.0%	13	14.9%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Homeopath	3	6.2%	0	0.0%
	Chiropractor, GP and Physiotherapist	1	2.1%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	2	4.2%	2	2.3%
	Chiropractor and Physiotherapist	3	6.2%	0	0.0%
	GP and Homeopath	16	33.3%	0	0.0%
	GP and Physiotherapist	1	2.1%	38	43.7%
	GP, Homeopath and Physiotherapist	10	20.8%	28	32.2%
	Homeopath and Physiotherapist	2	4.2%	0	0.0%
	No answer	4	8.3%	3	3.4%

Table 4.32: Which health care provider is able to treat the listed conditions continued ....

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Scoliosis	Chiropractor	7	14.6%	0	0.0%
	GP	1	2.1%	1	1.1%
	Physiotherapist	0	0.0%	12	13.8%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Physiotherapist	5	10.4%	27	31.0%
	Chiropractor, GP, Homeopath and Physiotherapist	3	6.2%	5	5.7%
	Chiropractor and Physiotherapist	23	47.9%	25	28.7%
	GP and Homeopath	3	6.2%	0	0.0%
	GP and Physiotherapist	0	0.0%	9	10.3%
	GP, Homeopath and Physiotherapist	0	0.0%	2	2.3%
	Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	3	3.4%
Skin problems	GP	4	8.3%	27	31.0%
	Homeopath	2	4.2%	1	1.1%
	Physiotherapist	0	0.0%	2	2.3%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Homeopath	1	2.1%	1	1.1%
	Chiropractor, GP and Physiotherapist	1	2.1%	2	2.3%
	Chiropractor, GP, Homeopath and Physiotherapist	2	4.2%	1	1.1%
	Chiropractor and Physiotherapist	1	2.1%	0	0.0%
	GP and Homeopath	31	64.6%	35	40.2%
	GP and Physiotherapist	0	0.0%	4	4.6%
	GP, Homeopath and Physiotherapist	0	0.0%	8	9.2%
	No answer	4	8.3%	4	4.6%
Spinal condition	Chiropractor	6	12.5%	0	0.0%
	GP	0	0.0%	1	1.1%
	Physiotherapist	0	0.0%	17	19.5%
	Chiropractor and GP	3	6.2%	2	2.3%
	Chiropractor, GP and Homeopath	1	2.1%	0	0.0%
	Chiropractor, GP and Physiotherapist	10	20.8%	25	28.7%
	Chiropractor, Homeopath and Physiotherapist	2	4.2%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	6	12.5%	6	6.9%
	Chiropractor and Physiotherapist	13	27.1%	8	9.2%
	GP and Homeopath	2	4.2%	0	0.0%
	GP and Physiotherapist	0	0.0%	23	26.4%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	5	10.4%	4	4.6%

Table 4.32: Which health care provider is able to treat the listed conditions continued ....

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Sports-related injury	Chiropractor	4	8.3%	0	0.0%
	Physiotherapist	0	0.0%	17	19.5%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Physiotherapist	8	16.7%	25	28.7%
	Chiropractor, Homeopath and Physiotherapist	1	2.1%	0	0.0%
	Chiropractor, GP, Homeopath and Physiotherapist	8	16.7%	7	8.0%
	Chiropractor and Physiotherapist	21	43.8%	13	14.9%
	GP and Homeopath	1	2.1%	1	1.1%
	GP and Physiotherapist	0	0.0%	19	21.8%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	2	2.3%
Sprain	Chiropractor	4	8.3%	0	0.0%
	GP	0	0.0%	2	2.3%
	Physiotherapist	2	4.2%	20	23.0%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Physiotherapist	5	10.4%	17	19.5%
	Chiropractor, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	8	16.7%	9	10.3%
	Chiropractor and Physiotherapist	24	50.0%	10	11.5%
	GP and Homeopath	0	0.0%	1	1.1%
	GP and Physiotherapist	0	0.0%	21	24.1%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	3	3.4%
Thoracic pain	Chiropractor	6	12.5%	0	0.0%
	GP	1	2.1%	1	1.1%
	Physiotherapist	0	0.0%	8	9.2%
	Chiropractor and GP	2	4.2%	2	2.3%
	Chiropractor, GP and Physiotherapist	6	12.5%	36	41.4%
	Chiropractor, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	Chiropractor, GP, Homeopath and Physiotherapist	13	27.1%	10	11.5%
	Chiropractor and Physiotherapist	16	33.3%	18	20.7%
	GP and Physiotherapist	0	0.0%	5	5.7%
	GP, Homeopath and Physiotherapist	0	0.0%	1	1.1%
	No answer	4	8.3%	5	5.7%

Table 4.32: Which health care provider is able to treat the listed conditions continued ....

Q 39		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Whiplash	Chiropractor	6	12.5%	0	0.0%
	GP	0	0.0%	1	1.1%
	Physiotherapist	0	0.0%	13	14.9%
	Chiropractor and GP	1	2.1%	2	2.3%
	Chiropractor, GP and Physiotherapist	7	14.6%	34	39.1%
	Chiropractor, GP, Homeopath and Physiotherapist	10	20.8%	7	8.0%
	Chiropractor and Physiotherapist	20	41.7%	13	14.9%
	GP and Physiotherapist	0	0.0%	12	13.8%
	GP, Homeopath and Physiotherapist	0	0.0%	2	2.3%
	No answer	4	8.3%	3	3.4%

4.5.3.20 Factors influencing the decision to refer a patient

Table 4.33 shows what factors affect a chiropractors and physiotherapistsdecision to refer a patient.

Table 4.33: Factors influencing the decision to refer a patient

Q40 Factors that influence your decision to refer a patient to another health care provider		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Patient request	Strongly agree	22	45.8%	36	41.4%
	Agree	20	41.7%	39	44.8%
	No impact	4	8.3%	3	3.4%
	Disagree	0	0.0%	4	4.6%
	Strongly disagree	0	0.0%	1	1.1%
	No answer	2	4.2%	4	4.6%
Patient demographic	Strongly agree	1	2.1%	10	11.5%
	Agree	19	39.6%	31	35.6%
	No impact	20	41.7%	30	34.5%
	Disagree	3	6.2%	7	8.0%
	Strongly disagree	3	6.2%	3	3.4%
	No answer	2	4.2%	6	6.9%
Past referral from the other profession	Strongly agree	4	8.3%	12	13.8%
	Agree	29	60.4%	41	47.1%
	No impact	13	27.1%	26	29.9%
	Disagree	0	0.0%	1	1.1%
	Strongly disagree	0	0.0%	2	2.3%
	No answer	2	4.2%	5	5.7%
Their gender	Strongly agree	0	0.0%	2	2.3%
	Agree	6	12.5%	4	4.6%
	No impact	30	62.5%	62	71.3%
	Disagree	2	4.2%	5	5.7%
	Strongly disagree	8	16.7%	11	12.6%
	No answer	2	4.2%	3	3.4%
Their practice location	Strongly agree	3	6.2%	11	12.6%
	Agree	29	60.4%	48	55.2%
	No impact	10	20.8%	18	20.7%
	Disagree	4	8.3%	5	5.7%
	Strongly disagree	0	0.0%	2	2.3%

	No answer	2	4.2%	3	3.4%

Table 4.33: Factors influencing the decision to refer a patient continued...

Q40 Factors that influence your decision to refer a patient to another health care provider		Occupation			
		Chiropractor		Physiotherapist	
		Count	%	Count	%
Their qualification	Strongly agree	16	33.3%	38	43.7%
	Agree	22	45.8%	33	37.9%
	No impact	8	16.7%	12	13.8%
	Disagree	0	0.0%	0	0.0%
	Strongly disagree	0	0.0%	1	1.1%
	No answer	2	4.2%	3	3.4%
Their time in practice (i.e. years experience)	Strongly agree	7	14.6%	19	21.8%
	Agree	21	43.8%	47	54.0%
	No impact	18	37.5%	16	18.4%
	Disagree	0	0.0%	1	1.1%
	Strongly disagree	0	0.0%	1	1.1%
	No answer	2	4.2%	3	3.4%
Your family/friend recommendation	Strongly agree	6	12.5%	11	12.6%
	Agree	20	41.7%	28	32.2%
	No impact	18	37.5%	36	41.4%
	Disagree	1	2.1%	3	3.4%
	Strongly disagree	1	2.1%	5	5.7%
	No answer	2	4.2%	4	4.6%
Your gender	Strongly agree	0	0.0%	1	1.1%
	Agree	8	16.7%	3	3.4%
	No impact	31	64.6%	65	74.7%
	Disagree	1	2.1%	6	6.9%
	Strongly disagree	6	12.5%	9	10.3%
	No answer	2	4.2%	3	3.4%
Your knowledge of the other profession	Strongly agree	16	33.3%	32	36.8%
	Agree	24	50.0%	42	48.3%
	No impact	6	12.5%	9	10.3%
	Disagree	0	0.0%	1	1.1%
	Strongly disagree	0	0.0%	0	0.0%
	No answer	2	4.2%	3	3.4%
Your perception/personal experience	Strongly agree	14	29.2%	27	31.0%
	Agree	28	58.3%	46	52.9%
	No impact	4	8.3%	9	10.3%
	Disagree	0	0.0%	1	1.1%
	Strongly disagree	0	0.0%	0	0.0%
	No answer	2	4.2%	4	4.6%
Your practice location	Strongly agree	3	6.2%	12	13.8%
	Agree	23	47.9%	43	49.4%
	No impact	19	39.6%	24	27.6%
	Disagree	1	2.1%	2	2.3%
	Strongly disagree	0	0.0%	1	1.1%
	No answer	2	4.2%	5	5.7%
Your scope of practice	Strongly agree	9	18.8%	30	34.5%
	Agree	30	62.5%	48	55.2%
	No impact	7	14.6%	5	5.7%
	Disagree	0	0.0%	0	0.0%
	Strongly disagree	0	0.0%	0	0.0%
	No answer	2	4.2%	4	4.6%
Your time in practice (i.e. years experience)	Strongly agree	6	12.5%	17	19.5%
	Agree	19	39.6%	43	49.4%
	No impact	18	37.5%	22	25.3%
	Disagree	2	4.2%	1	1.1%
	Strongly disagree	1	2.1%	1	1.1%
	No answer	2	4.2%	3	3.4%

4.5.3.21 Responses to certain statements

Table 4.34 shows the participants' reaction to the following statements.

Table 4.34: Responses to certain statements

Q41		Occupation			
		Chiropractor		Physiotherapist	
		Count	Column N %	Count	Column N %
Chiropractic and Physiotherapy are similar professions (in terms of professional abilities).	Strongly agree	4	8.3%	5	5.7%
	Agree	26	54.2%	32	36.8%
	Disagree	11	22.9%	32	36.8%
	Strongly disagree	5	10.4%	15	17.2%
	No answer	2	4.2%	3	3.4%
Chiropractic and Physiotherapy are complimentary professions.	Strongly agree	6	12.5%	5	5.7%
	Agree	33	68.8%	49	56.3%
	Disagree	4	8.3%	24	27.6%
	Strongly disagree	3	6.2%	5	5.7%
	No answer	2	4.2%	4	4.6%
Physiotherapy should be limited to the treatment of myofascial conditions.	Strongly agree	5	10.4%	0	0.0%
	Agree	12	25.0%	1	1.1%
	Disagree	25	52.1%	15	17.2%
	Strongly disagree	4	8.3%	69	79.3%
	No answer	2	4.2%	2	2.3%
Chiropractic should be limited to the treatment of articular dysfunction.	Strongly agree	2	4.2%	9	10.3%
	Agree	0	0.0%	33	37.9%
	Disagree	28	58.3%	26	29.9%
	Strongly disagree	16	33.3%	15	17.2%
	No answer	2	4.2%	4	4.6%
Chiropractic increases stroke incidence in patients when treating neck pain.	Strongly agree	0	0.0%	9	10.3%
	Agree	3	6.2%	22	25.3%
	Disagree	16	33.3%	43	49.4%
	Strongly disagree	27	56.2%	6	6.9%
	No answer	2	4.2%	7	8.0%
All Physiotherapists can perform the same treatment as Chiropractors without additional training.	Strongly agree	0	0.0%	1	1.1%
	Agree	1	2.1%	8	9.2%
	Disagree	9	18.8%	51	58.6%
	Strongly disagree	36	75.0%	25	28.7%
	No answer	2	4.2%	2	2.3%
Chiropractors can perform the same treatments as all Physiotherapists without additional training.	Strongly agree	5	10.4%	0	0.0%
	Agree	7	14.6%	1	1.1%
	Disagree	22	45.8%	40	46.0%
	Strongly disagree	12	25.0%	44	50.6%
	No answer	2	4.2%	2	2.3%
Chiropractors are able to treat extremity joint dysfunction.	Strongly agree	30	62.5%	5	5.7%
	Agree	14	29.2%	40	46.0%
	Disagree	0	0.0%	33	37.9%
	Strongly disagree	2	4.2%	6	6.9%
	No answer	2	4.2%	3	3.4%
Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow.	Strongly agree	1	2.1%	15	17.2%
	Agree	8	16.7%	47	54.0%
	Disagree	30	62.5%	20	23.0%
	Strongly disagree	6	12.5%	1	1.1%
	No answer	3	6.2%	4	4.6%
Chiropractic has been shown to achieve better outcomes in the treatment of headaches.	Strongly agree	23	47.9%	1	1.1%
	Agree	21	43.8%	10	11.5%
	Disagree	2	4.2%	58	66.7%
	Strongly disagree	0	0.0%	14	16.1%
	No answer	2	4.2%	4	4.6%

4.5.3.22 What the chiropractor / physiotherapistsays about the other profession when asked about it

Table 4.35 shows what a chiropractor advises his/her patient when asked about physiotherapy, or what a physiotherapist tell his/her patient about chiropractic when asked about it.

Table 4.35: What a physiotherapist or a chiropractitioner advises about the other profession

Q42		Occupation			
		Chiropractor		Physiotherapist	
		Count	Column N %	Count	Column N %
If a patient of yours enquires about Chiropractic (if you are a Physiotherapist) or Physiotherapy (if you are a Chiropractor), do you?	Give your professional opinion	33	68.8%	45	51.7%
	Outline the required professions scope of practice	11	22.9%	19	21.8%
	Say that you do not know enough	1	2.1%	17	19.5%
	Tell the patient that you can treat the same condition	1	2.1%	4	4.6%
	No answer	2	4.2%	2	2.3%

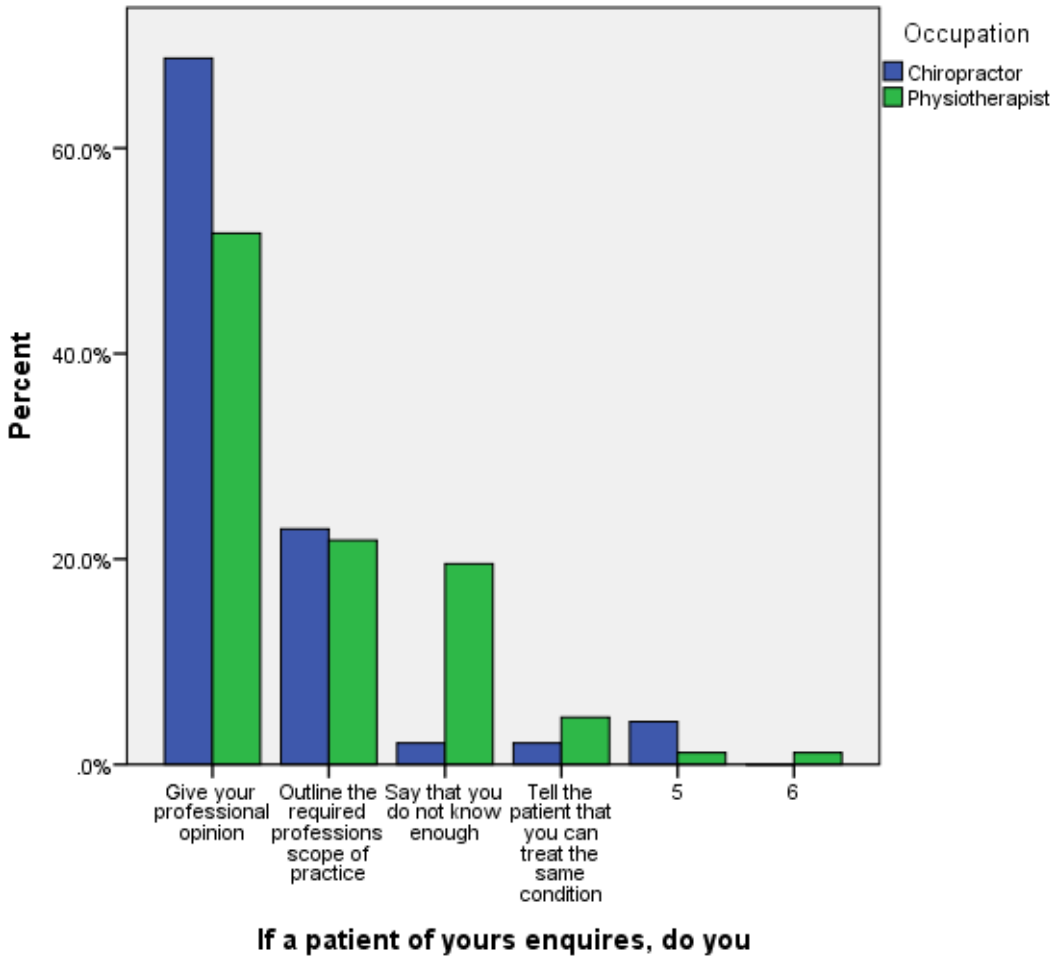


Figure 4.29: What the chiropractor / physiotherapist says about the other profession when asked about it

4.5.3.23 Summary

From Figure 4.22 (Do you refer patients to a chiropractor?), it can be seen that 46% of physiotherapists never refer to a chiropractor, 25% of chiropractors always refer to another chiropractor. In contrast Figure 4.23 (Do you refer patients to a physiotherapist?), 43.8% chiropractors occasionally referred to a physiotherapist, where 24.1% of physiotherapists will occasionally refer to a colleague. It seems that by consensus (Table 4.19), 79.2% of chiropractors and 86.2% of physiotherapists would include a report when referring a patient. The principle reason for referring patients by both provider types was the type of condition (Figure 4.24, Table 4.20 and Table 4.21) with which the patient presents to the practitioners at 66.7% and 42.5% for each of the chiropractor and physiotherapist respectively. Of interest, it is also seen that physiotherapists also refer patients to more qualified health care providers, for more appropriate treatment regimes, because they feel that their scope of practice is limited and because they are seeking a second opinion in patient care. By contrast, chiropractors tend to refer because they take into account patient finances.

In terms of patient care continuity between chiropractors and physiotherapists, it was noted that 20.8% of chiropractors never reported back about the care of a referred patient to their chiropractic colleague, whereas 33.4% always or frequently reported back to the chiropractor from whom they received a patient (Figure 4.25). This contrasts strongly with 39.1% of physiotherapists that never reported back to the chiropractor and 6.8% that reported back always or frequently.

This pattern is mimicked again when reviewing the feedback to physiotherapists who referred patients either to their chiropractic or physiotherapy colleagues. Here 14.2% of chiropractors always or frequently reported back, with 27.1% of chiropractors reporting back occasionally. This places the majority of chiropractors in the affirmative in terms of reporting back to the referring physiotherapist. By contrast, the majority of physiotherapists either “never”, “rarely” or “occasionally” followed up with the referring physiotherapist.

It would, therefore, seem that physiotherapists are less likely to refer patients either to their physiotherapy colleagues and / or chiropractors as compared to chiropractors. This is in contrast to the findings suggested under objective Two, where it was suggested that physiotherapists in this study would be more likely to refer than chiropractors given the demographic factor that were collected in this study. It is therefore suggested that future studies more carefully delineate the referral enablers and detractors that lie beyond the scope of this study. This would enable the future research to enhance our current understanding of the interaction between the professions and how to better enable a positive referral relationship between them.

A letter (Table 4.22) is the most commonly used communication tool when a chiropractor (41.7%) and a physiotherapist (55.2%) report about the patient to the referring practitioner, with email and telephone being the next most common tools utilised differentially between the two professions.

With respect to patient co-management with another chiropractor, the chiropractic respondents noted that 31.2% of their referrals to other chiropractors were returned to them, this is significantly higher than the 18.8% that are never returned to the referring chiropractor by another chiropractor. Physiotherapists, however, reported that 9.2% of their patients returned after they referred them to another chiropractor and a third (33.3%) indicated that their patients never returned from another chiropractor once they had referred them. By contrast, when looking at whether another physiotherapist return patients to the care of the referring health care provider (chiropractor or physiotherapist), approximately 50% of chiropractors indicated that they received the patients back from fellow chiropractors (occasionally, frequently and always), where 39% physiotherapists indicated they received their patients back from physiotherapists (occasionally, frequently and always).

In summary then, referrals made by chiropractors to either provider (chiropractor or physiotherapist), results in 81% of their patients being returned to them, whereas referrals made by physiotherapists to either of the providers resulted in only 48% return of patients to their practice. This may be one reason why physiotherapists are

less likely to refer patients either to their physiotherapy colleagues and / or chiropractors as compared to chiropractors. This will need to be explored more fully in future research. Additionally, this referral pattern may be influenced by the types of conditions seen in the two practice types (viz. chiropractic and physiotherapy), therefore this research also considered the types of conditions seen and how these linked to referrals. To assist in discriminating between practitioner types, homoeopaths (biopsychosocial in paradigm orientation) and GPs (biomedical in paradigm orientation) were added to the responses so a more global view of referral could be analysed.

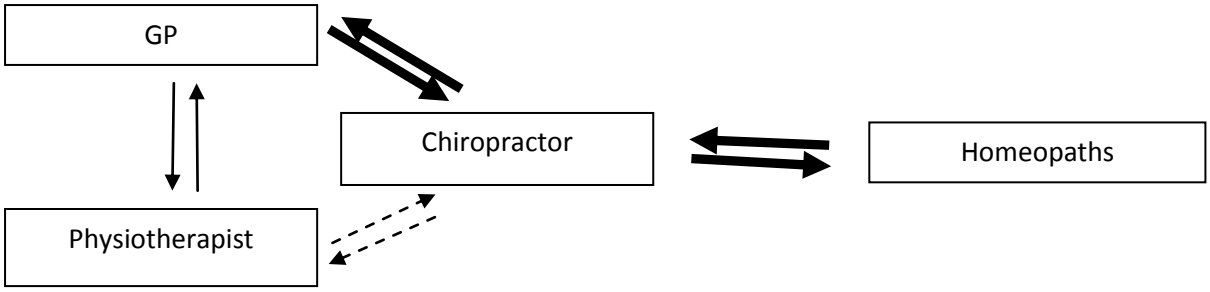
Table 4.23 shows how often chiropractors and physiotherapists (from the sample) receive referrals from chiropractors (occasionally 25%; rarely 25% for chiropractors versus 44% never for physiotherapists), General Practitioners (GP) (39.6% frequently and 35.4%occasionally for chiropractors versus 56% frequently and 26% always for physiotherapists), homeopaths (41.7% occasionally and 16.7% never for chiropractors versus 64.4% never for physiotherapists) and physiotherapists (33.3% rarely and 27.1% occasionally for chiropractors versus 25.3% occasionally and 26.4% no answer for physiotherapists)respectively.

To conclude, the most common referrals received by the chiropractors in this study predominantly came from homoeopaths (biopsychosocial in paradigm orientation) followed by general practitioners (biomedical in paradigm orientation), with both having a percentage just over 40%. By contrast, 56% of the physiotherapists received referrals from general practitioners; hardly ever from chiropractors; rarely from their own colleague physiotherapists and almost never from homoeopaths. Thus, it would seem that physiotherapists receive the least number of referrals from any source and then only from within the biomedical paradigm practitioners, which may go further to explain their lack of wanting to refer patients out, since their sources of referral or receiving new patients within the health care milieu are so limited.

This above pattern is mimicked when assessing the perceived frequency with which patients are returned to the care of the referring practitioner and the associated mechanism for reporting back (Tables 4.24 and 4.25). Thus, potentially reinforcing

the perceived need for physiotherapists to maintain their patient base with minimal referral.

Again these referral patterns are re-inforced by the responses (per condition and per practitioner) (Tables 4.27 - 4.32) (See Appendix P (for written summary)), which tend to modify Figure 4.13 as follows:



(Refer to Figure 4.13: An amendment to Pillay's (2006) interaction graphic)

To further support the Figure 4.13, chiropractors ranked the strongest reason for referring a patient was patient request (Alonso, 2004), followed by past referral from the other profession (Langley, Minkin and Till, 1997), their practice location (Temoshok, 2004), their qualification (Forrest *et al.,* 2006), time in practice (Forrest *et al.,* 2006), a family/friend recommendation (Langley, Minkin and Till, 1997), perception/personal experience and scope of practice (Matteson and Bomonti, 2005; Bridges *et al*., 2011). Factors that were perceived to have no impact included patient demographics, their gender and the practitioners' gender. These latter factors seem to support the lack of impact that practitioner gender had on the referral pattern in this study.

Similarly, physiotherapists ranked the strongest reason for referring a patient was the qualification of the other practitioner (Forrest *et al.,* 2006). Other strong factors include: past referral from the other profession (Langley, Minkin and Till, 1997), their practice location (Temoshok, 2004), their time in practice (Forrest *et al.,* 2006), family/friend recommendation (Langley, Minkin and Till, 1997), perception/personal

experience (Matteson and Bomonti, 2005; Bridges *et al*., 2011), time in practice (Forrest *et al.,* 2006), scope of practice (Matteson and Bomonti, 2005; Bridges *et al*., 2011), practice location (Temoshok, 2004), patient request (Alonso, 2004). Gender had no impact on the referral decision according to the physiotherapists. These latter factors seem to support the lack of impact that practitioner gender had on the referral pattern in this study.

In terms of the roles of the two professions, chiropractors and physiotherapists agreed that (Tables 4.34 and 4.35):

- Chiropractic and Physiotherapy are similar professions (in terms of professional abilities).
- Chiropractic and Physiotherapy are complimentary professions.

In terms of the roles of the two professions, chiropractors and physiotherapists agreed on disagreeing with the statements:

- Physiotherapy should be limited to the treatment of myofascial conditions.
- Chiropractic increases stroke incidence in patients when treating neck pain.
- All physiotherapists can perform the same treatment as chiropractors without additional training.
- Chiropractic has been shown to achieve better outcomes in the treatment of headaches.
- Chiropractors can perform the same treatments as all physiotherapists without additional training.

In terms of the roles of the two professions, chiropractors and physiotherapists disagreed that:

- Chiropractic should be limited to the treatment of articular dysfunction.
- Chiropractors are able to treat extremity joint dysfunction.
- Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow.

Based on the above outcomes, it would seem that the two professions have a degree mutual respect for one another, differing only regarding statements that are directed at particular treatment outcomes or condition specific statements (these

statements reflecting their limited knowledge / interaction of the other profession). This is again independently confirmed when the respondents were asked about the other (chiropractors about physiotherapists and physiotherapists about chiropractors) profession, both (chiropractors 68.8%, physiotherapists 51.7%) gave their professional opinion. Therefore, it is unlikely that the mutual similarities between the professions are responsible for the type and manner of referral between the two professions.

4.5.4 Objective Four

Objective Four was to determine how certain factors influence the referral of patients between chiropractors and physiotherapists. Summaries are found at the end of each subsection of this objective.

There were two outcomes for this analysis: referral to the other (i.e. chiropractors referring to physiotherapists and physiotherapists referring to chiropractors) and referral from the other (i.e. chiropractors receiving referrals from physiotherapists and physiotherapists receiving referrals from chiropractors). The outcomes for this analysis was categorised from Question 24 (referral to the other) and Question 30 (referrals from the other). The data were analysed separately by occupation.

4.5.4.1 Chiropractors referring to physiotherapists

Table 4.36: What makes chiropractors refer to physiotherapists?

		No		Yes	
		Count	%	Count	%
Gender	Male	9	40.9%	12	48.0%
	Female	13	59.1%	13	52.0%
Institution of qualification	DUT	21	95.5%	21	84.0%
	National Chiropractic College	0	0.0%	1	4.0%
	AECC	0	0.0%	1	4.0%
	University of Johannesburg	0	0.0%	1	4.0%
	Palmer College	1	4.5%	1	4.0%
Private practice	Yes	19	86.4%	23	92.0%
	No	3	13.6%	2	8.0%
Hospital or clinic	Yes	0	0.0%	2	8.0%
	No	22	100.0%	23	92.0%
Multidisciplinary	Yes	10	45.5%	11	44.0%
	No	12	54.5%	14	56.0%
School	Yes	1	4.5%	0	0.0%
	No	21	95.5%	25	100.0%
Part time or full time	Part time	5	22.7%	5	20.0%
	Full time	17	77.3%	20	80.0%
Chiropractor (distance to nearest)	0-2 km	18	81.8%	19	76.0%
	2-4 km	0	0.0%	3	12.0%
	4-6 km	2	9.1%	2	8.0%
	>8km	2	9.1%	1	4.0%
	Unsure	0	0.0%	0	0.0%
	No answer	0	0.0%	0	0.0%

Table 4.36 What makes chiropractors refer to physiotherapists continued …					
		No		Yes	
		Count	%	Count	%
GP (distance to nearest practice)	0-2 km	21	95.5%	22	88.0%
	2-4 km	0	0.0%	2	8.0%
	4-6 km	1	4.5%	1	4.0%
	>8km	0	0.0%	0	0.0%
	Unsure	0	0.0%	0	0.0%
	No answer	0	0.0%	0	0.0%
Homeopath (distance to nearest practice)	0-2 km	13	59.1%	16	64.0%
	2-4 km	1	4.5%	5	20.0%
	4-6 km	2	9.1%	1	4.0%
	>8km	3	13.6%	1	4.0%
	Unsure	3	13.6%	2	8.0%
	No answer	0	0.0%	0	0.0%
Physiotherapist (distance to nearest practice)	0-2 km	17	77.3%	18	72.0%
	2-4 km	3	13.6%	5	20.0%
	4-6 km	0	0.0%	1	4.0%
	>8km	0	0.0%	1	4.0%
	Unsure	2	9.1%	0	0.0%
	No answer	0	0.0%	0	0.0%
PERSONAL contact (as a patient)	Yes	11	50.0%	15	60.0%
	No	11	50.0%	10	40.0%
Where you satisfied with the treatment you received?	Yes	6	27.3%	14	56.0%
	No	4	18.2%	1	4.0%
	N/A	12	54.5%	10	40.0%
What is the principle reason for referral of patients from your practice generally?	Condition dependent	14	63.6%	18	72.0%
	Patient finances	1	4.5%	0	0.0%
	Personal reasons	0	0.0%	0	0.0%
	Patient request	0	0.0%	0	0.0%
	Second opinion	1	4.5%	0	0.0%
	You wish to get rid of the patient	0	0.0%	0	0.0%
	More qualified health care provider (specialist)	4	18.2%	2	8.0%
	More appropriate treatment regiment for the patient	1	4.5%	5	20.0%
	You feel that your scope is limited in helping the patient	1	4.5%	0	0.0%
	Other	0	0.0%	0	0.0%
	Patient demographic	0	0.0%	0	0.0%

Table 4.37: Pearson Chi-Square Tests based on Table 4.36

Gender	Chi-square	.238
	df	1
	Sig.	.626
Institution of qualification	Chi-square	4.929
	df	5
	Sig.	.425[a,b]
Private practice	Chi-square	.391
	df	1
	Sig.	.532[a]
Hospital or clinic	Chi-square	1.838
	df	1
	Sig.	.175[a,b]
Multidisciplinary	Chi-square	.010
	df	1
	Sig.	.920
School	Chi-square	1.161
	df	1
	Sig.	.281[a,b]
Part time or full time	Chi-square	.052
	df	1
	Sig.	.820[a]
Chiropractor (distance to nearest practice)	Chi-square	3.182
	df	3
	Sig.	.364[a]
GP (distance to nearest)	Chi-square	1.839
	df	2
	Sig.	.399[a,b]
Homeopath (distance to nearest)	Chi-square	4.337
	df	4
	Sig.	.362[a]
Physiotherapist (distance to nearest)	Chi-square	4.355
	df	4
	Sig.	.360[a,b]
Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) as a patient?	Chi-square	.473
	df	1
	Sig.	.491
Were you satisfied with the treatment you received?	Chi-square	5.011
	df	2
	Sig.	.082[a]
What is the principle reason for referral of patients from your practice generally?	Chi-square	6.669
	df	5
	Sig.	.246[a,b]
Results are based on nonempty rows and columns in each innermost subtable.		
a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.		
b. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.		

Table 4.38: Cross-correlation based on Table 4.36

	Chiropractors referring to physiotherapists	N	Mean	Std. Deviation	Std. Error Mean	*P* value
Age	no	22	34.18	8.819	1.880	0.420
	yes	25	36.44	10.054	2.011	
Length of time in practice	no	22	6.95	6.807	1.451	0.161
	yes	25	10.20	8.568	1.714	

None of the factors tested (Tables 4.36 – 4.38) were associated with chiropractors referring patients to physiotherapists. The only factor that may have been significant if the sample sizes had been larger was the relationship that the chiropractor had built with the physiotherapist based on the successful outcomes that the chiropractor had received from a physiotherapist after having been treated.

These outcomes support the inclusive nature of the demographics (Objective One) as contextualised in Objective Two. Therefore, it is suggested that chiropractic specific referral enablers are further researched, possibly through a combination of qualitative and quantitative means in order to determine the nuances of referral influencers.

4.5.4.2 Chiropractors receiving referrals from physiotherapists

Table 4.39: What makes chiropractors receive referrals from physiotherapists?

		No		Yes	
		Count	%	Count	%
Gender	Male	10	37.0%	9	52.9%
	Female	17	63.0%	8	47.1%
Institution of qualification	DUT	26	96.3%	14	82.4%
	National Chiropractic College	0	0.0%	1	5.9%
	AECC	1	3.7%	0	0.0%
	University of Johannesburg	0	0.0%	1	5.9%
	Palmer College	0	0.0%	1	5.9%
Private practice	Yes	26	96.3%	13	76.5%
	No	1	3.7%	4	23.5%
Hospital or clinic	Yes	0	0.0%	1	5.9%
	No	27	100.0%	16	94.1%
Multidisciplinary	Yes	11	40.7%	9	52.9%
	No	16	59.3%	8	47.1%
School	Yes	1	3.7%	0	0.0%
	No	26	96.3%	17	100.0%
Part time or full time	Part time	5	18.5%	5	29.4%
	Full time	22	81.5%	12	70.6%
Chiropractor (distance to nearest)	0-2 km	21	77.8%	14	82.4%
	2-4 km	0	0.0%	3	17.6%
	4-6 km	3	11.1%	0	0.0%
	>8km	2	7.4%	0	0.0%
	Unsure	1	3.7%	0	0.0%
	No answer	0	0.0%	0	0.0%
GP (distance to nearest)	0-2 km	25	92.6%	15	88.2%
	2-4 km	0	0.0%	2	11.8%
	4-6 km	2	7.4%	0	0.0%
	>8km	0	0.0%	0	0.0%
	Unsure	0	0.0%	0	0.0%
	No answer	0	0.0%	0	0.0%
Homeopath (distance to nearest)	0-2 km	15	55.6%	12	70.6%
	2-4 km	3	11.1%	3	17.6%
	4-6 km	3	11.1%	1	5.9%
	>8km	3	11.1%	0	0.0%
	Unsure	3	11.1%	1	5.9%
	No answer	0	0.0%	0	0.0%
Physiotherapist (distance to nearest)	0-2 km	18	66.7%	14	82.4%
	2-4 km	5	18.5%	3	17.6%
	4-6 km	2	7.4%	0	0.0%
	>8km	1	3.7%	0	0.0%
	Unsure	1	3.7%	0	0.0%
	No answer	0	0.0%	0	0.0%
PERSONAL contact with a chiropractor (as a patient)	Yes	13	48.1%	12	70.6%
	No	14	51.9%	5	29.4%
Where you satisfied with the treatment you received?	Yes	8	29.6%	11	64.7%
	No	4	14.8%	1	5.9%
	N/A	15	55.6%	5	29.4%

Table 4.39: What makes chiropractors receive referrals from physiotherapists? Continued …					
		No		Yes	
		Count	%	Count	%
What is the principle reason for referral of patients from your practice generally ?	Condition dependent	18	66.7%	11	64.7%
	Patient finances	1	3.7%	0	0.0%
	Personal reasons	0	0.0%	0	0.0%
	Patient request	0	0.0%	0	0.0%
	Second opinion	1	3.7%	0	0.0%
	You wish to get rid of the patient	0	0.0%	0	0.0%
	More qualified health care provider (specialist)	5	18.5%	2	11.8%
	More appropriate treatment regiment for the patient	2	7.4%	3	17.6%
	You feel that your scope is limited in helping the patient	0	0.0%	1	5.9%
	Other	0	0.0%	0	0.0%
	Patient demographic	0	0.0%	0	0.0%

Table 4.40: Pearson Chi-Square Tests based on Table 4.39

Gender	Chi-square	1.075
	df	1
	Sig.	.300
Institution of qualification	Chi-square	5.817
	df	5
	Sig.	.324[a,b]
Private practice	Chi-square	4.071
	df	1
	Sig.	.044[a,*]
Hospital or clinic	Chi-square	1.625
	df	1
	Sig.	.202[a,b]
Multidisciplinary	Chi-square	.626
	df	1
	Sig.	.429
School	Chi-square	.644
	df	1
	Sig.	.422[a,b]
Part time or full time	Chi-square	.705
	df	1
	Sig.	.401[a]
Chiropractor (distance to nearest)	Chi-square	8.570
	df	4
	Sig.	.073[a,b]
GP (distance to nearest)	Chi-square	4.458
	df	2
	Sig.	.108[a,b]
Homeopath (distance to nearest)	Chi-square	3.227
	df	4
	Sig.	.521[a]
Physiotherapist (distance to nearest)	Chi-square	2.876
	df	4
	Sig.	.579[a,b]
Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) as a patient?	Chi-square	2.141
	df	1
	Sig.	.143
Were you satisfied with the treatment you received?	Chi-square	5.273
	df	2
	Sig.	.072[a]
What is the principle reason for referral of patients from your practice generally?	Chi-square	4.115
	df	5
	Sig.	.533[a,b]
Results are based on nonempty rows and columns in each innermost subtable.		
*. The Chi-square statistic is significant at the .05 level.		

a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.
b. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Table 4.41: Cross-correlation based on Table 4.39

	Chiropractors getting referrals from physiotherapists	N	Mean	Std. Deviation	Std. Error Mean	*P* value
Age	No	27	33.19	8.467	1.630	0.096
	Yes	17	37.82	9.282	2.251	
Length of time in practice	No	27	7.00	6.956	1.339	0.137
	Yes	17	10.35	7.424	1.801	

If the physiotherapist is in private practice, they are more likely to refer to chiropractors in private practise (p=0.044). This supports the assertion that unconsciously the physiotherapy referral network will only extend to chiropractors who operate within the known paradigm (biomedical model), which is the same model within which the physiotherapy profession resides (Tauber, 2002; Lindau *et al*., 2003; Spiro and Norton, 2003; Laszlo, 2002; Laine and Davidoff, 1996; Engel, 1977; Weisberg *et al*., 1999; Double, 2002). No other factors were associated with chiropractors receiving referrals from physiotherapists, with the exception of the distance to the nearest chiropractor (p=0.073) from the physiotherapist, whether the physiotherapist was satisfied with the treatment they received from the chiropractor (p=0.072) and the age of the chiropractor (p=0.096), which may have become significant factors if the sample size had been increased by increased numbers of respondents. Therefore, it is suggested that a future study verify these possible referral influencers and confirm their effect.

4.5.4.3 Physiotherapists referring to chiropractors

Table 4.42: What makes physiotherapists refer to chiropractors?

		No		Yes	
		Count	%	Count	%
Gender	Male	11	18.6%	5	20.8%
	Female	48	81.4%	19	79.2%
Institution of qualification	University of Cape Town	3	5.1%	5	20.8%
	University of Durban Westville	34	57.6%	7	29.2%
	MEDUNSA	2	3.4%	0	0.0%
	University of Stellenbosch	4	6.8%	2	8.3%
	University of the Witwatersrand	5	8.5%	5	20.8%
	University of the Free State	4	6.8%	0	0.0%
	University of Pretoria	3	5.1%	1	4.2%
	Brighton University	1	1.7%	0	0.0%
	Middlesex Hospital	1	1.7%	0	0.0%
	University of East London	0	0.0%	1	4.2%
	University of the Western Cape	1	1.7%	2	8.3%
	King Edward VIII Hospital	0	0.0%	1	4.2%
	Trinity College	1	1.7%	0	0.0%
Private practice	Yes	47	79.7%	24	100.0%
	No	12	20.3%	0	0.0%
Hospital or clinic	Yes	38	64.4%	7	29.2%
	No	21	35.6%	17	70.8%
Multidisciplinary	Yes	13	22.0%	3	12.5%
	No	46	78.0%	21	87.5%
School	Yes	3	5.1%	2	8.3%
	No	56	94.9%	22	91.7%
Part time or full time	Part time	7	11.9%	4	16.7%
	Full time	52	88.1%	20	83.3%
Chiropractor (distance to nearest)	0-2 km	31	52.5%	17	70.8%
	2-4 km	7	11.9%	3	12.5%
	4-6 km	6	10.2%	2	8.3%
	>8km	3	5.1%	1	4.2%
	Unsure	12	20.3%	0	0.0%
	No answer	0	0.0%	1	4.2%
GP (distance to nearest)	0-2 km	46	78.0%	20	83.3%
	2-4 km	7	11.9%	2	8.3%
	4-6 km	3	5.1%	1	4.2%
	>8km	2	3.4%	0	0.0%
	Unsure	1	1.7%	0	0.0%
	No answer	0	0.0%	1	4.2%

Table 4.42: What makes physiotherapists refer to chiropractors?					
		No		Yes	
		Count	%	Count	%
Homeopath (distance to nearest)	0-2 km	13	22.0%	11	45.8%
	2-4 km	8	13.6%	5	20.8%
	4-6 km	4	6.8%	3	12.5%
	>8km	2	3.4%	0	0.0%
	Unsure	30	50.8%	4	16.7%
	No answer	2	3.4%	1	4.2%
Physiotherapist (distance to nearest)	0-2 km	47	79.7%	15	62.5%
	2-4 km	4	6.8%	2	8.3%
	4-6 km	3	5.1%	4	16.7%
	>8km	3	5.1%	1	4.2%
	Unsure	1	1.7%	1	4.2%
	No answer	1	1.7%	1	4.2%
PERSONAL contact with a chiropractor (as a patient)	yes	8	13.6%	16	66.7%
	no	51	86.4%	8	33.3%
Where you satisfied with the treatment you received?	yes	7	11.9%	14	58.3%
	no	1	1.7%	2	8.3%
	N/A	51	86.4%	8	33.3%
What is the principle reason for referral of patients from your practice generally?	Condition dependent	23	39.0%	14	58.3%
	Patient finances	1	1.7%	0	0.0%
	Personal reasons	1	1.7%	0	0.0%
	Patient request	3	5.1%	0	0.0%
	Second opinion	1	1.7%	0	0.0%
	You wish to get rid of the patient	0	0.0%	0	0.0%
	More qualified health care provider (specialist)	13	22.0%	3	12.5%
	More appropriate treatment regiment for the patient	7	11.9%	5	20.8%
	You feel that your scope is limited in helping the patient	10	16.9%	2	8.3%
	Other	0	0.0%	0	0.0%
	Patient demographic	0	0.0%	0	0.0%

Table 4.43: Pearson Chi-Square Tests based on Table 4.42

Gender	Chi-square	.053
	df	1
	Sig.	.819[a]
Institution of qualification	Chi-square	20.095
	df	12
	Sig.	.065[a,b]
Private practice	Chi-square	5.706
	df	1
	Sig.	.017[a,*]
Hospital or clinic	Chi-square	8.535
	df	1
	Sig.	.003[*]
Multidisciplinary	Chi-square	.997
	df	1
	Sig.	.318[a]
School	Chi-square	.318
	df	1
	Sig.	.573[a]
Part time or full time	Chi-square	.342
	df	1
	Sig.	.559[a]
Chiropractor (distance to nearest)	Chi-square	8.422
	df	5
	Sig.	.134[a,b]
GP (distance to nearest)	Chi-square	3.966
	df	5
	Sig.	.554[a,b]
Homeopath (distance to nearest)	Chi-square	10.288
	df	5
	Sig.	.067[a,b]
Physiotherapist (distance to nearest)	Chi-square	4.338
	df	5
	Sig.	.502[a,b]
Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) as a patient?	Chi-square	23.409
	df	1
	Sig.	.000[*]
Were you satisfied with the treatment you received?	Chi-square	23.409
	df	2
	Sig.	.000[a,b,*]
What is the principle reason for referral of patients from your practice generally?	Chi-square	6.503
	df	7
	Sig.	.482[a,b]
Results are based on nonempty rows and columns in each innermost subtable.		
*. The Chi-square statistic is significant at the .05 level.		
a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.		
b. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.		

Table 4.44: Cross-correlation based on Table 4.42

	Physiotherapists referring to chiropractors	N	Mean	Std. Deviation	Std. Error Mean	*P* value
Age	no	59	35.63	11.641	1.516	0.565
	yes	24	37.29	12.509	2.553	
Length of time in practice	no	59	12.95	11.455	1.491	0.649
	yes	24	14.25	12.463	2.544	

Physiotherapists who work in private practise were significantly more likely to refer to chiropractors (p=0.017), and those who work in clinics or hospitals were significantly less likely to refer patients (p=0.003). This again reflects the distinct operation of physiotherapists within the biomedical model when limited to those environments. However, with increasing exposure to the chiropractic profession, the physiotherapists are more likely to refer as seen in the significant role that physiotherapy private practice plays as well as the fact that having been treated by a chiropractor and being satisfied with the treatment was also significantly related to referring patients to a chiropractor (p<0.001).

Factors that may have been significant if the sample size had been larger (and therefore would need verification in a follow on study), are the institution from which the physiotherapist obtained their qualification (p=0.065) and the distance to nearest homoeopath (p=0.067). Both of these factors indicate that increased exposure to places of study (viz. University of Durban Westville and the University of the Witwatersrand are both located near the DUT and UJ respectively – which are chiropractic training institutions) and the distance to the nearest homoeopath, seems to suggest that increased exposure to CAM practices or biopsychosocial practices would increase the likelihood of referral by a physiotherapist to a chiropractor.

Therefore, it is likely that increased interaction between the two professions would enable increased referrals between the physiotherapist and the chiropractor.

4.5.4.4 Physiotherapists receiving referrals from chiropractors

Table 4.45: Physiotherapists receiving referrals from chiropractors

		No		Yes	
		Count	%	Count	%
Gender	Male	9	15.0%	6	28.6%
	Female	51	85.0%	15	71.4%
Institution of qualification	University of Cape Town	5	8.3%	4	19.0%
	University of Durban Westville	36	60.0%	4	19.0%
	MEDUNSA	1	1.7%	0	0.0%
	University of Stellenbosch	2	3.3%	3	14.3%
	University of the Witwatersrand	5	8.3%	5	23.8%
	University of the Free State	4	6.7%	0	0.0%
	University of Pretoria	4	6.7%	0	0.0%
	Brighton University	1	1.7%	0	0.0%
	Middlesex Hospital	0	0.0%	1	4.8%
	University of East London	0	0.0%	1	4.8%
	University of the Western Cape	1	1.7%	2	9.5%
	King Edward VIII Hospital	0	0.0%	1	4.8%
	Trinity College	1	1.7%	0	0.0%
Private practice	Yes	49	81.7%	21	100.0%
	No	11	18.3%	0	0.0%
Hospital or clinic	Yes	36	60.0%	9	42.9%
	No	24	40.0%	12	57.1%
Multidisciplinary	Yes	13	21.7%	3	14.3%
	No	47	78.3%	18	85.7%
School	Yes	2	3.3%	2	9.5%
	No	58	96.7%	19	90.5%
Part time or full time	Part time	8	13.3%	4	19.0%
	Full time	52	86.7%	17	81.0%
Chiropractor (distance to nearest)	0-2 km	34	56.7%	16	76.2%
	2-4 km	6	10.0%	2	9.5%
	4-6 km	7	11.7%	1	4.8%
	>8km	3	5.0%	0	0.0%
	Unsure	10	16.7%	1	4.8%
	No answer	0	0.0%	1	4.8%
GP (distance to nearest)	0-2 km	50	83.3%	17	81.0%
	2-4 km	4	6.7%	2	9.5%
	4-6 km	4	6.7%	0	0.0%
	>8km	2	3.3%	0	0.0%
	Unsure	0	0.0%	1	4.8%
	No answer	0	0.0%	1	4.8%
Homeopath (distance to nearest)	0-2 km	15	25.0%	10	47.6%
	2-4 km	8	13.3%	4	19.0%
	4-6 km	7	11.7%	0	0.0%
	>8km	2	3.3%	0	0.0%
	Unsure	25	41.7%	6	28.6%
	No answer	3	5.0%	1	4.8%
Physiotherapist (distance to nearest)	0-2 km	46	76.7%	15	71.4%
	2-4 km	3	5.0%	2	9.5%
	4-6 km	4	6.7%	2	9.5%
	>8km	4	6.7%	0	0.0%
	Unsure	1	1.7%	1	4.8%
	No answer	2	3.3%	1	4.8%
PERSONAL contact with a chiropractor (as a patient)	yes	13	21.7%	11	52.4%
	no	47	78.3%	10	47.6%
Were you satisfied with the treatment you received?	Yes	11	18.3%	10	47.6%
	no	1	1.7%	2	9.5%
	N/A	48	80.0%	9	42.9%

Table 4.45: Physiotherapists receiving referrals from chiropractors continued...					
		No		Yes	
		Count	%	Count	%
What is the principle reason for referral of patients from your practice generally ?	Condition dependent	23	38.3%	12	57.1%
	Patient finances	1	1.7%	0	0.0%
	Personal reasons	1	1.7%	0	0.0%
	Patient request	3	5.0%	0	0.0%
	Second opinion	0	0.0%	1	4.8%
	You wish to get rid of the patient	0	0.0%	0	0.0%
	More qualified health care provider (specialist)	12	20.0%	4	19.0%
	More appropriate treatment regiment for the patient	11	18.3%	1	4.8%
	You feel that your scope is limited in helping the patient	9	15.0%	3	14.3%
	Other	0	0.0%	0	0.0%
	Patient demographic	0	0.0%	0	0.0%

Table 4.46: Pearson Chi-Square Tests based on Table 4.45

Gender	Chi-square	1.899
	df	1
	Sig.	.168[a]
Institution of qualification	Chi-square	27.945
	df	12
	Sig.	.006[a,*,c]
Private practice	Chi-square	4.455
	df	1
	Sig.	.035[a,*]
Hospital or clinic	Chi-square	1.851
	df	1
	Sig.	.174
Multidisciplinary	Chi-square	.535
	df	1
	Sig.	.465[a]
School	Chi-square	1.270
	df	1
	Sig.	.260[a]
Part time or full time	Chi-square	.402
	df	1
	Sig.	.526[a]
Chiropractor (distance to nearest)	Chi-square	7.246
	df	5
	Sig.	.203[a,c]
GP (distance to nearest)	Chi-square	7.996
	df	5
	Sig.	.156[a,c]
Homeopath (distance to nearest)	Chi-square	6.770
	df	5
	Sig.	.238[a,c]
Physiotherapist (distance to nearest)	Chi-square	2.833
	df	5
	Sig.	.726[a,c]
Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) as a patient?	Chi-square	7.038
	df	1
	Sig.	.008[*]
Were you satisfied with the treatment you received?	Chi-square	10.788
	df	2
	Sig.	.005[a,*,c]
What is the principle reason for referral of patients from your practice generally?	Chi-square	7.827
	df	7
	Sig.	.348[a,c]
Results are based on nonempty rows and columns in each innermost subtable.		
*. The Chi-square statistic is significant at the .05 level.		

a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.
c. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Table 4.47: Cross-correlation based on Table 4.45

	Physiotherapists getting referrals from chiropractors	N	Mean	Std. Deviation	Std. Error Mean	*P* value
Age	No	60	34.83	10.769	1.390	0.207
	Yes	21	38.67	14.718	3.212	
Length of time in practice	No	60	12.30	10.424	1.346	0.266
	Yes	21	15.62	14.814	3.233	

Physiotherapists who are in private practice were associated with receiving referrals from chiropractors (p=0.035), and chiropractors having received personal (p=0.08) treatment from a physiotherapist and been satisfied with the treatment (p=0.005) was also related to physiotherapists receiving referrals from chiropractors. Similar to physiotherapists sending out referrals, receiving referrals was also related to their institution of qualification (p=0.006), however, this needs to be read with caution based on the numbers of cells in the calculation that had a total of less than one.

Notwithstanding the outcomes of the last significant factor, these results again show that the predominant influences on the referral pattern are related to the environment and the paradigms of operation of the different professions and how they interface. This research simply suggests that physiotherapists and chiropractors be exposed to each other's professions, so as to familiarise the other profession with the standard operating procedures that are evident to those within a paradigm but not outside of that.

4.6 Summary

The most significant findings, in relation to the objectives set out for this study, appear in the following paragraph.

In accordance with the first objective and from the demographic data gathered from the participating chiropractors, it would appear as if the average chiropractor is female, 35 years of age and who qualified at DUT. 58% are in private practice and have been practicing for an average of 9 years. 35% of chiropractors knew if the physiotherapist in their area were involved in activities outside his/her practice, 50% said this has a positive impact on whether to refer to that physiotherapist or not.

Therefore, it was anticipated that the chiropractors would actively refer patients as per the literature indicators.

In accordance with the second objective, and from the demographic data gathered from the participating physiotherapists, it would appear as if the average physiotherapist is female, 36.3 years of age and the greater majority qualified at UDW. 86% are in private practice and have been practicing for an average of 14 years. 20% of physiotherapists knew if the chiropractor in their area were involved in activities outside his/her practice, 41% said this has a positive impact on whether to refer to that chiropractor or not. Therefore, it was anticipated that the chiropractors would actively refer patients as per the literature indicators.

The majority of the sampled physiotherapists (46%) have never referred a patient to a chiropractor, where 44% of chiropractors have occasionally referred a patient to a physiotherapist. The principle reason for referring a patient (for both chiropractors and physiotherapists) is dependent on the condition with which the patient presents, most chiropractors (79%) and physiotherapists (86%) will include a report when referring a patient and a letter is the most commonly used report format. Referrals made by chiropractors to either provider indicates that 81% of the chiropractors' patients return, whereas referrals made by physiotherapists to either of the providers resulted in only 48% return of patients to their practice. Therefore, the outcomes in this objective did not support the literature discussions on the outcomes of the first and second objectives, as referral patterns seemed to be based more on the paradigm of operation within which the professions were trained and operated than the demographic factors that have previously been identified to influence referral.

From the data received, in order to meet the fourth objective, shows that the strongest factor to enable referrals from a chiropractor to a physiotherapist is successful physiotherapy treatment received by the chiropractor. Physiotherapists who work in private practice were significantly more likely to refer to chiropractors, and those who work in clinics or hospitals were significantly less likely to refer patients. This last objective further enhanced the outcomes of the previous objective by indicating the dependence of referrals is related to a limited extent to the

demographics of the practitioner and more increasingly to the paradigm of operation and knowledge of the other profession.

Thus, in this context, Chapter Five will draw the conclusions for this study and recommendations for further studies in this field.

Chapter Five

Conclusion and Recommendations

5.1 Introduction

In this chapter, conclusions, based on the outcomes from the collected primary data, are drawn and recommendations for further studies related to this are discussed. The data was collected from the practitioners in the sample of the study and at the time of completing the questionnaire.

5.2 Conclusion

In concluding this study, it has become evident that factors such as demographics variably and inconclusively limit physiotherapists and chiropractors' decision to refer patients to one another. It is, however, apparent that practice location; practice type and association by geographic location seem to have some impact on the referral of patients by these practitioners. These factors are, however, influenced significantly by the paradigm of training and operations that the practitioners operate under – viz. the biomedical or biopsychosocial models. Therefore, it is necessary for professions within these models to look at increasing the degree of inter-professional collaboration and activities in order to ensure a better understanding of each other's professions as well as the manner in which each other operate.

5.3 Recommendations

Limitations of the study:

1. The study looked at previously identified factors from the literature without expanding on these within the South African context. Therefore, it may be necessary to complete future qualitative and / or quantitative studies to explore whether there are factors unique to the South African context.

2. The study relied on a sample limited to the eThekwini region, this may not represent the population of the greater South Africa and a national study should be considered to ensure that this study does in fact represent the professions adequately.
3. Improved sample size is always a positive consideration for future studies whether or not they are regionally demarcated.
4. Having validated questionnaires within one or more of the official languages may have resulted in improved outcomes, as this would have facilitated better understanding of the questionnaires and hence accuracy of responses (Scollen and Scollen1995; Baynham, 1995). Concerns that would need to be considered in this context are context, content and concurrent validity (Bernard, 2000).
5. The method of data collection – personal delivery – may have been problematic with regard to responses in this study, considering specifically that the researcher was a chiropractic student and that some respondents were from his profession and others not. This may also have influenced the responses of respondents. Future studies may wish to consider a neutral data collection person (viz. not related to either profession from which information is drawn), as opposed to using different methods (e.g. postal questionnaires) as these latter methods have a lesser response rate (Lapane, Quilliam and Hughes, 2007).
6. Additionally, if this study was repeated in the future, greater effort would be made to obtain a greater response rate. These could include: more frequent reminders regarding questionnaire completion, using all channels of questionnaire delivery and collection (i.e. Post, email, fax, personal delivery and internet search engines).
7. It was expected that the respondents complete the questionnaire openly and honestly, reflecting the reality of their practice at the point in time when they completed the questionnaire (Dyer, 1997; Mouton, 1996; Mouton, 2001).

Professional recommendations:

1. Further initiatives with regard to inter-professional education should be undertaken by all professions to stimulate inter-professional referrals for the improvement of health care services to obtain best outcomes for the patients.

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Appendix A1
Letter of information and informed consent.Expert group.

DEAR PARTICIPANT

Welcome to my research project. Thank you for taking the time to consider participating in my study.

TITLE OF RESEARCH STUDY:
An investigation into the effect of selected factors on the inter-referral patterns of patients between chiropractors and physiotherapists, in the eThekwini municipality.

Principal investigator: John George Lochner Slabbert
Co-Investigator: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)

Introduction and Purpose of the study:
A multidisciplinary approach to patient management has been proved to be both important and beneficial. However, studies have shown an unbalanced inter-professional referral of patients between chiropractors and physiotherapists. What is the reason for this? The study will aim to identify which, and how, selected factors influence the decision to refer a patient. This should lead to a greater knowledge and understanding of the current inter-referral system and can have a positive influence on future patient management. Chiropractors and physiotherapists, who adhere to the inclusion criteria of this study, in theeThekwini municipalitywill take part in this study which will be conducted by means of a questionnaire. As a member of the Expert group, you are asked to participateduring the meeting by discussing the questionnaire with the rest of the members in order to finalize the questionnaire.

Inclusion criteria:

- At least two patients;
- At least one medical practitioner in private practice;
- At least one medical practitioner in the public sector;
- At least two practicing chiropractors;
- At least two practicingphysiotherapists (private practice);
- At least two practicing physiotherapists (publicsector);
- At least one Masters student (someone who has completed a questionnaire study);
- At least one person with research experience utilizing questionnaires.

Exclusion Criteria

- Any person invited that declines the invitation to participate.
- Any person who does not voluntarily sign the letter of information and informed consent (Appendix A1) to participate in the expert group.

After the telephonic conversation with me, we will have had this appointment made and on my arrival you will be given this letter of information and informed consent to read and

understand.Should you agree to participate in this study you will now be asked to sign this letter of information and informed consent. The procedure of the meeting will be explained by me.

Risks/discomfortsand Benefits
None to be expected from the study.

Remuneration: You will not be awarded any remuneration for taking part in this study.
Cost: Your participation in this research is free of charge.

Confidentiality:
Your personal information will remain confidential by the use of a coding system for data analysis and reporting.Your participation in this study is voluntary and refusal to participate will not result in any adverse consequences. You are free to withdraw from the study at any time.

Should there be a research related injury: None to be expected from the study.

Persons to contact in the event of any Problems or Queries:
Supervisor: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)
HREC Research Administrator (IREC) Tel: 0313732900

Statement of Agreement to Participate in the Research Study:
I, ...Subject's full name .....(ID number) have read this document in it is entirely and understand its contents. Where I have had any questions or queries, these have been explained to me by Lochner Slabbert to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) .....
Subject's signature. .....Date.....

Researcher's name (print) .....
Researcher's signature .....Date.....

Witness name (print) .....
Witness signature .....Date.....

APPENDIX A2
CONFIDENTIALITY STATEMENT – EXPERT GROUP

IMPORTANT NOTICE:

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

DECLARATION

1. All information contained in the research documents and any information discussed during the expert 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 questionnaires will be coded and kept anonymous in the research process.
3. None of the information shall be communicated to any other individual or organization outside of this specific focus group as to the decisions of this focus group.
4. The information from this expert group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

Please print in block letters:

Expert Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

Appendix B1
Letter of information and informed consent. Pilot study group.

DEAR PARTICIPANT

Welcome to my research project. Thank you for taking the time to consider participating in my study.

TITLE OF RESEARCH STUDY:

An investigation into the effect of selected factors on the inter-referral patterns of patients between chiropractors and physiotherapists, in the eThekwini municipality.

Principal investigator: John George Lochner Slabbert
Co-Investigator: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)

Introduction and Purpose of the study:

A multidisciplinary approach to patient management has been proved to be both important and beneficial. However, studies have shown an unbalanced inter-professional referral of patients between chiropractors and physiotherapists. What is the reason for this? The study will aim to identify which, and how, selected factors influence the decision to refer a patient. This should lead to a greater knowledge and understanding of the current inter-referral system and can have a positive influence on future patient management. Chiropractors and physiotherapists, who adhere to the inclusion criteria of this study, in the eThekwini municipality will take part in this study which will be conducted by means of a questionnaire. You have been selected to participate in the Pilot study group. The aim of the Pilot study is to determine if the questionnaire will work in practice. Changes will be made to the questionnaire, based on your feedback, before the Main study group receives their questionnaire.

Inclusion criteria:

- Chiropractors registered and practicing with the AHPCSA.
- Physiotherapists registered and practicing with the HPCSA.
- Must be practicing within the eThekwini municipality (defined by 031 dialing code).

Exclusion Criteria

- Any practitioner that participated in the expert group.
- Any practitioner that will participate in the main study.
- Any person who does not voluntarily sign the letter of information and informed consent (Appendix B1) to participate in the main study.
- Any practitioner not practicing within the eThekwini municipality (defined by 031 dialing code).
- Any person approached who declines the invitation to participate.

After the telephonic conversation with me, we will have had this appointment made and on my arrival you will be given this letter of information and informed consent to read and understand. Otherwise the envelope containing the documents will be personally delivered to your practice, where I will personally collect them on an agreed date. Should you agree to participate in this study you will now be asked to sign this letter of information and informed consent.

Risks/discomfortsand Benefits
None to be expected from the study.

Remuneration: You will not be awarded any remuneration for taking part in this study.
Cost: Your participation in this research is free of charge.

Confidentiality:
Your personal information will remain confidential by the use of a coding system for data analysis and reporting. Your participation in this study is voluntary and refusal to participate will not result in any adverse consequences. You are free to withdraw from the study at any time.

Should there be a research related injury: None to be expected from the study.

Persons to contact in the event of any Problems or Queries:
Co-investigator: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)
HREC Research Administrator (IREC) Tel: 0313732900

Statement of Agreement to Participate in the Research Study:
I, ...Subject's full name .....(ID number) have read this document in it is entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by Lochner Slabbert to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) .....
Subject's signature. .....Date.....

Researcher's name (print) .....
Researcher's signature .....Date.....

Witness name (print) .....
Witness signature .....Date.....

Appendix D

Pre-test Evaluation

1 What is your opinion of the subject presented in this questionnaire?
(Please mark the most appropriate box)

- 1.1 Extremely interesting ☐
- 1.2 Interesting ☐
- 1.3 Average ☐
- 1.4 Boring ☐
- 1.5 Very boring ☐

2 Do you think the topics raised in this questionnaire were adequately covered?

- 2.1 Yes ☐
- 2.2 No ☐

3 What is your opinion about the covering letter?
(Please mark one box only)

- 3.1 Very clear ☐
- 3.2 Clear ☐
- 3.3 Adequate ☐
- 3.4 Unclear ☐
- 3.5 Needs revising ☐

4 How would you describe the instructions accompanying each of the questions?
(Please mark one box only)

- 4.1 Very clear ☐
- 4.2 Clear ☐
- 4.3 Adequate ☐
- 4.4 Unclear ☐
- 4.5 Needs revising ☐

5 Do you think the questionnaire is too long?

- 5.1 Yes ☐
- 5.2 No ☐

6 What is your opinion of the wording of the questionnaire?
(Please mark the appropriate box/es)

- 6.1 The meaning of **all questions** is absolutely clear ☐
- 6.2 The meaning of **most** questions is clear ☐
- 6.3 There is too much chiropractic/ medical jargon ☐
- 6.4 The questions will not be understood
- 6.5 The questionnaire needs to be revised because it is unclear ☐

☐

If you had any difficulty answering any question/s, please write the number/s of the question/s in the space below with a suggestion on how the question/s can be improved?

_____
_____
_____
_____
_____
_____

Thank you for your most valuable time in helping me with my research project.
Please be reminded that the topics discussed above are strictly confidential.

Appendix C 1
Letter of information and informed consent. Main study group.

DEAR PARTICIPANT

Welcome to my research project. Thank you for taking the time to consider participating in my study.

TITLE OF RESEARCH STUDY:

An investigation into the effect of selected factors on the inter-referral patterns of patients between chiropractors and physiotherapists, in the eThekwini municipality.

Principal investigator: John George Lochner Slabbert
Co-Investigator: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)

Introduction and Purpose of the study:

A multidisciplinary approach to patient management has been proved to be both important and beneficial. However, studies have shown an unbalanced inter-professional referral of patients between chiropractors and physiotherapists. What is the reason for this? The study will aim to identify which, and how, selected factors influence the decision to refer a patient. This should lead to a greater knowledge and understanding of the current inter-referral system and can have a positive influence on future patient management. Chiropractors and physiotherapists, who adhere to the inclusion criteria of this study, will take part in this study which will be conducted by means of a questionnaire.

Inclusion criteria:

- Chiropractors registered and practicing with the AHPCSA.
- Physiotherapists registered and practicing with the HPCSA.
- Must be practicing within the eThekwini municipality (defined by 031 dialing code).

Exclusion Criteria

- Any person who does not voluntarily sign the letter of information and informed consent (Appendix C) to participate in the expert group.
- Any practitioner not practicing within the eThekwini municipality (defined by 031 dialing code).
- Any practitioner that participated in either the expert group meeting or in the pilot study.

After the telephonic conversation with me, we will have had this appointment made and on my arrival you will be given this letter of information and informed consent to read and understand. Otherwise the envelope containing the documents will be delivered to your practice. Should you agree to participate in this study you will now be asked to sign this letter of information and informed consent. The questionnaire should not take more than 15 minutes to complete. The questionnaire will be collected from you on a pre-arranged manner.

Risks/discomfortsand Benefits
None to be expected from the study.

Remuneration: You will not be awarded any remuneration for taking part in this study.
Cost: Your participation in this research is free of charge.

Confidentiality:
Your personal information will remain confidential by the use of a coding system for data analysis and reporting.Your participation in this study is voluntary and refusal to participate will not result in any adverse consequences. You are free to withdraw from the study at any time.

Should there be a research related injury: None to be expected from the study.

Persons to contact in the event of any Problems or Queries:
Supervisor: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)
HREC Research Administrator (IREC) Tel: 0313732900

Statement of Agreement to Participate in the Research Study:
I, ...Subject's full name .....(ID number) have read this document in it is entirely and understand its contents. Where I have had any questions or queries, these have been explained to me by LochnerSlabbert to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) .....
Subject's signature. .....Date.....

Researcher's name (print) .....
Researcher's signature .....Date.....

Witness name (print) .....
Witness signature .....Date.....

Appendix F

Brief van inligting en ingeligtetoestemming. Hoof studiegroep.

GEAGTE DEELNEMER

Welkom by mynavorsingsprojek.Dankiedat u die tydneemomditteoorweegomaan my studiedeelteneem.

Titelvan dienavorsingsstudie:

'nOndersoek op die effek van geselekteerdefaktore op die inter-verwysingspatrone van pasiëntetussenchiropraktiesyne en fisioterapeute, in die eThekwini munisipaliteit.
Hoof navorser: John George LochnerSlabbert

Mede Navorser: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)

Inleiding en doel van die studie:
'n Multi-gedisiplineerdebenadering tot pasientbestuur is al bewys as beidebelangrik en voordeligvir die pasient. Alhoewel, studies toon 'n ongebalanseerde inter-professioneleverwysing van pasiëntetussenchiropraktiesyne en fisioterapeute.Wat is die redehiervoor? Die doel van hierdiestudie is om vas testelwatter, en hoe, geselekteerdefaktore die besluitom 'n pasiëntteverwysbeinvloed.Ditbehoortte lei tot 'n beterverstaan en insig van die huidige inter-verwysingssisteem en kanmoontlik n positieweeffekhê op toekomsbestuur van pasiënte. Chiropraktiesyne en fisioterapeute, wataan die insluitings-vereistesvoldoen, in die eThekwini munisipaliteitsalaan die studiedeelneemdeur n vraagstuktevoltooi.

Insluitingskriteria

- Chiropraktisynewatgeregistreerd is en onder die AHPCSApraktiseer.
- Fisioterapeutewatgeregistreerd is en onder die HPCSA praktiseer.
- Moet in die eThekwini munisipaliteitpraktiseer (as gedefinieerddeur die 031 belkode).

Uitsluitingskriteria

- Enige person watnievrywillig die brief van informasie en ingeligtetoestemming (Appendix C2), omaan die hoof studiedeelteneem, geteken het nie.
- Enigepraktiseerderwatniebinne die eThekwini munisipaliteit(volgens die 031 belkode) praktiseernie.
- Enige person wat of in die focus groep of in die pilot studiedeelgeneem het.

Risiko/ongemak en Voordele: Geen word in hierdiestudievoorsiennie.

Vergoeding: Geen word in hierdiestudievoorsiennie.

Koste: Udeelnameaanhierdiestudie is gratis.

Vertroulikheid:
U persoonlikeinligting word vertroulikbewaardeur die gebruik van 'n kodestelselvir data analiese en verslagdoening. U deelnameaanhierdiestudie is vrywillig en

deurteweieromdeelteneemhougeennadeligegevolge in nie. Weesgerusdat u enigetyduit die studie mag tree.

Soudaar n studie-verwantebeseringwees: Geen word van hierdiestudieverwagnie.

Personeomtekontaksoudaarenigevrae of problem wees:

Toesighouer: Dr. C. Korporaal (M.Tech: Chiropractic, CCFC) (0832463562)

HREC Research Administrator (IREC) Tel: 0313732900

OoreenkomsVerklaringterDeelnameaan die NavorsingsStudie: Ek, ……Deelnemer se volle name …… (ID nommer) het hierdiedokument in sy total gelees en verstaan die inhoud. Waarekenigevraegehad het of ietsnieverstaan het nie, het LochnerSlabbertdit tot my bevredigingverduidelik. Verder, verstaanek ten volledatek op enigeoomblik myself van hierdiestudie mag onttrek, sonderenigenadeligegevolge. Dus, stem ekvrywillig in omaanhierdiestudiedeelteneem.

Deelnemer se naam (drukskrif) ……

Deelnemer se handtekening ……Datum……..

Navorser se naam (drukskrif) ……..

Navorser se handtekening ……Datum……..

Getuie se naam (drukskrif) ……

Getuie se handtekening ……Datum……

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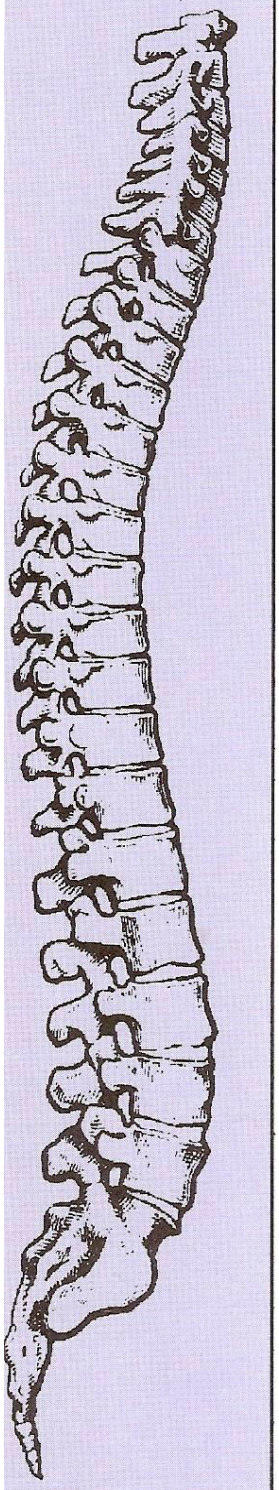

To Whom it May Concern

The Chiropractic Association of South Africa is satisfied that the Research Project envisaged by Lochner Slabbert will contribute to inter-professional relationships.

We have no problem concerning his approach to individual members of our Association, provided that such members accede to his request for assistance in completing the relative questionnaire.

On Behalf of the Association;

[redacted]

Dr R V Engelbrecht
Chief Executive Officer

SOUTH AFRICAN SOCIETY OF PHYSIOTHERAPY

PO BOX 752378
GARDENVIEW
JHB, 2047

TEL: +27 11-615 3170
FAX: +27 86 559 8237
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21 March 2012

To whom it may concern

The South African Society of Physiotherapy (SASP) is satisfied that the Research Project envisaged by Lochner Slabbert will contribute to inter-professional relationships.

We have no problem concerning his approach to individual members of our Society, provided that such members consent to his request for assistance in completing the relative questionnaire.

Regards

MAGDA FOURIE
Deputy President
South African Society of Physiotherapy

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

26 July 2012

IREC Reference Number: **REC 26/12**

Mr J G L Slabbert
24 Nantes Street
Paarl
7646

Dear Mr Slabbert

An investigation of the factors affecting referral of patients between chiropractors and physiotherapists in the eThekwini Municipality

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been Approved subject to the following amendment:

- The instructions should be preceded by a friendly greeting.

Please note that you may now proceed with research on the proposed project.

Yours Sincerely

[redacted]

Dr D. F. Naude
Chairperson: IREC

Appendix J: Instructions:

Please answer the following questions by placing a cross(X) in the relevant block or writing down your answer in the space provided.

We are aware of the sensitivity of the questions and therefore we request that you are not to write any identifying data on this questionnaire. Your co-operation is appreciated, as this will allow that we keep your responses anonymous. Once the questionnaires have been received, they will be stored in a locked cabinet so that only myself as the researcher and my research supervisor will have access to them. This will ensure that your responses are kept confidential.

This questionnaire focuses on the following: background or biographical information; the extent of collaboration between Chiropractors and Physiotherapists; your personal opinion on issues related to Chiropractic and Physiotherapy.

Some of the questions will determine: to what extent do you agree with specific statement/how strongly you relate to the specific statement. Please indicate your answer using the following 5-point scale, where:

1 = Strongly agree/Always 2 = Agree/Frequently 3 = Neutral/Occasionally
4 = Disagree/Rarely 5 = Strongly disagree/Never

Practice refers to any professional interactions in treating patients, irrespective of place (e.g. hospital, private practice).

1	What is your age (at your last birthday)?		(years)
2	Your gender:	Male	Female
3	What is your current occupation?	Chiropractor	Physiotherapist
4	Indicate area of interest (if you are a chiropractor) or speciality (if you are a physiotherapist).		
5	Where did you qualify(Country)?		
6	Where did you qualify(Institution)?		
7	When did you qualify (year)?		
8	Do you hold any other qualifications?	Yes	No
9	If yes to 7, please indicate whether these qualifications fall into any of the following categories (can tick more than one).		

Accounting / financial management	Administration	Alternative medicine
Agricultural / nature conservation	Communication / journalism	Construction and surveying
Crime prevention / security	Education	Engineering
Housing development	Human resources / industrial relations	Humanities
IT / computer science	Management and planning	Manufacturing
Medicine / Medical technologies	Para-medical	Performing arts
Public relations / marketing	Sciences and mathematics	Services to the community
Social sciences / legal services	Technology / Processing	Tourism / hospitality
Transport	Visual arts and design	
Other		

10	How long have you been in practice?		(years)
11	Where do you practice? Can tick more than one.	Private practice	1
		Hospital/Clinic setting	2
		Multidisciplinary setting	3
		School setting	4
		Other (specify)	

12	Where is your practice located?	Suburb	Central Business District	Rural
13	Do you practice part time or full time?	Part time		Full time

14	Are you involved in other anyhealth care activities? Can tick more than one.	
	Community service	Community engagement
	Conference attendance	Conference presentation
	Educational institution	Education and research
	Inter-professional collaboration – research	Inter-professional collaboration – education
	Inter-professional collaboration – community engagement	Inter-professional collaboration – conference attendance / presentation
	Profession association (national)	Professional association (international)
	Professional boards	Research (supervision)
	Research (for higher degree purposes)	Research (non qualification)

15	For each of the professions listed, tick the proximity of the closest practitioner to your practice.					
		0 – 2 km	2 – 4 km	4 – 6 km	>8 km	Unsure
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

16	Do you know if the Chiropractor (if you are a Physiotherapist) or the Physiotherapist (if you are a Chiropractor) nearest to you is involved with activities other than his/her practice? For example working with a sports team, attend meetings/congresses, does talks or presentations, involved in any further education.	Yes	No
17	If the chiropractor/physiotherapist nearest to you is involved in any of the above-mentioned/other activities, would that have an impact on your decision to refer a patient to that practitioner?	Yes	No
18	If you answered Yes to the question above (Question 16), is it a positive impact on your decision to refer a patient to that practitioner?	Yes	No
19	Should a chiropractor and a physiotherapist be able to practice within the same multidisciplinary setting?	Yes	No

20	Do you share your practice with any of the following health care providers?		
		Yes	No
	Chiropractor		
	GP		
	Homeopath		
	Physiotherapist		

21	In the management of patients, do you have **PROFESSIONAL contact** with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor)?		
	Daily	Monthly	Never
	Weekly	Referral-related	

22	Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) **as a patient**?	Yes	No
23	Where you satisfied with the treatment you received?	Yes	No

24	Do you refer patients to the following health care providers? Tick one per health care provider.					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

25	Do you include a letter/report when referring a patient?	Yes	No

26	What is the principle reason for referral of patients? Tick one.					
	Condition dependant	Patient finances	Personal reasons	Patient request	Second opinion	You wish to get rid of the patient
	More qualified health care provider (specialist)	More appropriate treatment regimen for the patient	You feel that your scope is limited in helping the patient	Other (please specify):		

27	Does the health care provider you referred a patient to report back to you on the status of the patients' care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
28	If the health care provider reports back to you, in which format do they most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone
29	Does the health care provider you refer a patient to return the patient to your care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
30	Do you receive referrals from the following health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
31	Do you return a patient to the care of the following referring health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
32	Do you report back to the health care provider that referred a patient to you?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
33	If you report back to the health care provider, inwhich format do you most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone

For questions 34 to 39 please refer to the condition list listed alongside in order to answer each of the questions.		Abdominal condition	Arthritis	Cardiovascular condition	Endocrine condition	Extremity joint dysfunction/injury	Headache	Low back pain	Mild fracture	Neck pain	Neurological condition	Respiratory condition	Scoliosis	Skin problems	Spinal disc tear / herniation	Sports-related injury	Sprain	Thoracic pain	Whiplash
34	In the last 6 months, how often were each of the above conditions referred to you?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
35	In the past 6months, how often has a patient, with one of the above conditions, presented to you first (i.e. the patient was not referred)?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
36	In the last 6 months, how often did you refer the above conditions?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
37	Please indicate which health care provider received the majority of your referrals for each of the above stated conditions (if you referred that condition). Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
38	Who do you think is the best equipped to treat the above conditions? Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
39	From the listed conditions above, indicate which health care provider is able to treat the condition within their scope of practice. Can tick more than one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		

40	How strongly do you believe that the following factors influence your decision to refer a patient to another health care provider?					
		Strongly agree	Agree	No impact	Disagree	Strongly disagree
	Patient request					
	Patient demographic					
	Past referral from the other profession					
	Their gender					
	Their practice location					
	Their qualification					
	Their time in practice (i.e. years experience)					
	Your family/friend recommendation					
	Your gender					
	Your knowledge of the other profession					
	Your perception/personal experience					
	Your practice location					
	Your qualification					
	Your time in practice (i.e. years experience)					
41	Please indicate whether you agree / disagree with the statements below. (Please tick one box for each statement).					
		Strongly agree	Agree	Disagree	Strongly disagree	
	Chiropractic and Physiotherapy are similar professions (i.t.o. professional abilities).					
	Chiropractic and Physiotherapy are complimentary professions.					
	Physiotherapy should be limited to the treatment of myofascial conditions.					
	Chiropractic should be limited to the treatment of articular dysfunction.					
	Chiropractic increases stroke incidence in patients when treating neck pain.					
	All Physiotherapists can perform the same treatment as Chiropractors without additional training.					
	Chiropractors can perform the same treatments as all Physiotherapists without additional training.					
	Chiropractors are able to treat extremity joint dysfunction.					
	Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow.					
	Chiropractic has been shown to achieve better outcomes in the treatment of headaches.					
42	If a patient of yours enquire about Chiropractic (if you are a Physiotherapist) or Physiotherapy (if you are a Chiropractor), do you (tick only one option):					
	Giveyour professional opinion.					
	Outlinethe enquired professions' scope of practice.					
	Saythat you do not know enough.					
	Tellthe patient that you can treat the same condition.					

Thank you for your co-operation in completing this questionnaire. The questionnaire will be collected on the date arranged prior with you.

Appendix K: Instructions:

Please answer the following questions by placing a cross(X) in the relevant block or writing down your answer in the space provided.

We are aware of the sensitivity of the questions and therefore we request that you are not to write any identifying data on this questionnaire. Your co-operation is appreciated, as this will allow that we keep your responses anonymous. Once the questionnaires have been received, they will be stored in a locked cabinet so that only myself as the researcher and my research supervisor will have access to them. This will ensure that your responses are kept confidential.

This questionnaire focuses on the following: background or biographical information; the extent of collaboration between Chiropractors and Physiotherapists; your personal opinion on issues related to Chiropractic and Physiotherapy.

Some of the questions will determine: to what extent do you agree with specific statement/how strongly you relate to the specific statement. Please indicate your answer using the following 5-point scale, where:

1 = Strongly agree/Always 2 = Agree/Frequently 3 = Neutral/Occasionally
4 = Disagree/Rarely 5 = Strongly disagree/Never

Practice refers to any professional interactions in treating patients, irrespective of place (e.g. hospital, private practice).

1	What is your age (at your last birthday)?		(years)
2	Your gender:	Male	Female
3	What is your current occupation?	Chiropractor	Physiotherapist
4	Indicate area of interest (if you are a chiropractor) or speciality (if you are a physiotherapist).		
5	Where did you qualify(Country)?		
6	Where did you qualify(Institution)?		
7	When did you qualify (year)?		
8	Do you hold any other qualifications?	Yes	No
9	If yes to 7, please indicate whether these qualifications fall into any of the following categories (can tick more than one).		

Accounting / financial management	Administration	Alternative medicine
Agricultural / nature conservation	Communication / journalism	Construction and surveying
Crime prevention / security	Education	Engineering
Housing development	Human resources / industrial relations	Humanities
IT / computer science	Management and planning	Manufacturing
Medicine / Medical technologies	Para-medical	Performing arts
Public relations / marketing	Sciences and mathematics	Services to the community
Social sciences / legal services	Technology / Processing	Tourism / hospitality
Transport	Visual arts and design	
Other		

10	How long have you been in practice?		(years)
11	Where do you practice? Can tick more than one.	Private practice	1
		Hospital/Clinic setting	2
		Multidisciplinary setting	3
		School setting	4
		Other (specify)	

12	Where is your practice located?	Suburb	Central Business District	Rural
13	Do you practice part time or full time?	Part time		Full time

14	Are you involved in other anyhealth care activities? Can tick more than one.	
	Community service	Community engagement
	Conference attendance	Conference presentation
	Educational institution	Education and research
	Inter-professional collaboration – research	Inter-professional collaboration – education
	Inter-professional collaboration – community engagement	Inter-professional collaboration – conference attendance / presentation
	Profession association (national)	Professional association (international)
	Professional boards	Research (supervision)
	Research (for higher degree purposes)	Research (non qualification)

15	For each of the professions listed, tick the proximity of the closest practitioner to your practice.					
		0 – 2 km	2 – 4 km	4 – 6 km	>8 km	Unsure
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

16	Do you know if the Chiropractor (if you are a Physiotherapist) or the Physiotherapist (if you are a Chiropractor) nearest to you is involved with activities other than his/her practice? For example working with a sports team, attend meetings/congresses, does talks or presentations, involved in any further education.	Yes	No
17	If the chiropractor/physiotherapist nearest to you is involved in any of the above-mentioned/other activities, would that have an impact on your decision to refer a patient to that practitioner?	Yes	No
18	If you answered Yes to the question above (Question 16), is it a positive impact on your decision to refer a patient to that practitioner?	Yes	No
19	Should a chiropractor and a physiotherapist be able to practice within the same multidisciplinary setting?	Yes	No

20	Do you share your practice with any of the following health care providers?		
		Yes	No
	Chiropractor		
	GP		
	Homeopath		
	Physiotherapist		

21	In the management of patients, do you have **PROFESSIONAL contact** with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor)?		
	Daily	Monthly	Never
	Weekly	Referral-related	

22	Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) **as a patient**?	Yes	No
23	Where you satisfied with the treatment you received?	Yes	No / N/A

24	Do you refer patients to the following health care providers? Tick one per health care provider.					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

25	Do you include a letter/report when referring a patient?	Yes	No

26	What is the principle reason for referral of patients from your practice generally? Tick one.					
	Condition dependant	Patient finances	Personal reasons	Patient request	Second opinion	You wish to get rid of the patient
	More qualified health care provider (specialist)	More appropriate treatment regimen for the patient	You feel that your scope is limited in helping the patient	Other (please specify):		

27	Does the health care provider you referred a patient to report back to you on the status of the patients' care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
28	If the health care provider reports back to you, in which format do they most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone
29	Does the health care provider you refer a patient to return the patient to your care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
30	Do you receive referrals from the following health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
31	Do you return a patient to the care of the following referring health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
32	Do you report back to the health care provider that referred a patient to you?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
33	If you report back to the health care provider, inwhich format do you most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone

For questions 34 to 39 please refer to the condition list listed alongside in order to answer each of the questions.		Abdominal condition	Arthritis	Cardiovascular condition	Endocrine condition	Extremity joint dysfunction/injury	Headache	Low back pain	Mild fracture	Neck pain	Neurological condition	Respiratory condition	Scoliosis	Skin problems	Spinal disc tear / herniation	Sports-related injury	Sprain	Thoracic pain	Whiplash
34	In the last 6 months, how often were each of the conditions related to abovereferred to you?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
35	In the past 6months, how often has a patient, with one of theconditions related to above, presented to you first (i.e. the patient was not referred)?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
36	In the last 6 months, how often did you refer the conditions related to above?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
37	Please indicate which health care provider received the majority of your referrals for each of the conditions related to above. Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
38	Who do you think is the best equipped to treat conditions related to above? Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
39	From the conditions related toabove, indicate which health care provider is able to treat the condition within their scope of practice. Can tick more than one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		

40	How strongly do you believe that the following factors influence your decision to refer a patient to another health care provider?					
		Strongly agree	Agree	No impact	Disagree	Strongly disagree
	Patient request					
	Patient demographic					
	Past referral from the other profession					
	Their gender					
	Their practice location					
	Their qualification					
	Their time in practice (i.e. years experience)					
	Your family/friend recommendation					
	Your gender					
	Your knowledge of the other profession					
	Your perception/personal experience					
	Your practice location					
	Your scope of practice					
	Your time in practice (i.e. years experience)					
41	Please indicate whether you agree / disagree with the statements below. (Please tick one box for each statement).					
		Strongly agree	Agree	Disagree	Strongly disagree	
	Chiropractic and Physiotherapy are similar professions (i.t.o. professional abilities).					
	Chiropractic and Physiotherapy are complimentary professions.					
	Physiotherapy should be limited to the treatment of myofascial conditions.					
	Chiropractic should be limited to the treatment of articular dysfunction.					
	Chiropractic increases stroke incidence in patients when treating neck pain.					
	All Physiotherapists can perform the same treatment as Chiropractors without additional training.					
	Chiropractors can perform the same treatments as all Physiotherapists without additional training.					
	Chiropractors are able to treat extremity joint dysfunction.					
	Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow.					
	Chiropractic has been shown to achieve better outcomes in the treatment of headaches.					
42	If a patient of yours enquire about Chiropractic (if you are a Physiotherapist) or Physiotherapy (if you are a Chiropractor), do you (tick only one option):					
	Giveyour professional opinion.					
	Outlinethe enquired professions' scope of practice.					
	Saythat you do not know enough.					
	Tellthe patient that you can treat the same condition.					

Thank you for your co-operation in completing this questionnaire. The questionnaire will be collected on the date arranged prior with you.

Appendix L:

Dear Participant

Welcome to my study and thank you for taking the time needed to complete this questionnaire. Your input is greatly appreciated.

Instructions:

We are aware of the sensitivity of the questions and therefore we request that you are not to write any identifying data on this questionnaire. Your co-operation is appreciated, as this will allow that we keep your responses anonymous. Once the questionnaires have been received, they will be stored in a locked cabinet so that only myself as the researcher and my research supervisor will have access to them. This will ensure that your responses are kept confidential.

This questionnaire focuses on the following: background or biographical information; the extent of collaboration between Chiropractors and Physiotherapists; your personal opinion on issues related to Chiropractic and Physiotherapy. Please answer the following questions by placing a cross(X) in the relevant block or writing down your answer in the space provided.

Practice refers to any professional interactions in treating patients, irrespective of place (e.g. hospital, private practice).

1	What is your age (at your last birthday)?			(years)
2	Your gender:	Male		Female
3	What is your current occupation?	Chiropractor		Physiotherapist
4	Indicate area of interest (if you are a chiropractor) or speciality (if you are a physiotherapist).			
5	Where did you qualify(Country)?			
6	Where did you qualify(Institution)?			
7	When did you qualify (year)?			
8	Do you hold any other qualifications?	Yes		No
9	If yes to 7, please indicate whether these qualifications fall into any of the following categories (can tick more than one).			
	Accounting / financial management	Administration		Alternative medicine
	Agricultural / nature conservation	Communication / journalism		Construction and surveying
	Crime prevention / security	Education		Engineering
	Housing development	Human resources / industrial relations		Humanities
	IT / computer science	Management and planning		Manufacturing
	Medicine / Medical technologies	Para-medical		Performing arts
	Public relations / marketing	Sciences and mathematics		Services to the community
	Social sciences / legal services	Technology / Processing		Tourism / hospitality
	Transport	Visual arts and design		
	Other			
10	How long have you been in practice?			(years)
11	Where do you practice? Can tick more than one.	Private practice		1
		Hospital/Clinic setting		2
		Multidisciplinary setting		3
		School setting		4
		Other (specify)		
12	Where is your practice located?	Suburb	Central Business District	Rural

13	Do you practice part time or full time?	Part time	Full time

14	Are you involved in other anyhealth care activities? Can tick more than one.	
	Community service	Community engagement
	Conference attendance	Conference presentation
	Educational institution	Education and research
	Inter-professional collaboration – research	Inter-professional collaboration – education
	Inter-professional collaboration – community engagement	Inter-professional collaboration – conference attendance / presentation
	Profession association (national)	Professional association (international)
	Professional boards	Research (supervision)
	Research (for higher degree purposes)	Research (non qualification)

15	For each of the professions listed, tick the proximity of the closest practitioner to your practice.					
		0 – 2 km	2 – 4 km	4 – 6 km	>8 km	Unsure
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

16	Do you know if the Chiropractor (if you are a Physiotherapist) or the Physiotherapist (if you are a Chiropractor) nearest to you is involved with activities other than his/her practice? For example working with a sports team, attend meetings/congresses, does talks or presentations, involved in any further education.	Yes	No
17	If the chiropractor/physiotherapist nearest to you is involved in any of the above-mentioned/other activities, would that have an impact on your decision to refer a patient to that practitioner?	Yes	No
18	If you answered Yes to the question above (Question 17), is it a positive impact on your decision to refer a patient to that practitioner?	Yes	No
19	Should a chiropractor and a physiotherapist be able to practice within the same multidisciplinary setting?	Yes	No

20	Do you share your practice with any of the following health care providers?		
		Yes	No
	Chiropractor		
	GP		
	Homeopath		
	Physiotherapist		

21	In the management of patients, do you have **PROFESSIONAL contact** with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor)?		
	Daily	Monthly	Never
	Weekly	Referral-related	

22	Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) **as a patient**?	Yes	No
23	Where you satisfied with the treatment you received?	Yes	No / N/A

24	Do you refer patients to the following health care providers? Tick one per health care provider.					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					

25	Do you include a letter/report when referring a patient?	Yes	No

26	What is the principle reason for referral of patients from your practice generally? Tick one.					
	Condition dependant	Patient finances	Personal reasons	Patient request	Second opinion	You wish to get rid of the patient
	More qualified health care provider (specialist)	More appropriate treatment regimen for the patient	You feel that your scope is limited in helping the patient	Other (please specify):		

27	Does the health care provider you referred a patient to report back to you on the status of the patients' care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
28	If the health care provider reports back to you, in which format do they most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone
29	Does the health care provider you refer a patient to return the patient to your care?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
30	Do you receive referrals from the following health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
31	Do you return a patient to the care of the following referring health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
32	Do you report back to the health care provider that referred a patient to you?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor					
	GP					
	Homeopath					
	Physiotherapist					
33	If you report back to the health care provider, inwhich format do you most commonly interact?					
	E-mail	Fax	Letter	Social media	SMS	Telephone

For questions 34 to 39 please refer to the condition list listed alongside in order to answer each of the questions.		Abdominal condition	Arthritis	Cardiovascular condition	Endocrine condition	Extremity joint dysfunction/injury	Headache	Low back pain	Mild fracture	Neck pain	Neurological condition	Respiratory condition	Scoliosis	Skin problems	Spinal disc tear / herniation	Sports-related injury	Sprain	Thoracic pain	Whiplash
34	In the last 6 months, how often were each of the conditions related to abovereferred to you?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
35	In the past 6months, how often has a patient, with one of theconditions related to above, presented to you first (i.e. the patient was not referred)?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
36	In the last 6 months, how often did you refer the conditions related to above?																		
	Always																		
	Frequent																		
	Occasionally																		
	Rarely																		
	Never																		
37	Please indicate which health care provider received the majority of your referrals for each of the conditions related to above. Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
38	Who do you think is the best equipped to treat conditions related to above? Tick one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		
39	From the conditions related toabove, indicate which health care provider is able to treat the condition within their scope of practice. Can tick more than one health care provider per condition.																		
	Chiropractor																		
	GP																		
	Homoeopath																		
	Physiotherapist																		

40	How strongly do you believe that the following factors influence your decision to refer a patient to another health care provider?					
		Strongly agree	Agree	No impact	Disagree	Strongly disagree
	Patient request					
	Patient demographic					
	Past referral from the other profession					
	Their gender					
	Their practice location					
	Their qualification					
	Their time in practice (i.e. years experience)					
	Your family/friend recommendation					
	Your gender					
	Your knowledge of the other profession					
	Your perception/personal experience					
	Your practice location					
	Your scope of practice					
	Your time in practice (i.e. years experience)					

41	Please indicate whether you agree / disagree with the statements below. (Please tick one box for each statement).				
		Strongly agree	Agree	Disagree	Strongly disagree
	Chiropractic and Physiotherapy are similar professions (i.t.o. professional abilities).				
	Chiropractic and Physiotherapy are complimentary professions.				
	Physiotherapy should be limited to the treatment of myofascial conditions.				
	Chiropractic should be limited to the treatment of articular dysfunction.				
	Chiropractic increases stroke incidence in patients when treating neck pain.				
	All Physiotherapists can perform the same treatment as Chiropractors without additional training.				
	Chiropractors can perform the same treatments as all Physiotherapists without additional training.				
	Chiropractors are able to treat extremity joint dysfunction.				
	Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow.				
	Chiropractic has been shown to achieve better outcomes in the treatment of headaches.				

42	If a patient of yours enquire about Chiropractic (if you are a Physiotherapist) or Physiotherapy (if you are a Chiropractor), do you (tick only one option):	
	Giveyour professional opinion.	
	Outlinethe enquired professions' scope of practice.	
	Saythat you do not know enough.	
	Tellthe patient that you can treat the same condition.	

Thank you for your co-operation in completing this questionnaire. The questionnaire will be collected on the date arranged with you.

Have a wonderful day.

Appendix M: Instructions:

Please answer the following questions by placing a cross(X) in the relevant block or writing down your answer in the space provided.

We are aware of the sensitivity of the questions and therefore we request that you are not to write any identifying data on this questionnaire. Your co-operation is appreciated, as this will allow that we keep your responses anonymous. Once the questionnaires have been received, they will be stored in a locked cabinet so that only myself as the researcher and my research supervisor will have access to them. This will ensure that your responses are kept confidential.

This questionnaire focuses on the following: background or biographical information; the extent of collaboration between Chiropractors and Physiotherapists; your personal opinion on issues related to Chiropractic and Physiotherapy.

Some of the questions will determine: to what extent do you agree with specific statement/how strongly you relate to the specific statement. Please indicate your answer using the following 5-point scale, where:

1 = Strongly agree/Always
2 = Agree/Frequently
3 = Neutral/Occasionally
4 = Disagree/Rarely
5 = Strongly disagree/Never

1	What is your age (at your last birthday)?		
2	Your gender:	Male	1
		Female	2
3	What is your current occupation?	Chiropractor	1
		Physiotherapist	2
4	Where (Country) did you qualify?		
5	Where (Institution) did you qualify?		
6	When did you qualify (year)?		
7	Do you hold any other qualifications?	Yes	1
		No	2

8	If yes to 7, please indicate whether these qualifications fall into any of the following categories					
	Accounting / financial management	1	Administration	2	Alternative medicine	3
	Agricultural / nature conservation	4	Communication / journalism	5	Construction and surveying	6
	Crime prevention / security	7	Education	8	Engineering	9
	Housing development	10	Human resources / industrial relations	11	Humanities	12
	Information technology / computer science	13	Management and planning	14	Manufacturing	15
	Medicine / Medical technologies	16	Para-medical	17	Performing arts	18
	Public relations / marketing	19	Sciences and mathematics	20	Services to the community	21
	Social sciences / legal services	22	Technology / Processing	23	Tourism / hospitality	24
	Transport	25	Visual arts and design	26		
	Other					

9	How long have you been in practice?	0 – 4 years	1
		4 – 8 years	2
		8 – 12 years	3
		12 – 16 years	4
		> 16 years	5
10	Where do you practice?	Private practice	1
		Hospital/Clinic setting	2
		Multidisciplinary setting	3
		Other	4
11	The area where you practice is located (i.e. suburb; central business district; rural).		
12	Do you practice part time or full time?	Yes	1
		No	2

13	Are you involved in other professional activities?				
	Educational institution	1	Education and research		2
	Conference attendance	3	Conference presentation		4
	Inter-professional collaboration – research	5	Inter-professional collaboration – education		6
	Inter-professional collaboration – community engagement	7	Inter-professional collaboration – conference attendance / presentation		8
	Profession association (national)	9	Professional association (international)		10
	Professional boards	11	Research (supervision)		12
	Research (non qualification)	13	Research (for higher degree purposes)		14

14	How close are the following health care providers to your practice? Please circle the appropriate number for each.				
		0 – 2 km	2 – 4 km	4 – 6 km	>8 km
	Chiropractor	1	2	3	4
	GP	1	2	3	4
	Homeopath	1	2	3	4
	Physiotherapist	1	2	3	4
15	Do you know if the Chiropractor (if you are a Physiotherapist) or the Physiotherapist (if you are a Chiropractor) nearest to you are involved with activities other than his/her practice? For example working with a sports team, attend meetings/congresses, does talks or presentations, involved in any further education.			1 – Yes	2 – No
16	If the chiropractor/physiotherapist nearest to you are involved in any of the above-mentioned/other activities, would that have an impact on your decision to refer a patient to that practitioner?			1 – Yes	2 – No
17	If you answered Yes to the question above, is it a positive impact on your decision to refer a patient to that practitioner?			1 – Yes	2 – No
18	Do you think a chiropractor and a physiotherapist can practice together in the same multidisciplinary setting?			1 – Yes	2 – No
19	Do you share your practice with any of the following health care providers?				
		Yes		No	
	Chiropractor	1		2	
	GP	1		2	
	Homeopath	1		2	
	Physiotherapist	1		2	
	Other (please name)				

20	Do you have/have you ever had **PROFESSIONAL contact** with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor)?					
	Daily	1	Monthly	3	Never	5
	Weekly	2	Referral-related	4		

21	Do you have/have you ever had PERSONAL contact with a chiropractor (if you are a physiotherapist) or with a physiotherapist (if you are a chiropractor) **as a patient**?				Yes	1
					No	2
22	Do you refer patients to the following health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
	Other (please name)					
23	If you do refer patients, how many times in the last 6 months did you refer to the following health care providers?					
		1 - 10	10 - 20	20 - 30	30 - 40	>40
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
24	What it the principle reason for referral of patients ?					
	Condition dependant	Patient finances	Personal reasons	Patient request	Second opinion	You wish to get rid of the patient
	More qualified health care provider (specialist)	More appropriate treatment regimen for the patient	You feel that your scope is limited in helping the patient	Other (please specify):		
25	Do you receive referrals from the following health care providers?					
		Always	Frequently	Occasionally	Rarely	Never
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
	Other (please name)					
26	If you do receive referrals, how many times in the last 6 months have you received referrals from the following health care providers?					
		1 - 10	10 - 20	20 - 30	30 - 40	>40
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
27	Do you return a patient to the care of the following referring health care providers?					
		Always	Frequently	Occasionally	Rarely	No
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
28	Does the health care provider you refer a patient to return the patient to your care?					
		Always	Frequently	Occasionally	Rarely	No
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5

29	Does the health care provider you referred a patient to report back to you on the status of the patients care?					
		Always	Frequently	Occasionally	Rarely	No
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
30	If the health care provider reports back to you, in which format do they most commonly interact ? (please rank the list below from most to least frequent):					
	E-mail		Other (please specify)			
	Fax					
	Letter					
	SMS					
	Telephone					
31	Do you report back to the health care provider that referred a patient to you?					
		Always	Frequently	Occasionally	Rarely	No
	Chiropractor	1	2	3	4	5
	GP	1	2	3	4	5
	Homeopath	1	2	3	4	5
	Physiotherapist	1	2	3	4	5
32	If the you report back to the health care provider, which format do you use most commonly interact with them ? (please rank the list below from most to least frequent):					
	E-mail		Other (please specify)			
	Fax					
	Letter					
	SMS					
	Telephone					
33	In the last 6 months, how many times were each of the following conditions referred to you?					
		0	1-10	10 - 20	20 - 30	30 - 40	>40
	Appendicitis	0	1	2	3	4	5
	Arthritis	0	1	2	3	4	5
	Asthma	0	1	2	3	4	5
	Cancer	0	1	2	3	4	5
	Colds and flu	0	1	2	3	4	5
	Diabetes	0	1	2	3	4	5
	Headache	0	1	2	3	4	5
	Low back pain	0	1	2	3	4	5
	Mild fracture	0	1	2	3	4	5
	Neck pain	0	1	2	3	4	5
	Skin problems	0	1	2	3	4	5
	Sprain	0	1	2	3	4	5
	Upper back pain	0	1	2	3	4	5
	Whiplash	0	1	2	3	4	5
	Extremity joint dysfunction / injury	0	1	2	3	4	5
	Sports-related injury	0	1	2	3	4	5
	Scoliosis	0	1	2	3	4	5
	Spinal disc tear / herniation	0	1	2	3	4	5

34	In the past 6months, how many times has a patient, with one of the following conditions, presented to you first (i.e. the patient was not referred)?						
		0	1-10	10 - 20	20 - 30	30 - 40	>40
	Appendicitis	0	1	2	3	4	5
	Arthritis	0	1	2	3	4	5
	Asthma	0	1	2	3	4	5
	Cancer	0	1	2	3	4	5
	Colds and flu	0	1	2	3	4	5
	Diabetes	0	1	2	3	4	5
	Headache	0	1	2	3	4	5
	Low back pain	0	1	2	3	4	5
	Mild fracture	0	1	2	3	4	5
	Neck pain	0	1	2	3	4	5
	Skin problems	0	1	2	3	4	5
	Sprain	0	1	2	3	4	5
	Upper back pain	0	1	2	3	4	5
	Whiplash	0	1	2	3	4	5
	Extremity joint dysfunction / injury	0	1	2	3	4	5
	Sports-related injury	0	1	2	3	4	5
	Scoliosis	0	1	2	3	4	5
	Spinal disc tear / herniation	0	1	2	3	4	5
35	In the last 6 months, how many times did you refer the following conditions?						
		0	1-10	10 - 20	20 - 30	30 - 40	>40
	Appendicitis	0	1	2	3	4	5
	Arthritis	0	1	2	3	4	5
	Asthma	0	1	2	3	4	5
	Cancer	0	1	2	3	4	5
	Colds and flu	0	1	2	3	4	5
	Diabetes	0	1	2	3	4	5
	Headache	0	1	2	3	4	5
	Low back pain	0	1	2	3	4	5
	Mild fracture	0	1	2	3	4	5
	Neck pain	0	1	2	3	4	5
	Skin problems	0	1	2	3	4	5
	Sprain	0	1	2	3	4	5
	Upper back pain	0	1	2	3	4	5
	Whiplash	0	1	2	3	4	5
	Extremity joint dysfunction / injury	0	1	2	3	4	5
	Sports-related injury	0	1	2	3	4	5
	Scoliosis	0	1	2	3	4	5
	Spinal disc tear/herniation	0	1	2	3	4	5

36	In the last 6 months, who referred the following conditions to you?				
		Chiropractor	GP	Homeopath	Physiotherapist
	Appendicitis	1	2	3	4
	Arthritis	1	2	3	4
	Asthma	1	2	3	4
	Cancer	1	2	3	4
	Colds and flu	1	2	3	4
	Diabetes	1	2	3	4
	Headache	1	2	3	4
	Low back pain	1	2	3	4
	Mild fracture	1	2	3	4
	Neck pain	1	2	3	4
	Skin problems	1	2	3	4
	Sprain	1	2	3	4
	Upper back pain	1	2	3	4
	Whiplash	1	2	3	4
	Extremity joint dysfunction/injury	1	2	3	4
	Sports-related injury	1	2	3	4
	Scoliosis	1	2	3	4
	Spinal disc tear/herniation	1	2	3	4
37	Who do you think are the best equipped to treat the following conditions?				
		Chiropractor	GP	Homeopath	Physiotherapist
	Appendicitis	1	2	3	4
	Arthritis	1	2	3	4
	Asthma	1	2	3	4
	Cancer	1	2	3	4
	Colds and flu	1	2	3	4
	Diabetes	1	2	3	4
	Headache	1	2	3	4
	Low back pain	1	2	3	4
	Mild fracture	1	2	3	4
	Neck pain	1	2	3	4
	Skin problems	1	2	3	4
	Sprain	1	2	3	4
	Upper back pain	1	2	3	4
	Whiplash	1	2	3	4
	Extremity joint dysfunction/injury	1	2	3	4
	Sports-related injury	1	2	3	4
	Scoliosis	1	2	3	4
	Spinal disc tear/herniation	1	2	3	4
38	In the last 6 months, who did you refer the following conditions to?				
		Chiropractor	GP	Homeopath	Physiotherapist
	Appendicitis	1	2	3	4
	Arthritis	1	2	3	4
	Asthma	1	2	3	4
	Cancer	1	2	3	4
	Colds and flu	1	2	3	4
	Diabetes	1	2	3	4
	Headache	1	2	3	4
	Low back pain	1	2	3	4
	Mild fracture	1	2	3	4
	Neck pain	1	2	3	4
	Skin problems	1	2	3	4
	Sprain	1	2	3	4

	Upper back pain	1	2	3	4
	Whiplash	1	2	3	4
	Extremity joint dysfunction/injury	1	2	3	4
	Sports-related injury	1	2	3	4
	Scoliosis	1	2	3	4
	Spinal disc tear/herniation	1	2	3	4
39	From the listed conditions below, indicate which health care provider you think can treat the condition.				
		Chiropractor	GP	Homeopath	Physiotherapist
	Appendicitis	1	2	3	4
	Arthritis	1	2	3	4
	Asthma	1	2	3	4
	Cancer	1	2	3	4
	Colds and flu	1	2	3	4
	Diabetes	1	2	3	4
	Headache	1	2	3	4
	Low back pain	1	2	3	4
	Mild fracture	1	2	3	4
	Neck pain	1	2	3	4
	Skin problems	1	2	3	4
	Sprain	1	2	3	4
	Upper back pain	1	2	3	4
	Whiplash	1	2	3	4
	Extremity joint dysfunction / injury	1	2	3	4
	Sports-related injury	1	2	3	4
	Scoliosis	1	2	3	4
	Spinal disc tear/herniation	1	2	3	4
40	How strongly do you belief that the following factors influence your decision to refer a patient to another health care provider?					
		Strongly agree	Agree	No impact	Disagree	Strongly disagree
	Practice location	1	2	3	4	5
	Your qualification	1	2	3	4	5
	Your knowledge of the other profession	1	2	3	4	5
	Your perception/personal experience	1	2	3	4	5
	Your gender	1	2	3	4	5
	Your time in practice	1	2	3	4	5
	Patient request	1	2	3	4	5
	Patient demographic	1	2	3	4	5
	Threat to your practice	1	2	3	4	5
	Past referral from the other profession	1	2	3	4	5
	Family/friend	1	2	3	4	5
41	Please indicate whether you agree / disagree with the statements below, as per the provided scale.					
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	Chiropractic and Physiotherapy are similar professions	1	2	3	4	5
	Chiropractic and Physiotherapy are complimentary professions	1	2	3	4	5
	Physiotherapy should be limited to the treatment of muscular strains	1	2	3	4	5
	Chiropractic should be limited to the treatment of spinal articular dysfunction	1	2	3	4	5
	Chiropractic increases stroke incidence in patients when treating neck pain	1	2	3	4	5

	Physiotherapists can perform the same treatment as Chiropractors without additional training	1	2	3	4	5
	Chiropractors can perform the same treatments as Physiotherapists without additional training	1	2	3	4	5
	Chiropractors are able to treat extremity joint dysfunction	1	2	3	4	5
	Physiotherapy has been shown to be superior to Chiropractic	1	2	3	4	5
	Chiropractic has been shown to be superior to Physiotherapy	1	2	3	4	5
	Manipulation by a Physiotherapist should be considered harmful and ineffective.	1	2	3	4	5
	Manipulation by a Chiropractor should be considered harmful and ineffective	1	2	3	4	5

42	If a patient of yours enquire about Chiropractic (if you are a Physiotherapist) or Physiotherapy (if you are a Chiropractor), do you:	
	Saythat you do not know enough	1
	Outlinethe enquired professions' scope of practice	2
	Giveyour personal opinion	3
	Giveyour professional opinion	4
	Tellthe patient that you can treat the same condition.	5

Thank you for your co-operation in completing this questionnaire. The questionnaire will be collected on the date arranged prior with you.

Appendix N

Expert group concerns

1. Define/clarify what is meant by “practice”.
2. Add a question denoting any areas of interest/speciality of the practitioners.
3. Change question 9 to an open ended question.
4. Question 10: add “school setting” and to specify if they answer “other”.
5. Possible answers for question 11: Suburb, Central business district or Rural.
6. Question 13 can have more than one answer.
7. Add unsure to question 14.
8. Question 15 and 16: grammar.
9. Change question 18 and 20’s wording/clarify.
10. Add question after question 21: “where you satisfied by the treatment you received?”.
11. Leave question 23 and 26.
12. Bring question 28 before question 25.
13. Bring question 29 before question 27.
14. Add social media as an option to question 30.
15. Question 33 to 39: leave out appendicitis, asthma, colds and flu, diabetes, sprain, upper back pain; add abdominal conditions, respiratory conditions, endocrine conditions, cardiovascular condition, neurological condition, thoracic pain. Change the answer options to Always, Frequent, Occasionally, Rarely and Never. Make list alphabetical. Attempt to make one table.
16. Reword questions 37, 38 and 39.
17. Move question 38 before question 37.
18. Question 40: add their qualification, their gender and their time in practice. Remove threat to your practice. Change Family/Friend to On the recommendation of your family/friend.
19. Question 41: remove the Neutral option. Add professional ability/skill to the first statement. Replace muscular strains with myofascial conditions (third statement). Remove “spinal” (fourth statement). Add “all” to “physiotherapists” in the sixth and seventh statement.
20. Remove the final two statements.
21. Question 42: add “of the other profession” to the first statement. Remove the third statement. Change the ninth statement to “Physiotherapy has been shown to achieve better outcomes in the treatment of tennis elbow”. Change the tenth statement to “Chiropractic has been shown to achieve better outcomes in the treatment of headaches”.

Appendix O

Pilot study Concerns

1. Question 28: different health care providers communicate differently.
2. Question 36 and 38: some conditions eg low back pain, respiratory conditions, skin problems and neurological conditions can present in many different ways, therefore the answers are generalised.
3. Question 40: is he “another health care provider” in the same profession or another profession as the person filling in the questionnaire?
4. Question 23: add Not Applicable as an option, especially if participant answered “No” to question 22.
5. Question 26: possibly more than one possible answer.
6. Question 40: unsure about the “Your qualification” statement.
7. Cover letter change: eThekwini municipality to Ethekwini municipal district.
8. Question 9, 14, 28 and 33 unnecessary?
9. Clarify question 37.
10. Questionnaire is too long.

Appendix P

Chiropractors and physiotherapists stated how often they received referrals of patients with certain conditions, within the past six months (Table 4:27):

- Frequently to the chiropractor: whiplash, thoracic pain, sports-related injury, headache, spinal condition, neck pain, low back pain and, joint conditions.
- Occasionally to the chiropractor: arthritis, neurological condition and scoliosis.
- Never to the chiropractor: abdominal condition, cardiovascular condition, endocrine condition, mild fracture, respiratory condition, skin condition and sprain.
- Always to the physiotherapist: low back pain, neck pain and respiratory conditions.
- Frequently to the physiotherapist: arthritis, joint condition, headache, mild fracture, neurological condition, spinal condition, sports-related injury, sprain, thoracic pain and whiplash.
- Occasionally to the physiotherapist: scoliosis.
- Never to the physiotherapist: skin condition, endocrine condition, cardiovascular condition and abdominal conditions.

Chiropractors and physiotherapists stated how often they saw patients presenting with the following conditions within the past six months. These patients were not referred to the respective practitioners (Table 4:28).

- Frequently to the chiropractor: arthritis, joint, headache, low back pain, neck pain, spinal condition, sports-related, sprain, thoracic pain and whiplash.
- Occasionally to the chiropractor: neurological condition and scoliosis.
- Rarely to the chiropractor: mild fracture.
- Never to the chiropractor: abdominal condition, cardiovascular condition, endocrine condition, respiratory condition and skin conditions.

- Always to the physiotherapist: sports-related injury, neck pain, low back pain, and headaches.

- Frequently to the physiotherapist: whiplash, thoracic pain, sprain, spinal condition, sports-related injury, joint condition and arthritis.
- Occasionally to the physiotherapist: neurological condition.
- Rarely to the physiotherapist: scoliosis, mild fracture.
- Never to the physiotherapist: skin condition, endocrine condition, abdominal condition and cardiovascular conditions.

Chiropractors and physiotherapists stated how often, in the past six months, they referred a patient presenting with certain conditions to another practitioner (Table 4:29):

- Always by the chiropractor: cardiovascular condition.
- Occasionally by the chiropractor: abdominal condition, arthritis, mild fracture, neurological condition and spinal conditions.
- Rarely by the chiropractor: joint condition, headache, low back pain, neck pain, sports-related injury, thoracic pain and sprain.
- Never by the chiropractor: endocrine condition, respiratory condition, scoliosis, skin condition and whiplash.

- Always by the physiotherapist: mild fracture.
- Frequently by the physiotherapist: spinal condition and respiratory conditions.
- Occasionally by the physiotherapist: sports-related injury, neurological condition, low back pain, neck pain, headache, joint condition and arthritis.
- Rarely by the physiotherapist: whiplash, thoracic pain, sprain and scoliosis.
- Never by the physiotherapist: skin condition, endocrine condition and cardiovascular condition.

Chiropractors stated who received most of their referrals of patients presenting with conditions similar to below (Table 4:30):

- Chiropractor: joint, low back pain, neck pain, scoliosis, spinal, thoracic pain and whiplash.
- General Practitioner: abdominal, arthritis, cardiovascular, endocrine, headache, neurological, respiratory and skin conditions.
- Homeopath: arthritis.
- Physiotherapist: joint, sports-related injuries and sprains.

Physiotherapists stated who received most of their referrals of patients presenting with conditions similar to below (Table 4:30):

- General practitioner: joint condition, low back pain, neck pain, scoliosis, spinal, thoracic pain, whiplash, abdominal condition, arthritis, cardiovascular condition, endocrine condition, headache, neurological condition, respiratory condition, skin condition, arthritis, joint condition, sports-related injuries and sprain.

The chiropractors were asked which profession they think is best equipped to treat conditions similar to below (Table 4:31):

- The chiropractor: arthritis, joint condition, headache, low back pain, neck pain, neurological condition, scoliosis, spinal condition, sports-related, sprain, whiplash and thoracic pain.
- The general practitioner: abdominal condition, cardiovascular condition, mild fracture, endocrine condition, respiratory condition and skin conditions.

The physiotherapists were asked which profession they think is best equipped to treat conditions similar to below (Table 4:31):

- The general practitioner: abdominal condition, cardiovascular condition, endocrine condition and abdominal conditions.
- The physiotherapist: arthritis, joint condition, headache, low back pain, neck pain, neurological condition, scoliosis, spinal condition, sports-related, sprain, whiplash, thoracic pain and mild fractures.

Chiropractors and physiotherapists stated who they feel can treat conditions similar to below, i.e. which profession's scope of practice includes treating conditions similar to below (Table 4:32)

An example to explain: Condition "X": professions whose scope of practice include treating Condition "X" (whether it was the chiropractor/physiotherapist/both who made the statement).

- Abdominal condition: GP and homeopath (chiropractor and physiotherapist).

- Arthritis: chiropractor, GP, homeopath and physiotherapist (chiropractor and physiotherapist).
- Cardiovascular condition: GP and homeopath (chiropractor); GP and physiotherapist (physiotherapist)
- Endocrine condition: GP and homeopath (chiropractor and physiotherapist).
- Joint condition: chiropractor and physiotherapist (chiropractor); chiropractor, GP and physiotherapist.
- Headache: chiropractor, GP, homeopath and physiotherapist (both)
- Low back pain: chiropractor and physiotherapist (chiropractor);chiropractor, GP and physiotherapist.
- Mild fracture: GP (chiropractor); GP and physiotherapist (physiotherapist).
- Neck pain: chiropractor, GP and physiotherapist (both).
- Neurological condition: chiropractor and GP (chiropractor); GP and physiotherapist (physiotherapist).
- Respiratory condition: GP and homeopath (chiropractor); GP and physiotherapist (physiotherapist).
- Scoliosis: chiropractor and GP (chiropractor); chiropractor, GP and physiotherapist (physiotherapist).
- Skin condition: GP and homeopath (both).
- Spinal condition: chiropractor and physiotherapist (chiropractor); chiropractor, GP and physiotherapist (physiotherapist).
- Sport-related injury: chiropractor and physiotherapist (chiropractor); GP and physiotherapist (physiotherapist).
- Sprain: chiropractor and physiotherapist (chiropractor); GP and physiotherapist (physiotherapist).
- Thoracic pain: chiropractor and physiotherapist (chiropractor); GP and physiotherapist (physiotherapist).
- Whiplash: chiropractor and physiotherapist (chiropractor); GP and physiotherapist (physiotherapist).