A study into the changing views of Orthopaedic surgeons, Neurosurgeons and Neurologists of Chiropractic in South Africa.

BY:

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A dissertation presented to the Faculty of Health Sciences at the Durban University of Technology in partial compliance with the requirements for the Master's Degree in Technology:

Chiropractic

I, Francois Botha do declare that this dissertation is representative of my own work.

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Dedication

To my parents Garth and Soekie, for their endless love and support throughout the years.

Acknowledgements

- Firstly I would like to thank God for gracing me with the ability to become a Chiropractor.

- To Dr Charmaine Korporaal for her time, patience and invaluable guidance throughout my years as a Chiropractic student as well as with this dissertation. Your devotion to us as Chiropractic students is greatly appreciated.

- To the administration staff of the Chiropractic department at DUT for their friendly and efficient assistance throughout my studies at this institution.

- To my grandmother Susanna, ek wil ouma net bedank vir ouma se eindelose liefde en bystand deur die jare.

- To Dr Andreas Steenkamp, Dr Myron Schultz and Dr M Khoury for inspiring me to become the best Doctor that I can be.

Abstract

Introduction

Previously it was established that the majority of medical professions such as Orthopaedic surgeons, Neurosurgeons and Neurologists were not comfortable with the Chiropractic Profession. Changes have occurred since this perception was established so it was considered necessary to review the knowledge and perception of these three medical professions in order to ascertain any changes.

Objectives

The objectives were to establish the demographic factors of Orthopaedic surgeons, Neurosurgeons and Neurologists, whilst also establishing their current views and perceptions of the Chiropractic profession in South Africa in terms of their personal experience of Chiropractic, Chiropractic therapeutic efficacy, the Chiropractic scope of practice and inter-professional relations.

Methods

This prospective, qualitative questionnaire study required that all 478 Orthopaedic surgeons, 110 Neurosurgeons, and 101 Neurologists who were registered with the Health Professions Council of South Africa at the time receive a questionnaire. Thus a total of 689 Questionnaires were sent out for completion.

Results

The overall views and perceptions of participating Orthopaedic surgeons, Neurosurgeons and Neurologists regarding Chiropractic has made a positive shift in favour of developing and potentially expanding relations between these professions and the Chiropractic profession. This has been shown by the increased confidence these professions have in the Chiropractic profession both in terms of effectiveness of Chiropractic treatment for neuromusculoskeletal and other conditions, as well as the increased rate of referral between these professions and Chiropractors.

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Glossary

Anonymity: An ethical safeguard against invasion of privacy whereby the researcher is unable to identify the respondents by their response. (http://www.rucharacter.org/page/ae_glossary/)

Confidentiality: The protection of data that relate to single statistical units and are obtained directly for statistical purposes or indirectly from administrative or other sources against any breach of the right to confidentiality. It implies the prevention of unlawful disclosure.
(http://stats.oecd.ord/glossary/detail.asp?ID=6993)

Construct validity: Construct validity measures how accurately answers to the questions in the questionnaire reflect theoretical predictions of a particular construct. The focus group is here utilised to ensure that the questionnaire is sound in establishing that for which it is used is within the context of the research aims and objectives (Bernard, 2000).

Content validity: An instrument has content validity when the content of the questionnaire is considered effective and well rounded enough to be able to assess a particular concept. This was achieved by having receiving input from persons who are representative of the specific areas of expertise related to the research to be conducted (Bernard, 2000).

Criterion validity: Criterion validity is measured when a particular tool produces similar results when compared with another tool already known to be trustworthy. This is also called *concurrent* validity by Mouton (1996). This type of validity will not be addressed as part of this current research and has only been included for completeness in discussing validity (Bernard, 2000).

Face validity: Face validity is the simplest type of validity, which is determined by agreement between researchers and those with a vested interest in the questionnaire (i.e. interpreted in this study as those participants of the focus group), that 'on the face of it' the tool seems valid, unambiguous and easily interpreted by the lay person (Bernard, 2000).

Reliability: In statistics, reliability is the consistency of a set of measurements or measuring instrument, often used to describe a test. This can either be whether the measurements of the same instrument give or are likely to give the same measurement (test-retest), or in the case of more subjective instruments, such as personality or trait inventories, whether two independent assessors give similar scores (inter-rater reliability). Reliability is inversely related to random error. Reliability does not imply validity. That is, a reliable measure is measuring something consistently, but not necessarily what it is supposed to be measuring. (http://en.wikipedia.org/wiki/Experimental_reliability).

CHAPTER ONE: INTRODUCTION

1.1 Introduction

A study conducted by Rubens (1996) compared the views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists held of the Chiropractic profession in South Africa.

In this study it was found that 59.1% of the Neurologists, 51.7% of the Orthopaedic surgeons and 45.5% of the Neurosurgeons who participated in the study had both limited views and perception of the Chiropractic profession and were therefore reluctant to refer patients to them. This may have been due to the fact that the precise role of Chiropractic in healthcare was disputed during that time, as was found in Jamison's (1995) study in Australia. However, even with a change in time allopathic practitioners still seem to have limited views and perceptions of Chiropractic. This was highlighted by Louw (2006) and Hunter (2004), whereby they reported that General Practitioners and Physiotherapists to have both limited views and perceptions of Chiropractic.

It is however possible that factors related to the Chiropractic profession as well as factors related to the external environment and participants former knowledge and expectations of a service (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane, 1996; Robins, 1996) might have caused a change in these limited views and perceptions held of the Chiropractic profession by Orthopaedic surgeons, Neurosurgeons and Neurologists over the past decade. These could include but are not limited to (Robbins, 1996):

<u>Environmental factors :</u>

- The socio-economic conditions prevalent in South Africa (About South Africa. Health, 2004: Hupkes, 1990) and
- Consumer preference and demand barriers (Gaumer; Koren and Gemmen, 2002)

Professional (object) factors:

- Chiropractic history and development as compared to that of other medical professions (Chiropractic Association Of South Africa (CASA), 2005),
- Legal barriers (Gaumer et. al. 2002),
- The education of chiropractors in South Africa (CASA, 2005).
- Accessibility barriers (Gaumer et. al. 2002) and
- Chiropractor's self-imposed barriers to primary care provider roles (Gaumer et. al. 2002).

Perceiver (Orthopaedic surgeons, Neurosurgeons and Neurologists) factors:

- Personal history / exposure to Chiropractic (Brussee and Breen, 2001),
- Expectations (Berg, 1999 and Robins, 1996),
- Values and attitudes (Postman, Bruner and McGinnies, 1948) and
- Cultures (Dreyer, 2004).

According to Bergh (1999) and Robins (1996) these factors affect all sectors of the population to a greater or lesser extent over time and dependant on the interaction of these factors within the context of the individual person, the degree of the effect will vary. Therefore, it is possible to state that these factors over time could promote or reduce the views and perception that Orthopaedic surgeons, Neurosurgeons and Neurologists have of the Chiropractic profession.

Although Rubens' (1996) study showed Orthopaedic surgeons, Neurosurgeons and Neurologists to have limited views and negative perceptions of the Chiropractic profession, it has to be noted that the Chiropractic profession has undergone several changes in favour of developing relations and thus the statistics obtained from the results of this study may have changed over the past decade or so for a number of reasons.

In light of these above-mentioned changes within the Chiropractic profession since Rubens' (1996) study, as well as more generic factors that may have changed; it could be assumed that all these factors could have affected a change in perception of Chiropractic held by Orthopaedic surgeons, Neurosurgeons and Neurologists regarding the Chiropractic profession. Based on this, there is a need to compile a study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa to determine whether these changes and factors have had an effect outside the Chiropractic profession.

1.2 The problem statement

A study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa.

1.3 Research Objectives

1.3.1 Objective one:

To establish the demographic factors of Orthopaedic surgeons, Neurosurgeons and Neurologists.

Hypothesis One

There is no similarity between the demographic profile of Orthopaedic surgeons, Neurosurgeons, and Neurologists when the 1996 and 2008 profiles are compared.

1.3.2 Objective two:

To establish the current views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession in South Africa in terms of the following parameters:

- Personal experience

- Chiropractic therapeutic efficacy
- Chiropractic scope of practice and
- Inter-professional relations

Hypothesis Two

There is no relationship between the views and perceptions of the Chiropractic profession, and the abovementioned demographic factors related to Orthopaedic surgeons, Neurosurgeons and Neurologists when the 1996 and 2008 profiles are compared.

1.1.3 Objective three:

To compare the views and perceptions of Orthopaedic surgeons, Neurosurgeons, and Neurologists previously established, with current views and perceptions established in this study in terms of determining if any change has occurred over the past ten years.

Hypothesis Three

There is no relationship between the current views and perceptions held by Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession and the literature that is currently available.

1.4 Rationale for this study

To determine whether there is an altered view and perception held by Orthopaedic surgeons, Neurosurgeons and Neurologists of Chiropractors at present as opposed to a decade ago. The results of this research could aid as a guideline to the Chiropractic profession so as to determine the effect of change within the Chiropractic profession as perceived by Orthopaedic surgeons, Neurosurgeons, and Neurologists. Thus, allowing the Chiropractic profession to strategize future occupational and personal relationship initiatives in congruence with these findings.

1.5 Benefits of the study

In Rubens' 1996 study it was found that 59.1% of Neurologists, 51.7% of Orthopaedic surgeons and 45.5% of Neurosurgeons who participated in the study where uncomfortable with Chiropractic.

In light of the abovementioned changes in the Chiropractic profession since Rubens (1996) study, as well as changes in a number of generic factors which might have induced a change in views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists regarding the Chiropractic profession there is a need to re-assess these views and perceptions in order to determine whether these changes and factors have had an effect outside of the Chiropractic profession. The knowledge of whether or not these factors have had an effect outside of the Chiropractic profession would be of great value to the profession, as this could act as a basis from which the profession could build, and strategize to improve future relations with these and other professions.

1.6 Delimitations

It is assumed that all participants in the study responded accurately whilst fairly representing their reality at the time of completion of the questionnaire. The type of data collection does not allow for an in-depth analysis of reasons related to how particular questions were answered, as a result of this, the relationships may not be causal, but merely associations. Thus, causality and reverse causality will not be determined in this study. This method of research may in future require further investigation.

1.7 Conclusion:

This chapter has provided a brief background to this study including the problem statement, objectives and hypotheses.

Chapter Two will detail the background with an in-depth review of the literature. The methodology of this study will be outlined in chapter Three. Chapter Four will provide details of the statistical analysis of this study and chapter Five will discuss the results of the study as well as suggest recommendations for future studies**.**

CHAPTER TWO: REVIEW OF THE RELATED LITERATURE

A 1993 report by the British Medical Association stated that the education and training of complimentary practitioners (e.g. Chiropractic) is grounded in orthodox medicine, and therefore they share a common language, that should allow for close dialog with medical colleagues.

Although professionals should be knowledgeable about one another's principals, formation, attitude, qualifications, and basic skills (Brussee, et al, (2001) studies by Rubens (1996), Louw (2006), and Hunter (2004) they show that South African Orthopaedic surgeons, Neurosurgeons and Neurologists, General Practitioners, and Physiotherapists respectively have both limited views and negative perceptions of Chiropractic in South Africa. Taking into account the results of the abovementioned studies it becomes clear that factors as mentioned by Brussee (2001) and the British Medical Association (1993), as mentioned above, have by and large not taken effect in terms of how the abovementioned medical professions (Orthopaedic surgeons, Neurosurgeons, Neurologists, General practitioners, and Physiotherapists) view or perceive the Chiropractic profession.

In this context, the concept of perception is explained as the process of organising sensory information into a precept. Therefore a perceptual experience is formed by information being received through the five senses in the body, after which the information is processed and meaning is put to this information – thus a perception. This perceptual development has been explained using various hypotheses and many theoretical approaches have been explored (Coren and Ward, 1989, Hayes, 1994; Eysenck and Keane, 1996; Atkinson *et al.,* 2000) to explain how these processes affect perception and alter perception sets.

Emphasis by constructive theorists regarding the importance of "Top Down" and "Bottom-Up" processes in perception development (Hayes, 1994; Eysenck and Keane, 1996) has been noted. The "Top-Down" process is

affected by a person's former knowledge and expectations and the "Bottom-up" processes by outside contribution from available stimuli (Hayes 1994; Myers, 1996; Atkinson *et al.,* 2000). The process known as the "Top down" theory of perception development is when information is not only interpreted from a direct stimulus, but prior knowledge is used to interpret the sensory information (Hayes, 1994). Previous experiences (in the perceiver) may prejudice interpretation of various stimuli and therefore affect perception (Coren and Ward, 1989; Eysenck and Keane, 1996) and is known as a perceptual set (Hayes, 1994; Robbins, 1996; Bergh *et al.,* 1999). Eysenck and Keane (1996) stated that because these processes occur concurrently, to some extent, perception and thus the perceptual set would by influenced by both the "Bottom-up" and "Top-down" processes.

Therefore it should be remembered that the reality which created the perception may differ from the perception or perceptual set that was created and as a result mistakes could occur whilst perceiving and remembering information. As a result it is possible that information may be misinterpreted leading to hasty conclusions or even the wrong conclusions about events and/or physical objects (Eysenck and Keane, 1996). The suggestion by Robbins (1996) and Bergh *et al.,* (1999) that perception is subjective by nature is therefore supported; where the subjectivity of perception may be attributed to the perceiver, the environment in which the object is being perceived and the object being perceived (Hayes, 1994).

Expectations, values and attitude, previous experience, culture and motivation and emotion have been shown to have an affect on perceptual development (Coren and Ward, 1989; Hayes, 1994; Eysenck and Keane, 1996: Robbins, 1996; Bergh *et al.,* 1999*)* and therefore a person's anticipation can distort their perceptions as they tend to be more inclined to see what they expect to see.
An example of this is how teenagers are often perceived as being rebellious and mischievous. This perception is based on prior expectations despite the fact that this may not be the behaviour and attitude of all teenagers (Talmage 2007).

Therefore various elements or changes within these elements as found within an environment can influence people's perceptions and therefore the environment in which they see objects or events taking place is very important (Robbins, 1996). Bergh *et al.,* (1999) stated that perception is rarely interpreted without first taking into consideration the context or situation in which it occurs.

The way people see certain perceived objects can be affected by a number of factors (Robbins, 1996; Bergh *et al.,* 1999). As the relationship between the object and the background in which the object is observed will influence perception these objects are rarely observed in isolation (Robbins, 1996). Therefore events, objects and people that are alike will be grouped together as having similar characteristics even if they have different noticeable features (Robbins, 1996). Orthopaedic surgeons, Neurosurgeons and Neurologists could thus be grouped together as they are alike and share common characteristics even though they have different noticeable features.

Therefore from the above it can be seen that perceptions are ever changing and can be affected in multiple levels and by multiple elements, in an ever changing world (Robbins, 1996; Bergh *et al.,* 1999).

Therefore when assessing the results of Rubens (1996) study it is noted that participating Orthopaedic surgeons, Neurosurgeons and Neurologists held limited views and negative perceptions of the Chiropractic profession at the time. It may be possible that certain generic factors might have caused a change in these limited views and negative perceptions held of the Chiropractic profession over the past ten years. These factors are listed below after which these facts are discussed to clarify their potential importance to this study.

Environmental factors

- The socio-economic conditions prevalent in South Africa (About South Africa . Health, 2004: Hupkes, 1990) and
- Consumer preference and demand barriers (Gaumer et. al. 2002).

Professional (object) factors

- Chiropractic history as compared to that of other medical professions (CASA, 2005),
- Legal barriers (Gaumer et. al. 2002),
- The education of Chiropractors in South Africa (CASA, 2005).
- Accessibility barriers (Gaumer et. al. 2002) and
- Chiropractor's self-imposed barriers to primary care provider roles (Gaumer et. al. 2002).

Perceiver (Orthopaedic surgeons, Neurosurgeons and Neurologists) factors

- Personal history / exposure to Chiropractic (Brussee *et al.,* 2001),
- Expectations (Berg, 1999 and Robins, 1996),
- Values and attitudes (Postman *et al*., 1948) and
- Cultures (Dreyer, 2004).

These abovementioned factors affect all sectors of the population to a greater or lesser extent and exposure to any of these factors will therefore influence the views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists. Dependant on the interaction of the factors within the context of the individual person the degree of the effect will vary. Therefore, it is possible to state that these factors and the changes related to them could influence the views and perception that these Orthopaedic surgeons, Neurosurgeons and Neurologists have of the Chiropractic profession.

Furthermore, these factors may serve as enabling or detracting reasons that may affect Orthopaedic surgeons, Neurosurgeons and Neurologists views or perception of Chiropractic whether it is in a positive or negative light.

As these barriers are important in understanding the outcomes of this study, each will be discussed in detail below:

1. Environmental factors

1.1 The socio-economic circumstances surrounding health care in South Africa

It is important that there is an understanding of this factor as the Orthopaedic surgeons, Neurosurgeons and Neurologists knowledge, perceptions and as a result their views of Chiropractic could be influenced by the socio-economic circumstances surrounding health care in South Africa.

In South Africa, health care varies from some of the most basic primary services which are offered free by the state, to highly specialized technological health services which are available in the private sector (About South Africa > Health, 2004). This indicates that there is a division of the population in respect of their access to the extremes of the health care services that are available. This may mean that an individual's perception of a health care profession could be prejudiced by their experience related to their point of entry into the health care system.

In this respect:

- Most Chiropractors in South Africa work in the private sector and their services are covered by medical aid schemes, (CASA, 2005), which caters for middle- and high-income earners who are members of these medical schemes (18% of the population) (About South Africa > Health, 2004). High levels of poverty with a prevalence of 43.2% (2006) and an unemployment rate of 25.5% (2006) make it difficult for the majority of people to belong to medical aid schemes or pay for health services in South Africa (http://www.hst.org.za/healthstats/146/data)

It could be assumed that as Orthopaedic surgeons, Neurosurgeons and Neurologists are also health care professionals they are high income earners, and they would therefore have access to the health care system in the private

sector. This should then facilitate the exposure of these Orthopaedic surgeons, Neurosurgeons and Neurologists to the Chiropractic profession.

1.2 Consumer preference and demand barriers

According to Gaumer *et al.,* (2002) most public consumers in the U.S.A view Chiropractors as back specialists. This could be attributed to the fact that Chiropractors tend to be regarded by the public as specialists within a narrow range of clinical practice that is only related to musculoskeletal disorders (principally low back pain) (Jamison, 1995). This view has changed somewhat in the last 10 years, with the definition of Chiropractic being expanded to include general spinal care as well as extremity care / sports injury intervention (Morris *et al.,* 2006).

In addition to the above, it should be noted that over the past decade patients making use of, and therefore increasing the demand for complimentary practitioners such as Chiropractors, has increased because of their focus on holistic care and the medias drive for people to be responsible for their own health and well being (Verhoef and Page, 1996). The increasing trend towards multidisciplinary health care has made it apparent that more frequent and meaningful inter-professional association is essential between allopathic medicine (including, Orthopaedic surgeons, Neurosurgeons and Neurologists) and Chiropractors. It would however seem that collaboration between Orthopaedic surgeons, Neurosurgeons, Neurologists and Chiropractors is not a norm because of the negative views and perceptions that these medical professionals hold (Rubens, 1996). This may have been due to the fact that the specific role of Chiropractic in healthcare continued to be disputed during this time, as was found in Jamison's (1995) study in Australia.

However, even with a transformation in time allopathic practitioners still seem to have limited views and negative perceptions of Chiropractic, as found by Louw (2006) and Hunter (2004), where they reported limited views and negative perceptions of chiropractic among General practitioners and Physiotherapists respectively.

Thus it would seem that even though there may be an increased demand for Chiropractic by patients it may be limited as a result of apparent consumer preference barriers (dictated by the either the medical practitioners' views or the degree of accessibility) as seen by the limited patient referral to Chiropractors by Orthopaedic surgeons, Neurosurgeons and Neurologists (Rubens, 1996).

2. Professional (Object) factors

2.1. The history of Chiropractic

Since the inception of Chiropractic education in South Africa more than a decade ago, various tenets of the profession have been questioned by certain groups, especially medical and sociology Professions (Wardwell, 1994). In this regard the allopathic medical profession in particular has been wary and sceptical of the Chiropractic profession (Curtis and Bove, 1992) and medical practitioners were prohibited from having anything to do with this "false system of teaching" (Hupkes, 1990). Chiropractic in particular was "damned" because it lacked the scientific proof to substantiate its claims (Sanchez, 1991).

This may be in part responsible for the limited view and negative perception of the Chiropractic profession by Orthopaedic surgeons, Neurosurgeons and Neurologists. In addition this may have been re-enforced due to the fact that there was no scientific proof to confirm the claims made by the Chiropractic profession (Brantingham and Snyder, 1999) at the time of Rubens (1996) study. However a large number of Chiropractic-related studies has been published in multidisciplinary / mainstream publications and journals (Langworthy and Smink, 2000) which should have increased the knowledge of Chiropractic practice amongst Orthopaedic surgeons, Neurosurgeons and Neurologists in South Africa. According to Morris (2006) available evidence shows that manipulation has received positive recommendations as the treatment modality of choice for acute low back pain by a number of

government sponsored committees in the U.K. Another study by Morris (2006) looked at the recovery patterns of patients who had received Chiropractic treatment which included spinal manipulation. The results showed that 50% of the patients had significantly improved in terms of symptomology within four visits or within two weeks of receiving Chiropractic treatment. However, the negative perceptions held of Chiropractic may still exist due to the scientific publications of such research studies (Wardwell, 1994; Langworthy and Smink, 2000) not being read by the medical community or public at large in South Africa, and as a result limited understanding of the same information may still be evident. Nevertheless with the increase in evidence to promote the claims made by Chiropractors, this should reduce the negative perceptions since Rubens (1996) study.

2.2 Legal Barriers

A Bill was passed in South Africa in 1971 which blocked the register to Chiropractors and Chiropractic learners, successfully ending any expansion of the profession in South Africa (Brantingham and Snyder, 1999). After much lobbying however, the Associated Health Service Professions Act No 63 of 1982 was promulgated, facilitating growth within the Chiropractic profession. The 1982 Act established the Allied Health Professions Council of South Africa (AHPCSA, 2005), formerly known as the South African Associated Health Services Professions Board (Brantingham and Snyder, 1999), a legislative body that wrote Chiropractic into law, and with whom all students and practicing Chiropractors must then register (CASA, 2005).

This may mean that Orthopaedic surgeons, Neurosurgeons and Neurologists that graduated before 1982 may remember the negative press that resulted in the closure in the Chiropractic register. Therefore, their knowledge and perception of Chiropractic may be limited as they may not have been aware of this legislation change in favour of this formerly perceived “dying” profession.

2.3 Chiropractic Education in South Africa

Similarly prior to 1989, Chiropractic students had to enrol in institutions abroad (Brantingham and Snyder, 1999). The first students were admitted to Technikon Natal, South Africa, in 1989 which highlights that it has been less than twenty years that the profession has been actively educating and promoting itself as an alternative health profession (Till, 1997; Brantingham and Snyder, 1999).

Therefore the possibility exists that the Orthopaedic surgeons, Neurosurgeons and Neurologists who graduated before 1989 may still have the mind set that there are no accredited Chiropractic training programmes in South Africa and the possibility further exists that this could reduce the association with a Chiropractic profession that is viewed as disorganised and hap hazard in certain countries (Wardwell, 1994). Furthermore, the perception that some of these Orthopaedic surgeons, Neurosurgeons and Neurologists may have regarding Chiropractic training not being offered in South Africa may contribute towards a lack of knowledge about the profession in South Africa.

On the other hand those Orthopaedic surgeons, Neurosurgeons and Neurologists who are aware that Chiropractic is offered at the Durban University of Technology, (previously the Durban Institute of Technology), or University of Johannesburg may have a limited knowledge of the requirements of the Chiropractic programmes at these institutions. This is possible as the training is more complex and extended than would normally be found around the world, as most world wide qualifications are limited to the Honours level / Baccalaurette level of training as compared to the Masters level training in South Africa (CASA, 2005). Further differences may also be found in the Career Information Booklet, Master of Technology: Chiropractic. 2000. These are:

- The academic programme extends over a minimum five years of full-time study (Van As, 2005).

- The first three years provide the Chiropractic practitioner with a thorough grounding in traditional medical subjects with special emphasis on diagnostic skills (Van As, 2005).
- The final two years of the programme emphasize the holistic nature of the profession with particular attention to neuromusculoskeletal disorders (Van As, 2005).
- In addition to the academic component, the fifth year learners receive training in the Chiropractic Day Clinic treating patients and thereby gaining experience, which is above the benchmark set by the World Health Organisation (WHO) (WHO education guidelines, 2005).
- Furthermore the learners are required to complete a Master dissertation as part of their Master's requirements.

However in light of the slow and difficult growth in Chiropractic ever since the launch of the training institutions, it is also possible that there is greater than before exposure of Chiropractic to the general public, so that theoretically there are extra practitioners accessible to teach them. Therefore it may assumed that as more Chiropractors qualify, the more potential access these specialists (Orthopaedic surgeons, Neurosurgeons and Neurologists) have to information on the current skills Chiropractors possess. This would however only be true if Orthopaedic surgeons, Neurosurgeons and Neurologists did not have any accessibility barriers (as discussed in 2.4 below) preventing them from having contact with Chiropractors.

In addition to the comparison between the worldwide and South African training of Chiropractors, one also needs to consider the differences between the training received by the Orthopaedic surgeons, Neurosurgeons and Neurologists and Chiropractors, as this may also influence their view and perception, based on own experience. When one assesses and compares the training programme at the Durban University of Technology to the University of Kwa-Zulu Natal Medical School the following differences are highlighted (and an explanation as to the relevance of these factors follows below):

- UKZN Medical School's has had an increased number of applicants over the past few years. The number of applications for MBCHB qualification in 1999 was 1448 and this figure rose to 2868 for the year 2005 (Vawda, 2004). However, only 300 applicants (10.4%) are accepted per year into medical school.
- Chiropractic only received around 304 applications in 2003, 374 applications in 2004 and 379 applications in 2005 at Durban Institute of Technology (Boshoff, 2005) of which 41 applicants (11%) were accepted each year. Therefore in terms of ratio and proportion the Chiropractic intake although smaller seems to be doing better than the medical intake of students.

Therefore, it could be argued that although there is an increased number of Chiropractic graduates that emerge every year, there has not been an increase in the percentage of applicants accepted into Chiropractic institutions over the same period of time. In addition, these statistics also facilitate the belief that even with increased scientific validation of Chiropractic practices; this information is not being translated into public knowledge.

2.4 Accessibility barriers

The Chiropractic Diplomatic Corps (2004) stated that there were 237 practicing Chiropractors in South Africa and an estimated 2200 Chiropractors were needed in the country at that time. With a population of 45 million people in South Africa in 2004 (About South Africa > Health, 2004), it meant that there was approximately one practicing Chiropractor to every 190 000 people in South Africa. In 2007 the South African population stood at almost 48 million (http://www.hst.org.za/healthstats/1/data) and according to the Allied Health Professions Council of South Africa 2008 (Theron, 2008) the number of registered Chiropractors in South Africa in May 2008 stood at 512, thus having approximately one Chiropractor for every 94 000 people. This would imply that the accessibility barrier of the South African population (including Orthopaedic surgeons, Neurosurgeons and Neurologists) should be decreasing in terms of Chiropractic but is by no means optimal as at this date.

A lack of accessibility of Chiropractors (in terms of numbers of Chiropractors) could influence Orthopaedic surgeons, Neurosurgeons and Neurologists knowledge of chiropractic. This is supported by Louw (2006) who said that General practitioners felt that less than 15% of their patients and less than 15% of the South African population regularly saw Chiropractors. Both of these figures could be as a direct result of the numbers of Chiropractors in South Africa.

2.5 Chiropractors self-imposed barriers to primary care provider roles

Whilst not all Chiropractors think of themselves as primary contact practitioners (PCPs) as directed within the scope of practice of the Allied Health Professions Act 63 of 1982 (AHPCSA, 2005), it has become evident that some Chiropractors have limited their practice to that of neuromusculoskeletal conditions. According to Gaumer, (2002) this may be due to the way that the Chiropractic training programme is structured in South Africa or due to a lack of hospital privileges which denies Chiropractors access to all aspects of primary health care. As a result of this limited data on how Chiropractors view themselves is limited, individual Chiropractor's views cannot be obtained.

Hospital privileges would allow Chiropractic students to gain first hand exposure to a much wider variety of pathology which could in turn provide Chiropractors with the confidence they may need to act as primary care physicians in terms of diagnosing pathologies (Till and Till, 2000). Till and Till (2000) further added that by offering Chiropractic services in a hospital setting would be an ideal opportunity to expand on the experience of the interns as well as exposing Chiropractic to people who had never previously heard of Chiropractic care (let alone experienced it) to the benefits of such care. Further implications are that a change of the attitudes of medical and supplementary staff towards Chiropractic care may be possible within this context resulting in a positive public relations benefit.

Furthermore the development of the World Federation of Chiropractic (WFC) Identity where the WFC sent out 29 094 e-mail invitations on 4 October 2004,

inviting members to participate in the survey on the international consultation on the most appropriate public identity of the Chiropractic profession, resulted in a more unified approach to self identification and marketing for the profession. On 24 October 2004 when the survey closed, 3689 completed Questionnaires were obtained (WFC, 2005). Below is the executive summary of the consultation on the identity of the Chiropractic profession:

> "There is consensus among Chiropractors that it is important for a profession to have a clear public identity. That said, most agree that the Chiropractic profession suffers from an unclear identity and position within health care today. When it comes to communicating with the public to promote the use of Chiropractic services, just over one-half (54%) of Chiropractors believe that the Chiropractors' view of the profession and the public's view of the profession is equally as important to represent. There is thus a significant discrepancy in the way Chiropractors believe the general public and medical doctors should perceive the profession and the way they think the profession is actually perceived. While the vast majority of Chiropractors believe the profession should be considered primary health care with focused (55%) or broad (36%) scope, in actuality, most believe that both the general public and medical doctors alike, have no clear perception of the profession or perceive the profession as offering specialist care. Similarly, while most Chiropractors (88%) believe the profession and its services should be perceived as mainstream (or core to the health delivery system), there is agreement that the profession is not viewed this way by the public at large or by medical doctors, instead it is viewed as being complementary and alternative. Most Chiropractors (62%) strongly agree with the policy statement opposing the use of prescription drugs in the practice of Chiropractic. In fact, positioning the profession as non-drug, non-surgical heath care is viewed as being integral to how the profession should be perceived by the general public. " (WFC, 2005).

This may indicate that, Orthopaedic surgeons, Neurosurgeons and Neurologists may continue to have a limited view and negative perception of the Chiropractic profession because of its unclear boundaries and because of the Chiropractic professions lack of a clear definition (Wardwell, 1994).

Therefore it would seem that a primary issue concern would be directly related to the contradictory / non contradictory information being available to users, non-users or lapsed users of Chiropractic care (Van As, 2005). These factors would imply that the access to information by the general public as well as Orthopaedic surgeons, Neurosurgeons and Neurologists is at best unclear and therefore limited by barriers that the Chiropractors impose on themselves (i.e. lack of a clear marketing strategy).

3. Perceiver (Orthopaedic surgeons, Neurosurgeons and Neurologists) factors

3.1. Personal history and/or exposure to Chiropractic

Studies have shown that individuals who either have had first hand experience with, or received information regarding a certain topic, is more likely to be knowledgeable about the topic than individuals who have had no previous exposure to it. This would imply that exposure to the Chiropractic profession either first hand or through someone else may influence an individuals perception towards it.

In a study by Brussee et al. (2001), it was seen that a great deal of General practitioners' information about Chiropractic was formed by patients who had received treatment by Chiropractors, and that an important factor influencing General practitioners opinions and perceptions about Chiropractic appeared to be their patients experiences at Chiropractors' practices.

As a result of Chiropractic operating mainly in the private sector (CASA, 2005) it may be possible that the majority of the general public may have a skewed

view of the Chiropractic profession because of their reduced exposure to the profession.

As a result of this limited interaction between Chiropractors and other health care disciplines, referral of the general public to Chiropractors may be limited, reducing their exposure to Chiropractic (Dreyer, 2004; Jamison, 1995).

3.2. Expectations

According to Bergh and Theron, 1999, our belief systems often cause us to see what we expect to see and have been shown to influence or distort our perceptions and expectations about certain things.

3.3. Values and attitudes

Research has shown that values and attitudes play a major role in influencing perception (Postman *et al.,* 1948, Carpenter *et al.*, 1956 and Worthington, 1969). These studies demonstrated that people take longer to identify sexual or other taboo words than they do neutral. This demonstrates how the participants' values and attitudes towards different subject matter may have an effect on their response to them.

In the case of this research, the participants' values and attitudes towards healthcare and towards Chiropractic may greatly influence their reactions to the questions proposed in the questionnaire.

3.4. Cultures

Culture can be defined as the customary beliefs or social forms of racial, religious or social groups (Reader's Digest Oxford Word Finder, 1992). Since culture is something that is part of an individual from birth, it would obviously have a major influence on how an individual perceives objects and the world around them, including health related issues.

For example, a culture in South Africa includes the consultation with traditional healers. It is possible that social considerations in terms of health care differences that have traditionally been associated with particular cultures may also limit access of individuals with different cultural beliefs to health care practices outside of their culture (Dreyer, 2004).

In other words, if a person is raised whilst being exposed to a culture that only seeks pure allopathic medicine for the treatment of pain and related ailments; they are likely to be more reluctant to seek care from complementary medical practitioners such as Chiropractors, Homeopaths and Herbalists.

Summary

In light of the results apposing Chiropractic, as highlighted in Rubens (1996) study, it is however important to note that the Chiropractic profession has undergone several changes in favour of developing relations since then and therefore over the past decade views and perceptions may have changed for a number of reasons.

Over the past 10 years there has been an increase in the numbers of Chiropractic schools in public higher education which has resulted in an increase in the organisation of Chiropractic, as well as an increase in the number of Chiropractors (Allied Health Professions Council of South Africa, 2005). There has also been an increase in public demand for Chiropractic as a result of an increase in public visibility and awareness of the Chiropractic profession (Korporaal, 2007).

Therefore it could be stated that the public's (and therefore by default the Orthopaedic surgeons Neurosurgeons and Neurologists) perception and view of the scope of Chiropractic practice would have been altered and influenced by the legal, financial, professional, accessibility, consumer preference, and self-imposed barriers as well as the changes that have occurred in each of these areas over the last 10 years. Yet the wide scope of practice available to

Chiropractors in South Africa, in which most Chiropractors confine their own practices to primarily musculoskeletal conditions in South Africa, may still be a point of confusion to external parties, including Orthopaedic surgeons, Neurosurgeons and Neurologists.

Therefore, it could be stated that the views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists could be limited, biased, incomplete or complete based on each specialists exposure to these various factors that have been discussed in this chapter. However, stating that any one factor is responsible can only be completed in a manner that validates the inferences drawn from the literature. This by default means that a survey is needed in order to assess the current knowledge and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists in South Africa as a starting point for investigating this complex arena, where the barriers are not isolated and independent factors, but co-dependent, indicating that the mechanisms for educating these specialists are potentially vast.

Nonetheless, the initial assessment with respect to the Orthopaedic surgeons, Neurosurgeons and Neurologists views and perceptions did not yield results in favour of Chiropractic, and therefore a reassessment of these views and perceptions will be a good measure of the type and the number of barriers that need to be overcome and addressed by the Chiropractic profession in South Africa with respect to the following identified barriers:

- Changes in the socio-economic circumstances surrounding health care in South Africa.
- Changes in the consumer preference and demand barriers.
- The history of Chiropractic and the evolution of the profession in years to come.
- Changes in legal barriers.
- Changes and evolution of Chiropractic Education in South Africa.
- Changes in accessibility barriers.

- Changes in the barriers that Chiropractors imposed / impose on themselves with regard to their marketing.

Therefore, the aim of this research was to assess the knowledge and perception of Orthopaedic surgeons Neurosurgeons and Neurologists in South Africa with respect to Chiropractic.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter covers the study design, the methodology used, the sampling procedures employed, the inclusion and exclusion criteria, the methods employed as well as the data analysis.

3.2 Study Design

This was a structured, questionnaire based study and was of a quantitative nature. Information was collected by means of a questionnaire, based upon the format used in previous research studies (Hunter (2004) Louw (2006) and Rubens (1996). This research was approved by the Faculty of Health Science Research and Ethics Committee which declared that it complied with the declaration of Helsinki 1975. As the ethics clearance of this study commenced prior to the Durban University of Technology issuing ethics clearance certificates in numerical order, which cannot be back-dated, it was not possible to have a clearance certificate issued for this study. The study had however complied with all ethical criteria at the time of ethics clearance.

3.3 Sampling procedure

In Rubens (1996) study, a total of 449 Orthopaedic surgeons, 92 Neurosurgeons and 78 Neurologists (totalling 619 specialists in all) were issued questionnaires. An amount of 164 questionnaires were returned in total, constituting a response rate of 26.5%, which was adequate for statistical analysis.

In this study the entire population of Orthopaedic surgeons, Neurosurgeons and Neurologists where issued questionnaires. A total of 478 Orthopaedic surgeons, 110 Neurosurgeons and 101 Neurologists, totalling a number of 689 specialists in all were invited to participate in this study.

According to Esterhuizen, 2005, for this study to have been statistically valid, a return of more than 50 questionnaires or more than 15% of the issued questionnaires had to be returned. Returns exceeding the minimum required amounts would increase the reliability of the results (Esterhuizen, 2005).
The minimum response rate required from each profession is indicated below in table 3.1 Minimum response rate required from each profession:

	Orthopaedic surgeons	Neurosurgeons	Neurologists	Total
Maximum sample	478	110	101	689
15% Minimum response rate required for analysis.	72	17	15	103
50 Questionnaires to be returned for statistical analysis.	Would be achieved. Intra-group analysis as well as generalisation possible.	May not be achieved. Intra-group analysis possible. No generalisation possible.	May not be achieved. Intra-group analysis possible. No generalisation possible.	Could be achieved. Generalisation possible.

Non-respondents were telephonically contacted and kindly re-requested to return the completed questionnaire. This was done in an attempt to potentially facilitate a higher response rate to the study.

3.4 Inclusion and Exclusion criteria

3.4.1 Inclusion criteria

The participating Orthopaedic surgeons, Neurosurgeons, and Neurologists had to comply with the following criteria: -

- All participants had to have been registered with the Health Professions Council of South Africa (HPCSA) as either an Orthopaedic surgeon, Neurosurgeon or Neurologist.
- All participants were required to have been practicing in South Africa at the time of the study.

- All questionnaires and/or relevant appendices (Appendix C being the Informed Consent Form and Appendix H being the questionnaire) had to have been completed and returned in their totality to be included.

3.4.2 Exclusion criteria

Participants where excluded from the study if they:

- Did not comply with the above inclusion criteria.
- Failed to complete the questionnaire and/or relevant appendices (Appendix C being the Informed Consent Form and Appendix H being the questionnaire) in their totality.
- Had participated in the focus group.
- Had participated in the pilot study.

3.5 Methodology

The postal addresses as well as the contact telephone numbers of each of the 689 practitioners was purchased from Med-pages prior to the commencement of the study (Medpages, 2005).

A questionnaire (Appendix H) accompanied by a Covering Letter (Appendix B) and an Informed Consent Form (Appendix C) was sent out to the entire population of Orthopaedic surgeons, Neurosurgeons, and Neurologists who practiced in S.A. and were registered with the Health Professions Council of South Africa during 2005.

As questionnaires were issued to the participants of this study without their prior consent, no form of advertising was required for this study.

The questionnaire and the Informed Consent form was posted to the 3 groups of practitioners. A prepaid, self-addressed envelope was supplied to the participants for the return of their questionnaires.

The questionnaire was accompanied by a letter, (Appendix B), which kindly requested the practitioner's participation in the study as well as explaining what was expected of them in terms of the completion of the questionnaire. Each participant was also issued an Informed Consent Form (Appendix C), which needed to be completed and returned with the completed questionnaire. The Informed Consent Forms were considered to be complete if the participant had signed the informed consent form.

Anonymity and confidentiality was achieved in this study by having all returned questionnaires and Informed Consent Forms separated from each other by a neutral third party upon return. This was done to ensure that the researcher could not link questionnaires to individual participants by name, however still keep record of which participants (by name) had participated in the study.

In line with the above, the non-respondents were then identified by a third party who contacted them telephonically six weeks after the initial posting of the questionnaires to kindly request them to take part in the study.

A further three weeks were then allowed for the return of questionnaires by the initial non-respondents before statistical analysis began.

3.5.1. Questionnaire background

The source of data collection in this study was a questionnaire. In general, questionnaires are a good source of information, provided that the questionnaire has been demonstrated to be reliable and valid (Mouton, 1996). Questionnaires are the tool of choice for a Masters thesis such as this, as it ensures objectivity in that researcher bias, is kept to a minimum, and there is also less chance of misinterpretation of the results (Mouton, 1996). This is especially pertinent in this study, where the researcher was a Chiropractic student. This may have led to an inherent bias in terms of the interpretation of

the results in the study. Therefore the objectivity as offered by a questionnaire was essential in ensuring that researcher bias was kept to a minimum.

The questionnaire (Appendix H) used in this study utilised the same questions used by Hunter (2004), Louw (2006) and Rubens (1996) so as to promote construct validity and reliability of results. However, where necessary questions may have been added by the focus group and/or pilot study.

Focus group

To ensure validity and reliability the questionnaire was tested by a focus group.

The purpose of this focus group was also to address further issues that surrounded validity of the questionnaire, the components of which are: face validity, construct validity, content validity and criterion validity.

According to the normal procedure of conducting a focus group, it was initiated by the researcher, two registered Chiropractors, two Chiropractic students, and two Chiropractic patients. Comments and advice were also received by two Neurosurgeons and a Statistician who were not able to attend the meeting. Accompanying the questionnaire was a Letter of Information (Appendix D), and an Informed Consent Form (Appendix C), the Confidentiality statement (Appendix E) and the Code of Conduct Form (Appendix F) which was issued to all the members of the focus group for them to complete and sign. Those participants not physically present at the meeting completed and signed the Confidentiality Statement (Appendix E) and the Code of Conduct Form (Appendix F) prior to the commencement of the meeting.

The participants met to assess and analyse the questionnaire, whilst at the same time proposing logical solutions to any problems, which may have been found, as well as suggesting any relevant questions to be added to the

questionnaire. Relevant changes were only made to the questions after general consent of all the participants where obtained. This process was followed for each question.

Questionnaire changes:

Format changes to the focus group questionnaire - Appendix A:

1. As there was no title to the questionnaire, the title of the study was used as a heading to which was inserted above question 1 but below the heading stating that this is Rubens 1996, questionnaire.
2. The instruction appearing at all the questions where answers were required to be circled reading “Please tick the appropriate box” was removed from these questions and an instruction below the title was added reading “Please circle appropriate number or box”, was decided amongst participants of the focus group.
2. Selection boxes were added to each of the answering options of the new question 9

Question changes:

1. Question 1 which read “Please indicate your field of speciality. (Please tick the appropriate box.) became question 2 which reads “Please indicate your field of speciality”.
2. Question 2 which read “To which extent do you feel informed as to what chiropractors do? (Please tick one box only) became question 6 which reads “To what extent do you feel informed as to what chiropractors do?”
3. Question 3 which read “Which one of the following statements best reflects your view of chiropractic? (Please tick one box only)” became question 9 which reads “Which one of the following statements best reflects your view of chiropractic?”
4. Question 4 which read “To what extent do you believe chiropractors to be competent in neuro musculo skeletal examination and diagnosis?

(Please tick one box only) became question 7 which reads “To what extent do you believe chiropractors to be competent in neuromusculoskeletal examination and diagnosis?”

5. Option 1 in the new question 7, which read “Greatly competent”, was changed to read “Highly competent”.
6. Question 5 which read “Is there sufficient difference between Chiropractic and Physiotherapy to justify the existence of two separate professions?” became question 10 (b) which reads “If yes, is there sufficient difference between chiropractic and physiotherapy to justify the existence of two separate professions and the words “If yes,” was added to the beginning of the question.
7. The new question 10 received a 10(a) which read “In your opinion is there a difference between chiropractic and physiotherapy?” and the answering options of 1. Yes; 2. No; and 3. Don’t know was added with answering boxes.
8. Question 6 which read “Please indicate to what extent you might refer patients to the following disciplines for neuro musculoskeletal problems. (Please circle one number for each discipline, with (1) indicating no referrals and (5) indicating most referrals.)” became question 11 which reads “Please indicate to what extent you might refer patients to the following disciplines for neuromusculoskeletal problems. (Please circle one number for each discipline, with (1) indicating no referrals and (5) indicating most referrals.).” Above the answering option 1 the word “None” was added, above the answering option 5 the word “Most" was added and above answering option 3 the symbol “$\rightarrow$” was added.
9. In the new question 11 option 3 became option 4, option 4 became option 11, option 5 became option 8, option 6 became option 10 and option 7 became option 12.
10. In the new question 11 the options 2. Biokinetics, 5. Neurology, 6. Neurosurgery, 7. Orthotics and 9. Orthopaedics was added.
11. Question 7 which read “To what extent do you think the following conditions can be effectively treated by chiropractors? (Please tick

only one box per condition.)" became question 8 which reads "To what extent do you think the following conditions can be effectively treated by chiropractors?"

12. Question 8 which read "Please rate each of the following professions in terms of their importance in serving a primary health care capacity? (Please circle a number for each profession, with (1) indicating least important and (5) indicating most **important.)"** became question 12 which reads ". Please rate each of the following professions in terms of their importance in serving a primary health care capacity? (Please circle a number for each profession, with (1) indicating no importance and (5) indicating most important.)"
13. The word "Least Important" in the heading of the post focus group question 12 was replaced with "no importance". Above the answering option 1 the word "None" was added, above the answering option 5 the word "Most" was added and above answering option 3 the symbol "→" was added.
14. Question 9 which read "Which of the following practices, given the appropriate training, do you think chiropractors should be able to perform? (Please tick appropriate boxes.) became question 13 and the wording changed from "Which of the following practices, given the appropriate training, do you think chiropractors should be able to perform." To "Which of the following practices do you think fall within the scope of practice of a chiropractor?"
15. In the new question 13 option 1 became option 3, option 3 became option 4, option 4 became option 1, option 6 became option 8.
16. In the new question 13 the following options were added: 6. Spinal manipulation and 7. Treatments of neuromuscular dysfunction.
17. In the new question 13 the wording of option 4 was changed from "Prescribe schedule medicines related to neuromusculoskeletal conditions" to "Prescription of schedule medicines related to neuromusculoskeletal conditions".
18. Question 12 which read "Which direction would you like to see Chiropractic take in the future? (Please tick one box only.) became

question 14 and in option 1 the word “fuse” was replaced with “merge” and the word “medicine” was replaced with “mainstream medicine”. No 4 reading “chiropractic should remain a complimentary practice as it currently is” was added. Option 4 became option 5.

19. Question 13 which read “In your opinion, what would Chiropractic have to do to encourage greater interaction with medicine and its’ specialties?” became question 25 and the wording of the question was changed from “In your opinion, what would Chiropractic have to do to encourage greater interaction with medicine and its’ specialities?” to “In your opinion, what would the chiropractic profession as a whole have to do to encourage greater integration with medicine and its’ specialities?”.
20. Question 14 which read “Please indicate to what extent the following factors would encourage you to use chiropractic in the future? (Please circle one number for each choice, with (1) indicating the least extent and (5) the greatest extent.) became question 15(a) and the heading was changed from “Please indicate to what extent the following factors would encourage you to use chiropractic in the future?” to “Please indicate to what extent the following factors would encourage you to refer a patient to a chiropractor at present”. Option 5 “Other” was added. Above the answering option 1 the word “Least” was added, above the answering option 5 the word “Greatest" was added and above answering option 3 the symbol “$\rightarrow$” was added.
21. The new question 15 had question 15(b) added which reads “What do you feel would have to happen within the chiropractic profession to encourage you to refer a patient to a chiropractor?”
22. Question 15 which read “Do you believe that people practicing manipulation (spinal or other) should have: (please tick appropriate box) became question 16(a) and the heading was changed from “Do you believe that people practicing manipulation (spinal or other) should have:” to “Which of the following skills do you think an individual practicing manipulation should have?”

23. The new question 16 had a subsection (b) added which reads “Which of the following skills, to your knowledge, does a chiropractor posses and the same answering options were allocated as in question 16(a).
24. Question 16 which read “Do you understand chiropractic to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation? (Please mark appropriate box)” became question 17.and option 3. “Don’t know” was added.
25. Question 17 which read “Do you understand chiropractic to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation?” became question 18 and option 3. “Don’t know” was added.
26. Question 18 which read “Do you practice any form of spinal or extra vertebral manipulation?” became question 3 and the wording “and/or mobilization?” was added to the first and second part of the question.
27. Question 19(a) which read “Have you received formal training in spinal manipulation?” became question 4(a) and words” and/or mobilization?” was added. Option 3 was added which reads “If yes, please specify the nature of such training as well as the duration thereof.”
28. Question 19(b) which read “Would you like to receive formal training in spinal manipulation?” became question 4(b) and the words “and/or mobilization?” was added. An option 3 “N/A” was also added.
29. Question 20 which read “Have you ever referred a patient to a chiropractor?” became question 22.
30. Question 21 which read “Have you ever received referrals from chiropractors?” became question 23.
31. The old question 21(c) which read “In any communication that you have had with chiropractors, were you satisfied with the person/s professionalism in terms of: (Please tick box)” became question 23(b) and an option 5 which reads “Accuracy of diagnosis” was added.
32. Question 22 which read “Have you examined any patients that you believed were in any way harmed by chiropractic treatment?” became question 24 and in option (a) the spelling of the word “injury/s” was changed to “injuries”.

33. The new question 24(b) wording was changed from “Do you believe that the nature and frequency of any such harm is sufficient to “outlaw” chiropractic?” was changed to “Do you believe that the nature and frequency of any such harm is sufficient to limit your referral to a chiropractor?”.
34. Question 23 which read “To what extent do you believe chiropractic should play an active role in the South African health care system?” became question 19.
35. Question 24 which read “To what extent should chiropractic occupy the following roles in health care? (Please circle one number for each role, with (1) indicating no role at all and (5) the greatest role.)” became question 20 and above the answering option 1 the word “None” was added, above the answering option 5 the word “Greatest" was added and above answering option 3 the symbol “→” was added.
36. Question 25 which read “Please indicate to what extent the following sources have aided in forming your views about chiropractic. (Please circle one number for each source, with (1) being least informative and (5) being most informative) became question 21. The alphabetical options a to g was changed to numeral options 1 to 7 and above the answering option 1 the word “Least” was added and above option 5 the word “Most" was added and above answering option 3 the symbol “→” was added. An option 7 which reads “Your own personal experience” was added.
37. Question 26 which read “Are you aware that the Scientific and Education Committee of MASA made a positive recommendation to the SAMDC to make it possible for closer co-operation between medical practitioners and chiropractors?” became question 5 and the wording was changed from “Are you aware that the Scientific and Education Committee of MASA made a positive recommendation to the SAMDC to make it possible for closer co-operation between medical practitioners and chiropractors?” changed to read “Where you aware that the Scientific and Education Committee of MASA (Medical Association of South Africa) made a recommendation to the SAMDC

(South African Medical and Dental Council) to make it possible for co-operation between medical practitioners and chiropractors?"

38. Question 27 which read "How many years have you practiced as your current registered professional status indicates?" became question 1 and the alphabetical options a to d changed to numeral options1 to 4.
39. A new question 26 was added which reads "How would you rate your view of chiropractic? (Please circle one number for your choice, with (1) indicating the worst view and (5) the greatest view).

Spelling changes:

1. The spelling of the word "neuro musculo skeletal" throughout the questionaire was changed to read "neuromusculoskeletal".

Question omissions:

1. Question 10 which read "To what extent do you agree or disagree with the following statement? (Please tick one box only).
   "*General practitioners have negative views about managing patients with musculoskeletal problems."* was removed. Question 11 was removed
2. The old question 21(b) which read "To what extent were you satisfied with the nature of the referral?" was deleted.
3. Question 11 which read "To what extent do you agree or disagree with the following statement? (Please tick one box only)."*General practitioners often feel frustrated with back pain patients."* was removed.

Pilot study

This was conducted by having two Chiropractors, two Chiropractic patients, as well as a Chiropractic student review the corrected questionnaire and comment on any further corrections they thought should be made. Thereafter, a few questions evaluating the questionnaire (Appendix G) were answered by

the pilot study participants. No comments or suggestions were however made by the pilot study participants to change the questionnaire any further.
The questionnaires had now demonstrated face, content as well as construct validity. The final, corrected questionnaire was developed and printed for use in this study (Appendix H).

3.6 Limitations

It is assumed that all participants in the study responded accurately whilst fairly representing their view and perception at the time of completing questionnaire. The type of data collection does not allow for an in-depth analysis of reasons related to particular questions answered. As a result of this relationships, may not be causal, but merely associations, as causality will not necessarily be determined.

3.7 Data Analysis

SPSS version 13 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the current data. Due to the fact that only frequency data rather than raw data was available from the 1996 study, comparisons between the current data and the 1996 data were achieved using Epicalc version 1.02 (Joe Gilman and Mark Myatt, 1998, Brixton Books).

Cross tabulations and chi square tests or Fisher's exact tests where appropriate, were used to assess associations between categorical variables. A p value of <0.05 was considered as statistically significant.

Non-parametric Mann-Whitney tests were used to compare ordinal data between two independent groups while Kruskal Wallis tests were used in the case of more than two independent groups. A p value of <0.05 was considered as statistically significant.

CHAPTER 4: THE RESULTS

4.1 Introduction

In this chapter the aims and objectives of this study will be statistically analysed and discussed. Results of the statistical analysis of the data are presented in this section. Firstly, a descriptive analysis is presented, followed by analytical analysis, which reports proportions and means. A conclusion to the study will be drawn in chapter 5.

4.2 Data

4.2.1 Primary data

This data was collected from the participants of the study in the form of their responses to the questionnaires. This also includes the data that had been obtained from the statistical analysis of the questionnaires.

4.2.2 Secondary data

This is the data that had been obtained from the literature (including journals, books and the internet) which was used to form arguments and hypotheses as well as compare the results of the study.

4.3 Key abbreviations

- N = Number
- n = Sample size
- SD = Standard deviation
- Std = Standard
- % = Percentage
- MASA = Medical Association of South Africa
- p = Probability value
- < = Less than
- > = Greater than
- = = Equal to

4.4 Response rates

Orthopaedic surgeons

- number of issued questionnaires = 478
- number responses received = 54
  (minimum required 50 questionnaires
  – see Table 3.1)
- percentage responses received = 11.3%
- Exclusion of any returned questionnaires = 0
- Final percentage responses used for
  Statistical analysis = 11.1%

Neurosurgeons

- number of issued questionnaires = 110
- number responses received = 18
- percentage responses received = 16.4%
  (minimum required 15% as 50 questionnaires
  may not have been possible – see Table 3.1)
- Exclusion of any returned questionnaires = 0
- Final percentage responses used for
  Statistical analysis = 16.4%

Neurologists

- number of issued questionnaires = 101
- number responses received = 16
- percentage responses received = 15.8%
  (minimum required 15% as 50 questionnaires
  may not have been possible – see Table 3.1)
- Exclusion of any returned questionnaires = 0
- Final percentage responses used for
  Statistical analysis = 15.8%

Total number of participants

- Total number of issued questionnaires = 689
- Total number responses received = 88
- Total percentage responses received = 12.8%
- Exclusion of any returned questionnaires = 0
- Final percentage responses used for statistical analysis = 12.6%

4.5 Participant demographics

4.5.1 Objective 1

To establish the demographic factors of Orthopaedic surgeons, Neurosurgeons and Neurologists:

4.5.1.1 Sample characteristics

The number of responses from each profession and percentage of the sample that each profession constitutes are shown in Figure 1.

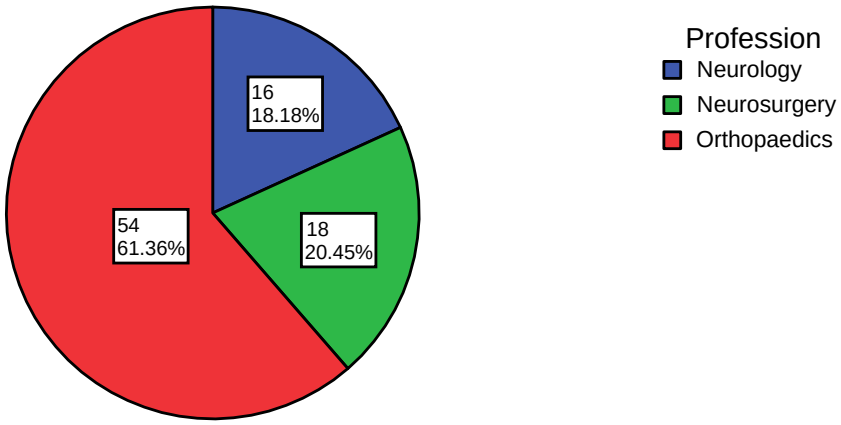

Figure 1: Pie chart showing number and percentage response from each profession

4.5.1.2 Length of time in practice by profession

Table 1 indicates that there was no significant difference in length of time in practice between the three professions (p=0.825). The majority of all three professions were in practice for 10-20 years.

Table 1: Length of time in practice by profession

			How many years have you practiced as your current professional status indicates?				Total
			<=10 years	10-20 years	21-30 years	>30 years	
Profession	Neurology	Count	3	9	3	1	16
		Row %	18.8%	56.3%	18.8%	6.3%	100.0%
	Neurosurgery	Count	3	10	4	1	18
		Row %	16.7%	55.6%	22.2%	5.6%	100.0%
	Orthopaedics	Count	11	23	11	9	54
		Row %	20.4%	42.6%	20.4%	16.7%	100.0%
Total		Count	17	42	18	11	88
		Row %	19.3%	47.7%	20.5%	12.5%	100.0%

4.5.1.3 Response to question 3

Question 3: Do you practice any form of spinal or extra vertebral manipulation and/or mobilization?

There was no significant difference in the proportion who practised any spinal manipulation between the professions (p=0.481). The majority of participants did not practice manipulation or mobilization (75.9%, n=66). The responses per profession are shown in Figure 2.

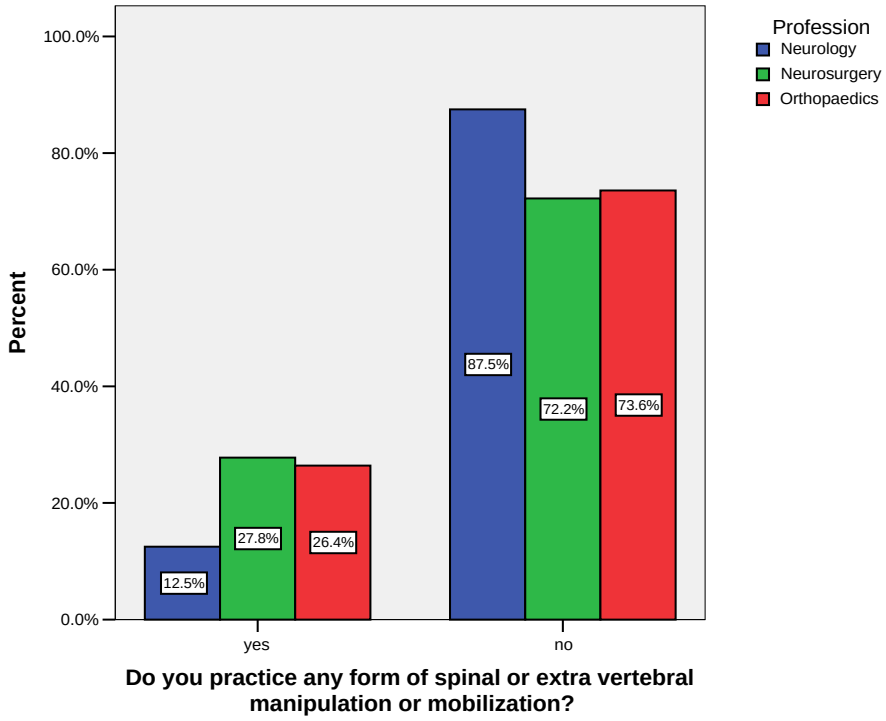

Figure 2: Percentage response to question 3

4.5.1.4.1 Response to question 4a

Question 4a: Have you received formal training in spinal manipulation and/or mobilization?

Overall 22.7% had received training in spinal manipulation and/or mobilization. There was also a significant difference by profession (p=0.045). Orthopaedic surgeons tended to have had the most training (31.5%). This is shown in (Table 2).

Table 2: Question 4a

			Have you received formal training in spinal manipulation and/or mobilization?		Total
			Yes	No	
Profession	Neurology	Count	1	15	16
		Row %	6.3%	93.8%	100.0%
	Neurosurgery	Count	2	16	18
		Row %	11.1%	88.9%	100.0%
	Orthopaedics	Count	17	37	54
		Row %	31.5%	68.5%	100.0%
Total		Count	20	68	88
		Row %	22.7%	77.3%	100.0%

4.5.1.4.2 Response to question 4b:

Question 4b: Would you like to receive formal training in spinal manipulation and/or mobilization?

Participants were not very enthusiastic about receiving formal training in spinal manipulation and/or mobilization. A total of 71.3% answered no and 19.5% replied that they would like to receive formal training. There was no statistical significant difference between the professions (p=0.321). Responses by profession are shown in Table 3.

Table 3: Question 4b

			Would you like to receive formal training in spinal manipulation and/or mobilization?			Total
			Yes	No	N/A	
Profession	Neurology	Count	1	14	1	16
		Row %	6.3%	87.5%	6.3%	100.0%
	Neurosurgery	Count	2	14	2	18
		Row %	11.1%	77.8%	11.1%	100.0%
	Orthopaedics	Count	14	34	5	53
		Row %	26.4%	64.2%	9.4%	100.0%
Total		Count	17	62	8	87
		Row %	19.5%	71.3%	9.2%	100.0%

4.6 Results of questionnaire analysis

4.6.1 Objective 2:

To establish the current views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession in S.A in terms of the following parameters:

a. Personal experience
b. Chiropractic therapeutic efficacy
c. Chiropractic scope of practice and
d. Inter-professional relations

To meet this objective a sample of currently practicing Orthopaedic surgeons, Neurosurgeons and Neurologists was taken. Of the 689 currently registered practitioners, 88 questionnaires were returned (12.8%).

4.6.1.1 Questions relating to views and perceptions

4.6.1.1.1 Response to question 5

Question 5: Were you aware that the Scientific and Education Committee of MASA (Medical Association of South Africa) made a recommendation to the SAMDC (South African Medical and Dental Council) to make it possible for co-operation between medical practitioners and Chiropractors?

4.6.1.1.1.1 Percentage response to question 5

The responses to question 5 were very similar between the professions and therefore there was no significant difference in these results (p=0.975). This is shown in Figure 3

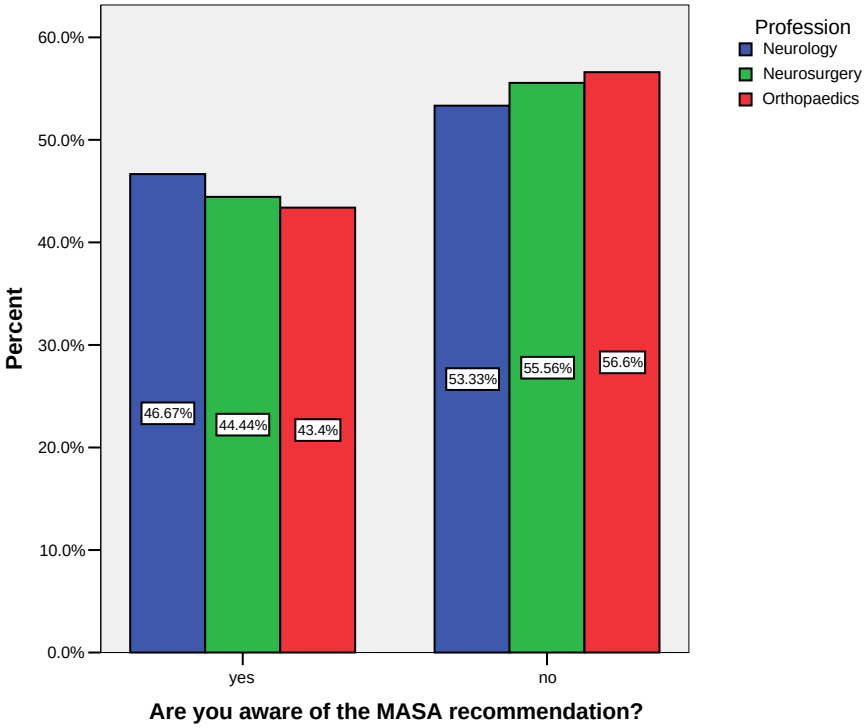

Figure 3: Percentage response to question 5 by profession

4.6.1.1.2 Response to question 6

Question 6: To what extent do you feel informed as to what Chiropractors do?

Table 4 shows the extent to which practitioners felt informed as to what Chiropractors do. Neurologists felt slightly informed, while neurosurgeons were moderately informed. The Orthopaedic surgeons felt divided between being moderately and slightly informed. The difference was not quite statistically significant (p=0.081).

Table 4: Question 6 by profession

		To what extent do you feel informed as to what Chiropractors do?				Total
		Highly informed	Moderately informed	Slightly informed	Not at all informed	
Neurology	Count	1	3	11	1	16
	Row %	6.3%	18.8%	68.8%	6.3%	100.0%
Neurosurgery	Count	3	11	3	1	18
	Row %	16.7%	61.1%	16.7%	5.6%	100.0%
Orthopaedics	Count	3	23	24	4	54
	Row %	5.6%	42.6%	44.4%	7.4%	100.0%
Total	Count	7	37	38	6	88
	Row %	8.0%	42.0%	43.2%	6.8%	100.0%

4.6.1.1.3 Response to question 7

Question 7: To what extent do you believe Chiropractors to be competent in neuromusculoskeletal examination and diagnosis?

Neurologists mainly believed that chiropractors were slightly competent at neuromusculoskeletal examination and diagnosis, while Neurosurgeons and Orthopaedic surgeons mainly felt they were moderately competent. This difference was statistically significant (p=0.013). This is shown in Table 5.

Table 5: Question 7

		To what extent do you believe Chiropractors to be competent in neuromusculoskeletal examination and diagnosis?					Total
		Highly competent	Moderately competent	Slightly competent	Not at all competent	Not informed enough to comment	
Neurology	Count	0	5	8	1	2	16
	Row %	.0%	31.3%	50.0%	6.3%	12.5%	100.0%
Neurosurgery	Count	6	10	2	0	0	18
	Row %	33.3%	55.6%	11.1%	.0%	.0%	100.0%
Orthopaedics	Count	4	24	17	5	3	54
	Row %	7.5%	45.3%	32.1%	9.4%	5.7%	100.0%
Total	Count	10	39	27	6	5	88
	Row %	11.5%	44.8%	31.0%	6.9%	5.7%	100.0%

4.6.1.1.4 Response to question 8

Question 8: To what extent do you think the following conditions can be effectively treated by Chiropractors?

Table 6 shows the responses from Orthopaedic surgeons, Neurosurgeons and Neurologists as to the conditions they thought Chiropractic could effectively treat. The mode (most frequently occurring response) was “never” for all conditions except disc herniation (mode = “sometimes”), general, low

back and neck pain (mode = “usually”), hip and knee pain (mode = “sometimes”), mylagia (mode = “sometimes”), nerve root pain and nervous tension (mode = “sometimes”), osteoarthritis and rheumatism (mode = “sometimes”), and sciatica, shoulder pain, tension headache and whiplash (mode = “sometimes”).

Table 6: Extent to which Chiropractors can effectively treat certain conditions

	Always		Usually		Sometimes		Never	
	Count	%	Count	%	Count	%	Count	%
Allergies	0	.0%	0	.0%	12	15.2%	67	84.8%
Asthma	0	.0%	1	1.3%	11	13.9%	67	84.8%
Bacterial infections	0	.0%	0	.0%	5	6.3%	75	93.8%
Depression	2	2.5%	6	7.6%	34	43.0%	37	46.8%
Diabetes	0	.0%	2	2.6%	9	11.5%	67	85.9%
Disc herniation	2	2.4%	12	14.3%	50	59.5%	20	23.8%
General back pain	15	17.4%	48	55.8%	19	22.1%	4	4.7%
High blood pressure	0	.0%	1	1.3%	12	15.4%	65	83.3%
Insomnia	1	1.3%	5	6.4%	24	30.8%	48	61.5%
Hip pain	3	3.7%	12	14.8%	52	64.2%	14	17.3%
Knee pain	3	3.7%	12	14.8%	50	61.7%	16	19.8%
Low back pain	8	9.5%	48	57.1%	24	28.6%	4	4.8%
Low blood pressure	0	.0%	1	1.3%	12	15.6%	64	83.1%
Malnutrition	0	.0%	2	2.6%	10	13.0%	65	84.4%
Migraine	4	5.1%	5	6.3%	34	43%	36	45.6%
Myalgia	4	4.9%	28	34.1%	43	52.4%	7	8.5%
Neck pain	6	7.1%	39	45.9%	37	43.5%	3	3.5%
Nerve root pain	4	4.8%	11	13.1%	54	64.3%	15	17.9%
Nervous tension	9	10.8%	18	21.7%	38	45.8%	18	21.7%
Obesity	0	.0%	4	5.1%	24	30.4%	51	64.6%
Osteoarthritis	1	1.2%	9	11.0%	39	47.6%	33	40.2%
Peptic ulcer	0	.0%	0	.0%	9	11.5%	69	88.5%
Rheumatism	2	2.5%	11	13.9%	46	58.2%	20	25.3%
Sciatica	5	5.9%	16	18.8%	55	64.7%	9	10.6%
Shoulder pain	4	4.8%	15	18.1%	57	68.7%	7	8.4%
Tension headache	8	9.6%	20	24.1%	44	53.0%	11	13.3%
Viral infections	0	.0%	1	1.3%	10	12.5%	69	86.3%
Whiplash	9	10.6%	20	23.5%	47	55.3%	9	10.6%

4.6.1.1.5 Response to question 9

Question 9: Which one of the following statements best reflects your view of Chiropractic?

There was no statistically significant difference in responses by profession (p=0.656). However, Neurosurgeons stated that they felt that Chiropractic provided excellent treatment for some musculoskeletal conditions (55.6%) while Neurologists were the least likely to select this option (25% of Neurologists). However, 56.2% of the Neurologists felt that they were "uncomfortable with it but it is effective for some patients". This is shown by profession in Figure 4.

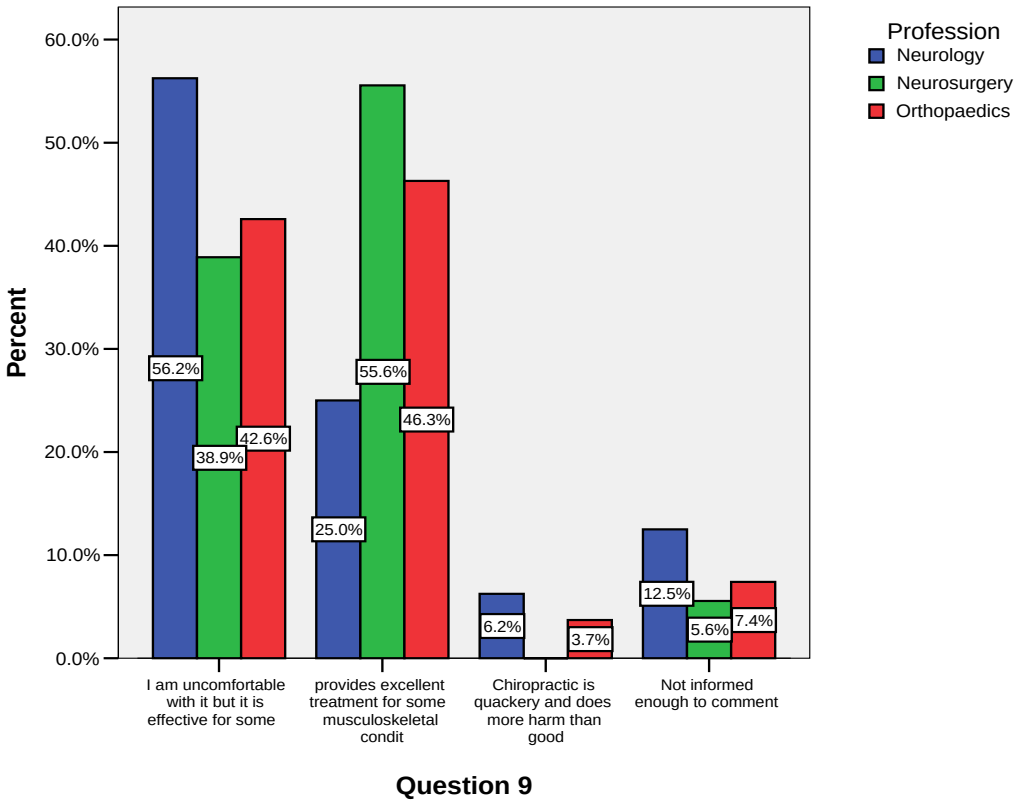

Figure 4: Question 9 by profession

4.6.1.1.6 Response to question 10a

Question 10a: In your opinion is there a difference between Chiropractic and Physiotherapy?

The vast majority replied “yes” (96.3%). Only two of the 54 Orthopaedic surgeons replied “no”, whereas two Neurologists and one Neurosurgeon stated “Don’t know”. Overall there was no significant difference in responses between the professions (p= 0.120). The responses by profession are shown in Table 7.

Table 7: Question 10a by profession

			In your opinion is there a difference between Chiropractic and Physiotherapy?			Total
			Yes	No	Don't know	
Profession	Neurology	Count	14	0	2	16
		Row %	87.5%	.0%	12.5%	100.0%
	Neurosurgery	Count	17	0	1	18
		Row %	94.4%	.0%	5.6%	100.0%
	Orthopaedics	Count	52	2	0	54
		Row %	96.3%	3.7%	.0%	100.0%
Total		Count	83	2	3	88
		Row %	94.3%	2.3%	3.4%	100.0%

4.6.1.1.6.1 Response to question 10b

Question 10b: If yes, is there sufficient difference between Chiropractic and Physiotherapy to justify the existence of two separate professions?

Of those who answered “yes” to the above question, 78% responded that there was sufficient difference between the two professions to justify their separate existence. This proportion did not differ significantly between the professions (p=0.756), as the majority of each profession answered “yes”. This is shown in Table 8.

Table 8: Question 10b by profession

			If yes, is there sufficient difference between chiropractic and physiotherapy?			Total
			Yes	No	Don't know	
Question 2	Neurology	Count	10	1	1	12
		Row %	83.3%	8.3%	8.3%	100.0%
	Neurosurgery	Count	15	1	1	17
		Row %	88.2%	5.9%	5.9%	100.0%
	Orthopaedics	Count	39	8	6	53
		Row %	73.6%	15.1%	11.3%	100.0%
Total		Count	64	10	8	82
		Row %	78.0%	12.2%	9.8%	100.0%

4.6.1.1.7 Responses to Question 11

Question 11: Please indicate to what extent you might refer patients to the following disciplines for neuromusculoskeletal problems. (Please circle one number for each discipline, with (1) indicating no referrals and (5) indicating most referrals).

Table 9 shows that Neurosurgeons would be the most likely of all the professions to refer patients to Chiropractors (mode = 3). There was a statistically significant difference in referral to Chiropractors between the three professions (p=0.016).

Table 9: Most frequent responses to Question 11 by profession

	Profession		
	Neurology	Neurosurgery	Orthopaedics
	Mode	Mode	Mode
Acupuncture	1	2	2
Biokinetics	3	4	3
Chiropractic	1	3	2
Massage therapy	1	1	1
Neurology	4	4	3
Neurosurgery	4	5	3
Orthotics	2	3	3
Osteopathy	1	1	1
Orthopedics	3	4	5
Physiotherapy	3	4	5
Reflexology	1	1	1

4.6.1.1.8 Responses to Question 12

Question 12: Please rate each of the following professions in terms of their importance in serving a primary health care capacity? (Please circle a number for each profession, with (1) indicating no importance and (5) indicating most important.)

Dentistry, medicine and nursing were judged by the Orthopaedic surgeons, Neurologists, and Neurosurgeons as the most important profession in serving health care. Chiropractic was rated as a 2 on a scale of 1 to 5 by Neurologists and Orthopaedics, and 3 by Neurosurgeons. The mode response is shown by profession in Table 10.

Table 10: Most frequent responses to Question 12 by profession

	Profession		
	Neurology	Neurosurgery	Orthopaedics
	Mode	Mode	Mode
Chiropractic	2	3	2
Dentistry	5	5	5
Herbalism	1	2	1
Homeopathy	1	2	2
Medicine	5	5	5
Naturopathy	1	2	1
Nursing	5	5	5
Optometry	5	3	5
Pharmacy	5	4	5
Physiotherapy	3	3	5
Traditional healing	1	1	1

4.6.1.1.9 Responses to Question 13

Question 13: Which of the following practices do you think fall within the scope of practice of a Chiropractor?

Most participants agreed that drawing blood, intra-articular injection, minor surgery, prescription of scheduled medicines and reducing minor fractures/dislocations were not within the Chiropractic scope of practice (Table 11). They also mainly conceded that spinal manipulation was within a Chiropractor's scope of practice. But opinions differed as to treatment of neuromuscular dysfunction, with Neurosurgeons agreeing significantly more than the other professions that treatment of neuromuscular dysfunction falls within the scope of practice of a Chiropractor (p=0.007).

Table 11: Responses to Question 13 by profession

		Profession					
		Neurology		Neurosurgery		Orthopaedics	
		No	Yes	No	Yes	No	Yes
Draw blood for diagnostic purpose	Count	16	0	18	0	52	2
	%	100.0%	.0%	100.0%	.0%	96.3%	3.7%
Intra-articular injection	Count	16	0	17	1	52	2
	%	100.0%	.0%	94.4%	5.6%	96.3%	3.7%
Minor surgery	Count	16	0	18	0	54	0
	%	100.0%	.0%	100.0%	.0%	100.0%	.0%
Prescription of scheduled medicines	Count	15	1	13	5	48	6
	%	93.8%	6.3%	72.2%	27.8%	88.9%	11.1%
Reduce minor fracture/ dislocations	Count	15	1	14	4	52	2
	%	93.8%	6.3%	77.8%	22.2%	96.3%	3.7%
Spinal manipulation	Count	2	14	1	17	6	48
	%	12.5%	87.5%	5.6%	94.4%	11.1%	88.9%
Treatment of neuromuscular dysfunction	Count	10	6	2	16	19	35
	%	62.5%	37.5%	11.1%	88.9%	35.2%	64.8%
None of the above	Count	15	1	17	1	51	3
	%	93.8%	6.3%	94.4%	5.6%	94.4%	5.6%

4.6.1.1.10 Responses to question 14

Question 14: Which direction would you like to see Chiropractic take in the future?

Responses to the statements below by profession are shown in Table 12. The proportion who agreed with each statement was not significantly different between the profession except in the case of statement 4 (p=0.039). There were a significantly lower percentage of Neurosurgeons who agreed with this statement than other practitioners. Neurosurgeons tended to feel that Chiropractic should either exist under medical supervision or become a limited medical profession.

Table 12: Responses to question 14 by profession

	Statement 1		Statement 2		Statement 3		Statement 4		Statement 5	
	Chiropractic should merge with medicine		Chiropractic should exist under medical supervision		Chiropractic should become a limited medical profession		Chiropractic should remain a complementary practice		Chiropractic should disappear	
	no	yes	no	yes	no	yes	no	yes	no	yes
Neurology	15 93.8%	1 6.3%	14 87.5%	2 12.5%	14 87.5%	2 12.5%	8 50.0%	8 50.0%	13 81.3%	3 18.8%
Neurosurgery	15 83.3%	3 16.7%	11 61.1%	7 38.9%	12 66.7%	6 33.3%	15 83.3%	3 16.7%	18 100.0%	0 .0%
Orthopaedics	44 81.5%	10 18.5%	43 79.6%	11 20.4%	45 83.3%	9 16.7%	27 50.0%	27 50.0%	51 94.4%	3 5.6%

4.6.1.1.11 Response to question 15

Question 15: Please indicate to what extent the following factors would encourage you to refer a patient to a Chiropractor at present? (Please circle one number for each choice, with (1) indicating the least extent and (5) the greatest extent).

Figure 5 suggests that Neurologists would not refer patients to chiropractors for any of the reasons listed. In contrast, Neurosurgeons and Orthopaedic surgeons rated personal experience as 4 out of 5 for referral, followed by patient demand as 3 out of 5. Colleagues experience and recommendation featured less highly.

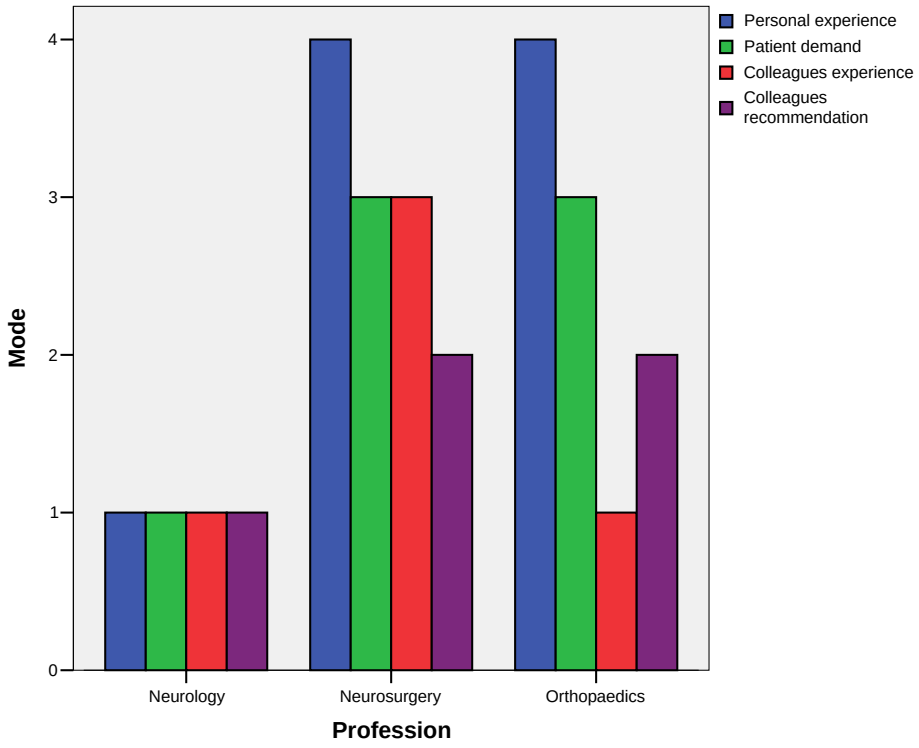

Figure 5: Most frequently occurring response to question 15 by profession

4.6.1.1.12.1 Responses to question 16a

Question 16a: Which of the following skills do you think an individual practicing manipulation should have? (1. General diagnostic skills, 2. Orthopaedic and neurological diagnostic skills, 3. Knowledge of relevant radiology).

Most Participants believed that someone practicing manipulation should have general diagnostic skills, Orthopaedic and neurological diagnostic skills, as well as knowledge of radiology. There was a high level of agreement in all questions by all practitioners. This is shown in Figure 6.

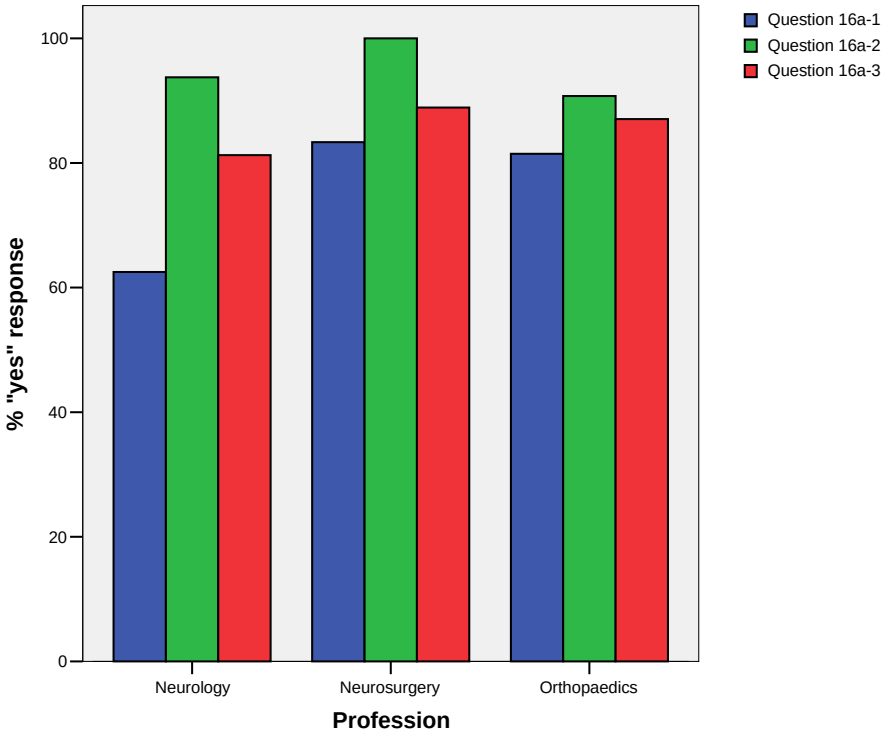

Figure 6: Percentage "yes" responses to question 16a by profession

4.6.1.1.12.2 Responses to question 16b

Question 16b: Which of the following skills, to your knowledge, does a Chiropractor possess?

Neurologists and orthopaedic surgeons mainly did not feel that Chiropractors possessed the listed skills. Neurosurgeons had a higher percentage of positive responses than the other professionals to all the questions. This is shown in Figure 7.

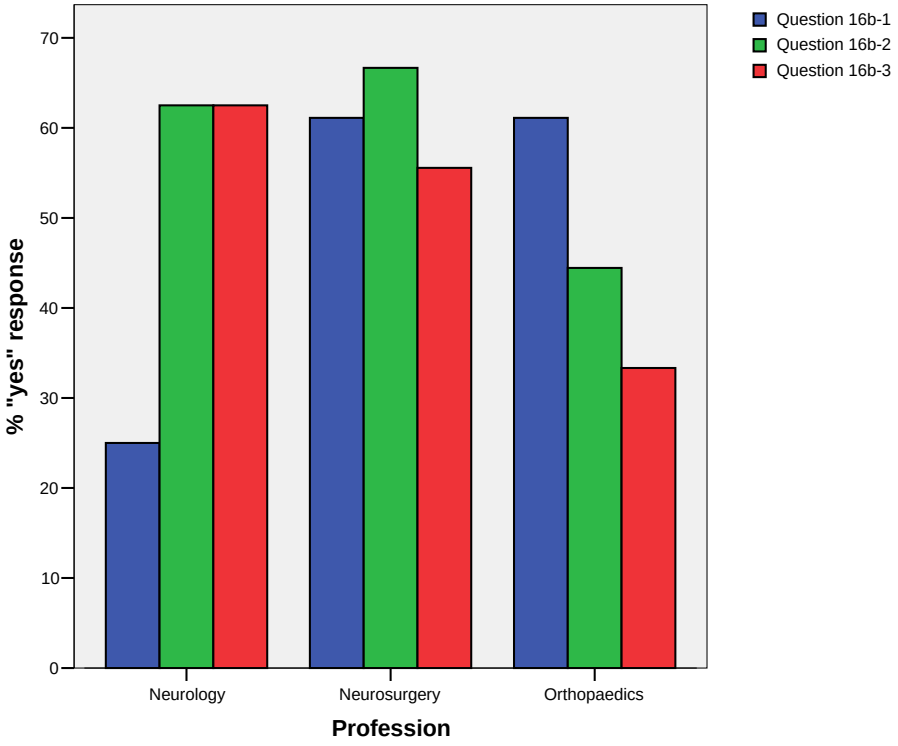

Figure 7: Percentage "yes" responses to question 16b by profession

4.6.1.1.13 Responses to question 17

Question 17: Do you understand Chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation?

There was no significant difference between participant responses in terms of answers to question 17 (p=0.683). The majority of participants overall responded “no” to this question (59.3%), while 24.4% responded “yes” and 16.3% did not know. This is shown by profession in Table 13.

Table 13: Responses to question 17

			Do you understand chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation?			Total
			Yes	No	Don't know	
Profession	Neurology	Count	6	7	3	16
		Row %	37.5%	43.8%	18.8%	100.0%
	Neurosurgery	Count	4	11	3	18
		Row %	22.2%	61.1%	16.7%	100.0%
	Orthopaedics	Count	11	33	8	52
		Row %	21.2%	63.5%	15.4%	100.0%
Total		Count	21	51	14	86
		Row %	24.4%	59.3%	16.3%	100.0%

4.6.1.1.14 Responses to question 18

Question 18: Do you understand Chiropractors to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation?

Sixty nine percent agreed that they felt Chiropractors felt that some disorders of the body could be amenable to spinal manipulation. This is shown in table 14.

Table 14: Responses to question 18

			Do you understand chiropractors to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation?			Total
			Yes	No	Don't know	
Profession	Neurology	Count	11	4	1	16
		Row %	68.8%	25.0%	6.3%	100.0%
	Neurosurgery	Count	11	4	3	18
		Row %	61.1%	22.2%	16.7%	100.0%
	Orthopaedics	Count	38	5	10	53
		Row %	71.7%	9.4%	18.9%	100.0%
Total		Count	60	13	14	87
		Row %	69.0%	14.9%	16.1%	100.0%

4.6.1.1.15 Responses to question 19

Question 19: To what extent do you believe Chiropractic should play an active role in the South African health care system?

Table 15 shows that there was no significant difference in the responses to question 19 by profession (p=0.130), although the most typical response was slightly different. The Neurosurgeons were likely to rate Chiropractic higher than the two other professions.

Table 15: Responses to question 19

		To what extent do you believe chiropractic should play an active role in the South African health care system?				Total
		Great extent	Moderate extent	Slight extent	No active role	
Neurology	Count	0	6	6	3	15
	Row %	.0%	40.0%	40.0%	20.0%	100.0%
Neurosurgery	Count	1	12	4	1	18
	Row %	5.6%	66.7%	22.2%	5.6%	100.0%
Orthopaedics	Count	7	20	23	3	53
	Row %	13.2%	37.7%	43.4%	5.7%	100.0%
Total	Count	8	38	33	7	86
	Row %	9.3%	44.2%	38.4%	8.1%	100.0%

4.6.1.1.16 Responses to question 20

Question 20: To what extent should Chiropractic occupy the following roles in health care? (Please circle one number for each role, with (1) indicating no role at all and (5) the greatest role).

Table 16 shows that Neurologists mainly felt that Chiropractic should occupy a rehabilitative role in health care, while Orthopaedic surgeons thought that they should occupy preventative, supportive and rehabilitative roles. Neurosurgeons mainly chose supportive roles for Chiropractors.

Table 16: Most frequent (mode) responses to question 20

	Profession		
	Neurology	Neurosurgery	Orthopaedics
	Mode	Mode	Mode
Primary contact	1	3	1
Preventative	2	3	4
Supportive	3	4	4
Rehabilitative	4	3	4

4.6.1.1.17 Responses to question 21

Question 21: Please indicate to what extent the following sources have aided in forming your views about Chiropractic. (Please circle one number for each source, with (1) being least informative and (5) being most informative).

For Neurologists and Orthopaedic surgeons, the opinions of their patients have superseded their own experience in forming their views of Chiropractic. For all Neurosurgeons, Neurologists and Orthopaedic surgeons, friends, the popular media, medical journals and personal experience did not aid in forming a view of Chiropractic. The most frequent response to question 21 is shown in Figure 8 by profession.

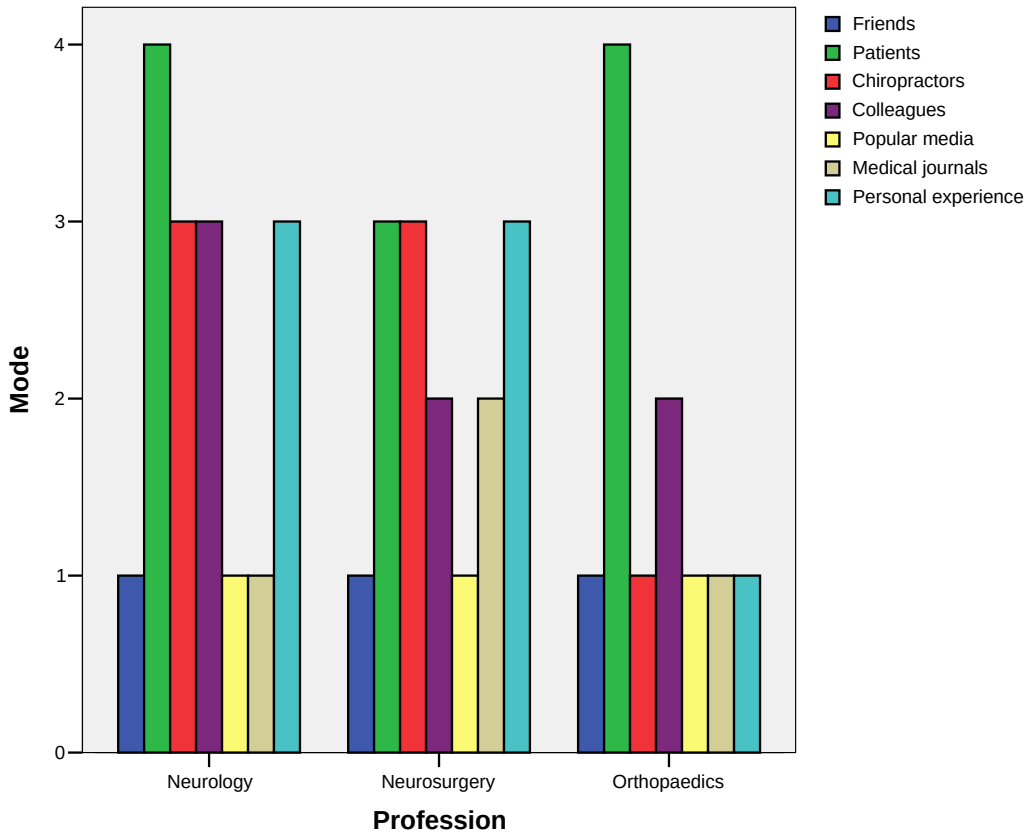

Figure 8: Most frequent responses to question 21 by profession

4.6.1.1.18 Responses to question 22

Question 22: Have you ever referred a patient to a Chiropractor?

In total 72.4% of participants had ever referred patients to a Chiropractor. This was not significantly different by profession (p=0.392), although Neurosurgeons had referred the most (83.3%) and Neurologists had referred the least (62.5%) (See Table 17).

Table 17: Responses to question 22

		Have you ever referred a patient to a chiropractor?		Total
		Yes	No	
Neurology	Count	10	6	16
	Row %	62.5%	37.5%	100.0%
Neurosurgery	Count	15	3	18
	Row %	83.3%	16.7%	100.0%
Orthopaedics	Count	38	15	53
	Row %	71.7%	28.3%	100.0%
Total	Count	63	24	87
	Row %	72.4%	27.6%	100.0%

4.6.1.1.18.1 Responses to question 22b

Question 22b: If yes, with what frequency have you referred to Chiropractors?

Of those who had ever referred patients to a Chiropractor, Neurologists and Orthopaedic surgeons were most likely to refer patients quarterly and Neurosurgeons were most likely to refer monthly. However, this difference was not statistically significant (p=0.230).

Table 18: Responses to question 22b

		If yes, with what frequency have you referred to chiropractors?					Total
		Single occasion	Weekly	Monthly	Quarterly	Yearly	
Neurology	Count	3	0	1	4	2	10
	Row %	30.0%	.0%	10.0%	40.0%	20.0%	100.0%
Neurosurgery	Count	2	2	6	3	2	15
	Row %	13.3%	13.3%	40.0%	20.0%	13.3%	100.0%
Orthopaedics	Count	2	2	9	13	11	37
	Row %	5.4%	5.4%	24.3%	35.1%	29.7%	100.0%
Total	Count	7	4	16	20	15	62
	Row %	11.3%	6.5%	25.8%	32.3%	24.2%	100.0%

4.6.1.1.19 Responses to question 23

Question 23: Have you ever received referrals from Chiropractors?

Neurologists were most likely to have received referrals from Chiropractors (93.3%). However, the difference between the professions was not statistically significant (p=0.527). Responses by profession are shown in Figure 9.

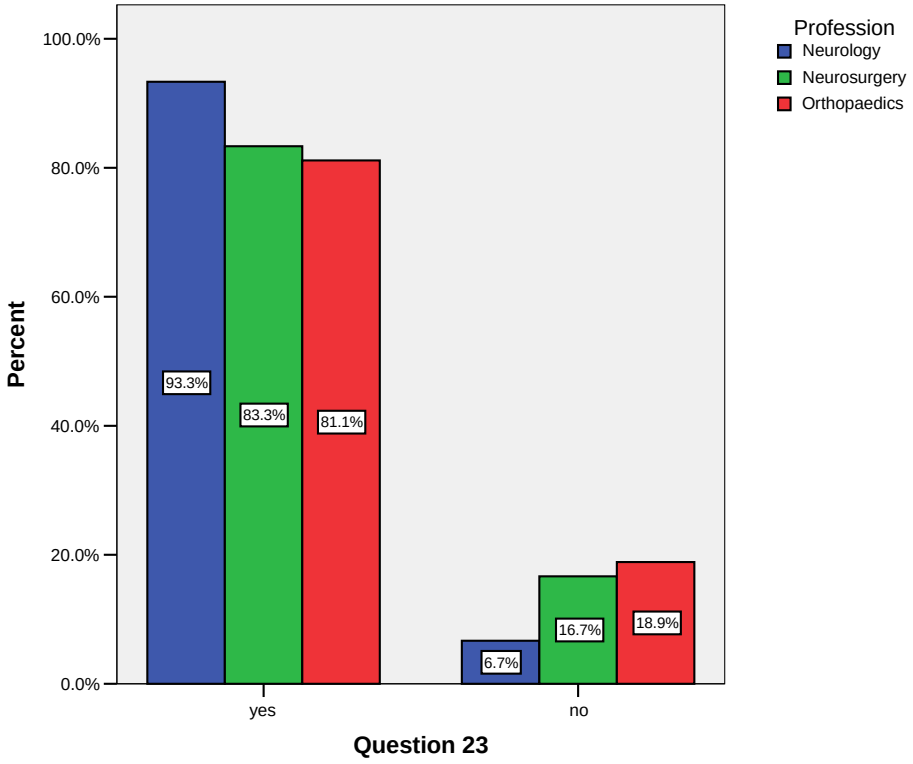

Figure 9: Responses to question 23

4.6.1.1.19.1 Responses to Question 23a

Question 23a: If yes, with what frequency have you received referrals from Chiropractors?

Neurologists were the least likely to have received weekly referrals. Neurologists and Orthopaedic surgeons were most likely to get quarterly referrals, while Neurosurgeons were most likely to get weekly referrals. The difference was not quite statistically significant (p=0.062). This is shown in Table 19.

Table 19: Responses to Question 23a

		If yes, with what frequency have you received referrals from chiropractors?					Total
		Single occasion	Weekly	Monthly	Quarterly	Yearly	
Neurology	Count	1	0	2	7	4	14
	Row %	7.1%	.0%	14.3%	50.0%	28.6%	100.0%
Neurosurgery	Count	2	6	2	3	2	15
	Row %	13.3%	40.0%	13.3%	20.0%	13.3%	100.0%
Orthopaedics	Count	5	3	8	17	9	42
	Row %	11.9%	7.1%	19.0%	40.5%	21.4%	100.0%
Total	Count	8	9	12	27	15	71
	Row %	11.3%	12.7%	16.9%	38.0%	21.1%	100.0%

4.6.1.1.19.2 Responses to question 23b

Question 23b: In any communication that you have had with Chiropractors, were you satisfied with the person/s professionalism in terms of:

Figure 10 shows that Neurosurgeons were more satisfied with the Chiropractor's professionalism in terms of all the factors listed. Statistical significance was achieved with all factors except for courtesy.

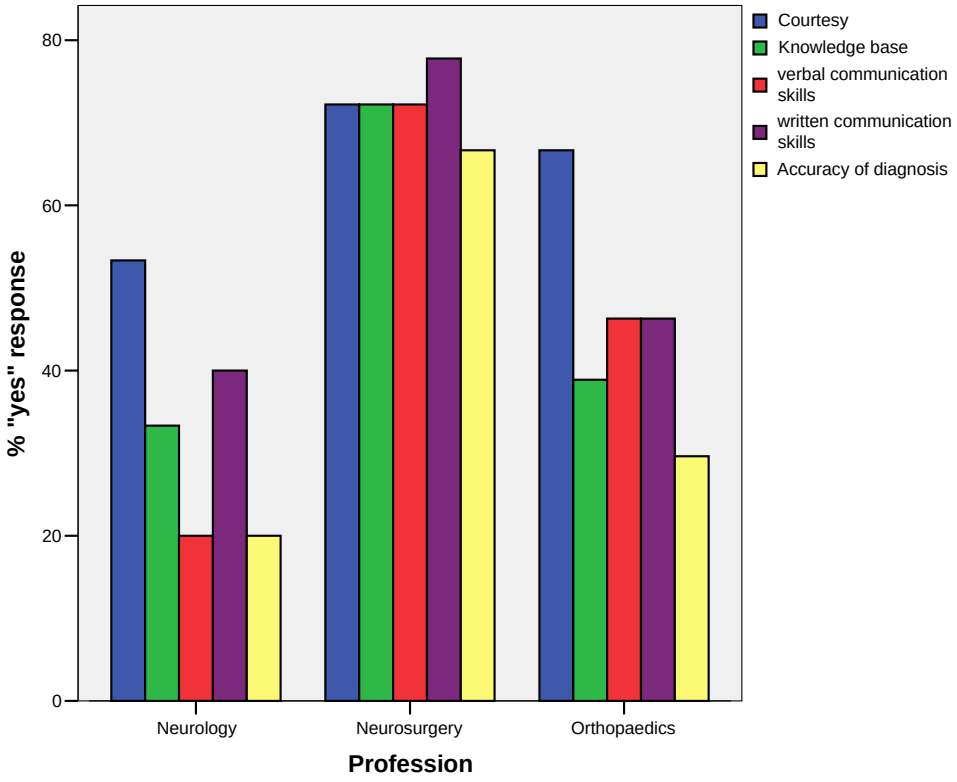

Figure 10: Percentage of "yes" responses to question 23b

4.6.1.1.20 Responses to Question 24

Question 24: Have you examined any patients that you believed were in any way harmed by Chiropractic treatment?

Table 20 shows that overall 47% of participants had examined patients that they believed had been harmed by Chiropractic treatment. This percentage did not differ by profession significantly (p=0.536). Slightly more Neurologists stated that they had examined patients they felt were harmed by chiropractic treatment.

Table 20: Responses to Question 24

			Have you examined any patients that you believed were in any way harmed by chiropractic treatment?		Total
			Yes	No	
Profession	Neurology	Count	9	6	15
		Row %	60.0%	40.0%	100.0%
	Neurosurgery	Count	8	10	18
		Row %	44.4%	55.6%	100.0%
	Orthopaedics	Count	22	28	50
		Row %	44.0%	56.0%	100.0%
Total		Count	39	44	83
		Row %	47.0%	53.0%	100.0%

4.6.1.1.20.1 Responses to question 24b[1]

Question 24b: Do you believe that the nature and frequency of any such harm is sufficient to limit your referral to a Chiropractor?

There was a statistically significant difference in responses to question 24b in those who reportedly had treated patients who were harmed by Chiropractic (p=0.043). 88.9% of Neurologists, followed by Orthopaedic surgeons (63.6%) tended to limit their referral to Chiropractors whilst (71.4%) Neurosurgeons tended to not limit their referral to a Chiropractor (28.6%). This is shown in Table 21.

Table 21: Responses to question 24b

			Do you believe that the nature and frequency of any such harm is sufficient to limit your referral to a chiropractor?		Total
			Yes	No	
Profession	Neurology	Count	8	1	9
		Row %	88.9%	11.1%	100.0%
	Neurosurgery	Count	2	5	7
		Row %	28.6%	71.4%	100.0%
	Orthopaedics	Count	14	8	22
		Row %	63.6%	36.4%	100.0%
Total		Count	24	14	38
		Row %	63.2%	36.8%	100.0%

[1] (Note) Question 24 is noted as 24a in the questionnaire and the subsequent related question is question 24b.

4.6.1.1.21 Response to question 26

Question 26: How would you rate your view of Chiropractic?

The most frequent response overall was 3 on a scale of 1 to 5 with a score of 1 being the worst view and 5 being the greatest view. By profession, Neurologists rated Chiropractic as 2, Neurosurgeons rated them as 4, and Orthopaedic surgeons gave a rating of 3. This difference was statistically significant (p=0.001).

Table 22: Participants' view of Chiropractic

		How would you rate your view of chiropractic? (Please circle one number for your choice, with (1) indicating the worst view and (5) the greatest view).				Total
		1	2	3	4	
Neurology	Count	1	9	4	1	15
	Row %	6.7%	60.0%	26.7%	6.7%	100.0%
Neurosurgery	Count	0	2	5	11	18
	Row %	.0%	11.1%	27.8%	61.1%	100.0%
Orthopaedics	Count	6	10	24	13	53
	Row %	11.3%	18.9%	45.3%	24.5%	100.0%
Total	Count	7	21	33	25	86
	Row %	8.1%	24.4%	38.4%	29.1%	100.0%

4.6.1.2 Correlation between demographics and knowledge, views and perceptions

4.6.1.2.1 Does the length of time in practice affect participant's view of Chiropractic and referral to Chiropractors?

4.6.1.2.1.1 Relationship between length of time in practice and Question 7

Responses to question 7 were viewed on an ordinal scale and compared with length of time in practice for the whole sample. Table 23 shows the median response in each category of length of time in practice. Median response was "2" – "moderately competent" in all categories except for the groups with >30 years in practice, where their median response was "3" = "slightly competent". There was no significant difference between responses to this question and length of time in practice (p=0.496) as shown in the Kruskal-Wallis test results in Table 23.

Table 23: Median response to question 7 by length of time in practice

Length of time in practice	Question 7
<=10 years	2.00
10-20 years	2.00
20-30 years	2.00
> 30 years	3.00
Total	2.00

Table 24: Kruskal-Wallis test to compare median response to question 7 by length of time in practice

	Length of time in practice	N	Mean Rank
Question 7	<=10 years	17	40.59
	10-20 years	42	44.50
	20-30 years	18	40.69
	> 30 years	10	53.65
	Total	87	

Table 24.1 Test Statistics (a,b)

	Question 7
Chi-Square	2.385
Df	3
Asymp. Sig.	0.496

a Kruskal Wallis Test

b Grouping Variable: Question 1

4.6.1.2.1.2 Relationship between length of time in practice and question 9

There was no significant association between length of time in practice and responses to question 9, as shown in Table 25 below (p=0.579).

Table 25: Crosstab of length of time in practice and question 9 responses

			Which one of the following statements best reflects your view of chiropractic?				Total
			I am uncomfortable with it but it is effective for some patients	Chiropractic Provides excellent treatment for some musculoskeletal conditions	Chiropractic is quackery and does more harm than good	Not informed enough to comment	
	<=10 years	Count	7	8	0	2	17
		Row %	41.2%	47.1%	.0%	11.8%	100.0%
	10-20 years	Count	19	19	2	2	42
		Row %	45.2%	45.2%	4.8%	4.8%	100.0%
	20-30 years	Count	7	10	0	1	18
		Row %	38.9%	55.6%	.0%	5.6%	100.0%
	> 30 years	Count	6	2	1	2	11
		Row %	54.5%	18.2%	9.1%	18.2%	100.0%
Total		Count	39	39	3	7	88
		Row %	44.3%	44.3%	3.4%	8.0%	100.0%

Pearson chi square 7.556, p=0.579

4.6.1.2.1.3 Relationship between length of time in practice and question 10a

There was no significant association between length of time in practice and responses to question 10a (p=0.707). Table 26 shows that the majority of each group responded “yes” to question 10a and there was little difference between the groups.

Table 26: Crosstab of length of time in practice and question 10a responses

			In your opinion is there a difference between chiropractic and physiotherapy?			Total
			Yes	No	Don't know	
Length of time in practice	<=10 years	Count	17	0	0	17
		% within Question 1	100.0%	.0%	.0%	100.0%
	10-20 years	Count	38	2	2	42
		% within Question 1	90.5%	4.8%	4.8%	100.0%
	20-30 years	Count	17	0	1	18
		% within Question 1	94.4%	.0%	5.6%	100.0%
	> 30 years	Count	11	0	0	11
		% within Question 1	100.0%	.0%	.0%	100.0%
Total		Count	83	2	3	88
		% within Question 1	94.3%	2.3%	3.4%	100.0%

Pearson’s chi square 3.775, p=0.707

4.6.1.2.1.4 Relationship between length of time in practice and question 13.

Table 27 shows that the only statistically significant association for question 13 and length of time in practice was concerning prescription of scheduled medicines (p=0.027). Those who had been in practice the shortest length of time (<=10 years) were more likely to respond "yes" to this question.

Table 27: Length of time in practice by question 13.

			Length of time in practice				Chi square and p value	Legends
			<=10 years	10-20 years	20-30 years	> 30 years		
Draw blood for diagnostic purposes	No	Count	16	42	17	11	3.103 0.376(a,b)	* The Chi-square statistic is significant at the 0.05 level. a More than 20% of cells in this sub table have expected cell counts less than 5. Chi-square results may be invalid. b The minimum expected cell count in this sub table is less than one. Chi-square results may be invalid.
		Column N %	94.1%	100.0%	94.4%	100.0%		
	Yes	Count	1	0	1	0		
		Column N %	5.9%	.0%	5.6%	.0%		
Intra-articular injection	No	Count	17	40	17	11	1.474 0.688(a,b)	
		Column N %	100.0%	95.2%	94.4%	100.0%		
	Yes	Count	0	2	1	0		
		Column N %	.0%	4.8%	5.6%	.0%		
Minor surgery	No	Count	17	42	18	11		
		Column N %	100.0%	100.0%	100.0%	100.0%		
	Yes	Count	0	0	0	0		
		Column N %	.0%	.0%	.0%	.0%		
Prescription of scheduled medicines	No	Count	11	38	16	11	9.208 3 0.027(*,a)	
		Column N %	64.7%	90.5%	88.9%	100.0%		
	Yes	Count	6	4	2	0		
		Column N %	35.3%	9.5%	11.1%	.0%		
Reduce minor fracture	No	Count	15	40	15	11	3.738 0.291(a,b)	
		Column N %	88.2%	95.2%	83.3%	100.0%		
	Yes	Count	2	2	3	0		
		Column N %	11.8%	4.8%	16.7%	.0%		
Spinal manipulation	No	Count	2	4	1	2	1.252 0.740(a)	
		Column N %	11.8%	9.5%	5.6%	18.2%		
	Yes	Count	15	38	17	9		
		Column N %	88.2%	90.5%	94.4%	81.8%		
Treatment of neuromuscular dysfunction	No	Count	6	14	7	4	0.178 0.981	
		Column N %	35.3%	33.3%	38.9%	36.4%		
	Yes	Count	11	28	11	7		
		Column N %	64.7%	66.7%	61.1%	63.6%		
None of the above	No	Count	16	40	17	10	.307 .959(a,b)	
		Column N %	94.1%	95.2%	94.4%	90.9%		
	Yes	Count	1	2	1	1		
		Column N %	5.9%	4.8%	5.6%	9.1%		

4.6.1.2.1.5 Relationship between length of time in practice and question 14

There were no significant associations between length of time in practice and question 14 (Table 28).

Table 28: Length of time in practice by question 14.

			Length of time in practice				Chi square and p value
			<=10 years	10-20 years	20-30 years	> 30 years	
Question 14-1	No	Count	15	35	15	9	
		Column N %	88.2%	83.3%	83.3%	81.8%	0.286
	Yes	Count	2	7	3	2	0.963(a)
		Column N %	11.8%	16.7%	16.7%	18.2%	
Question 14-2	No	Count	12	34	14	8	
		Column N %	70.6%	81.0%	77.8%	72.7%	0.888
	Yes	Count	5	8	4	3	0.828(a)
		Column N %	29.4%	19.0%	22.2%	27.3%	
Question 14-3	No	Count	14	31	17	9	3.500
		Column N %	82.4%	73.8%	94.4%	81.8%	
	Yes	Count	3	11	1	2	0.321(a)
		Column N %	17.6%	26.2%	5.6%	18.2%	
Question 14-4	No	Count	8	28	7	7	4.887
		Column N %	47.1%	66.7%	38.9%	63.6%	
	Yes	Count	9	14	11	4	0.180
		Column N %	52.9%	33.3%	61.1%	36.4%	
Question 14-5	No	Count	16	38	17	11	1.357
		Column N %	94.1%	90.5%	94.4%	100.0%	
	Yes	Count	1	4	1	0	0.716(a,b)
		Column N %	5.9%	9.5%	5.6%	.0%	

a More than 20% of cells in this sub table have expected cell counts less than 5. Chi-square results may be invalid.

b The minimum expected cell count in this sub table is less than one. Chi-square results may be invalid.

4.6.1.2.1.6 Length of time in practice by question 16

Table 29 below shows that the only significant association between question 16 and length of time in practice was concerning whether individuals practicing manipulation should possess orthopaedic and neurological diagnostic skills (question 16a-2) (p=0.012). Those practicing for shorter lengths of time tended to agree to a greater extent than those who had been practicing for a longer time.

Table 29: Length of time in practice by question 16.

			Length of time in practice				Chi square and p value
			<=10 Years	10-20 Years	20-30 Years	> 30 Years	
Question 16a-1	No	Count	4	7	5	3	1.256
		Column N %	23.5%	16.7%	27.8%	27.3%	
	Yes	Count	13	35	13	8	0.740(a)
		Column N %	76.5%	83.3%	72.2%	72.7%	
Question 16a-2	No	Count	1	0	2	3	10.863
		Column N %	5.9%	.0%	11.1%	27.3%	
	Yes	Count	16	42	16	8	0.012(*,a,b)
		Column N %	94.1%	100.0%	88.9%	72.7%	
Question 16a-3	No	Count	2	3	5	2	4.804
		Column N %	11.8%	7.1%	27.8%	18.2%	
	Yes	Count	15	39	13	9	0.187(a)
		Column N %	88.2%	92.9%	72.2%	81.8%	
Question 16b-1	No	Count	5	20	8	7	3.318
		Column N %	29.4%	47.6%	44.4%	63.6%	
	Yes	Count	12	22	10	4	0.345
		Column N %	70.6%	52.4%	55.6%	36.4%	
Question 16b-2	No	Count	7	19	8	8	3.230
		Column N %	41.2%	45.2%	44.4%	72.7%	
	Yes	Count	10	23	10	3	0.357
		Column N %	58.8%	54.8%	55.6%	27.3%	
Question 16b-3	No	Count	10	23	8	9	4.026
		Column N %	58.8%	54.8%	44.4%	81.8%	
	Yes	Count	7	19	10	2	0.259
		Column N %	41.2%	45.2%	55.6%	18.2%	

* The Chi-square statistic is significant at the 0.05 level.

a More than 20% of cells in this sub table have expected cell counts less than 5. Chi-square results may be invalid.

b The minimum expected cell count in this sub table is less than one. Chi-square results may be invalid.

4.6.1.2.1.6.1 Relationship between length of time in practice and question 19

Table 30 below shows the median responses on a scale of 1 to 4 from “Great extent” to “No active role” by length of time in practice.

Table 30: Median response to question 19 by length of time in practice

Question 1	Question 19
<=10 years	3.00
10-20 years	2.00
20-30 years	2.00
> 30 years	2.50
Total	2.00

4.6.1.2.1.7 Kruskal-Wallis test to compare median response to question 19 by length of time in practice

There was no significant difference in median response to question 19 by length of time in practice (p=0.900).

Table 31: Kruskal-Wallis test to compare median response to question 19 by length of time in practice

	Question 1	N	Mean Rank
Question 19	<=10 years	17	44.15
	10-20 years	42	44.85
	20-30 years	17	39.85
	> 30 years	10	42.95
	Total	86	

Table 31.1: Test Statistics(a,b)

	Question 19
Chi-Square	0.585
Df	3
Asymp. Sig.	0.900

a Kruskal Wallis Test

b Grouping Variable: Question 1

4.6.1.2.1.8 Median response to question 20 by length of time in practice

Table 32 below shows the median responses on a scale of 1 to 5 from “None” to “Greatest” by length of time in practice

Table 32: Median response to question 20 by length of time in practice

Question 1	Primary contact	Preventative	Supportive	Rehabilitative
<=10 years	3.00	3.00	3.00	3.00
10-20 years	3.00	3.00	4.00	4.00
20-30 years	2.00	2.00	3.00	3.00
> 30 years	2.00	3.50	4.00	4.00
Total	3.00	3.00	4.00	4.00

4.6.1.2.1.8.1 Kruskal-Wallis test to compare median response to question 20 by length of time in practice

Table 33 below shows that there were no significant differences in median response to question 20 by length of time in practice.

Table 33: Kruskal-Wallis test to compare median response to question 20 by length of time in practice

	Question 1	N	Mean Rank		Question 1	N	Mean Rank
Primary contact	<=10 years	17	46.47	Supportive	<=10 years	17	40.15
	10-20 years	42	40.26		10-20 years	41	42.76
	20-30 years	14	34.79		20-30 years	16	34.78
	> 30 years	7	38.86		> 30 years	9	54.89
	Total	80			Total	83	
Preventative	<=10 years	16	46.69	Rehabilitative	<=10 years	17	38.71
	10-20 years	40	38.39		10-20 years	41	41.22
	20-30 years	17	30.47		20-30 years	17	39.44
	> 30 years	4	50.63		> 30 years	8	58.44
	Total	77			Total	83	

Test Statistics(a,b)

	Primary contact	Preventative	Supportive	Rehabilitative
Chi-Square	2.134	5.786	4.449	4.590
Df	3	3	3	3
Asymp. Sig.	0.545	0.122	0.217	0.204

a Kruskal Wallis Test

b Grouping Variable: Question 1

4.6.1.2.1.9 Tabulation of length of time in practice by responses to question 22

There was no significant association between length of time in practice and referral to Chiropractors (p=0.218). Table 34 below shows that there was some variation in referral between the groups, with the highest percentage of referral from the group who had been in practice for 20-30 years, followed by those in the 10 to 20 year category. The lowest referral was shown by the group with over 30 years of practice.

Table 34: Cross tabulation of length of time in practice by responses to question 22

			Question 22		Total
			Yes	No	
Length of time in practice	<=10 years	Count	11	6	17
		Row %	64.7%	35.3%	100.0%
	10-20 years	Count	31	11	42
		Row %	73.8%	26.2%	100.0%
	20-30 years	Count	15	2	17
		Row %	88.2%	11.8%	100.0%
	> 30 years	Count	6	5	11
		Row %	54.5%	45.5%	100.0%
Total		Count	63	24	87
		Row %	72.4%	27.6%	100.0%

Pearson chi square 4.435, p=0.218

4.6.1.2.2 Does the use of manipulation affect participant's view of Chiropractic and referral to Chiropractors?

4.6.1.2.2.1 Kruskal-Wallis test to compare median response to question 7 by whether participants practice manipulation

Median response to question 7 in the group who used manipulation and the group which did not use manipulation was 2, indicating "Moderately competent". There was no significant difference between these two groups (p=0.155). The Kruskal-Wallis tests results are shown in Table 35.

Table 35: Kruskal-Wallis test to compare median response to question 7 by whether participants practice manipulation

	Question 3	N	Mean Rank	Sum of Ranks
Question 7	Yes	21	37.19	781.00
	No	65	45.54	2960.00
	Total	86		

Table 35.1: Test Statistics (a)

	Question 7
Mann-Whitney U	550.000
Wilcoxon W	781.000
Z	-1.422
Asymp. Sig. (2-tailed)	0.155

a Grouping Variable: Question 3

4.6.1.2.2.2 Crosstab of use of manipulation and question 9 responses

There was no significant association between use of manipulation and responses to question 9 (p=0.458). This is shown in Table 36 below.

Table 36: Crosstab of use of manipulation and question 9 responses

			Question 9				Total
			I am uncomfortable with it but it is effective for some patients	Provides excellent treatment for some musculoskeletal conditions	Chiropractic is quackery and does more harm than good	Not informed enough to comment	
Question 3	Yes	Count	6	12	1	2	21
		Row %	28.6%	57.1%	4.8%	9.5%	100.0%
	No	Count	32	27	2	5	66
		Row %	48.5%	40.9%	3.0%	7.6%	100.0%
Total		Count	38	39	3	7	87
		Row %	43.7%	44.8%	3.4%	8.0%	100.0%

Pearson chi square 2.597, p=0.458

4.6.1.2.2.3 Crosstab of use of manipulation and question 10a responses

There was no significant association between use of manipulation and response to question 10a (p=0.634).

Table 37: Crosstab of use of manipulation and question 10a responses

			Question 10a			Total
			Yes	No	Don't know	
Question 3	Yes	Count	19	1	1	21
		Row %	90.5%	4.8%	4.8%	100.0%
	No	Count	63	1	2	66
		Row %	95.5%	1.5%	3.0%	100.0%
Total		Count	82	2	3	87
		Row %	94.3%	2.3%	3.4%	100.0%

Pearson chi square 0.911, p=0.634

4.6.1.2.2.4 Relationship between use of manipulation and question 13

There were no significant associations between responses to question 13 and use of manipulation. This is shown in Table 38.

Table 38: Use of manipulation by question 13.

			Do you practice any form of spinal or extra vertebral manipulation and/or mobilization?		Fisher's exact p value
			Yes	No	
Draw blood for diagnostic purposes	No	Count	20	65	0.427
		Column N %	95.2%	98.5%	
	Yes	Count	1	1	
		Column N %	4.8%	1.5%	
Intra-articular injection	No	Count	20	64	0.568
		Column N %	95.2%	97.0%	
	Yes	Count	1	2	
		Column N %	4.8%	3.0%	
Minor surgery	No	Count	21	66	
		Column N %	100.0%	100.0%	
	Yes	Count	0	0	
		Column N %	.0%	.0%	
Prescription of scheduled medicines	No	Count	19	56	0.722
		Column N %	90.5%	84.8%	
	Yes	Count	2	10	
		Column N %	9.5%	15.2%	
Reduce minor fracture /dislocations	No	Count	18	62	0.352
		Column N %	85.7%	93.9%	
	Yes	Count	3	4	
		Column N %	14.3%	6.1%	

Spinal manipulation	No	Count	3	6	0.681
		Column N %	14.3%	9.1%	
	Yes	Count	18	60	
		Column N %	85.7%	90.9%	
Treatment of neuromuscular dysfunction	No	Count	7	24	1.000
		Column N %	33.3%	36.4%	
	Yes	Count	14	42	
		Column N %	66.7%	63.6%	
None of the above	No	Count	19	63	0.590
		Column N %	90.5%	95.5%	
	Yes	Count	2	3	
		Column N %	9.5%	4.5%	

4.6.1.2.2.5 Use of manipulation by question 14

Responses to question 14 were not influenced significantly by use of manipulation (Table 39). The only response that approached statistical significance was 14-3: Chiropractic should become a limited medical profession like Dentistry or Optometry. Those who used manipulation themselves were less likely to agree with this statement than those who did not use manipulation (p=0.060).

Table 39: Use of manipulation by question 14.

			Do you practice any form of spinal or extra vertebral manipulation and/or mobilization?		Fisher's exact p value
			Yes	No	
Question 14-1	No	Count	16	57	0.311
		Column N %	76.2%	86.4%	
	Yes	Count	5	9	
		Column N %	23.8%	13.6%	
Question 14-2	No	Count	15	53	0.382
		Column N %	71.4%	80.3%	
	Yes	Count	6	13	
		Column N %	28.6%	19.7%	
Question 14-3	No	Count	20	50	0.061
		Column N %	95.2%	75.8%	
	Yes	Count	1	16	
		Column N %	4.8%	24.2%	
Question 14-4	No	Count	11	38	0.802
		Column N %	52.4%	57.6%	
	Yes	Count	10	28	
		Column N %	47.6%	42.4%	
Question 14-5	No	Count	20	61	1.000
		Column N %	95.2%	92.4%	
	Yes	Count	1	5	
		Column N %	4.8%	7.6%	

4.6.1.2.2.6 Use of manipulation by question 16

Table 40 below shows that use of manipulation did not affect responses to Question 16 a or b.

Table 40: Use of manipulation by question 16

			Question 3		Fisher's exact p value
			Yes	No	
Question 16a-1	No	Count	5	14	0.770
		Column N %	23.8%	21.2%	
	Yes	Count	16	52	
		Column N %	76.2%	78.8%	
Question 16a-2	No	Count	1	5	1.000
		Column N %	4.8%	7.6%	
	Yes	Count	20	61	
		Column N %	95.2%	92.4%	
Question 16a-3	No	Count	2	10	0.722
		Column N %	9.5%	15.2%	
	Yes	Count	19	56	
		Column N %	90.5%	84.8%	
Question 16b-1	No	Count	11	28	0.459
		Column N %	52.4%	42.4%	
	Yes	Count	10	38	
		Column N %	47.6%	57.6%	
Question 16b-2	No	Count	11	30	0.623
		Column N %	52.4%	45.5%	
	Yes	Count	10	36	
		Column N %	47.6%	54.5%	
Question 16b-3	No	Count	14	35	0.320
		Column N %	66.7%	53.0%	
	Yes	Count	7	31	
		Column N %	33.3%	47.0%	

4.6.1.2.2.7 Crosstab of use of manipulation by Question 19

There was no association between use of manipulation and responses to question 19 (p=0.728). Table 41 shows that the percentage of responses to each level of question 19 was similar between the two groups.

Table 41: Crosstab of use of manipulation by Question 19

			To what extent do you believe chiropractic should play an active role in the South African health care system?				Total
			Great extent	Moderate extent	Slight extent	No active role	
Question 3	Yes	Count	3	10	7	1	21
		Row %	14.3%	47.6%	33.3%	4.8%	100.0%
	No	Count	5	28	25	6	64
		Row %	7.8%	43.8%	39.1%	9.4%	100.0%
Total		Count	8	38	32	7	85
		Row %	9.4%	44.7%	37.6%	8.2%	100.0%

Pearson's chi square 1.303, p = 0.728

4.6.1.2.2.8 Median responses to Question 20 by use of manipulation

There was not much difference in median response to question 20 on a scale of 1 (none) to 5 (greatest) between those who used and did not use manipulation. The median response is shown in Table 42.

Table 42: Median responses to Question 20 by use of manipulation

Question 3	Primary contact	Preventative	Supportive	Rehabilitative
Yes	2.00	3.00	4.00	4.00
No	3.00	3.00	4.00	3.00
Total	3.00	3.00	4.00	4.00

4.6.1.2.2.9 Mann-Whitney test to compare responses to question 20 by question 3

There was no significant difference in terms of the responses to question 20 and whether the practitioner used manipulation. The p values for the Mann-Whitney test to compare median responses between the 2 groups are shown in Table 43.

Table 43: Mann-Whitney test to compare responses to question 20 by question 3

	Question 3	N	Mean Rank	Sum of Ranks
Primary contact	Yes	18	36.28	653.00
	No	61	41.10	2507.00
	Total	79		
Preventative	Yes	17	36.41	619.00
	Nno	59	39.10	2307.00
	Total	76		
Supportive	Yes	19	42.68	811.00
	No	63	41.14	2592.00
	Total	82		
Rehabilitative	Yes	19	47.66	905.50
	No	63	39.64	2497.50
	Total	82		

Test Statistics(a)

	Primary contact	Preventative	Supportive	Rehabilitative
Mann-Whitney U	482.000	466.000	576.000	481.500
Wilcoxon W	653.000	619.000	2592.000	2497.500
Z	-.807	-.455	-.256	-1.334
Asymp. Sig. (2-tailed)	0.420	0.649	0.798	0.182

a Grouping Variable: Question 3

4.6.1.2.2.10 Cross tabulation of responses to question 22 by question 3

There was a slightly higher rate of referral in those who used manipulation (81%) than in those who did not use manipulation (69.2%), however this difference was not statistically significant (p=0.405).

Table 44: Cross tabulation of responses to question 22 by question 3

			Have you ever referred a patient to a Chiropractor?		Total
			Yes	No	
Question 3	Yes	Count	17	4	21
		Row %	81.0%	19.0%	100.0%
	No	Count	45	20	65
		Row %	69.2%	30.8%	100.0%
Total		Count	62	24	86
		Row %	72.1%	27.9%	100.0%

Fisher's exact p = 0.405

4.6.2 Objective 3:

To compare the views and perceptions of Orthopaedic surgeons, Neurosurgeons, and Neurologists previously established, with current views and perceptions established in this study in terms of determining if any change has occurred over the past ten years.

4.6.2.1 Question 3 by year

Table 23 shows a significant difference between the participants who practiced spinal manipulation in 1996 and 2006 ($p<0.001$). In 1996 the proportion who practiced manipulation was higher (48.2%) than in 2006 (24.1%).

Table 45: Question 3 by year

	Yes	No	total
1996	79 (48.2%)	85 (51.8%)	164
2006	21 (24.1%)	66 (75.9%)	87
Total	100	151	251

4.6.2.2 Question 4b by year

There was no significant difference between 1996 and 2006 in terms of the proportion of participants who would like to receive formal training in spinal manipulation (28.6% in 1996 vs. 19.5% in 2006), $p=0.115$. This is shown in Table 24.

Table 46: Question 4b by year

	Yes	No	Total
1996	47 (28.6%)	117 (71.4%)	164
2006	17 (19.5%)	70 (80.5%)	87
total	64 (25.5%)	187 (74.5%)	251

4.6.2.3 Question 5 by year

There was a highly significant difference between participants who knew about the proposed collaboration between Chiropractors and medical practitioners in 1996 (70.7%) and 2006 (44.2%), p<0.001. Table 25 shows that the 1996 cohort was more likely to know about it than the 2006 cohort.

Table 47: Question 5 by year

	Yes	No	Total
1996	116 (70.7%)	48 (29.3%)	164
2006	38 (44.2%)	48 (55.8%)	86
Total	154 (61.6%)	96 (38.4%)	250

4.6.2.4 Question 6 by year

There was no significant difference between the responses in 1996 and in 2006 with regard to the extent to which participants felt informed about what Chiropractors do (p=0.187). However, Table 26 shows that the percentage who felt not at all informed had decreased from 16.5 % in 1996 to 6.8% in 2006, thus indicating that the level of awareness had increased slightly over the years.

Table 48: Question 6 by year

	Highly informed	Moderately informed	Slightly informed	Not at all informed	Total
1996	10 (6.1)	62 (37.8)	65 (39.6)	27 (16.5)	164
2006	7 (8.0)	37 (42.0)	38 (43.2)	6 (6.8)	88
Total	17	99	103	33	252

4.6.2.5 Question 7 by year

There was a highly significant difference in responses between 1996 and 2006 in terms of how competent practitioners believe Chiropractors to be in neuromusculoskeletal examination and diagnosis ($p<0.001$). Table 27 shows that the percentage of responses in the "greatly competent" and "moderately competent" categories had increased from 1996 to 2006, while the responses in the "not at all competent" and "no comment" categories had decreased over the 10 years. This shows that practitioners' opinions about the competency of Chiropractors have improved in the last 10 years.

Table 49: Question 7 by year

	Greatly competent	Moderately competent	Slightly competent	Not at all competent	No comment	Total
1996	6 (3.7)	36 (22.1)	49 (30.1)	33 (20.2)	39 (23.9)	163
2006	10 (11.5)	39 (44.8)	27 (31.0)	6 (6.9)	5 (5.7)	87
Total	16	75	76	39	44	250

4.6.2.6 Question 8 by year

Table 50 shows the responses in 2006 and 1996 as to whether they thought Chiropractors could treat various conditions. There were several conditions where opinions had not changed significantly from 1996 to 2006. However, most opinions had changed over the 10 years. The 16 conditions where a significant change in opinions was found are listed below:

Diabetes ($p<0.001$); Disk herniation ($p=0.018$); General back pain ($p<0.001$); Hip pain ($p=0.016$); Knee pain ($p=0.016$); Low back pain ($p<0.001$); Malnutrition ($p=0.046$); Migraine ($p=0.015$); Myalgia ($p=0.018$); Neck pain ($p=0.037$); Nerve root pain ($p<0.001$); Nervous tension ($p=0.015$); Sciatica ($p<0.001$); Shoulder pain ($p=0.005$); Viral infections ($p=0.037$); and Whiplash ($p<0.001$).

For all these conditions, the change was towards a more positive direction (i.e. from not being able to treat the condition, towards being able to treat the condition). In no instance was there a significant change away from being able to treat the condition.

Table 50: Question 8 by year

	Year	Always		Usually		Sometimes		Never	
		Count	%	Count	%	Count	%	Count	%
Allergies	1996	0	0%	2	1.3%	11	7.0%	144	91.7%
	2006	0	.0%	0	.0%	12	15.2%	67	84.8%
Asthma	1996	0	0%	2	1.3%	10	6.3%	145	92.4%
	2006	0	.0%	1	1.3%	11	13.9%	67	84.8%
Bacterial infections	1996	0	0%	1	0.6%	3	1.9%	153	97.5%
	2006	0	.0%	0	.0%	5	6.3%	75	93.8%
Depression	1996	2	1.3%	10	6.3%	69	43.7%	77	48.7%
	2006	2	2.5%	6	7.6%	34	43.0%	37	46.8%
Diabetes	1996	0	0%	1	0.6%	2	1.3%	154	98.1%
	2006	0	.0%	2	2.6%	9	11.5%	67	85.9%
Disc herniation	1996	1	0.6%	20	12.7%	68	43.3%	68	43.3%
	2006	2	2.4%	12	14.3%	50	59.5%	20	23.8%
General back pain	1996	10	6.3%	66	42%	75	47.8%	6	3.8%
	2006	15	17.4%	48	55.8%	19	22.1%	4	4.7%
High blood pressure	1996	0	0%	1	0.7%	13	8.3%	142	91.0%
	2006	0	.0%	1	1.3%	12	15.4%	65	83.3%
Insomnia	1996	1	0.6%	7	4.5%	55	35.3%	93	59.6%
	2006	1	1.3%	5	6.4%	24	30.8%	48	61.5%
Hip pain	1996	0	0%	14	8.9%	98	62.4%	45	28.7%
	2006	3	3.7%	12	14.8%	52	64.2%	14	17.3%
Knee pain	1996	0	0%	15	9.6%	91	58.0%	51	32.4%
	2006	3	3.7%	12	14.8%	50	61.7%	16	19.8%
Low back pain	1996	8	5.1%	50	31.9%	90	57.3%	9	5.7%
	2006	8	9.5%	48	57.1%	24	28.6%	4	4.8%
Low blood pressure	1996	0	0%	5	3.2%	10	6.4%	141	90.4%
	2006	0	.0%	1	1.3%	12	15.6%	64	83.1%
Malnutrition	1996	0	0%	2	1.3%	7	4.5%	147	94.2%
	2006	0	.0%	2	2.6%	10	13.0%	65	84.4%
Migraine	1996	0	0%	9	5.8%	55	35.2%	92	59.0%
	2006	4	5.1%	5	6.3%	34	43%	36	45.6%
Myalgia	1996	3	1.9%	33	21%	89	56.7%	32	20.4%
	2006	4	4.9%	28	34.1%	43	52.4%	7	8.5%

Neck pain	1996	5	3.2%	50	31.9%	89	56.7%	13	8.3%
	2006	6	7.1%	39	45.9%	37	43.5%	3	3.5%
Nerve root pain	1996	3	1.9%	21	13.4%	62	39.5%	71	45.2%
	2006	4	4.8%	11	13.1%	54	64.3%	15	17.9%
Nervous tension	1996	3	1.9%	29	18.6%	77	49.4%	47	30.1%
	2006	9	10.8%	18	21.7%	38	45.8%	18	21.7%
Obesity	1996	1	0.6%	6	3.8%	28	17.8%	122	77.8%
	2006	0	.0%	4	5.1%	24	30.4%	51	64.6%
Osteoarthritis	1996	0	0%	12	7.6%	94	59.9%	51	32.5%
	2006	1	1.2%	9	11.0%	39	47.6%	33	40.2%
Peptic ulcer	1996	0	0%	1	0.6%	9	5.8%	146	93.6%
	2006	0	.0%	0	.0%	9	11.5%	69	88.5%
Rheumatism	1996	0	0%	19	12.1%	77	49%	61	38.9%
	2006	2	2.5%	11	13.9%	46	58.2%	20	25.3%
Sciatica	1996	2	1.3%	29	18.5%	74	47.1%	52	33.1%
	2006	5	5.9%	16	18.8%	55	64.7%	9	10.6%
Shoulder pain	1996	1	0.6%	34	21.7%	86	54.8%	36	23%
	2006	4	4.8%	15	18.1%	57	68.7%	7	8.4%
Tension headache	1996	4	2.6%	36	23.1%	88	56.4%	28	17.9%
	2006	8	9.6%	20	24.1%	44	53.0%	11	13.3%
Viral infections	1996	0	0%	1	0.6%	6	3.9%	149	95.5%
	2006	0	.0%	1	1.3%	10	12.5%	69	86.3%
Whiplash	1996	2	1.3%	29	18.5%	72	45.9%	54	34.4%
	2006	9	10.6%	20	23.5%	47	55.3%	9	10.6%

4.6.2.7 Question 9 by year

There was a borderline non significant change in the percentage of responses to each of the statements for question 9 by year (p=0.067). Table 51 shows that in 2006 there was a lower percentage of responses to statements 1, 3 and 4 than in 1996, while the responses to statement 2 had changed positively from 1996 to 2006. This shows that practitioners opinions of Chiropractic had improved over the 10 years, but this improvement was not quite statistically significant.

Table 51: Question 9 by year

	Statement 1[2]	Statement 2[3]	Statement 3[4]	Statement 4[5]	Total
1996	82 (50%)	48 (29.3%)	8 (4.9%)	26 (15.9%)	164
2006	39 (44.3%)	38 (44.3%)	3 (3.4%)	7 (8%)	88
Total	121	87	11	33	252

4.6.2.8 Question 10 by year

There was a highly significant change of opinion between 1996 and 2006 regarding whether there was a difference between Chiropractic and Physiotherapy ($p<0.001$). Table 52 shows that in 1996 only 59.3% of participants answered "yes" while in 2006 as many as 94.3% responded "yes". Therefore there is evidence that practitioners' opinion of a gap between Chiropractic and Physiotherapy has widened in the past 10 years.

Table 52: Question 10 by year

	Yes	No	Don't know	Total
1996	96 (59.3%)	27 (16.7%)	39 (24%)	162
2006	83 (94.3%)	2 (2.3%)	3 (3.4%)	88
Total	179	29	42	250

[2] Statement 1: "I am uncomfortable with it but it is effective for some patients"
[3] Statement 2: "Chiropractic provides excellent treatment for some musculoskeletal conditions"
[4] Statement 3: "Chiropractic is quackery and does more harm than good"
[5] Statement 4: "Not informed enough to comment"

4.6.2.9 Question 11.3 by year

The extent to which participants responded that they might refer patients to a Chiropractor is shown by year in Table 53, with a score of 1 representing the none and 5 being the most referals. There was a highly significant difference in responses between 1996 and 2006 cohorts ($p<0.001$). The most frequent response in 2006 was a "1" indicating unlikely to refer to a Chiropractor, while in 2006 the most frequent response was a tie between "2" and "3". This indicates that over the 10 year period, practitioners have become more likely to refer patients to Chiropractors.

Table 53: Question 11.3 by year

	1	2	3	4	5	Total
1996	79 (48.5%)	41 (25.2%)	30 (18.4%)	9 (5.5%)	4 (2.5%)	163
2006	19 (22.4%)	27 (31.8%)	27 (31.8%)	11 (12.9%)	1 (1.2%)	85
Total	98	68	57	20	5	248

4.6.2.10 Question 12.1 by year

Practitioners' views on the importance of Chiropractic in primary health care are shown by year in Table 54. The scale indicates increasing importance from 1 to 5. There was a significant difference in opinion between the 1996 cohort and the 2006 cohort ($p<0.001$). The most frequent response in 1996 was "1" (38.4%) indicating least important, and in 2006 this had changed to "3" indicating halfway between least and most important. This may show that the importance of Chiropractic in primary health care has increased in the opinions of practitioners over the past 10 years.

Table 54: Question 12.1 by year

	1	2	3	4	5	Total
1996	61 (38.4%)	47 (29.6%)	39 (24.5%)	5 (3.1%)	7 (4.4%)	159
2006	12 (14.3%)	28 (33.3%)	30 (35.7%)	13 (15.5%)	1 (1.2%)	84
Total	73	75	69	18	8	243

4.6.2.11 Question 13 by year

There was a highly significant difference between responses of the 1996 cohort and the 2006 cohort with regard to drawing blood for diagnostic purposes ($p<0.001$). A higher percentage of disagreement was found in 2006 than in 1996. With regard to intra-articular injection, the opinions also differed significantly ($p=0.003$), with participants disagreeing more in 2006 than in 1996. Minor surgery did not show any significant change in opinion ($p=0.165$), with the majority disagreeing in both years. Similar results were found for prescription of medicines ($p=0.096$) and reducing minor fractures ($p=0.185$). (All p values are from Fisher's exact 2 sided tests). The "none of the above" category may have been interpreted differently by the 2006 cohort as the responses were totally different in 2006 than in 1996 ($p<0.001$). This is shown in Table 55 below.

Table 55: Question 13 by year

Procedure	Year	No		Yes	
		Count	%	Count	%
Draw blood for diagnostic purposes	1996	120	74.1%	42	25.9%
	2006	86	97.73%	2	2.27%
Intra-articular injection	1996	137	84.6%	25	15.4%
	2006	85	96.59%	3	3.41%
Minor surgery	1996	157	96.9%	5	3.1%
	2006	88	100.00%	0	.00%
Prescription of scheduled medicines	1996	125	77.1%	37	22.9%
	2006	76	86.36%	12	13.64%
Reduce minor fractures/dislocations	1996	140	86.4%	22	13.6%
	2006	81	92.05%	7	7.95%
None of the above	1996	55	33.9%	107	66.1%
	2006	83	94.32%	5	5.68%

4.6.2.12 Question 14 by year

Table 56 shows responses to each of the statements in Question 14 by year. There was no way to statistically compare responses over the years because the question was asked in different ways in the two studies. The 1996 study did not permit multiple responses while the 2006 study did permit multiple responses, which is the reason for the total of 95 responses in 2006 instead of 88. This may show that not all categories were independent in 2006, violating the chi square assumptions. However, visual comparison of percentage of responses to each statement shows that statements 1, 4 and 5 were preferred in 2006 compared with 1996, while statements 2 and 3 were preferred in 1996.

Table 56: Question 14 by year

	Statement 1[6]	Statement 2[7]	Statement 3[8]	Statement 4[9]	Statement 5[10]	Total
1996	15 (9.3%)	70 (43.5%)	43 (26.7%)	29 (18%)	4 (2.5%)	161
2006	14 (14.7%)	20 (21%)	17 (17.9%)	38 (40%)	6 (6.3%)	95*
Total	29	90	60	67	10	256

- multiple responses were permitted

[6] Statement 1: “Chiropractic should merge with mainstream medicine”
[7] Statement 2: “Chiropractic should exist under medical supervision”
[8] Statement 3: “Chiropractic should become a limited medical profession”
[9] Statement 4: “Chiropractic should remain a complimentary practise”
[10] Statement 5: “Chiropractic should disappear”

4.6.2.13 Question 15.1 by year

The extent to which personal experience would influence practitioners to refer patients to Chiropractors is shown by year in Table 57. In 1996 the most frequent response was “5” (greatest extent), while in 2006 it was a tie between 1 and 5 and a smaller percentage of “5” responses than in 1996. The difference was statistically significant (p=0.025). This shows that personal experience did not influence referral as much in 2006 as it did in 1996.

Table 57: Question 15.1 by year

	1	2	3	4	5	Total
1996	44 (27.3%)	6 (3.7%)	14 (8.7%)	29 (18%)	68 (42.2%)	161
2006	19 (25%)	5 (6.6%)	15 (19.7%)	18 (23.7%)	19 (25.0%)	76
Total	63	11	29	47	87	237

4.6.2.14 Question 15.2 by year

The extent to which patient demand would influence practitioners to refer patients to Chiropractors is shown by year in Table 58. There was a highly significant difference in response between the 1996 and 2006 (p<0.001). It can be seen from the table that patient demand was more of an important factor in 2006 than in 1996.

Table 58: Question 15.2 by year

	1	2	3	4	5	Total
1996	59 (36.4%)	36 (22.2%)	42 (25.9%)	12 (7.4%)	13 (8%)	162
2006	8 (10.1%)	18 (22.8%)	26 (32.9%)	21 (26.6%)	6 (7.6%)	79
Total	67	54	68	33	19	241

4.6.2.15 Question 15.4 by year

The extent to which a colleague's recommendation would influence practitioners to refer patients to Chiropractors is shown by year in Table 59. The difference in response by year was statistically significant (p=0.040). In 1996 the most frequent response was "1" (least extent) but in 2006 it was "2". Therefore colleague's recommendation was more highly regarded in 2006 than in 1996.

Table 59: Question 15.4 by year

	1	2	3	4	5	Total
1996	59 (36.7%)	23 (14.3%)	44 (27.3%)	21 (13%)	14 (8.7%)	161
2006	16 (20.8%)	20 (26%)	18 (23.4%)	15 (19.5%)	8 (10.4%)	77
Total	75	43	62	36	22	238

4.6.2.16 Question 17 by year

Participants were asked whether they understood Chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation. There was a significant difference between responses in 1996 and 2006 (p<0.001). However, the difference was probably due to the existence of a "don't know" category in 2006 which was not an option in the 1996 study. The proportion of participants who answered "yes" in both years was similar (25% and 24.4% respectively), but there was a smaller percentage of "no" responses in 2006 compared with 1996. This is shown in Table 60.

Table 60: Question 17 by year

	Yes	No	Don't know	Total
1996	41 (25%)	123 (75%)	0	164
2006	21 (24.4%)	51 (59.3%)	14 (16.3%)	86
Total	62	174	14	250

4.6.2.17 Question 18 by year

Participants were asked whether they understood Chiropractors to claim that some disorders are due to biomechanical dysfunction and amenable to spinal manipulation. A high proportion of the 1996 and the 2006 cohorts responded "yes". However, due to a relatively high proportion of "don't know" responses in 2006, the difference in responses between the years was statistically significant ($p<0.001$). This is shown in Table 61.

Table 61: Question 18 by year

	Yes	No	Don't know	Total
1996	109 (66.5%)	55 (33.5%)	0	164
2006	60 (69%)	13 (15%)	14 (16%)	87
Total	169	68	14	251

4.6.2.18 Question 19 by year

There was no significant difference between responses of the two cohorts with regard to the role of Chiropractic in the South African Health Care System ($p=0.283$). Table 62 shows that the percentage responses in each category were very similar between the year cohorts, although there was a slight increase in the percentage who responded "great extent" and "moderate extent" in 2006 compared with 1996. Therefore there was a slight positive shift in opinion on the role of chiropractors over the 10 years but this was not statistically significant.

Table 62: Question 19 by year

	Great extent	Moderate extent	Slight extent	No active role	Total
1996	6 (3.8%)	66 (41.5%)	72 (45.3%)	15 (9.4%)	159
2006	8 (9.3%)	38 (44.2%)	33 (38.4%)	7 (8.1%)	86
Total	14	104	105	22	245

4.6.2.19 Question 20.1 by year

With regard to the type of roles that participants thought Chiropractors should occupy in health care, a primary contact role was supported to a significantly greater extent in 2006 than in 1996 ($p<0.001$). This is shown in Table 63, where the most common response in 1996 was “1” indicating no role at all, and in 2006 the most frequent response was “3” indicating halfway between no role and the greatest role.

Table 63: Question 20.1 by year

	1	2	3	4	5	Total
1996	84 (54.2%)	31 (20%)	23 (14.8%)	10 (6.5%)	7 (4.5%)	155
2006	22 (27.5%)	16 (20%)	23 (28.8%)	15 (18.8%)	4 (5%)	80
Total	106	47	46	25	11	235

4.6.2.20 Question 20.2 by year

Similarly, the preventative role of Chiropractic was supported to a significantly greater extent in 2006 than in 1996 ($p=0.001$). This is shown in Table 64.

Table 64: Question 20.2 by year

	1	2	3	4	5	Total
1996	73 (47.1%)	23 (14.8%)	34 (21.9%)	14 (9%)	11 (7.1%)	155
2006	17 (22.1%)	18 (23.4%)	21 (27.3%)	17 (22.1%)	4 (5.2%)	77
Total	90	41	55	31	15	232

4,6.2,21 Question 20.4 by year

The opinions of practitioners on the supportive role of Chiropractic did not change significantly from 1996 to 2006 (p=0.157) (data not shown). However, the rehabilitative role was supported to a greater extent in 2006 than in 1996 (Table 65) (p=0.022).

Table 65: Question 20.4 by years

	1	2	3	4	5	Total
1996	27 (17.4%)	18 (11.6%)	44 (28.4%)	33 (21.3%)	33 (21.3%)	155
2006	10 (12%)	15 (18.1%)	16 (19.3%)	31 (37.3%)	11 (13.3%)	83
Total	90	41	55	31	15	232

4.6.2.22 Table 43: Question 22 by year

When asked if they had ever referred a patient to a Chiropractor, a significantly higher proportion had referred patients in 2006 (72.4%) than more in 1996 (47.6%) (p<0.001). This is shown in Table 66.

Table 66: Question 22 by year

	Yes	No	Total
1996	78 (47.6%)	86 (52.4%)	164
2006	63 (72.4%)	24 (27.6%)	87
Total	141	110	251

4.6.2.23 Question 23 by year

Similarly, a significantly higher proportion had received referrals from Chiropractors in 2006 (83.7%), more than in 1996 (59.8%) ($p<0.001$). This is shown in Table 67.

Table 67: Question 23 by year

	Yes	No	Total
1996	98 (59.8%)	66 (40.2%)	164
2006	72 (83.7%)	14 (16.3%)	86
Total	170	80	250

4.6.2.24 Question 24 by year

A non-significantly higher percentage of participants from the 1996 cohort (56.7%) had examined patients whom they believed had been harmed by Chiropractic treatment ($p=0.148$). The percentage was still relatively high in 2006 (47%). This is shown in Table 68.

Table 68: Question 24 by year

	Yes	No	Total
1996	93 (56.7%)	71 (43.3%)	164
2006	39 (47%)	44 (53%)	83
Total	170	80	250

CHAPTER 5: DISCUSSION

5.1 Introduction

In this chapter the results of the study, as obtained in chapter 4, will be analysed and discussed. At the end of this chapter these results will then be discussed in terms of the various hypotheses of the study.

5.2 Response rates

The minimum required response rate from each participant group was 15% of the entire sample group or 50 questionnaires from the entire sample group (Esterhuizen, 2005). Orthopaedic surgeons met this criteria based on the return of 54 questionnaires (11.3%), Neurosurgeons met this criteria based on the return of 18 of the issued questionnaires (16.4%) and Neurologists based on the return of 16 of issued questionnaires (15.8%). This compares favourably with current research where response rates varied from 13.8% (Louw, 2006) to 16.5% (Symon et al., 2006). The latter two response rates does not however allow for results to be generalised to the population under study (Lindorff-Larsen et al., 2007; Mearns and Reader, 2007; Suter et al., 2007). Studies ranging from 30%-50% (Caldwell et al., 2007; Copp et al., 2007) does however allow for generalisations to be made within the context of the population under study. In agreement with the above, Esterhuizen (2005), who reviewed the methodology of this study, indicated that even though the total response rate of the 3 participant groups (12.6%) was below the required 15%, statistical analysis was still possible due to the fact that, individually, each participant group had met the required minimum response rate of either 50 Questionnaires of 15% of Questionnaires.

5.3 Participant demographics

5.3.1 Objective 1

To establish the demographic factors of Orthopaedic surgeons, Neurosurgeons and Neurologists

5.3.1 Demographics

The vast majority of responses to this study were from Orthopaedic surgeons (61.36%). Of these participants the majority had been in practice between 10 and 20 years (42.6%). The majority of Orthopaedic Surgeons (73.6%) did not practice any form of spinal or extra vertebral manipulation or mobilization even though 31.5% of Orthopaedic surgeons had received formal training in spinal manipulation. These results also showed that they had received the most amount of such training in comparison to other professions. Of the Orthopaedic surgeons, Neurosurgeons and Neurologists, Orthopaedic surgeons had received the most amount of formal training in spinal manipulation. When asked if participants would like to receive formal training in spinal manipulation and/or mobilization, the most enthusiastic group of participants were the Orthopaedic surgeons with 26.4% of them answering "YES"".

Neurosurgeons and Neurologists contributed a fairly equal response of the remaining 18.18% and 20.45% sample group of participants respectively. As with the Orthopaedic surgeons the majority of Neurosurgeons and Neurologists had been in practice between 10 and 20 years. Of the three participant groups, it was clear that Neurologists practice by far the least amount of spinal or extra vertebral manipulation or mobilization (12.5%) and also had the lowest percentage of participants to have received formal training in spinal manipulation (6.3%). Of the three groups of participants Neurologists were also the least enthusiastic to receive formal training in spinal manipulation (6.3%).

When assessing the above demographics, it could be assumed that Orthopaedic surgeons would favor Chiropractic more than Neurosurgeons and Neurologists based on both the percentage participants to the study as well as the interest in extra spinal manipulation or mobilization when compared to Neurosurgeons and Neurologists. Conversely, Neurologists would seem to show the least amount of enthusiasm towards the Chiropractic profession based on the response rate and responses to extra spinal manipulation or mobilization being the most limited of the three participant groups.

However, it could also be seen that the Orthopaedic surgeons would be most resistant to forging bonds with Chiropractors as they may perceive that they / their livelihood is being threatened by the Chiropractors who are able to “cure” patients pre-operatively (Morris, 2006). This may therefore be the motivation for more of them wanting to learn about manipulation as compared to the Neurologists and Neurosurgeons to retain their livelihood. Thus it may be that the Neurologists and Neurosurgeons are more likely to forge relationships with Chiropractors in this particular context.

This conflict in possibilities will be addressed throughout this chapter in order to evaluate which scenario is the most likely.

5.4 Results of questionnaire analysis

5.4.1 Objective 2:

To establish the current views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession in South Africa in terms of the following parameters:

Personal experience

b. Chiropractic therapeutic efficacy

Chiropractic scope of practice and

d. Inter-professional relations

Discussion of results under headings a – d as listed above:

5.4.1.1(a) Personal experience:

Responses to question 5 were similar regarding the awareness that the Scientific and Education Committee of the MASA made a recommendation to the SAMDC to promote co-operation between medical practitioners and Chiropractors possible. This made it difficult to assess whether or not this information had significant bearing on the personal experiences of these three groups and on individuals within the groups.

When asked to what extent participants felt informed as to what Chiropractors do, (Question 6) Neurologists felt the least informed. However Neurosurgeons collectively felt more informed than both Neurologists and Orthopaedic surgeons. When assessing the answers to question 9, the results show the majority of Neurologists to be uncomfortable with Chiropractic even though they believed Chiropractic is effective for some patients. The majority of Neurosurgeons felt Chiropractic provided excellent treatment for some musculoskeletal conditions. No Neurosurgeons felt that chiropractic was quackery and does more harm than good even though a very small percentage of Orthopaedic Surgeons and Neurologists (3.7% and 6.2%

respectively) deemed Chiropractic to be quackery and does more harm than good.

The outcomes discussed seem to support the fact that Orthopaedic surgeons are least likely to forge a bond with Chiropractors (i.e. they were on average moderately informed about Chiropractic practice and felt that it did provide good care for patients). However, the results showed that although they had very little understanding of the profession, they understood that it had a high success rate. This is in contrast to the Neurosurgeons who felt that Chiropractic was not quackery and did more good than harm – supporting a good working relationship. Finally it was the Neurologists who felt that Chiropractic was good for some conditions, but had limited ability to comment and erred on the side of caution when reporting that they were uncomfortable with Chiropractic, nevertheless Neurologists where least likely to report Chiropractors as quacks.

These outcomes seem to support the fact that the patients seen by Chiropractors and Orthopaedic surgeons are very similar, whereas those seen by Chiropractors and Neurosurgeons are less similar with Neurologists patients sharing the least amount of similarity with Chiropractic patients. (Morris, 2006)

When participants were asked, if in their opinion there was a difference between Chiropractic and Physiotherapy, (Question 10a) the vast majority of participants answered yes (94.3%). Of all the participants only two Orthopaedic surgeons answered there was no difference between Chiropractic and Physiotherapy. A small percentage of Neurologists (12.5%) and Neurosurgeons (5.6%) did not know if there was a difference between Chiropractic and Physiotherapy. To the participants that answered yes, they were then asked if they thought there was a sufficient difference between Chiropractic and Physiotherapy to justify the existence of two separate professions (Question 10b). A total of 78% of participants agreed that there should be two separate professions. Only a very small percentage of

participants (15.1% Orthopaedic surgeons, 5.95% Neurosurgeons and 8.3% Neurologists) felt that there was not sufficient difference between Chiropractic and Physiotherapy to justify the existence of two separate professions. These outcomes seem to support the assertions made in the previous section with regards to the types of patients seen by the Orthopaedic surgeons, Neurosurgeons and Neurologists. Particularly with respect to Orthopaedic surgeons where the evidence seems to suggest that they perceive Chiropractic as an analogous profession to physiotherapy (even though in South African terms Physiotherapists are not allowed to manipulate in their scope of practice (Dimond, 1999)). This creates an assertion that the Orthopaedic surgeons would like to have only Physiotherapists to assist them whilst they (as Orthopaedic surgeons) provide the manipulation. This tends to indicate that there is a possibility that the responses in favour of 2 professions (viz. chiropractic and physiotherapy) may be a factor related to the Hawthorne effect (Wikipedia, 2008) as opposed to the true responses of the participants. This is however only conjecture and it is recommended that this assertion is further investigated through means of a qualitative study in which reasons for responses can be more thoroughly evaluated.

When participants were asked if they understood Chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation (Question 17) the group of participants who had mostly agreed were Neurologists (37.5%). This supports the previous assertion that Neurologists have the least reason for interacting with and therefore understanding Chiropractors. However, the vast majority of participants answered no to this question, with Orthopaedic Surgeons having slightly more negative responses (63.5%) than Neurosurgeons; implying that Orthopaedic surgeons do have a good understanding of what the Chiropractic profession entails. This is at odds with the rating that Orthopaedic surgeons gave themselves at the start of the questionnaire. A small but fairly equal percentage of participants did not know if Chiropractors claimed that all disease is due to vertebral subluxation and amenable to spinal manipulation.

Participants were then asked if they understood Chiropractors to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation (Question 18). A fairly equal number of participants between the three groups answered yes (69%). Approximately a quarter of Neurosurgeons (22.2%) and Neurologists (25%) understood Chiropractors not to claim that only some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation. These responses seem to suggest that all the professions have a similar view of Chiropractic. This is at odds with the previous findings, but supports the fact that Orthopaedic surgeons actually do have a good understanding of Chiropractic, that Neurosurgeons have an average understanding and Neurologists have a hit and miss understanding – as their response to this question contradicts the previous question as discussed in the previous paragraph.

Participants were then asked to indicate to what extent various sources had aided in forming their views about Chiropractic (Question 21). The vast majority of Orthopaedic Surgeons and Neurologists revealed their patients to have aided the most in forming their view of Chiropractic. Neurosurgeons revealed the patients, Chiropractors and personal experience to have aided equally in forming their view of Chiropractic. Within all three groups, friends and popular media and medical journals contributed the least in forming their views about Chiropractic. These results may actually explain the discrepancies in the responses so far: that is Orthopaedic surgeons seem to have the most amount of information from patients as do Neurologists – in this context Orthopaedic surgeons have patients that overlap with Chiropractic patients the most (Morris, 2006) and thus it stands to reason that they will have the most accurate information about Chiropractic – yet they do not have the best perception based on market competitiveness (Morris, 2006). Of the Neurologists most of the patients are dissimilar therefore the amount of information would not be as accurate in terms of the patients that do report and therefore it is likely that of the Neurologists there is a group that has a good understanding and there are some that have little understanding. With

regards the Neurosurgeons, it would seem that they have the most accurate understanding of Chiropractic as this is not only based on patients (second hand information) but also personal experience. The outcomes that there was little influence by the media (journals and other media) seems to support the assertion made earlier that in the South African context exposure to information from such media is limited and that it should be utilised by the Chiropractic profession. Should the Chiropractic profession wish to forge further ties with these professions it would be a valuable resource to explore further (however it is assumed that the response to this question does not mean that the participants don't actually read journal articles) for purposes of cross referral and inter-professional communication.

When participants were asked if in communication with Chiropractors, they were satisfied with the person's professionalism in terms of courtesy, knowledge base, verbal and written communication skills and accuracy of diagnosis (Question 23b) the responses showed the following results. The vast majority of Neurosurgeons were satisfied with the professionalism of the Chiropractors. The majority of Orthopaedic surgeons and Neurologists were mostly satisfied with the Chiropractors courtesy. Between all three groups, participants were least satisfied with the accuracy of diagnosis. This response may be a reason for the responses to the "quackery" (Question 9.3). In this context the likelihood of Chiropractors agreeing with Orthopaedic surgeons is the greatest whereas with Neurosurgeons this may be less than and with Neurologists the least – corresponding with the responses to the "quackery" question.

Participants were asked if they had ever examined any patients that they believed were in any way harmed by Chiropractic treatment (Question 24). Neurologists had the most yes responses (60%). Both Orthopaedic and Neurosurgeons had similar positive (44%) and negative (56%) responses to this question. Participants were then asked if they thought the nature and frequency of any such harm was sufficient to limit their referral to a Chiropractor (Question 24b). Once again Neurologists (88.9%) had the largest

percentage yes response. In contrast Neurosurgeons (28.6%) had the lowest percentage yes responses, but 71.4% did not believe the nature and frequency of any such harm was sufficient to limit their referral to a Chiropractor. These results tend to re-iterate the responses to the "quackery" question as well as the accuracy of the diagnosis made. In this context the similarity of patients is again reflective of the responses of "harm to patients" and the assertion made at the outset of this discussion is re-enforced (viz. the level of perceived threat that the Chiropractic profession plays in terms of the market share for each of these professions in terms of patient similarity and functionality within the health care system).

Based on the answers of the latter two questions (Question 24 and Question 24b) it would seem that on average Neurosurgeons have had the least exposure to patients who they believed had in any way been harmed by Chiropractic treatment. Therefore it would be reasonable to assume that Neurosurgeons would favour Chiropractic treatment more than Neurologists, as the vast majority of Neurologists had felt that they had seen patients that had been harmed as a result of Chiropractic treatment.

To determine the overall view held by Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession, participants were asked to rate their view of Chiropractic (Question 26) on a sliding scale of 1 – 5 (1 being worst and 5 being the best). No Neurosurgeons who responded reported a 1 on this scale and the majority of Neurosurgeons rated the Chiropractic profession as a 4 (61.1%). This therefore confirms that Neurosurgeons have the most favourable view of Chiropractic within the three participant groups. As expected more Neurologists indicated they had the least favourable overall view of Chiropractic with 60% rating a 2 and only 6.7% rating a 4. Orthopaedic surgeons rated the Chiropractic profession as a 3.

5.4.1.1(b) Chiropractic Therapeutic Efficacy

To establish what Orthopaedic Surgeons, Neurosurgeons and Neurologists perceived Chiropractic therapeutic efficacy to be, they were asked to what extent they believed Chiropractors to be competent in neuromusculoskeletal examination and diagnosis (Question 7).

It was interesting to note that none of the Neurosurgeons responded that they were not informed enough to comment on this question. In contrast 33.3% felt Chiropractors to be highly competent and 55.6% moderately competent. This suggests that Neurosurgeons are the most informed and incidentally, the most comfortable in the way Chiropractors perform neuromusculoskeletal examination and diagnosis. Conversely 12.5% of Neurologists felt they were not informed enough to comment. Yet 50% felt Chiropractors to be slightly competent whilst 31.3% stated they were moderately competent.

A total of 9.4% of Orthopaedic Surgeons answered that they thought Chiropractors were not at all competent while 5.7% felt they were not informed enough to comment.

Based on the overall results of this question, it would seem that Neurosurgeons have by far the greatest confidence in Chiropractors in terms of neuromusculoskeletal examination and diagnosis of the three groups of specialists, which supports the previous results in which Neurosurgeons believe Chiropractors to be highly accurate in their diagnosis.

Another question aimed at accessing the perceived therapeutic efficacy of Chiropractors asked participants to rate eleven stated professions in terms of their importance in serving a primary health care capacity (Question 12) on a sliding scale of 1 to 5 (1 indicates no importance and 5 most important). When assessing the results to this question, Dentistry, Medicine and Nursing received scores of 5 by all three professions indicating that these professions played the most important roles in primary health care. Orthopaedic Surgeons

and Neurologists rated Chiropractic as a “2”, whereas Neurosurgeons rated Chiropractic as a “3” on this scale. This once again shows Neurosurgeons to value the role of Chiropractic as primary health care practitioners more so than Orthopaedic Surgeons and Neurologists. This outcome supports the previous results on the clinical competency of the Chiropractor.

5.4.1.1 (c) Chiropractic scope of practice

To determine what Orthopaedic surgeons, Neurosurgeons and Neurologists perceived the Chiropractors’ scope of practice to be, they were given a list of conditions and asked to what extent they thought these conditions could effectively be treated by Chiropractors (Question 8). The answers ranged from “always, usually, sometimes and never”. The three groups of participants were not differentiated in the analysis of this specific question. The most frequently occurring response was “never” for the majority of conditions listed. Disc herniations, hip and knee and shoulder pain, myalgia, nerve root pain and nervous tension, osteoarthritis and rheumatoid arthritis, sciatica, tension type headaches and whiplash were perceived to only “sometimes” be effectively treated by Chiropractic whereas, participants felt that Chiropractic treatment was ´usually” effective in the treatment of general low back pain as well as neck pain. This concurs neatly with the general consensus that Chiropractors are back specialists (Gaumer, 2002)

Participants were also given a list of practices and were asked which ones they thought fell within the scope of practice of a Chiropractor (Question 13). Analysis of results concluded that the three participant groups agreed that drawing blood for diagnostic purposes, intra-articular injections, minor surgery, prescriptions of scheduled medicines and reducing minor fractures/dislocations, did not fall within the scope of practice of a Chiropractor. All three participant groups agreed that spinal manipulation was within the scope of practice of a Chiropractor. The vast majority of Orthopaedic Surgeons (64.8%) and Neurosurgeons (88.9%) agreed that the treatment of neuromusculoskeletal dysfunction fell within the scope of practice

of a Chiropractor, whereas the majority of Neurologists (62.5%) believed this not to be true. This treatment of neuromusculoskeletal dysfunction does however fall within the accepted norm in regards the Chiropractic profession (CASA, 2005) and highlights the lack of accurate information available to the Neurologists.

The next question pertaining to the participants' views and perceptions of the scope of practice of a Chiropractor, asked which skills they thought an individual practising manipulation should have (Question 16a). The answering options were, 1. General diagnostic skills, 2. Orthopaedic and neurological diagnostic skills and 3 Knowledge of relevant radiology. The three groups agreed rather closely to one another as they all rated orthopaedic and neurological diagnostic skills as the most important followed by knowledge of relevant radiology and then general diagnostic skills. A sub section to this question asked which of the skills participants thought Chiropractors possessed (Question 16b). The vast majority of Neurosurgeons felt that Chiropractors possessed all the abovementioned skills, with close to 70% feeling Chiropractors possessed orthopaedic and neurological skills more than general diagnostic skills and knowledge of relevant radiology. More than 60% of Neurologists believed Chiropractors to possess orthopaedic and neurological, diagnostic skills as well as knowledge of relevant radiology, but only about 25% of Neurologists believed Chiropractors to possess general diagnostic skills. Orthopaedic surgeons (60%) perceived Chiropractors to possess general diagnostic skills. This is slightly more that Neurosurgeons, but more than double of what the Neurologists said.

Based on the abovementioned analysis it is clear that all three professions believed Orthopaedic and Neurological diagnostic skills to be of "most importance" in order to practice manipulation. The majority of Neurosurgeons (65%) and Neurologists (62%) felt that Chiropractors possessed these essential skills whereas just less than half (45%) of Orthopaedic surgeons felt that Chiropractors possessed these skills. Within all three groups knowledge of relevant radiology was rated as the second most important skill. This was

however the skill that received the second most ”yes” answers when asked which skills Chiropractors should possess. Therefore it would seem that Chiropractors are perceived to possess the necessary skills to practise manipulation based on the skills these three professions feel someone practising manipulation should have.

Participants were then asked what extent they believed Chiropractic to play an active role in the South African health care system (Question 19). Even though there was no statistically significant difference in answers between the three groups, 66.7% Neurosurgeons rated Chiropractic to play an active role in the South African health care system. This is a quarter more than what the Neurologists believed and a little less than half more than what the Orthopaedic surgeons believed.

Participants were then asked to what extent they thought Chiropractic should occupy Primary contact, Preventative, Supportive and Rehabilitative roles in health care (Question 20). Once again a sliding scale of 1 to 5 was used (1 indicating no role at all and 5 indicating the greatest role). The conclusion was that Neurologists felt that Chiropractic should occupy a more rehabilitative role whereas Neurosurgeons felt a more supportive role was more appropriate for Chiropractors. Orthopaedic surgeons felt Chiropractic should occupy preventative, supportive and rehabilitative roles in health care. Neurosurgeons were the only group of the three participant groups to consider Chiropractic to occupy a primary contact role in health care.

5.4.1.1(d) Inter-professional relations

To establish the inter-professional relations these three professions conduct, participants were asked to what extent they refer patients to a number of disciplines for neuromusculoskeletal problems. This question was also answered on a sliding scale 1 to 5 (1 indicating no referral and 5 indicating most referral). Of the three participant groups Neurosurgeons were the most likely to refer patients to Chiropractors for neuromusculoskeletal conditions

with Neurologists being the least likely to do this. As could be expected each of the three professions rated themselves as being the best choice of treatment for neuromusculoskeletal patients. Reflexology, Osteopathy and Massage therapy were the least favoured disciplines to refer neuromusculoskeletal patients to by all three groups of participants. This is of interest as all three of these groups fall within the complementary alternative therapies within which Chiropractic has also been classed (WHO, 2005)

Participants were asked which direction they would like to see Chiropractic take in the future (Question 14). Answers to this question were fairly similar between the three professions but what could be concluded was that the vast majority of Neurosurgeons (83.3%) felt that Chiropractic should not remain a complimentary practice whereas half (50%) of both Orthopaedic surgeons and Neurologists disagreed with these Neurosurgeons. This outcome may be linked to the market share perceived by the Orthopaedic surgeons and the lack of appropriate perception of the Neurologists. Nevertheless in this context the Neurosurgeons tended to feel that Chiropractors should exist under medical supervision or become a limited medical profession more so the limited responses from Orthopaedic surgeons and Neurologists did.

When participants were asked to indicate to what extent, personal experience, patient demand, colleagues experience and colleagues recommendation would encourage patient referral to a Chiropractor, Neurologists answered that none of these factors would encourage their referral to Chiropractors (Question 15 a). This seems to support the fact that the incorrect perception that has been generated by Neurologists would not support further interaction on any level. Thus it is suggested that reasons for this rigid adherence to the their beliefs and perception (rightly or wrongly) should be addressed in more open forums to achieve better outcomes as inter-professional relations that could be used to remedy this situation are not recognised as amenable forms by the Neurologists.

In contrast Orthopaedic surgeons and Neurosurgeons both rated personal experience followed by patient demand to influence their referrals to Chiropractors. Neurosurgeons also rated colleague experience as an important factor in encouraging referrals of patients to a Chiropractor. Participants were asked if they had ever referred a patient to a Chiropractor (Question 22). Neurosurgeons had the most yes responses (83.3%) followed by Orthopaedic surgeons (71.7%) and Neurologists (62.5%). Of the total group 72.4% of participants who had referred patients to Chiropractors before were then asked with what frequency they had done so. The participant group with the most frequent patient referral to Chiropractors were the Neurosurgeons referring patients monthly (40%). Neurologists were the most likely of the three groups to only refer patients to a Chiropractor on a quarterly occasion (40%). Orthopaedic surgeons were most likely to refer patients on a quarterly basis. This supports previous views or results made with respect to the interaction between Chiropractors and the three professions under discussion in this study.

To determine perceived inter-professional relations from a Chiropractic standpoint, participants were asked if they had ever received referrals from a Chiropractor (Question 23). The vast majority of participants answered yes to this question with 93.3% Neurologists, 83.3% Neurosurgeons and 81.1% Orthopaedic surgeons having received referrals from Chiropractors. Of those who had received referrals from a Chiropractor, Neurosurgeons were most likely to receive referrals on a weekly basis. Neurologists and Orthopaedic surgeons were most likely to receive referrals on a quarterly basis. Based on these outcomes it would seem that the Neurologists should in theory have the best understanding and interaction with Chiropractors, however it would seem that there are three important factors highlighted earlier (Question 6, 24a, 23b) that seem to modify this interaction – the knowledge that the Neurologist has, the number of “harmed patients” that the Neurologist perceives that Chiropractors have induced and the relative “inaccuracy of diagnoses” as perceived by the Neurologist. These three factors seem to have a lesser effect for Neurosurgeons and Orthopaedic surgeons, where the Orthopaedic

surgeon seems to be influenced by market share possibilities and the Neurosurgeon seems to have no vested interests and the most balanced and consistent view of Chiropractic and therefore also interaction with Chiropractic.

Question 15(b) and question 25 were open ended questions and asked what participants felt what they felt would have to happen within the Chiropractic profession to encourage referral to a Chiropractor and what would the Chiropractic profession as a whole have to do to encourage greater integration with medicine and its specialities respectively. As the open ended answers to these questions were very similar in nature and often overlapped, they will be discussed in combination with one another. A large number of participants felt that Chiropractors should attend orthopaedic and neurological conferences and meetings which would facilitate referral relationships between these professions and Chiropractic. Several participants believed that Chiropractic should integrate itself into medical practices and/or exist under medical supervision to increase its awareness as a paramedical profession. Other responses to these questions included that Chiropractic needed to establish a more specific identity, increase communication skills (including terminology) and increase their knowledge base of anatomy, physiology and pathology. Other respondents answered that Chiropractors should manipulate less and be less focused on facet joints as the cause of pathology. Several participants also encouraged the publication of evidence based research by Chiropractors to aid in increasing their referral to as well as encourage integration of Chiropractic with medicine.

5.4.1.2 Correlation between demographics and knowledge, views and perception.

The study was also structured to determine whether or not participant demographics would have an affect on participants responses to questions.

Length of time in practice was the first demographic to be analysed in terms of responses to certain questions.

The factors that were shown to have a significant relationship with the ***length of time in practice*** were:

Whether or not participants believed the prescription of schedule medicine fall within the scope of practice of Chiropractors. Participants that had been in practice for less than 10 years were more likely to respond "yes" to that question.

Whether participants felt individuals practicing manipulation should possess orthopaedic and neurological diagnostic skills. Participants who had been in practice for shorter periods in time tended to agree with this statement to a greater extent than those participants that had been in practice for longer periods. Participants in practice for shorter periods also tended to agree more that Chiropractors possessed these abovementioned skills.

Even though there was no significant correlation between participants' referral of patients to Chiropractors and length of time in practice, it was however noted that the group of participants with the highest percentage of referrals to Chiropractors had been in practice for between 20 and 30 years, followed by those in practice between 10 and 20 years. The lowest percentage of referrals to Chiropractors was made by those participants in practice for over 30 years. It could therefore be assumed that inter-referral of these participants to Chiropractors could become more frequent as the older Orthopaedic surgeons, Neurosurgeons and Neurologists retire from the South African Health care system.

The factors that were shown to have a non-significant relationship with the ***length of time in practice*** were:

The extent to which participants believed Chiropractic to be competent in neuromusculoskeletal examination and diagnosis was not significantly affected by length of time in practice.

Regarding question 9 in which participants were asked to choose a statement that best reflected their view of Chiropractic, there was also no significant association between length of time in practice and the answer to this question by participants.

Length of time in practice also had not significant association in terms of whether or not participants thought there was a difference between Chiropractic and Physiotherapy.

The direction that participants would like to see Chiropractic take in the future was also not influenced by length of time in practice.

Length of time in practice also had no significant effect on the active role participants thought Chiropractic should play an active role in the South African Health Care system.

The extent to which participants believed Chiropractic should occupy primary contact, preventative, supportive or rehabilitative roles in health care was also not affected by these participants length of time in practice.

The study also looked at how the use of *manipulation by participants* had affected the answers to certain questions.

There were no factors that were shown to have a significant relationship with the use of ***manipulation by participants***. However, it was noted that the following relationships were insignificant:

- Use of manipulation by participants showed to have no bearing on the extent participants felt Chiropractors to be competent in neuromusculoskeletal examination and diagnosis.
- Participants' use of manipulation, surprisingly, had no association regarding question 9 in which participants were asked to choose statements that best reflected their view of Chiropractic. Participants use of manipulation did not significantly affect the answers to this question.

- Due to the fact that the vast majority of participants indicated that they were aware that there was a difference between Chiropractic and Physiotherapy, use of manipulation did not demonstrate to have an association to answers to this question.
- Participants use of manipulation also played no significant part in which practices participants thought fall within the scope of practice of a Chiropractor.
- Participants use of manipulation showed to have no significance in terms of the skills that participants felt an individual practicing manipulation should have. The same was true for the skills that participants felt Chiropractors possessed.
- Participants' use of manipulation also had no effect on the active role participants believed Chiropractic should play in the South African Health Care System.
- The extent to which participants felt Chiropractic should occupy primary contact, preventative, supportive and rehabilitative roles in health care was also not affected by the participants use of manipulation.

Even though not statistically significant, it was noted that a higher percentage of individuals practising manipulation (81%) referred patients to Chiropractors than those that did not practice manipulation (69.2%)

5.4.2 Objective 3

To compare the views and perceptions of Orthopaedic surgeons, Neurosurgeons, and Neurologists previously established, with current views and perceptions established in this study in terms of determining if any change has occurred over the past ten years.

Comparison of the two studies showed that a significantly lower percentage (44.2%) of Orthopaedic surgeons, Neurosurgeons and Neurologists were aware of the proposed collaboration between Chiropractors and medical practitioners as recommended by the Science and Education Committee of

MASA as opposed to the 1996 study (70.7%). The reason for this may be that participants assumed that this collaboration has always been in place, or it may be due to a lack of enthusiasm on the part of the participants to stay up to date regarding developments affecting inter-professional relations in the medical field.

It was noted that significantly less Orthopaedic surgeons, Neurosurgeons and Neurologists perform spinal manipulation at present as opposed to a decade ago. There was no significant difference in the current percentage of participants who would like to receive formal training in spinal manipulation as opposed to a decade ago. This could be a development in favour of the Chiropractic profession as it could allow Chiropractors to become the practitioners of choice with regards to conditions requiring spinal manipulation. The reason for participants practicing less spinal manipulation now than a decade ago may be that participants refer patients to Chiropractors more so now than they did in 1996 and as a result the need for participants to perform spinal manipulation on patients may have decreased over the past decade. If this were to be the reason for participants refraining from performing spinal manipulation it would imply that there has been a positive shift in terms of developing relations between Orthopaedic surgeons, Neurosurgeons, Neurologists and Chiropractors.

There was no significant difference between the 1996 and 2006 study in terms of the participants view of Chiropractors. It was however evident that a much smaller percentage of participants (6.8%) felt “not at all informed” as opposed to a decade ago (16.5%), thus indicating that the level of awareness of Chiropractic has increased slightly over ten years. However, it is suggested that the Chiropractic Association continue with its public relation efforts to improve Orthopaedic surgeons, Neurosurgeons and Neurologists view of Chiropractors.

There was a significant increase in terms of how competent the Orthopaedic surgeons, Neurosurgeons and Neurologists viewed Chiropractors to be in

their neuromusculoskeletal examination and diagnosis skills with significantly more participants currently rating Chiropractors as “greatly competent” or “moderately competent”. These results also indicated that much fewer participants viewed Chiropractors to be “not at all competent” in neuromusculoskeletal diagnosis and examination. It is therefore evident that Orthopaedic surgeons, Neurosurgeons and Neurologists opinions regarding the competency of Chiropractors have greatly improved over the past decade. These results coupled with the research by Morris, 2006 shows that it is important for the Chiropractic profession to continue improving on both knowledge and techniques on neuromusculoskeletal diagnosis and examination to maintain and ultimately improve on the growing confidence in the Chiropractic profession.

Participants were provided with a list of conditions and were asked to what extent they felt Chiropractic could effectively treat these conditions. When comparing the 1996 results to that of 2006, the current results indicated that there are 16 conditions to which participants now viewed Chiropractors were more capable of treating / managing. These are listed below:

- Diabetes ;
- Disk herniation ;
- General back pain ;
- Hip pain ;
- Knee pain ;
- Low back pain ;
- Malnutrition ;
- Migraine ;
- Myalgia ;
- Neck pain ;
- Nerve root pain ;
- Nervous tension ;
- Sciatica ;
- Shoulder pain ;
- Viral infections and

- Whiplash.

In both 1996 and 2006 studies participants were asked to choose a statement which best reflects their view of Chiropractic. The response for which there was the most significant amount of positive change was to option no 2 which stated that "Chiropractors provided excellent treatment for some musculoskeletal conditions", implying that Orthopaedic surgeons, Neurosurgeons and Neurologists opinions of Chiropractic had improved over the past 10 years. This response implies that the positive changes that has occurred within the Chiropractic profession over the past decade including competency of neuromusculoskeletal examination and diagnosis, as well as the promotion of the positive effects of spinal manipulation via the validation of this through evidence based studies (Morris, 2006) has not gone unnoticed by the participating medical professions.

There was a highly significant change of opinion between 1996 and 2006 regarding whether or not participants thought there was a difference between Chiropractic and Physiotherapy. As many of 93.3% of participants in 2006, as opposed to 59.3% in 1996 thought there was a difference between Chiropractic and Physiotherapy. Therefore, there is evidence that Orthopaedic surgeons, Neurosurgeons and Neurologists opinion of the bridge between Chiropractic and Physiotherapy profession has widened in the past decade.

When participants were asked in 1996 to what extent they might refer a patient with neuromusculoskeletal problems to a Chiropractor the most frequent response on a sliding scale of 1 – 5 (1 indicating no referrals and 5 indicating most referrals) was 1 indicating that 10 years ago Orthopaedic surgeons, Neurosurgeons and Neurologists were unlikely to refer patients to Chiropractors. To the same question 10 years on most responses were between "2 and 3" on this scale, thereby indicating that Orthopaedic surgeons, Neurosurgeons and Neurologists have become more likely to refer patients to Chiropractors. Once again this implies that participants have

become more comfortable with Chiropractic as a profession and the decrease in the reluctance to refer patients to Chiropractors is evidence of participants becoming more aware of the positive effects Chiropractic treatment can offer to patients. This is a positive sign for the Chiropractic profession as this will facilitate inter-professional relations between Orthopaedic surgeons, Neurosurgeons, Neurologists and Chiropractors as this study shows that more Orthopaedic surgeons, Neurosurgeons and Neurologists become more comfortable with this multidisciplinary approach to patient care.

Both 1996 and 2006 studies asked participants to rate Chiropractic according to what they perceived the importance of Chiropractic to be in serving a Primary Health Care capacity on a scale of 1 to 5 as above. The most frequent response in 1996 was 1 as opposed to a most frequent response of 3 in 2006. Thus, the importance of Chiropractic in serving a Primary Health Care capacity has increased in the opinions of the Orthopaedic surgeons, Neurosurgeons and Neurologists over the past 10 years.

Regarding which practices Orthopaedic surgeons, Neurosurgeons and Neurologists think fall within the scope of practice of a Chiropractor, differed significantly in terms of responses between 1996 and 2006. A higher percentage of participants agreed in 2006 that drawing blood, intra-articular injection, minor surgery and prescription of scheduled medicines as well as reduction of minor fractures does not fall within the scope of practice of a Chiropractor. Based on the number of participants answering “none of the above” (66.1% in 1996, and only 5.68% in 2006) it could be assumed that participants interpreted the question differently in 2006 than in 1996.

The question asking participants which direction they would like to see Chiropractic take in the future could not be statistically compared between 1996 and 2006 because the question was asked in a different way between the two studies. The 2006 study permitted multiple answers to this question whereas the 1996 study did not. Visual comparison of the two studies however revealed that 1996 respondents felt that Chiropractic should exist

under medical supervision whereas participants in 2006 mainly felt that Chiropractic should remain a complimentary practice.

Comparing which factors encouraged participants referral to a Chiropractor between 1996 and 2006 it was found that personal experience of the participants played less of a role in 2006 than in 1996. Patient demand showed to be of much more importance in encouraging patient referral to a Chiropractor than in 1996 while colleagues recommendation was weighted slightly higher in 2006. This is in keeping with the high demand for Complementary Alternative Medical Therapies – and also in line with the fact that practitioners are starting to hoard their market share and are therefore they are less likely to refer patients to Complementary Alternative Therapists, including Chiropractors.

When participants were asked whether they understood Chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation there was a statistically significant difference between 1996 and 2006 responses. This may also be due to the fact that the question had been changed and an extra answering option to this question had been given in the 2006 questionnaire. The number of “yes” responses to this question was fairly similar in the 1996 and 2006 study. Even with an extra answering option in 2006 more than half of the participants still answered “no” and so understood Chiropractors not to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation. This should have a positive effect on the Chiropractic profession and because it may imply that Orthopaedic surgeons, Neurosurgeons and Neurologists have started to realise that claims made by Chiropractors can be substantiated and are not unfounded.

The next question asked if participants understood Chiropractors to claim that some disorders are to due biomechanical dysfunction and amenable to spinal manipulation. In both the 1996 and 2006 studies the vast majority of participants answered “yes” to this question. Once again due to the extra

answering option to this question in 2006 the amount of “No” answers in 2006 would have been affected. Comparing answers to this question between the two studies, it can be surmised that in 1996 as well as 2006 Orthopaedic surgeons, Neurosurgeons and Neurologists did not think that Chiropractors attributed all disease to be as a result of vertebral subluxation but instead that only some disorders are due to biomechanical dysfunction and required spinal manipulation.

Regarding whether or not Orthopaedic surgeons, Neurosurgeons and Neurologists felt Chiropractors should play an active role in the South African Health Care system shifted slightly in the favour of Chiropractic between the 1996 and 2006 studies. However, these results were not statistically significant.

The responses to the role that Orthopaedic surgeons, Neurosurgeons and Neurologists felt Chiropractic should occupy in health care between 1996 and 2006 revealed that they were much more inclined to rate Chiropractors as having a primary contact role in 2006 than in 1996. Similarly the participants rated in favour of Chiropractic to serve a preventative as well as a rehabilitative role more in 2006 than in 1996. Based on the abovementioned comparisons it can be seen that the value of Chiropractic in serving as primary contact practitioners, has been noticed over the past decade by Orthopaedic surgeons, Neurosurgeons and Neurologists. These results would therefore imply that if the Chiropractic profession where to retain and improve on its knowledge base it would promote the Chiropractic profession in gaining an increased market share in the areas of primary contact, preventative and rehabilitative health care based on merit.

Participants responses to whether or not they would ever refer a patient to a Chiropractor in 1996 and 2006 was significantly different with a greater number of Orthopaedic surgeons, Neurosurgeons and Neurologists having had referred a patient to a Chiropractor in 2006 (72.4%) than in 1996 (46.7%). Similarly a greater number of participants had received referrals from

Chiropractors in 2006 (83.7%) than in 1996 (59.8%). This positive shift in terms of inter-professional relations can be maintained and facilitated even further through the continuation of evidence based validation of the efficacy of chiropractic treatment (Morris, 2006).

Statistics from the 2006 study showed a non-significantly higher percentage of participants in 1996 (56.7%) had claimed that they had examined patients who they believed had been harmed by Chiropractic treatment than in 2006 (47%). As statistics like these are liabilities to the Chiropractic profession, it is important for the Chiropractic profession to continue enhancing and refining diagnostic as well as treatment techniques (Morris, 2006) further limit the amount of patients presenting to Orthopaedic surgeons, Neurosurgeons and Neurologists who may have been injured by such Chiropractic treatment.

5.5 Conclusion and summary

In conclusion it can be seen that Orthopaedic surgeons did not feel very well informed as to what Chiropractors do and had a rather average overall view of the Chiropractic profession. Orthopaedic surgeons had the most limited view of the competency of Chiropractors in performing accurate neuromusculoskeletal examination and diagnosis even though they did believe that this treatment did fall within the Chiropractic scope of practice. The results of these studies also indicated that even though Orthopaedic surgeons believed Chiropractors to possess a fair amount of general diagnostic skills, they did not believe that Chiropractic should occupy a primary health care role in South Africa. In contrast they stated that Chiropractors should remain a complimentary practice. Orthopaedic surgeons were also the second most inclined profession to refer patients to Chiropractors but were the least inclined to receive referrals from Chiropractors.

Neurosurgeons felt the most informed as to what Chiropractors do and had the most positive view of Chiropractors in terms of therapeutic efficacy, professionalism and a knowledge base. Neurosurgeons were also the group least likely to have had exposure to patients they believed had been harmed by Chiropractic treatment. Neurosurgeons felt more so than Orthopaedic surgeons and Neurologists that the treatment of neuromusculoskeletal dysfunction fell within the scope of practice of a Chiropractor and believed Chiropractors to possess all the skills required to perform spinal manipulation. Neurosurgeons were the only participant group to rate Chiropractic as a primary contact role in the South African Health Care system. Neurosurgeons were the participant group most likely to refer patients to Chiropractors and were the second most likely group to receive referrals from Chiropractors after Neurologists.

Neurologists felt the least informed as to what Chiropractors do. This was supported by Neurologists being the participant group who were most inclined

to believe that Chiropractors claimed all disease to be as the result of vertebral subluxation and amenable to spinal manipulation. This is further supported by the fact that Neurologists were the group most inclined to feel "not informed enough to comment" on the competency of Chiropractors in terms of neuromusculoskeletal examination and diagnosis as well as neuromusculoskeletal dysfunction not falling within their scope of practice. Neurologists were also the group who mostly felt that they had examined patients that had been harmed by Chiropractic treatment. Neurologists were also the most reluctant group to refer patients to Chiropractors even though they were the group most likely to have received referrals from Chiropractors.

When comparing the results of Rubens (1996) study to this (2006) study, it was evident that significantly less Orthopaedic surgeons, Neurosurgeons and Neurologists practice spinal manipulation now than they did a decade ago. This may be due to the fact that a much smaller percentage of participants felt not at all informed as to what Chiropractors do and this inter-referral between the three professions and Chiropractic have now become more frequent thereby limiting the need for Orthopaedic surgeons, Neurosurgeons and Neurologists to practice spinal manipulation. This is further supported by the increased percentage of participants deeming Chiropractic as greatly competent in neuromusculoskeletal examination and diagnosis as well as the increased number of conditions these professions feel Chiropractic can effectively treat now as opposed to a decade ago. Significantly more Orthopaedic surgeons, Neurosurgeons and Neurologists can justify the existence of Chiropractic and Physiotherapy as two separate professions in 2006, thereby indicating an increased understanding of what Chiropractors do. Participants were also much more inclined to refer patients to Chiropractors in 2006 for neuromusculoskeletal conditions than a decade ago. It is also important to note that overall Orthopaedic surgeons, Neurosurgeons and Neurologists rated the importance of Chiropractic in serving a primary health care capacity more highly in 2006 than in 1996. This may be due to patient demand playing a more significant role in encouraging patient referrals to Chiropractors. Much fewer participants perceived Chiropractic to claim that

all disease is due to vertebral subluxation but rather that some disease is due to biomechanical dysfunction, which may have implied that they have a better understanding of Chiropractic at present than a decade ago. This has facilitated an increased referral base from Orthopaedic surgeons, Neurosurgeons, Neurologists to Chiropractors from them to the other professions.

With respect to the objectives and the related hypotheses:

5.5.1 To establish the demographic factors of Orthopaedic surgeons, Neurosurgeons and Neurologists.

Hypothesis One

There is no similarity between the demographic profile of Orthopaedic surgeons, Neurosurgeons, and Neurologists when the 1996 and 2008 profiles are compared.

The majority of Orthopaedic surgeons, Neurosurgeons and Neurologists who participated in this study have been in practice between 10 and 20 years. Orthopaedic surgeons accounted for the majority of participants with Neurosurgeons and Neurologists equally contributing to the balance of participants. Even though Orthopaedic surgeons did not practice spinal manipulation, close on one third of them had received formal training in spinal manipulation and were the participant group most enthusiastic to want to receive formal training with more than a quarter of participants wanting to receive this kind of training. The current study showed that Neurologists practice by far the least amount of spinal or extra vertebral manipulation and were the group least enthusiastic to receive formal training in spinal manipulation.

5.5.2 To establish the current views and perceptions of Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession in South Africa in terms of the following parameters:

- Personal experience
- Chiropractic therapeutic efficacy
- Chiropractic scope of practice and
- Inter-professional relations

Hypothesis Two

There is no relationship between the views and perceptions of the Chiropractic profession, and the abovementioned demographic factors related to Orthopaedic surgeons, Neurosurgeons and Neurologists when the 1996 and 2008 profiles are compared.

- Personal experience

Orthopaedic surgeons did not feel very well informed as to what Chiropractors do even though the vast majority did know that Chiropractic did not believe that all disease is as a result of vertebral subluxation and amenable to spinal manipulation. Of the three participant groups Orthopaedic surgeons equated Chiropractic to Physiotherapy more so than the other two participant groups therefore implying that there is not necessarily a market for Chiropractic as a result of the existence of Physiotherapy. Orthopaedic surgeons had an average overall view of Chiropractic but this view has to be questioned based on the fact that Orthopaedic surgeons practice the most amount of spinal manipulation and may therefore see the Chiropractic profession as a threat in terms of market share.

Neurosurgeons collectively felt the most informed as to what Chiropractors do and believed Chiropractic to provide excellent treatment for some

neuromusculoskeletal disorders. Neurosurgeons were the most satisfied with Chiropractors professionalism and knowledge base of the three participant groups. Neurologists also had reported having the least amount of exposure to patients that they believed had in any way been harmed as a result of Chiropractic treatment. Of all the participant groups Neurosurgeons had the most favourable view of Chiropractic in terms of personal experience.

Neurologists felt the least informed as to what Chiropractors do and therefore felt the most uncomfortable with what Chiropractors do. In the majority of Neurologists experience, they felt that Chiropractic claimed that all disease is as a result of vertebral subluxation and is amenable to spinal manipulation. Of the three participant groups Neurologists felt that they had examined the largest number of patients that they believed had been harmed by Chiropractic treatment and so made this group the most reluctant to refer patients to Chiropractors. Neurologists collectively had the least favourable view of the Chiropractic profession of the three participant groups.

- Chiropractic therapeutic efficacy

Orthopaedic surgeons had the largest number of respondents which felt Chiropractic to be not at all competent in neuromusculoskeletal examination and diagnosis. In terms of whether or not Chiropractic should serve in a primary health care capacity, Orthopaedic surgeons along with Neurologists were less inclined to rate Chiropractic as a profession fit to serve a primary health care role and were therefore less convinced of the therapeutic efficacy of the Chiropractic profession than Neurosurgeons.

Neurosurgeons believed Chiropractors to be competent in neuromusculoskeletal examination and diagnosis and were more inclined to feel that Chiropractic should serve in a primary health care role as opposed to Orthopaedic surgeons and Neurologists. Therefore it is evident that Neurosurgeons have the greatest amount of confidence in Chiropractic in terms of therapeutic efficacy.

A significant percentage of Neurologists “did not feel informed enough to comment” yet 50% believed Chiropractic to be “only slightly competent” in neuromusculoskeletal examination and diagnosis. Thus Neurologists along with Orthopaedic surgeons were the least convinced of the value of Chiropractic in terms of therapeutic efficacy.

- Chiropractic scope of practice

Participant groups were not differentiated when analysing the conditions that participants thought Chiropractic could effectively treat. It was however, the general consensus amongst the three groups of participants that Chiropractic treatment was usually effective for the treatment of general lower back pain as well as neck pain. This confirms that even though it may not be evident based on the questionnaire analysis, participants do, to a certain degree, view Chiropractors as back specialists. All three participant groups felt that spinal manipulation fell within the scope of practice of a Chiropractor and that individuals practising spinal manipulation should possess orthopaedic and neurological diagnostic skills, general diagnostic skills as well as knowledge of relevant radiology.

Orthopaedic surgeons believed that the treatment of neuromusculoskeletal dysfunction does fall within the scope of practice of a Chiropractor. This group of participants also believed that Chiropractors possessed more general diagnostic skills than orthopaedic and neurological diagnostic skills and knowledge of relevant radiology. Orthopaedic surgeons were also of the belief that Chiropractors should occupy preventative, supportive and rehabilitative roles in South African Health care, rather than a primary contact role.

Neurosurgeons believed even more so than Orthopaedic surgeons that the treatment of neuromusculoskeletal dysfunction does fall within the scope of practice of a Chiropractor. The vast majority of Neurosurgeons believed Chiropractors to possess general diagnostic skills, orthopaedic and

neurological diagnostic skills as well as knowledge of relevant radiology with orthopaedic and neurological diagnostic skills being the skill most possessed by Chiropractors. Neurosurgeons were most likely to rate Chiropractic to play an active role in the South African Health Care System and were the only group to consider Chiropractic as having a primary contact role in the South African Health Care system.

Neurologists felt that neuromusculoskeletal dysfunction did not fall within the scope of practice of a Chiropractor, even though the majority of Neurosurgeons did however believe that Chiropractors possessed orthopaedic and neurological diagnostic skills and knowledge of relevant radiology. Neurologists were the least likely to rate Chiropractors as playing an active role in the South African Health Care System and felt that Chiropractic should occupy a more supportive role rather than one of primary contact.

- Inter-professional relations

When asked what direction Orthopaedic surgeons would like to see Chiropractic take in the future, approximately half of the Orthopaedic surgeons believed that Chiropractic should remain a complimentary practice. As discussed before, this may be due to the threat of Chiropractic offers taking over the Orthopaedic surgeons market share. Orthopaedic surgeons referral to Chiropractors was noted to be affected by both personal experience and patient demand for Chiropractic. Second to Neurosurgeons, Orthopaedic surgeons were the most likely to refer patients to a Chiropractor. This group of participants had received the least referrals from Chiropractors.

Of the three participant groups, Neurosurgeons were most likely to refer patients to Chiropractors for neuromusculoskeletal conditions. The vast majority of Neurosurgeons felt that Chiropractic should not remain a complimentary practice. Neurologists tended to agree that Chiropractic should exist under medical supervision or become a limited medical

profession. Neurosurgeons, as with Orthopaedic surgeons, rated personal experience followed by patient demand to have the greatest influence on their referral to Chiropractors. Colleagues experience tended to affect this participant group more so than the other two participant groups. Neurosurgeons were the group most likely to have referred patients to a Chiropractor. After Neurologists, Neurosurgeons received the most referrals from Chiropractors. That said, this group of participants were the most likely to receive the most frequent referrals.

Neurologists were the least likely to refer patients to Chiropractors for neuromusculoskeletal conditions. Neurologists would seem to have an established perception of the Chiropractic profession. This is supported by the fact that no factors would encourage their patient referral to a Chiropractor. Neurologists were the group least likely to refer patients to a Chiropractor. This group was the most likely to have only referred patients to a Chiropractor on a single occasion. Neurologists were the group most likely to have received referrals from Chiropractors even though it would seem that they were least likely to refer patients to a Chiropractor.

5.5.3 To compare the views and perceptions of Orthopaedic surgeons, Neurosurgeons, and Neurologists previously established, with current views and perceptions established in this study in terms of determining if any change has occurred over the past ten years.

Hypothesis Three

There is no relationship between the current views and perceptions by Orthopaedic surgeons, Neurosurgeons and Neurologists of the Chiropractic profession and the literature that is currently available.

Comparing the two studies showed that significantly less Orthopaedic surgeons, Neurosurgeons and Neurologists were aware of the proposed collaboration between Chiropractors and Medical

practitioners as recommended by the Science and Education Committee of MASA in 2006 than in 1996. It was also noted that only half the number of Orthopaedic surgeons, Neurosurgeons and Neurologists who participated in spinal manipulation in 1996 still did so in 2006. That said, it also has to be noted that a much smaller percentage of Orthopaedic surgeons, Neurosurgeons and Neurologists in 2006 felt not at all informed as to what Chiropractors do, thus suggesting a possible refraction from Orthopaedic surgeons, Neurosurgeons and Neurologists in practising spinal manipulation as a result of increased referral of patients to Chiropractors. This is supported by the increased percentage of Orthopaedic surgeons, Neurosurgeons and Neurologists who believed Chiropractors to be competent in neuromusculoskeletal examination and diagnosis. This increased confidence these professions showed in terms of Chiropractic being able to effectively treat certain conditions at present as opposed to a decade ago, which could imply an increased overall confidence these participants have or currently have of the overall competency of Chiropractic.

A significantly larger percentage of Orthopaedic surgeons, Neurosurgeons and Neurologists believe there to be a substantial difference between Chiropractic and Physiotherapy in 2006 as opposed to 1996. Participants were also more likely to refer patients to Chiropractors in 2006 than in 1996, once again implying that the overall view and perceptions held of Chiropractic has improved over the past decade in terms of their effectiveness of treatment and skill.

The opinion of Chiropractors serving in a primary health care capacity has also increased over the past decade even though conversely participants did feel that Chiropractic should remain a complimentary practice. It was interesting to note that personal experience of Orthopaedic surgeons, Neurosurgeons and Neurologists with Chiropractic played less of a role in encouraging patient referral to a

Chiropractor with patient demand being of more importance in encouraging this. Much fewer Orthopaedic surgeons, Neurosurgeons and Neurologists felt in 2006 that Chiropractors believed all disease to be due to vertebral subluxation and amenable to spinal manipulation.

A significantly higher percentage of Orthopaedic surgeons, Neurosurgeons and Neurologists referred patients to Chiropractors as well as having received more referrals from Chiropractors in 2006 than in 1996 even though these Orthopaedic surgeons, Neurosurgeons and Neurologists claimed to have encountered a slightly increased number of patients they believed had been harmed by Chiropractic treatment in 2006.

Overall the value of Chiropractors as medical professionals is increasingly being noted as can be seen in the increased number of Orthopaedic surgeons, Neurosurgeons and Neurologists rating in favour of Chiropractic serving as a primary contact role in the South African Health Care system.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

Objective one showed that the majority of participants were Orthopaedic surgeons of which about a third had received training in manipulation and even though they performed less manipulation in 2006 than in 1996 they were most likely the group to want to learn how to do so. Neurosurgeons and Neurologists contributed fairly equally to the study with Neurologists being the least likely to perform or want to receive training in manipulation.

Objective two showed an overall positive view in how Orthopaedic surgeons, Neurosurgeons and Neurologists view Chiropractic based on which conditions Chiropractic can treat as well as how effective Chiropractic can be at treating these conditions. In most instances Orthopaedic surgeons and Neurosurgeons were happy with any communications they have had with Chiropractors Neurologists were found to be generally sceptical of the Chiropractic profession and were the most likely to answer questions negatively toward Chiropractic.

Hypothesis three revealed that there has been a significant increase in overall awareness as to what Chiropractors do as well as an increase in overall confidence in Chiropractic by all three professions. Particularly, Neurosurgeons showed the greatest shift in favour of developing relations with the Chiropractic profession, however an increased amount of inter-referral between Chiropractors and Orthopaedic surgeons, Neurosurgeons and Neurologists has been noted as well as vice versa. The three participating professions were generally also more supportive of Chiropractic occupying a primary role in South African Health Care now than a decade ago.

So in conclusion, the three participating professions were generally more supportive of Chiropractic occupying a primary role in the South African Health Care system now than a decade ago. With the perception and knowledge of the Chiropractic profession having improved it is recommended

that the Chiropractic profession continue with further interactions with these professions to further nurture the relationships with them.

Recommendations:

Methodological recommendations

Even though contact numbers of the entire population of Orthopaedic surgeons, Neurosurgeons and Neurologists were obtained to facilitate a greater response rate than in the 1996 study, a lower response rate was still achieved. A more qualitative study may therefore need to be compiled to facilitate a greater response rate based on the confrontational nature of such a study. A greater population could therefore be sampled, and a more accurate view of participants perception could be gained in terms of the informative nature of a qualitative study.

Recommendations for future studies

Future studies could investigate qualitatively the reason for Orthopaedic surgeons, Neurosurgeons and Neurologists responses in an attempt to conclusively ascertain whether or not results to this study reflected participants true views and perceptions of Chiropractic or if the Hawthorne effect may have played a part in participants feeling threatened by the capability of Chiropractors. A study such as this may have highlighted the reluctance of these professionals to answer questions in a manner they perceive favourable to Chiropractic. This qualitative research would also allow for open ended questions to be answered by participants thereby potentially gaining a better understanding of the reasons behind certain answers to questions in this study.

Recommendations with regard to inter-professional relations with the Orthopaedic surgeons, Neurosurgeons and Neurologists.

It had been noted especially amongst Neurologists that they have rigid beliefs and perceptions of the Chiropractic profession which they seem to be very reluctant to alter. Thus, it is important for the Chiropractic profession to conduct more open forums to try soften these hardened views and perceptions held of the Chiropractic profession. Even though a much smaller percentage of Orthopaedic surgeons, Neurosurgeons and Neurologists felt not informed enough to comment on certain questions relating to Chiropractic, it is important that the Chiropractic Association of South Africa continue with its public relations efforts to reach the Orthopaedic surgeons, Neurosurgeons and Neurologists.

References

About South Africa> Health. [Online] Available from: http://www.southafrica.info/ess_info/sa_glance/health/923087.htm. [Accessed on 22/09/04].

Allied Health Professions Council of South Africa (AHPCSA). [Online]. Available from: http://www.ahpcsa.co.za. [Accessed on 27/04/05].

Atkinson, R.L., Atkinson, R.C., Smith, E.E., Bem, D.J. and Nolen-Hoeksema, S. 2000. *Hilgard's Introduction to Psychology.* 13th Editon. United States of America: Harcourt College Publishers

Bergh, Z.C. and Theron, A.L. 1999. *Psychology in the Work Context*. 1st Edition. South Africa: International Thompson Publishing.

Bernard, H.R. 2000. *Social Research Methods: Qualitative and Quantitative Approaches.* California: Sage Publications Inc.

Boshoff, G. 2005. Central Applications Office at DIT. Personal communication to R. van As. 9 May, 2005.

Bradshaw, D. 2002. Poverty and chronic diseases in South Africa. [online] Available from: http://www.hst.org.za/healthstats/146/data [Accessed 26/05/2008].

Brantingham, J.W. and Snyder, W. R. 1999. From Africa to Africa. Chiropractic History. 19(1):53-59.

Brussee, W.J.J. and Breen, A.C. 2001. Communication between general practitioners and Chiropractors: *Journal of Manipulative and Physiological Therapeutics,* 24(1): 12-16.

Carpenter, B, Weiner, M and Carpenter, J.T. (1956) *Predictability of perceptual defence behaviour.* The Journal of Abnormal and Social Psychology 52:380

Chiropractic Association of South Africa (CASA). [Online]. 2005. Available from: http://www.chiropractic.co.za [Accessed 20 February 2005].

Chiropractic Association of South Africa. Register of Members and Information Booklet 2004/2005.

Chiropractic Diplomatic Corps. [Online] Available from: http://chiropracticdiplomatic.com/country/southafrica.html [Accessed on 22/09/04].

Copp, G., Caldwell, K., Atwal, A., Brett-Richards, M., and Coleman, K. 2007. Preparation for cancer care: Perceptions of newly qualified health care professionals. European Journal of Oncology Nursing, 11:159-167.

Coren, S. and Ward, L.M. 1989. *Sensation & Perception.* 3rd Edition. United States of America: Harcourt Brace Jovanovich Publishers

Curtis, P. and Bove, G. 1992. Family physicians and chiropractors: what's best for the patient. Journal of Family Practitioners. **35:** 552-555.

Dimond, B. 1999. Legal Aspects of Physiotherapy. [online] Available from: http://scholar.google.co.za/scholar?q=Physiotherapy+legal+scope+of+practice&hl=en&rls=RNWM,RNWM:2007-08,RNWM:en&um=1&ie=UTF-8&oi=scholart [Accessed 20 October 2008].

Dreyer, N. 2004. *South Africa: Traditional Medicine to Fight AIDS*, Poverty. Star News paper. [Online] Available from http://www.newmediaexplorer. Org/sepp/2004/02/16/southafricatraditionalmedicinetofightaidspoverty. Htm. [Accessed on 23 September 2006]

Esterhuizen, T. 2005, personal communications with Francois Botha, November 2005.

Eysenck, M.W. and Keane, M.T. 1996. *Cognitive Psychology: A Student's handbook.* 3rd Edition. United Kingdom.

Gaumer, G. Koren, A. Gemmen, E. 2002. Barriers to expanding primary care roles for chiropractors: The role of chiropractic as primary care gatekeeper. Journal of Manipulative and Physiological Therapeutics. 25 (7):427-449.

Gilman and Myatt, 1998 J. Gilman and M. Myatt, EpiCalc 2000, Version 1.02, Brixton Books, Brixton, United Kingdom (1998).

Glossary of statistical terms [online]. 2005. Available from :http://stats.oecd.org/glossary/detail.asp?ID=6993 [Accessed 16/10/2008]

Health Statistics – Health Systems Trust [online]. 2008. Available from: http://www.hst.org.za/healthstats/1/data [Accessed 26/05/08].

Hayes, N. 1994. *Foundations of Psychology. An introductory text.* 1st edition. Great Britain: Routledge.

Hunter, S.J. 2004. The Perceptions and Attitudes of South African Physiotherapists about the Chiropractic Profession. A dissertation presented to the Faculty of health Services, Durban Institute of Technology, in partial fulfilment of the requirements for the Master's Degree in Technology: Chiropractic.

Hupkes, G.J. 1990. A proposal for the "Equal playing fields" for Chiropractic in SA's health care delivery system. MSc dissertation, of SA University.

Jamison, J.R. 1995. Chiropractic referral: The views of a group of conventional medical practitioners with an interest in unconventional therapies. Journal of Manipulative and Physiological Therapeutics, **18** (8): 512-518.

Korporaal, C. 2005, Personal communications with Francois Botha, September 2005.

Korporaal, C. 2007, Personal communications with Francois Botha, April 2007.

Langworthy, J.M. and Smink, R.D. 2000. Chiropractic through the eyes of Physiotherapists, Manual Therapists, and Osteopaths in the Nederlands. The Journal of Alternative and Complimentary Medicine. **6** (5): 437-443.

Lindorff-Larsen K., Rasmussen, H.H., Kondrup, J., Staum, M., Ladefoged K., and The Scandinavian Nutrition Group, 2007. Management and perception of hospital undernutrition – A positive change among Danish doctors and nurses. Clinical Nutrition, 26:371-378.

Louw, J.D. 2006. The Knowledge Of General Practitioners About Chiropractic As A Factor That May Influence Health Care Integration In South Africa. A dissertation submitted to the Faculty of Health Sciences at The Durban Institute of Technology in partial compliance with the requirements for a Master's Degree in Technology: Chiropractic.

Mearns, K.J., and Reader, T. 2007. Organisational support and safety outcomes: An un-investigated relationship ? Safety Science (2007), doi:10.1016/j.ssci.2007.05.002.

Medpages, 2005. Telephonic communications with S. Botha, 10 August, 2005.

Morris, C. 2006. Low back syndromes: Integrated clinical management. New York.

Mouton, J. 1996. Understanding social research. South Africa: Van Struik.

Myers, D.G. 1996. *Exploring Psychology.* 3rd Edition. United States of America: Worth Publishers Incorporated.

Postman, L; Bruner, J.S and McGinnies, E. (1948) *Personal values as selective values in perception*, Journal of Abnormal and Social Psychology 43:143 – 54

Reader's Digest – Oxford Complete Wordfinder. 1992. Eight Edition. London: The Reader's Digest Association Limited.

Reliability (statistics) [online]. 2008. Available from: http://en.wikipedia.org/wiki/Experimental_reliability [Accessed 16/10/2008].

Robbins, S.P. 1996. *Organizational Behaviour.* 7th Edition. United States of America: Prentice-Hall International.

Rubens, B. 1996. Orthopaedic Surgeons, Neurologists and Neurosurgeons Views of the Chiropractic Profession in South Africa. A dissertation presented to the Faculty of Health Services, Technikon Natal, in partial fulfillment of the Masters Degree in Technology, Chiropractic.

Sanchez, R.E. 1991. A Look in the Mirror: A Critical and Exploratory Study of Public Perceptions of the Chiropractic Profession in New Jersey. Journal of Manipulative and Physiological Therapeutics. 14 (3): 165-176.

Statistical definition of anonymity on the web [online]. Available from: http://www.rucharacter.org/page/ae_glossary/ [Accessed 16/10/2008].

Suter, E., Vanderheyden, L.C., Trojan, L.S, Verhoef, M.J., and Armitage, G.D. 2007. How important is research based practice to chiropractors and massage therapists. Journal of Manipulative and Physiological Therapeutics, 30(2):109-115.

Symon, A.G., McStea, B., and Murphy-Black, T. 2006. An exploratory mixed methods study of Scottish midwives understandings and perceptions of clinical near misses in maternity care. Midwifery, 22:125-136.

Talmage, G. 2007. An exploratory mixed-methods study to determine factors which may affect satisfaction levels of patients outside of a clinical setting. M. Tech. Chiropractic Thesis, Durban Institute of Technology, Durban.

Theron, S. 2008. Telephonic communications with F. Botha. 12/03/2008.

Till, A.G. and Till, H. 2000. Integration of Chiropractic Education into a Hospital Setting: A South African Experience. Journal of Manipulative and Physiological Therapeutics. **23** (2):130-133.

Till, G. 1997. Aspects of Chiropractic History in South Africa. Technikon Natal, unpublished handout.

Van As, R. 2005. *School Guidance Counsellors Knowledge and Perception about the Chiropractic Profession in South Africa.* M. Dip. Chiropractic Thesis, Durban University of Technology, Durban

Verhoef, M.J. and Page, S.A. 1996. Physicians' perspective on chiropractic treatment. *J Can Chiropr Assoc,* 40(4): 214-219.

Vawda, H. (Vawda@ukzn.ac.za). 23 September 2004. RE: Fwd: Request for information. Please forward to Mr. Ron van As. E-mail to Inez (Inzel@dit.ac.za).

Wardwell, W. I. 1994. Differential evolution of the osteopathic and chiropractic professions in the United States. Perspect Biol Med. 37(4):595-608

Wikipedia definition of the Hawthorne effect (online) 2008. Available from http://en.wikipedia.org/wiki/Hawthorne effect. Accessed 17 / 01 / 08

World Federation of Chiropractic. 2003/11/13. Consultation on Identity. Abstracts of Previous Relevant Research. [Online]. Available from: www.wfc.org/projects/identity/publications/surveyresearchabstracts. [Accessed on 27/04/05].

World Federation of Chiropractic (WFC). 2005. Consultation on Identity of the Chiropractic Profession. An International Consultation Seeking Consensus on Identity. Qualitative Research Findings. [Online]. Available from: http://www.wfc.org/doc_uploads/WFC%20Report_January%2052005.pps [Accessed on 27/04/05].

World Health Organization. 2005. WHO Guidelines on basic training and safety in chiropractic. Geneva: Government Printer.

Worthington, A.G. (1969) *Paired comparison scaling of brightness judgement: a method for the measurement of perceptual defence*, British Journal of Psychology 60(3) : 363 – 8

Appendix A

Rubens 1996, Questionnaire.

A review of the Orthopaedic surgeons, Neurosurgeons, and Neurologists view of Chiropractic in South Africa.

1. Please indicate your field of specialty. (Please tick the appropriate box.)
   1. Neurology ☐
   2. Neurosurgery ☐
   3. Orthopaedics ☐

2. To what extent do you feel informed as to what chiropractors do? (Please tick one box only.)
   1. Greatly informed ☐
   2. Moderately informed ☐
   3. Slightly informed ☐
   4. Not at all informed ☐

3. Which one of the following statements best reflects your view of chiropractic? (Please tick one box only.)
   1. I am uncomfortable with it but it is effective for some patients.
   2. Chiropractic provides excellent treatment for some musculoskeletal conditions.
   3. Chiropractic is quackery and does more harm than good.
   4. Not informed enough to comment.

4. To what extent do you believe chiropractors to be competent in neuro musculo skeletal examination and diagnosis? (Please tick one box only.)
   1. Greatly competent ☐
   2. Moderately competent ☐
   3. Slightly competent ☐
   4. Not at all competent ☐
   5. Not informed enough to comment ☐

5. Is there sufficient difference between Chiropractic and Physiotherapy to justify the existence of two separate professions?

   1. Yes ☐
   2. No ☐
   3. Don't know ☐

6. Please indicate to what extent you might refer patients to the following disciplines for neuro musculoskeletal problems. (Please circle one number for each discipline, with (1) indicating no referrals and (5) indicating most referrals.)

1.	Acupuncture	1	2	3	4	5
2.	Chiropractic	1	2	3	4	5
3.	Massage therapy	1	2	3	4	5
4.	Reflexology	1	2	3	4	5
5.	Osteopathy	1	2	3	4	5
6.	Physiotherapy	1	2	3	4	5
7.	Other (please specify	_____				

7. To what extent do you think the following conditions can be effectively treated by chiropractors? (Please tick only one box per condition.)

	Always	Usually	Sometimes	Never
Allergies	☐	☐	☐	☐
Asthma	☐	☐	☐	☐
Bacterial infections	☐	☐	☐	☐
Depression	☐	☐	☐	☐
Diabetes mellitus	☐	☐	☐	☐
Disc herniation	☐	☐	☐	☐
General back pain	☐	☐	☐	☐
High blood pressure	☐	☐	☐	☐
Insomnia	☐	☐	☐	☐
Hip pain	☐	☐	☐	☐
Knee pain	☐	☐	☐	☐
Low back pain	☐	☐	☐	☐
Low blood pressure	☐	☐	☐	☐
Malnutrition	☐	☐	☐	☐
Migraine	☐	☐	☐	☐
Myalgia	☐	☐	☐	☐
Neck pain	☐	☐	☐	☐
Nerve root pain	☐	☐	☐	☐
Nervous tension	☐	☐	☐	☐
Obesity	☐	☐	☐	☐

Osteoarthritis	☐	☐	☐	☐
Peptic ulcer	☐	☐	☐	☐
Rheumatism	☐	☐	☐	☐
Sciatica	☐	☐	☐	☐
Shoulder pain	☐	☐	☐	☐
Tension type headache	☐	☐	☐	☐
Viral infections	☐	☐	☐	☐
Whiplash	☐	☐	☐	☐

8. Please rate each of the following professions in terms of their importance in serving a primary health care capacity? (Please circle a number for each profession, with (1) indicating least important and (5) indicating most **important.)**

1.	Chiropractic	1	2	3	4	5
2.	Dentistry	1	2	3	4	5
3.	Herbalism	1	2	3	4	5
4.	Homoeopathy	1	2	3	4	5
5.	Medicine	1	2	3	4	5
6.	Naturopathy	1	2	3	4	5
7.	Nursing	1	2	3	4	5
8.	Optometry	1	2	3	4	5
9.	Pharmacy	1	2	3	4	5
10.	Physiotherapy	1	2	3	4	5
11.	Traditional healing	1	2	3	4	5
12.	Other (please state)___					

9. Which of the following practices, given the appropriate training, do you think chiropractors should be able to perform? (Please tick appropriate boxes.)

1.	Minor surgery	□
2.	Intra-articular injection	□
3.	Prescribe schedule medicines related to neuromusculoskeletal conditions	□
4.	Draw blood for diagnostic purposes	□
5.	Reduce minor fracture/dislocations	□
6.	None of the above	□

10. To what extent do you agree or disagree with the following statement? (Please tick one box only.)
"*General practitioners have negative views about managing patients with musculoskeletal problems."*

1. Strongly agree ☐
2. Agree ☐
3. Undecided ☐
4. Disagree ☐
5. Strongly disagree ☐

11. To what extent do you agree or disagree with the following statement? (Please tick one box only.)
"*General practitioners often feel frustrated with back pain patients."*

1. Strongly agree ☐
2. Agree ☐
3. Undecided ☐
4. Disagree ☐
5. Strongly disagree ☐

12. Which direction would you like to see Chiropractic take in the future? (Please tick one box only.)

1. Chiropractic should fuse with medicine. ☐
2. Chiropractic should exist under medical supervision. ☐
3. Chiropractic should become a limited medical profession similar to Dentistry or Optometry. ☐
4. Chiropractic should disappear. ☐

13. In your opinion, what would Chiropractic have to do to encourage greater interaction with medicine and its' specialties?

_____
_____
_____
_____
_____
_____
_____

14. Please indicate to what extent the following factors would encourage you to use chiropractic in the future? (Please circle one number for each choice, with (1) indicating the least extent and (5) the greatest extent.)

1.	Personal experience	1	2	3	4	5
2.	Patient demand	1	2	3	4	5
3.	Colleagues' experience	1	2	3	4	5
4.	Colleagues recommendation	1	2	3	4	5

15. Do you believe that people practicing manipulation (spinal or other) should have: (please tick appropriate box)

		Yes	No
5.	General diagnostic skills	☐	☐
6.	Orthopeadic and neurological diagnostic skills	☐	☐
7.	Knowledge of relevant radiology.	☐	☐

16. Do you understand chiropractic to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation? (Please mark appropriate box).

1. Yes ☐
2. No ☐

17. Do you understand chiropractic to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation?

1. Yes ☐
2. No ☐

18. Do you practice any form of spinal or extra vertebral manipulation?

1. Yes ☐
2. No ☐

If yes, for which types of conditions do you use manipulation and what form does it take? (Please state).

_____
_____
_____
_____
_____
_____
_____

19. (a) Have you received formal training in spinal manipulation?

1. Yes ☐
2. No ☐

(b) Would you like to receive formal training in spinal manipulation?

1. Yes ☐
2. No ☐

20. Have you ever referred a patient to a chiropractor?

1. Yes ☐
2. No ☐

(a) If Yes, was it in the manner of:

(i) A suggestion to the patient that he/she might try Chiropractic if he or she wished ☐

(ii) Direct referral to a Chiropractor by name. ☐

(b) If yes, with what frequency have you referred to chiropractors?

1. On a single occasion ☐
2. Weekly ☐
3. Monthly ☐
4. Quarterly ☐
5. Yearly ☐

21. Have you ever received referrals from chiropractors?

a. Yes ☐
b. No ☐

(a) If yes, with what frequency have you received referrals from chiropractors?

1. On a single occasion ☐
2. Weekly ☐
3. Monthly ☐
4. Quarterly ☐
5. Yearly ☐

AND

(b) To what extent were you satisfied with the nature of the referral?

1. Greatly satisfied ☐
2. Moderately satisfied ☐
3. Slightly satisfied ☐
4. Not at all satisfied ☐

AND

(c) In any communication that you have had with chiropractors, were you satisfied with the person/s professionalism in terms of: (Please tick box)

1. Courtesy ☐
2. Knowledge base ☐
3. Verbal communication skills ☐
4. Written communication skills ☐

22. Have you examined any patients that you believed were in any way harmed by chiropractic treatment?

c. Yes ☐
d. No ☐

(a) If yes, please state nature of the injury/s.

_____
_____
_____
_____
_____
_____.

(b) Do you believe that the nature and frequency of any such harm is sufficient to "outlaw" chiropractic?

1. Yes ☐
2. No ☐

23. To what extent do you believe chiropractic should play an active role in the South African health care system?

a. Great extent ☐
b. Moderate extent ☐
c. Slight extent ☐
d. No active role ☐

24. To what extent should chiropractic occupy the following roles in health care? (Please circle one number for each role, with (1) indicating no role at all and (5) the greatest role.)

a. Primary contact	1	2	3	4	5
b. Preventative	1	2	3	4	5
c. Supportive	1	2	3	4	5
d. Rehabilitative	1	2	3	4	5

25. Please indicate to what extent the following sources have aided in forming your views about chiropractic. (Please circle one number for each source, with (1) being least informative and (5) being most informative).

a.	Friends	1	2	3	4	5
b.	Patients	1	2	3	4	5
c.	Chiropractors	1	2	3	4	5
d.	Colleagues	1	2	3	4	5
e.	Popular media	1	2	3	4	5
f.	Medical journals	1	2	3	4	5

26. Are you aware that the Scientific and Education Committee of MASA made a positive recommendation to the SAMDC to make it possible for closer co-operation between medical practitioners and chiropractors?

a. Yes ☐

b. No ☐

27. How many years have you practiced as your current registered professional status indicates?

a. 10 years or less ☐

b. 20 years or less, but more than 10 years ☐

c. 30 years or less, but more than 20 years ☐

d. more than 30 years ☐

Appendix B

Covering letter

Dear Participant
Welcome to my research study. Thank you for your interest.

Title: A study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa

Name of researcher: Francois Botha (082 574 3616 or 031-204 2244 (DIT)
Name of supervisor: Dr C Korporaal (031 204 2094)
Name of Institution: Durban Institute of Technology

Introduction:

The health care delivery system in South Africa is constantly undergoing change and important issues to be addressed include shortage of resources, the high costs of health care, as well as the seeming lack of inter professional co-operation.

In this respect the medical profession in the past has generally been opposed to the theories and practise of Chiropractic, for a variety of reasons. The chiropractic profession is attempting to improve co-operation with the medical professions via the scientific validation of its theories and practice through research. However, at present very little quantifiable information on the medical profession's opinion and views of Chiropractic exists and only one study has been carried out in this regard pertaining to the Orthopaedic surgeons, Neurosurgeons, and Neurologists view of Chiropractic in South Africa, (Rubens, 1996). The results of two recent studies aimed at establishing perceptions of General Practitioners (Louw 2006) and Physiotherapists (Hunter 2004) on Chiropractic, indicate that there is still a paucity of understanding regarding the Chiropractic profession in these two fields, even in the face of the vast number of changes (both in research as well as professionally) in Chiropractic.

The only manner in which to establish whether these changes in the Chiropractic profession have made any impact would be to re-evaluate a group of medical specialists who have been evaluated before, as this would allow for the assessment of understanding change in view of the changes within Chiropractic.

Procedure:

You are requested to complete a questionnaire. The questions will be concerned with your views of Chiropractic utilisation as well as its therapeutic efficacy and inter-professional relations.

Please be assured that your personal details as well as the information, which you furnish, will be treated confidentially. No personal details will appear on the questionnaire. Personal details will however appear on the informed consent form but will be separated from the questionnaire by a neutral third party on its return, thus ensuring anonymity.

With the exception of a few open ended questions where a short written answer is necessary, all the questions can be answered by marking the appropriate box or boxes with a tick or cross, or circling a number. Please return the questionnaire in the stamped envelope included for your convenience.

You would be required to return the informed consent form in order for your questionnaire to be used in the studies analysis.

Benefits: The results will be published in an article in a journal and be available in the Durban Institute of Technology library.

Remuneration: None. Participation in this study is entirely voluntary.

Persons to contact for problems or questions:
Researcher: Francois Botha (082 574 3616 or 031-204 2205 (D.I.T)
Supervisor: Dr C. Korporaal(031 204 2094)

Thank you for participating in this survey. Your time and assistance are greatly appreciated.

Appendix C

INFORMED CONSENT FORM

(TO BE COMPLETED BY THE PARTICIPANT OF THE STUDY AND SIGNED BY THE PARTICIPANT AND A WITNESS)

DATE:

TITLE OF RESEARCH PROJECT:

A study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa.

NAME OF SUPERVISOR:
Dr C. Korporaal (031 204 2094)

NAME OF RESEARCH STUDENT:
Francois Botha (082 574 3616 / 031 776 3601)

Please circle the appropriate answer	**YES /NO**	
1. Have you read the research information sheet?	Yes	No
2. Have you had an opportunity to ask questions regarding this study?	Yes	No
3. Have you received satisfactory answers to your questions?	Yes	No
4. Have you had an opportunity to discuss this study?	Yes	No
5. Have you received enough information about this study?	Yes	No
6. Do you understand the implications of your involvement in this study?	Yes	No
7. Do you understand that you are free to		
a) withdraw from this study at any time ?	Yes	No
b) withdraw from the study at any time, without reasons given	Yes	No
c) withdraw from the study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the Durban Institute of Technology.	Yes	No
8. Do you agree to voluntarily participate in this study	Yes	No
9. Who have you spoken to regarding this study?	Yes	No

If you have answered NO to any of the above, please obtain the necessary information from the researcher and / or supervisor before signing. Thank You.

Please Print in block letters:

Participant name: _____Signature: _____
Witness Name: _____Signature:_____
Researcher's Name: _____Signature:_____
Supervisor's Name:_____ Signature:_____

Appendix D

LETTER OF INFORMATION – FOCUS GROUP

Dear Participant,
I would like to welcome you into the focus group of my study.

The title of my research project is:
A study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa

Background to the study:
The medical profession in the past has generally been opposed to the theories and practise of Chiropractic, for a variety of reasons, including purported lack of scientific validity of their theories and practices.

The chiropractic profession is attempting to improve co-operation with the medical professions via the scientific validation of its theories and practice through research. However, at present very little quantifiable information on the medical profession's opinion and views of Chiropractic exists and only one study has been carried out in this regard pertaining to the Orthopaedic surgeons, Neurosurgeons, and Neurologists view of Chiropractic in South Africa, (Rubens, 1996)

The only manner in which to establish whether these changes in the chiropractic profession have made any impact would be to re-evaluate a group of medical specialists who have been evaluated before, as this would allow for the assessment of understanding change in view of the changes within chiropractic.

The research will utilize a self-administered Questionnaire which will be issued to the entire population of Orthopaedic surgeons, Neurosurgeons and Neurologists for its completion. The findings and conclusions to this study will be published in the form of a mini-dissertation thus allowing Chiropractors as well as anyone concerned in South Africa to be aware of the results.

Objective of the study:

1. To determine whether there is a greater inter-professional collaboration between Orthopaedic surgeons, Neurosurgeons, Neurologists and chiropractors at present as apposed to a decade ago.
2. The results of this project could aid as a guideline to the chiropractic profession so as to determine the effect of change within the chiropractic profession as perceived by Orthopaedic surgeons, Neurosurgeons, and Neurologists. Thus allowing the chiropractic profession to strategize future personal relation initiatives in congruence with these findings

Your participation in this study is much appreciated and you are assured that your comments and contributions to the discussion will be kept confidential. The results of the discussion will only be used for research purposes.
If you have any further questions please feel free to contact me.

Francois Botha (082 574 3616)

Appendix E

CONFIDENTIALITY STATEMENT – FOCUS GROUP DECLARATION

IMPORTANT NOTICE:

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

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaires will be coded and kept anonymous in the research process.
3. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.
4. The information from this focus group will be made public in terms of 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:

Focus Group Member: _____ Signature:_____

Witness Name: _____ Signature:_____

Researchers Name: _____ Signature:_____

Supervisors Name: _____ Signature:_____

Appendix F

CODE OF CONDUCT

This form needs to be completed by every member of the Focus Group prior to the commencement of the focus group meeting.

As a member of this committee I agree to abide by the following conditions:

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

2. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.

3. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Member represents	Member's Name	Signature	Contact Details

Appendix G: Post Focus group pilot study

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 by lay persons	☐
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 H

Final Questionnaire.

A study into the changing views of Orthopaedic surgeons, Neurosurgeons, and Neurologists of Chiropractic in South Africa

Instructions: Please circle appropriate number or box.

1. How many years have you practiced as your current registered professional status indicates?
    1. 10 years or less ☐
    2. 20 years or less, but more than 10 years ☐
    3. 30 years or less, but more than 20 years ☐
    4. More than 30 years ☐

2. Please indicate your field of specialty.
    1. Neurology ☐
    2. Neurosurgery ☐
    3. Orthopaedics ☐

3. Do you practice any form of spinal or extra vertebral manipulation and/or mobilization?
    1. Yes ☐
    2. No ☐

    If yes, for which types of conditions do you use manipulation and/or mobilization and what form does it take? (Please state).

_____
_____
_____
_____
_____
_____
_____

4. a) Have you received formal training in spinal manipulation and/or mobilization?

   1. Yes ☐
   2. No ☐
   3. If yes, please specify the nature of such training as well as the duration thereof.

_____
_____
_____
_____
_____
_____
_____

(b) Would you like to receive formal training in spinal manipulation and/or mobilization?

1. Yes ☐
2. No ☐
3. N/A ☐

5. Where you aware that the Scientific and Education Committee of MASA (Medical Association Of South Africa) made a recommendation to the SAMDC (South African Medical and Dental Council) to make it possible for co-operation between medical practitioners and chiropractors?

   1. Yes ☐
   2. No ☐

6. To what extent do you feel informed as to what chiropractors do?

   1. Highly informed ☐
   2. Moderately informed ☐
   3. Slightly informed ☐
   4. Not-at-all informed ☐

7. To what extent do you believe chiropractors to be competent in neuromusculoskeletal examination and diagnosis?

   1. Highly competent ☐
   2. Moderately competent ☐
   3. Slightly competent ☐
   4. Not at all competent ☐
   5. Not informed enough to comment ☐

8. To what extent do you think the following conditions can be effectively treated by chiropractors?

	Always	Usually	Sometimes	Never
Allergies	☐	☐	☐	☐
Asthma	☐	☐	☐	☐
Bacterial infections	☐	☐	☐	☐
Depression	☐	☐	☐	☐
Diabetes mellitus	☐	☐	☐	☐
Disc herniation	☐	☐	☐	☐
General back pain	☐	☐	☐	☐
High blood pressure	☐	☐	☐	☐
Insomnia	☐	☐	☐	☐
Hip pain	☐	☐	☐	☐
Knee pain	☐	☐	☐	☐
Low back pain	☐	☐	☐	☐
Low blood pressure	☐	☐	☐	☐
Malnutrition	☐	☐	☐	☐
Migraine	☐	☐	☐	☐
Myalgia	☐	☐	☐	☐
Neck pain	☐	☐	☐	☐
Nerve root pain	☐	☐	☐	☐
Nervous tension	☐	☐	☐	☐
Obesity	☐	☐	☐	☐
Osteoarthritis	☐	☐	☐	☐
Peptic ulcer	☐	☐	☐	☐
Rheumatism	☐	☐	☐	☐
Sciatica	☐	☐	☐	☐
Shoulder pain	☐	☐	☐	☐
Tension type headache	☐	☐	☐	☐
Viral infections	☐	☐	☐	☐
Whiplash	☐	☐	☐	☐

9. Which one of the following statements best reflects your view of chiropractic?
   1. I am uncomfortable with it but it is effective for some patients. ☐
   2. Chiropractic provides excellent treatment for some musculoskeletal conditions. ☐
   3. Chiropractic is quackery and does more harm than good. ☐
   4. Not informed enough to comment. ☐

10.(a) In your opinion is there a difference between chiropractic and physiotherapy?
   1. Yes ☐
   2. No ☐
   3. Don't know ☐

(b) If yes, is there sufficient difference between chiropractic and physiotherapy to justify the existence of two separate professions?
   1. Yes
   2. No
   3. Don't know

11. Please indicate to what extent you might refer patients to the following disciplines for neuromusculoskeletal problems. (Please circle one number for each discipline, with (1) indicating no referrals and (5) indicating most referrals.)

	None	⟺			Most
1. Acupuncture	1	2	3	4	5
2. Biokinetics	1	2	3	4	5
3. Chiropractic	1	2	3	4	5
4. Massage therapy	1	2	3	4	5
5. Neurology	1	2	3	4	5
6. Neurosurgery	1	2	3	4	5
7. Orthotics	1	2	3	4	5
8. Osteopathy	1	2	3	4	5
9. Orthopaedics	1	2	3	4	5
10. Physiotherapy	1	2	3	4	5
11. Reflexology	1	2	3	4	5
12. Other (please specify)					
_____	1	2	3	4	5
_____	1	2	3	4	5

12. Please rate each of the following professions in terms of their importance in serving a primary health care capacity? (Please circle a number for each profession, with (1) indicating no importance and (5) indicating most important.)

	None	⟺			Most
1. Chiropractic	1	2	3	4	5
2. Dentistry	1	2	3	4	5
3. Herbalism	1	2	3	4	5
4. Homoeopathy	1	2	3	4	5
5. Medicine	1	2	3	4	5
6. Naturopathy	1	2	3	4	5
7. Nursing	1	2	3	4	5
8. Optometry	1	2	3	4	5
9. Pharmacy	1	2	3	4	5
10.Physiotherapy	1	2	3	4	5
11.Traditional healing	1	2	3	4	5
12.Other (please state)					
_____	1	2	3	4	5
_____	1	2	3	4	5

13. Which of the following practices do you think fall within the scope of practice of a Chiropractor?

1. Draw blood for diagnostic purposes ☐
2. Intra-articular injection ☐
3. Minor surgery ☐
4. Prescription of schedule medicines related to Neuromusculoskeletal conditions ☐
5. Reduce minor fracture/dislocations ☐
6. Spinal manipulation ☐
7. Treatment of neuromuscular dysfunction ☐
8. None of the above ☐

14 .Which direction would you like to see Chiropractic take in the future?

1. Chiropractic should merge with mainstream medicine. ☐
2. Chiropractic should exist under medical supervision. ☐
3. Chiropractic should become a limited medical profession similar to Dentistry or Optometry. ☐
4. Chiropractic should remain a complimentary practice as it currently is. ☐
5. Chiropractic should disappear ☐

15.(a) Please indicate to what extent the following factors would encourage you to refer a patient to a Chiropractor at present? (Please circle one number for each choice, with (1) indicating the least extent and (5) the greatest extent.)

	Least		⟺		Greatest
1. Personal experience	1	2	3	4	5
2. Patient demand	1	2	3	4	5
3. Colleagues' experience	1	2	3	4	5
4. Colleagues recommendation	1	2	3	4	5
5. Other					

_____

(b) What do you feel would have to happen within the Chiropractic profession to encourage you to refer a patient to a Chiropractor?

_____
_____
_____
_____
_____

16(a) Which of the following skills do you think an individual practicing manipulation should have?

1. General diagnostic skills ☐
2. Orthopaedic and neurological diagnostic skills ☐
3.Knowledge of relevant radiology. ☐

(b) Which of the following skills, to your knowledge, does a chiropractor possess?

1. General diagnostic skills ☐
2. Orthopaedic and neurological diagnostic skills ☐
3. Knowledge of relevant radiology ☐

17. Do you understand chiropractors to claim that all disease is due to vertebral subluxation and amenable to spinal manipulation?

1. Yes ☐
2. No ☐
3. Don't know ☐

18. Do you understand chiropractors to claim that some disorders of the body are due to biomechanical dysfunction and are amenable to spinal manipulation?

1. Yes ☐
2. No ☐
3. Don't know ☐

19. To what extent do you believe chiropractic should play an active role in the South African health care system?

1. Great extent ☐
2. Moderate extent ☐
3. Slight extent ☐
4. No active role ☐

20. To what extent should chiropractic occupy the following roles in health care? (Please circle one number for each role, with (1) indicating no role at all and (5) the greatest role.)

	None ⟺				Greatest
1. Primary contact	1	2	3	4	5
2. Preventative	1	2	3	4	5
3. Supportive	1	2	3	4	5
4. Rehabilitative	1	2	3	4	5

21. Please indicate to what extent the following sources have aided in forming your views about chiropractic. (Please circle one number for each source, with (1) being least informative and (5) being most informative).

	Least ⟺				Most
1. Friends	1	2	3	4	5
2. Patients	1	2	3	4	5
3. Chiropractors	1	2	3	4	5
4. Colleagues	1	2	3	4	5
5. Popular media	1	2	3	4	5
6. Medical journals	1	2	3	4	5
7. Your own personal experience	1	2	3	4	5

22. Have you ever referred a patient to a chiropractor?

1. Yes ☐
2. No ☐

(a) If Yes, was it in the manner of:

(i) A suggestion to the patient that he/she might try Chiropractic if he or she wished ☐

(ii) Direct referral to a Chiropractor by name. ☐

(b)_ If yes, with what frequency have you referred to chiropractors?

1. On a single occasion ☐
2. Weekly ☐
3. Monthly ☐
4. Quarterly ☐
5. Yearly ☐

23. Have you ever received referrals from chiropractors?

1. Yes ☐
2. No ☐

(a) If yes, with what frequency have you received referrals from chiropractors?

1. On a single occasion ☐
2. Weekly ☐
3. Monthly ☐
4. Quarterly ☐
5. Yearly ☐

AND

(b) In any communication that you have had with chiropractors, were you satisfied with the person/s professionalism in terms of:

1. Courtesy ☐
2. Knowledge base ☐
3. Verbal communication skills ☐
4. Written communication skills ☐
5. Accuracy of diagnosis ☐

24. Have you examined any patients that you believed were in any way harmed by chiropractic treatment?

1. Yes ☐
2. No ☐

(a) If yes, please state nature of the injuries.

_____
_____
_____
_____
_____

(b) Do you believe that the nature and frequency of any such harm is sufficient to limit your referral to a chiropractor?

1. Yes ☐
2. No ☐

25. In your opinion, what would the Chiropractic profession as a whole have to do to encourage greater integration with medicine and its' specialties?

_____

_____

_____

_____

_____

26. How would you rate your view of chiropractic? (Please circle one number for your choice, with (1) indicating the worst view and (5) the greatest view.)

Worst ⟺ Greatest

1 2 3 4 5

Thank You

Francois Botha