The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards chiropractic

Mini-dissertation in partial compliance with the requirements for the Masters Degree in Technology: Chiropractic, in the Department of Chiropractic at the Durban University of Technology.

by

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I, Sarvesh Maharajh, declare that this dissertation represents my own work, both in conception and execution.

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DEDICATION

I dedicate this dissertation to my parents, Rishipaul Ramnath Maharajh and Urmila Devi Maharajh for their unconditional love and support.

Thank you for giving me the opportunity of entering into this worthy profession.

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ABSTRACT

Background: Many previous South African studies exploring the relationship between the public, chiropractic and other health care professionals have indicated a poor level of knowledge and perception between the researched populations. The aim of this study was to determine the knowledge and perceptions of second and third year medical students at The Nelson Mandela School of Medicine towards chiropractic.

Objectives: The objectives of this study were firstly, to document the demographic details of the second and third year participants, secondly, to determine the level of knowledge and exposure of the second and third year participants to chiropractic, thirdly, to determine the perceptions of second and third year participants regarding chiropractic and to compare this between second and third year participants, fourthly, to determine the utilization of chiropractic by second and third year participants, and finally, to determine any relationship between demographic factors, knowledge, perception and utilization of chiropractic.

Method: A survey method was employed with the measuring tool being a questionnaire. It was decided that only second and third year medical students would be included in the study.

Results: The response rate of the study was 42.5%. It was found that the majority of participants were female, of Black ethnicity and all participants were younger than 33 years old.

Participants had a wide range, and a relatively satisfactory level of knowledge of chiropractic, however, the 3rd year participants had a significantly higher mean knowledge score than the second years. There was a wide range of perceptions of chiropractic, but a relatively negative level of perception. There were no significant differences in perception scores between the groups (p=0.859).

The third year participants seemed to have a better view of the scope of chiropractic than second year participants. The utilization of chiropractic by the participants, their friends and family was found to be low.

A few areas of concern, with regards to the limited exposure that medical students at The Nelson Mandela School of Medicine have towards chiropractic, were raised.

Conclusion and recommendations: It can be concluded that second and third year medical students from The Nelson Mandela School of Medicine had a generally poor knowledge and perception of the chiropractic profession, which may be a possible reason for the poor communication between chiropractors and qualified medical practitioners.

The presence of chiropractic students, who served as human anatomy demonstrators at The Nelson Mandela School of Medicine, may have had an impact on the results of the study. It is therefore recommended that further studies be done to investigate the effect that these demonstrators have at The Nelson Mandela School of Medicine. Basic information on chiropractic should also be included at The Nelson Mandela School of Medicine to educate medical students on chiropractic.

DEFINITIONS

Allopathic	-	A term loosely applied to the practice of mainstream (orthodox) medicine (Gaier, 1991).
Ayurvedic medicine	-	An ancient system of natural and medical healing that originated in India. Ayur means “life” and veda means “science” (Gottleib, 2000).
Chiropractic	-	A method of therapy based on the theory that disease is mainly due to a malfunction of the nerves which may be corrected by manipulation of bodily structures, especially the spinal column (Webster Comprehensive Dictionary, 1992).
Knowledge	-	Information or understanding acquired through experience; practical ability or skill (Webster Comprehensive Dictionary, 1992).
Perception	-	Knowledge through the senses of the existence and properties of matter and the external world (Webster Comprehensive Dictionary, 1992).
Participants	-	Second and third year medical students at The Nelson Mandela School of Medicine registered for the year of 2009.

ABBREVIATIONS

CAM - Complementary and Alternative Medicine

CASA - Chiropractic Association of South Africa

GP - General Practitioner

KZN - KwaZulu-Natal province

YR - Year

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Chapter One
Introduction

1.1 Introduction

Chiropractic is a natural, complementary/alternative, hands on, drug free, surgery free approach to health. Since its inception, chiropractic has risen to become the third most used primary health care profession in the world after medicine and dentistry (CASA, 2009).

According to Chaffe (1997), perception is the process by which people select, organise, and interpret information to form a meaningful picture of the world. In this context, there are three broad categories of factors that influence the manner in which people perceive various objects, e.g. chiropractic. This is in accordance to the Neiss classification as discussed by Berg and Theron (1999), Robbins (1996) and Hayes (1994); which include those factors that are related to the perceiver e.g. Medical students; those related to the perceived object e.g. Chiropractic; and those related to the environment in which the perceiver and the perceived objects operate e.g. The Nelson Mandela School of Medicine.

Literature reveals a number of studies exploring the relationship between the public, chiropractic, and other health care professionals in South Africa (Butt, 2008; Cloete, 2008; Heslop, 2008; Maharaj, 2008; Naidoo, 2008; Palmer, 2008; Rattan, 2007; Talmage, 2007; Kew, 2006; Pillay, 2006; Louw, 2005; van As, 2005; Hunter, 2004; Langworthy and Smink, 2000; Dyer, 1997; Rubens, 1996; Jamison, 1995) which indicate that a poor level of knowledge and perception exist within the researched populations. To further complicate this picture, it is noted that the majority of public consumers in the United States of America (USA) and Europe, view chiropractors as back specialists (Jamison, 1995), which is congruent with the outcomes of the previous perception studies done in South Africa (Butt, 2008; Cloete, 2008; Heslop, 2008; Maharaj, 2008; Naidoo, 2008; Palmer, 2008; Rattan, 2007; Kew, 2006; Pillay, 2006; Louw, 2005; van As, 2005; Hunter, 2004; Rubens, 1996). In contrast, in a

more recent study done by Thorvaldsen (2007) on the perception of third year medical students at the University of KwaZulu-Natal and The University of Cape Town towards homoeopathy, another CAM therapy, it was found that there was a positive perception of homoeopathy and the potential for it to become more widely accepted by the medical fraternity.

Therefore based on their medical knowledge, and the recent growing popularity of complementary/alternative health professions including chiropractic (Hughes and Wingard, 2006; Wojcikowski et al, 2006; Bodeker and Kronenberg, 2002; McFarland et al, 2002; Bodeker, 2001; Lewith et al, 2001; Ernst and White, 2000), a possible difference in the level of knowledge and perceptions may exist between current medical students and previously assessed health professionals (Louw, 2005; Van As, 2005; Hunter, 2004; Rubens, 1996. Therefore, the following parameters need to be re-assessed within the South African context, so to accurately measure medical students' perception, in that the factors they are exposed to are different compared to previous studies.

Contextual factors include, but may not be limited to:

- The socio-economic conditions prevalent in South Africa, with respect to the general population and the medical students specifically,
- Limited access to chiropractors for financial reasons, logistical concerns or both (About South Africa > Health, 2007) Hupkes, 1990),
- Legal barriers (Gaumer *et al*., 2002),
- Accessibility barriers, such as the geographic availability of chiropractic (Gaumer *et al*., 2002).

Perceiver changes, which include, but may not be limited to:

- Cultural upbringing,
- Age, gender, education,
- Consumer preferences,
- Demand barriers for CAM therapies (Gaumer *et al*., 2002).

Perceived object changes including but not limited to:

- The history of chiropractic in South Africa (CASA, 2005),

- The education of chiropractors in South Africa (CASA, 2005),
- Chiropractors' self-imposed barriers to primary care provider roles (Gaumer *et al*., 2002).

Therefore, this study aimed to determine the level of knowledge and perception about chiropractic amongst second and third year medical students at the Nelson Mandela School of Medicine.

1.2 Aims and Objectives of this study

The aim of this study was to determine the level of knowledge and perception about chiropractic amongst second and third year medical students at the Nelson Mandela School of Medicine.

Objective one

The first objective of this study was to document the demographic factors of the second and third year students.

Null Hypothesis one:

The demographics between the second and third year students would not be similar.

Objective two

The second objective was to determine the level of knowledge and exposure of the second and third year students to chiropractic.

Null Hypothesis two:

The level of knowledge and exposure of second and third year students would not be the same.

Objective three

The third objective was to determine the perceptions of second and third year students regarding chiropractic, and to compare this between the second and third year participants, and to determine the participants' views regarding the scope of chiropractic.

Null Hypothesis three:

The second and third year students' perception of chiropractic would not be the same.

Objective four

The fourth objective was to determine the utilization of chiropractic by second and third year students.

Null Hypothesis four:

The level of utilisation of chiropractic by second and third year students would not be the same.

Objective five

The fifth objective will be to determine if any relationship existed between demographic factors, knowledge, perception and utilization of chiropractic.

Null Hypothesis five:

There was no difference between the second and third year student groups with regards the relationships between demographic factors, knowledge, perception and utilization of chiropractic.

1.3 Rationale of this study

The Nelson Mandela School of Medicine is the only higher education institute in KwaZulu-Natal (KZN) at which students can study medicine.

This research was important as it ascertained the perceptions and knowledge that the students attending this medical school had of the chiropractic profession. These findings could be used for the development of public relation.

1.4 Limitations of this study

Although the researcher could not ensure the openness and honesty of all participants, it was requested and expected that when completing the questionnaire, the participants were open and honest about their current knowledge and perceptions.

1.5 Conclusion

This chapter introduced the study, it presented the aim and objectives and the rationale for this study. It also pointed out the inherent limitations of the study.

Chapter Two of this study will discuss a review of the literature. This is followed by Chapter Three, which outlines the materials and methods utilized to structure the design of the research study. Chapter Four presents the results and discussion of the results. Chapter Five highlights the conclusions and suggests recommendations based on the results of this study.

Chapter 2

Literature Review

2.1 Introduction

This chapter discusses the literature available regarding the knowledge and perceptions of second and third year students at The Nelson Mandela School of Medicine towards the field of chiropractic.

2.2 Complementary and Alternative Medicine (CAM)

CAM places emphasis on a holistic approach to health and criticizes what it perceives as conventional medicine's view of a patient as a "bag of chemicals" (O'Mathuna, 2001).

The World Health Organization (2009) defines health as "a state of complete physical mental and social well being, and not merely the absence of disease or infirmity".

Complementary medicine is also known as holistic medicine, and Zollmann and Vickers (1999) state that due to complementary practitioners' multifactorial and multilevel view of illness, most of these practitioners are seen as holistic medicine practitioners.

Holistic models, which encompass the holistic approach to medicine, do not draw a distinction between physical, mental, spiritual and social components of health, but these are instead seen in light of the individual's wholeness. Definite advantages of the holistic model can be seen, in terms of encouraging health promotion, prevention and patient involvement in care. However, these models have been criticized as being so broad, diverse and multifactorial, that they are difficult to apply to tasks such as formulating practice guidelines, health care benefits packages and licensure requirements (Klimenko, Julliard, Lu and Song, 2006).

2.3 The Concept of Perception

According to Chaffe (1997), perception is the process by which people select, organise, and interpret information to form a meaningful picture of the world. It is explained as the organization of sensory information, gathered by the five senses of the body (hearing, sight, smell, taste and touch), processing this information and adding meaning to it in order to form an object (Chaffe, 1997). Kew (2006) adds to this explanation by pointing out that perception is often not based on education or experience, but rather on what is sensed from the surroundings. Similarly Kehoe (1998) also stated that the way in which a person perceives their environment is determined by their individual experiences, expectations and beliefs, and not necessarily on what is actually taking place.

2.4 Factors affecting perception

It has been deemed important that studies assessing perceptions are repeated (Langworthy and Smink, 2000) as this specialized context could deviate from the norm to such an extent that it no longer reflects that norm. The reason for this is that it is a dynamic process that depends on the interaction of multiple factors between the observer, the object, and the environment. Therefore, The Neiss classification, as illustrated in Table 2.1, supports Langworthy and Smink's suggestion and also highlights some of the factors affecting perception.

Table 2.1: Factors Affecting Perception

Factors in the perceiver: e.g. Medical Students • Personal demographics. • Attitudes. • Experience. • Expectations. • Cultural upbringing. • Consumer preference and demand barriers.	**Factors in the environment:** e.g. Nelson Mandela School of Medicine • Time. • Work setting. • Social setting.
Factors in the perceived object: e.g. Chiropractic • History • Proximity • Accessibility barriers • Background. • Motion. • Size. • Novelty. • Chiropractic Education in South Africa. • Chiropractors self imposed barriers to primary care provider roles.	

Adapted from Robbins (1996).

Based on the manner in which a person views the world around them, most public consumers (in the USA) and other potential consumers view chiropractors as back specialists (Reubens, 1996; Eisenburg et al., 1998; Gaumer et al., 2002; Hunter, 2004; Louw, 2005). According to an Australian study by Jamison (1995), this is because of the fact that chiropractors tend to be regarded by the public as specialists within a narrow range of clinical practice related to musculoskeletal disorders (principally low back pain).

It cannot, however, be assumed that this perception is reflective of the local status quo in South Africa as the context differs from that of the USA/Europe as well as the factors

that influence the perceiver as this is principally governed by the cultural and societal development of the perceiver (Bergh *et al., 1999* ; Robbins, 1996). .

These differences may be principally related to some of the following within the South African context:

2.4.1 Factors in the perceiver

2.4.1.1 Personal demographics

Personal demographics such as age, gender, ethnicity and educational details, could influence a persons perceptions about a subject. These are further discussed below:

2.4.1.1.1 Age

Literature shows that older patients were more likely to use CAM therapies such as chiropractic than younger patients (Kayne, Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). Likely reasons for this may be increased exposure to CAM therapies over the years, disappointments with previously received mainstream care and having to live with and deal with chronic illnesses related to increased age (Kayne, Beattie and Reeves, 1999; Tatalias, 2006).

2.4.1.1.2 Gender

Studies by MacLennan and Wilson (1996), Durant, Verhoef, Conway and Sauve (2001) and Tatalias(2006) have found that women are more likely than men to use CAM therapies and have indicated that a possible reason for this is that within a family environment, women are usually the care-givers for children. Literature shows that people who care for children, make more use of CAM therapies than people who don't have children, as it is more non-invasive and is perceived to have fewer side effects (Crawford, Cincotta, Lim and Powell, 2006; Hughes and Wingard, 2006; Lim, Cranswick, Skull and South, 2006; Smith *et al*., 2006; Wilson, Dowson and Mangin, 2007; Low, Murray, O'Mahony and O'B Hourihane, 2008). Due to the above discussion, should the majority of participants be female, the likelihood of exposure to the

chiropractic profession is expected to be higher and therefore, a good knowledge and positive perception of chiropractic is expected.

2.4.1.1.3 Ethnicity

It has been found that culture and its associated political surroundings have a strong influence in the way members of a particular group, react to different constructs e.g. the lack of manual therapies in African culture in contrast to the Indian culture that embraces manual therapy (Philbin, Lozada, Zuniga, Mantsios, Case, Magis-Rodriguez, Latkin and Strathdee, 2008). Myburgh and Mouton (2007) also found chiropractic to be underappreciated by the South African Black population, who has no notion of what chiropractic is. Due to The Nelson Mandela School of Medicine's increased intake of students who were previously disadvantaged, there is expected to be a greater number of students from the Black population group of South Africa (Myburgh, 2007). These students are expected to have decreased exposure to chiropractic and therefore a poor knowledge and perception of the chiropractic profession.

2.4.1.1.4 Level of education

An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Reasons for this include a greater awareness of health care options, greater ability to understand the efficacy of different treatment options due to increased accessibility to information (e.g. libraries, internet) and better understanding of disease processes and treatment procedures. Based on the above information, and due to the fact that all participants are in their second and third years of tertiary education, they are expected to have greater awareness of chiropractic, as compared to the general public, but a poorer awareness as compared to pediatricians and other qualified medical professionals. However, knowledge and perception based studies conducted by Rubens (1996, Van As (2005), Kew (2006), Butt (2008) and Heslop (2008) found that the majority of neurologists, neurosurgeons and orthopedic

surgeons, school careers guidance councillors, personal trainers, rugby coaches and paediatricians were not well informed about chiropractic.

2.4.1.1.4.1 Medical Training and Professional Status in South Africa

Medicine is the largest primary health care profession in the world (CASA, 2009). According to Colleges and Universities-South Africa (2010), there are currently eight universities in South Africa where medicine can be studied. These are as follows:

- University of Cape Town
- University of Pretoria
- Stellenbosch University
- University of Witwatersrand
- University of the Free State
- University of KwaZulu-Natal
- University of Limpopo
- Walter Sisulu University

After completing a five year programme in South Africa, medical graduates qualify with the degrees of bachelor of medicine and bachelor of surgery (MBChB). The two degrees are taken concurrently. They then register with the Health Professions Association of South Africa (HPCSA) (Faculty of Health, 2009).

2.4.1.1.4.2 Medical Training at The Nelson Mandela School of Medicine

During the five year programme at The Nelson Mandela School of Medicine, students receive medical training which is integrated, student-centered, self-directed and problem-based. The programme is composed of modules which are made up of

themes in the first three years. Anatomy, physiology and pathology are the main headings under which each module is discussed. There is initially a compulsory one-week orientation at the beginning of year one. In the second and third years, students do a four-week selective module, which is usually undertaken in a group environment (Faculty of Health, 2009). According to the Faculty of Health (2009), the modules and themes are as follows:

Year one

- **Module one** – Foundation Nourishment and Growth

  Themes - Foundation, Nutrition, Growth and Development

- **Module two** – Attacks and New Life

  Themes – Infection/inflammation, Reproductive Health 1, Trauma and Emergency Care

- **Module three** – Basic Emergency Care

Year two

- **Module one –** Internal Organ Systems

  Themes – Cardiovascular, Digestion and Absorption, Urogential

  Module two – Interactions with the environment

  Themes – Body in Motion, Central functions, “People and Bugs”

- **Module three** – Level two-Selective

  Introduces students to the principles of community-based health care, family medicine and research through experiential learning opportunities

Year three

- **Module one** – Co-ordination and Control

  Themes – Cell dysfunction and Heamatology, Hormonal orchestra

- **Module two –** Life and the Liver

  Themes – Lifestyles, Man, Environment and Health, Abdominal Complaints and Jaundice

- **Module three** – Introduction to Paediatrics

  Aims to develop clinical skills specific to paediatric patients and to bring about understanding of the patho-physiological basis of certain signs and symptoms

- **Module four** – Level three-Selective

  Introduces students to the principles of community-based health care, family medicine and research through experiential learning opportunities

- **Module five** – Introduction to Internal Medicine

  Aims to develop the clinical skills specific to internal medicine and equip the student with clinical skills necessary for their further clinical years of study

- Module six - Introduction to Surgery

  Aims to develop clinical skills specific to general surgery and orthopedics and to bring about understanding of the patho-physiological basis of certain signs and symptoms

Year four

- **Module one** – Adult Paediatric Medical and Mental Health

  Aims to reinforce and develop clinical skills specific to internal medicine, family medicine, paediatrics and psychiatry.

- **Module two** – Principles of Surgery, Obstetrics & Gynaecology and Forensic Medicine

  Aims to reinforce skills learned in the first three years of study and to provide students with knowledge and clinical skills specific to surgical disciplines and forensic medicine

Year five

- **Module one** – Medicine 2

  Aims to produce an independent medical practitioner with the ability to diagnose and treat common medical conditions and refer those who he/she is unable to manage to appropriate health care

- **Module two** – Obstetrics and Gynaecology 2

Aims to teach students clinical and ethical skills as well as to teach a holistic approach to care of a mother and her baby and to women's health issues that relate to reproduction

- **Module three** – Family Medicine 2

  Aims to expose students to holistic health care and to ensure their competence in dealing with differentiated and undifferentiated health care problems in a variety of settings

- **Module four** – Paediatrics 2

  Aims to teach students clinical and ethical skills and to teach a holistic approach to child health and care

- **Module five** – Psychiatry 2

  Aims to emphasize practical knowledge in terms of mental illness.

  Also aims to expose students to clinical presentation of psychiatric disorders

- **Module six** – Surgery 2

  Aims to introduce students to a holistic approach to general, orthopedic and paediatric surgical patient care and to develop ethical skills in diagnosis and management of patient's diseases

2.4.1.2 Attitudes

Differences in health care, that were traditionally associated with differences in culture, may be a limiting factor of access to health care outside that culture (Dreyer, 2004). If their cultural background does not facilitate interaction with the chiropractic profession, there is expected to be decreased exposure to the profession. It is also estimated by Myburgh and Mouton (2007), that chiropractic is under-appreciated by the Black South African community, due to their cultural upbringing which does not facilitate interaction with this predominantly western health care profession.

2.4.1.3 Experience

Previous consultation with a chiropractor, and whether or not they were satisfied with the treatment received, may affect a person's knowledge and perception of the chiropractic profession. Since chiropractic patients generally know more about chiropractic than non-patients, participants who have consulted with a chiropractor before are expected to have a better knowledge and perception of chiropractic (Rattan,2007). A great deal of general practitioners gained their information about chiropractic from their patients who were previously treated by chiropractors, and an important factor affecting general practitioners perceptions of chiropractic, appeared to be their patients' experience at chiropractors' practices (Brusee, Assendelft and Breen, 2001). This supports the notion that exposure to chiropractic through someone else's experience may also influence perception towards chiropractic. The South African public may generally have less experience of chiropractic treatment. This is supported by studies that have indicated that most South Africans cannot afford chiropractic treatment, and therefore have less experience of chiropractic treatment (CASA, 2009). Most medical students at The Nelson Mandela School of Medicine are expected to be of South African origin, and they are therefore expected to have limited experience and a poor knowledge and perception of chiropractic due to the fact that they are not qualified and do not see patients yet. However, the knowledge and perceptions of the participants may have been altered by their interaction with chiropractic students who have been employed as Human Anatomy demonstrators at The Nelson Mandela School

of Medicine during the last three years (Naidoo, 2008). This interaction between chiropractic students and medical students at The Nelson Mandela School of Medicine may have had a positive effect on the level of knowledge and perceptions of the participants.

2.4.1.4 Expectations

People are always more inclined to see what they expect to see, due to their belief systems, therefore our perceptions may also be distorted by our expectations (Berg and Theron, 1999). People with high expectations of chiropractic and its usefulness should also have a high knowledge and better perception of chiropractic (Louw, 2005). Therefore, the level of knowledge and perceptions that medical student's have of chiropractic, may depend on their expectations of the usefulness of CAM therapies such as chiropractic. Participants may be predominantly trained in professions that fall within the allopathic medicine model (Hupkes, 1990). There could therefore be a poor knowledge and perception of chiropractic due to them possibly having a reduced expectation of chiropractic.

2.4.1.5 Cultural Upbringing

According to The Webster Comprehensive Dictionary (1992), culture is the sum total of the attainments and activities, of any specific period, race or people, including their implements, handicrafts, agriculture, economics, music, art, religious beliefs, traditions, language and story. Traditionally, there was an association between differences in culture and differences in health care which may be a limiting factor of access to health care outside that culture (Dreyer, 2004). There is expected to be decreased exposure to the profession if their cultural background does not facilitate interaction with the chiropractic profession. Myburgh and Mouton (2007), found chiropractic to be under-appreciated by the South African Black community, due to their cultural upbringing, which did not facilitate interaction with this predominantly western health care profession.

2.4.1.6 Consumer preference and demand barriers

The demand for chiropractic care and the potential for chiropractors to serve in primary care roles is created mainly by consumer preference (Caplan and Associates, 1994; Gaumer, Koren and Gemmen, 2002).

Most chiropractic consumers and other potential consumers view chiropractors as back specialists **(**Gaumer *et al.,* 2002). According to Blydenburgh and Freedman (1988), Jamison (1995) and Gaumer *et al* (2002), a significant segment of the public (in Australia and America) prefers chiropractic treatment to medical care for low back pain The experience of the general South African population may include physiotherapists, traditional healers and other members of the health care sector (Hupkes, 1990), who may also be seen as professionals who address back pain, and with whom patients may be more comfortable. This would be a limiting factor to their exposure to chiropractic.

Sanchez (1991), found that non-utilization of chiropractic care, could be caused by gaps in the knowledge of the public, about the chiropractic profession. The less, the public understood about the chiropractic profession, the less likely they were to identify a condition as one that could be treated by a chiropractor.

According to Coulter (1992), Wardwell (1994) and Jamison (1995), the medical profession in South Africa remains sceptical about chiropractic, even though it is a popular health care option in other countries. Many general practitioners are more likely to refer patients to a physiotherapist because they personally feel that their patients understand more about physiotherapy (Breen, Carrington, Collier and Vogel, 2000).

2.4.2 Factors in the perceived object:

Research has found that many factors can affect a person's perception of certain objects (Robbins, 1996; Berg and Theron*,* 1999) and that the relationship between the object and its background will influence perception (Robbins, 1996). Therefore, people, objects and events are grouped together, even if they have different distinguishable

features (Robbins, 1996). These factors in the perceived object, may influence perception (Hayes, 1994; Robbins, 1996; Berg and Theron, 1999).

- History
- Proximity
- Accessibility barriers
- Background.
- Motion.
- Size.
- Novelty.
- Chiropractic Education in South Africa.
- Chiropractors self imposed barriers to primary care provider roles.

2.4.2.1 History

According to Chapman-Smith (2009), chiropractic began in the United States of America in 1895. Thereafter, the practice of chiropractic has been organized in the United States of America and Canada since the 1920s, in Australia since the 1940s and in New Zealand and South Africa since the 1960s.

In the past, chiropractic was condemned particularly because it lacked the scientific evidence to substantiate its claims (Sanchez, 1991). In 1961, a Bill for the recognition of chiropractic was presented to parliament, with much interest being shown in chiropractic during the debate. The health minister at the time (Hertzog), appointed a commission of enquiry into chiropractic, based on the presence of philosophical conflict in the profession (Till, 1997; Brantingham and Snyder, 1999). After the completion of the enquiry six months later, it was recommended that chiropractic be done away with, and that any beneficial treatment methods should be adopted by physiotherapists and orthopedic surgeons. Due to the representation of chiropractic being divided, further presentations were rejected by the minister of health (Till, 1997). In 1971, the

Chiropractic Association of South Africa (CASA) was formed by the joining of the previously divided Pan-African Chiropractor's Association (PACA) and South African Chiropractor's Association (SACA). Chiropractic was then banned by the health minister at the time, despite the persistent approaches by CASA to legislate the recognition of chiropractic. The ban was soon withdrawn due to the popularity of chiropractic. In 1989, the then Technikon Natal in KwaZulu-Natal accepted the first chiropractic students into the program. It became the first chiropractic department and the second governmentally supported public higher education system in the world (Brantingham and Snyder, 1999).

Due to the difficult and abnormal social development of chiropractic (Coulter, 1992; Wardwell, 1994), the public of South Africa, and especially members of the medical profession, would possibly have a limited knowledge and potentially negative perception of chiropractic.

2.4.2.2 Chiropractic education, training and professional status in South Africa

Before 1989, the public interested in studying chiropractic had to enroll in colleges overseas (Brantingham and Snyder, 1989). The first chiropractic learners were accepted into Technikon Natal in 1989 (Till, 1997; Brantingham and Snyder, 1999). The possible misconception that chiropractic cannot be studied in South Africa, may be a major contributing factor to a lack of interest, and therefore, a lack of knowledge about chiropractic. The study of chiropractic in South Africa could influence the public's level of knowledge and perception due to increased exposure to the profession by larger numbers of practicing South African chiropractors. Medical students would be expected to know more about the study of chiropractic in South Africa, due to their increased knowledge and awareness of matters relating to the medical field. They should therefore be aware that chiropractic can be studied at the Durban University of Technology, and The University of Johannesburg in South Africa, and that the course is spread over six years, after which a Masters Degree in chiropractic is achieved. The

entire course outline is fully discussed in 2.2. Limited understanding of the entrance requirements to the chiropractic programmes at these institutions may also play a significant role in limiting the knowledge that medical students may have regarding chiropractic.

The entrance requirements include (Faculty of Health Sciences, 2009):

- Applicants must be over 17 years of age
- Reasonably physically fit and
- In possession of a senior certificate with matriculation exemption. Subjects must include Higher grade Mathematics, Physical Science and/ or Biology (Faculty of Health Sciences, 2009), as per senate approval (January 2005).

And/or where applicable:
Compulsory Requirements:

- Life orientation at NQF level 4
- English language either 1st or 2nd language at NQF level 4
- Mathematics at NQF level 4

Elective Requirements**:**

- Life Sciences at NQF level 4

AND/OR

- Physical Sciences at NQF level 4

There has been a slow, steady growth in chiropractic since the inception of the training institutions. It can therefore be conceived that there is increased exposure of chiropractic to the public, because there are more practicing chiropractors to educate them. This would allow for greater understanding and knowledge of chiropractic (CASA, 2009).

A chiropractor registered in South Africa, is allowed rights and privileges similar to those of allopathic medical practitioners. Chiropractic is the third largest primary health care profession in the world after medicine and dentistry, and has the same status as allopathic practitioners (CASA, 2009).

There are currently 17 Chiropractic colleges in the USA, 2 in Australia, 2 in Canada, 1 in France, 1 in New Zealand and 2 in South Africa. In South Africa, the course is offered at the Durban University of Technology and the University of Johannesburg. As mentioned previously, a Masters Degree in Chiropractic is awarded after 5 years of education and training (CASA, 2009). According to the Faculty of Health Science student handbook (2009), students receive a solid grounding in the general sciences in their first 2 years of study, including:

- Human Anatomy and Histology 1
- Physiology 1
- Physical Science
- Biology 1
- Chemistry 1
- Chiropractic Philosophy
- Computer Skills 1
- Social Studies 1
- Human Anatomy and Histology 2
- Physiology 2
- Medical Microbiology 2
- Biochemistry 2

- Epidemiology 2
- General Pathology 2
- Chiropractic Philosophy 2

Students are then introduced to clinically oriented subjects including:

- Auxiliary Therapeutics 3
- Chiropractic Principles and Practice 3
- Diagnostics 3
- Psychopathology 2
- Systemic Pathology 3
- Clinical Biomechanics and Kinesiology 4
- Chiropractic Principles and Practice 4
- Clinical Chiropractic 4
- Diagnostics 4
- Radiology 4
- Research Methods and Techniques 1
- Clinical Biomechanics and Kinesiology 5
- Chiropractic Principles and Practice 5
- Clinical Chiropractic 5
- Practice Management and Jurisprudence 5

At the end of the 4th year and during the 5th year of study, students are required to complete a research project and dissertation. In the 6th year of study, students are required to complete an internship, as a part of a legal requirement, which includes many practical applications in both the public and private sector. Graduates of the chiropractic program are required to register with the Allied Health Professions Association of South Africa (AHPCSA), which is their statutory body. This statutory body has the equivalent legal status to the Health Professions Council of South Africa (HPCSA), with which the medical graduates register with (CASA, 2009).

2.4.2.3 Proximity

The practice of chiropractic has been regulated in the USA and Canada since the 1920s, in Australia since the 1940s and in New Zealand and South Africa since the 1960s (Chapman-Smith, 1997). There are chiropractors in 109 countries all over the world (Chiropractic Diplomatic Corps, 2007).

There are 102 chiropractors in KwaZulu-Natal, currently registered with the Chiropractic Association of South Africa (CASA, 2008).

According to CASA (2008), people living in a region that does not recognize chiropractic or that has a very low doctor to patient ratio, would potentially have a decreased knowledge and poor perception of the chiropractic profession, due to decreased exposure to chiropractic. CASA, (2008) further points out that most chiropractors in South Africa work in urban areas, thereby, limiting the perception of these participants to chiropractors.

2.4.2.4 Accessibility barriers

A shortage of primary health care providers in a certain area may result in difficulty in accessing primary health care in these areas (Caplan and Associates, 1994; Gaumer *et al*. 2002). Also, chiropractic services are not offered in a hospital setting, which is seen as the most accessible health care option by the South African public. The only exception to this in South Africa is the Kimberly Hospital Centre, which has a separate dedicated chiropractic clinic on the premises (Higgs, 2009).

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2.4.2.5 Background of chiropractic

Since the inception of chiropractic into the health care field over 100 years ago, chiropractic teachings and techniques have been scrutinized by many influential medical groups including medicine and sociology (Wardwell, 1994). The chiropractic profession was viewed with much concern by allopathic medicine (Curtis and Bove, 1992). Taking into account that the participants of this study are all studying in the medical field, which is allopathic, a poor knowledge and negative perception of the chiropractic profession may be expected from them due to the propaganda by highly influential groups which historically set out to discredit and destroy chiropractic (CASA, 2009).

2.4.2.6 Motion

Motion refers to the movement in support of CAM therapies, including chiropractic treatment.

Numerous studies in the last ten years, have indicated a worldwide increasing use of chiropractic treatment (Hughes and Wingard, 2006; Wojcicowski et al, 2006; Bodeker and Kronenberg, 2002; McFarland et al, 2002; Bodeker, 2001; Lewith et al, 2001; Ernst,

2000). A reason for this may be the increased support by the CAM field, of the principles of evidence based medicine (van Tulder et. al, 2005), or CAM's holistic approach to wellness, with a strong focus on patient responsibility (Verhoef and Page, 1996).

An increase in the usage of chiropractic around the world, shows increased exposure to chiropractic which would, in turn, increase the knowledge about the chiropractic profession, and improve perceptions the public (and medical students) may have regarding chiropractic.

2.4.2.7 Size

An increase in demand for chiropractors is further supported by the increasing number of chiropractors within the profession (Lees, 2000), and this would serve to increase exposure to the chiropractic profession.

2.4.2.8 Novelty

Although the chiropractic profession has been in existence for more than a century, much of the public are only now starting to hear about it, and experience chiropractic treatment for themselves (Higgs, 2009). It seems that there is a perceived novelty or "newness" regarding chiropractic as more people are only now beginning to understand its benefits as a drug-free and surgery free approach to the treatment of neuromusculoskeletal conditions. This may increase the level of knowledge and have a positive influence on perceptions that the public, and medical students, have about chiropractic.

2.4.2.9 Chiropractors' self-imposed barriers to primary care provider roles

Not all chiropractors think of themselves as actual or potential primary contact practitioners as directed within the scope of practice of the Allied Health Professions Act of 63 of 1982 (AHPCSA, 2005). Some prefer to limit their scope of practice to neuromusculoskeletal conditions because of training and possibly lack of hospital privileges, which does not allow for access to all aspects of primary care (Gaumer *et al.,* 2002). It would therefore seem possible that most chiropractic consumers, and other potential consumers view chiropractors as back specialists (Caplan and Associates, 1994; Gaumer, *et al*. 2002).

Gaumer, *et al*. (2002) states that if chiropractors are to serve as primary health care professionals and if they need to change the existing care-seeking behaviours of consumers, they need to overcome impressions that they primarily treat back pain. This change could lead future generations of chiropractors into primary health care roles within primary health care facilities such as government hospitals and clinics, thereby increasing exposure of the profession to the general public, which would serve to enhance the knowledge and perceptions amongst South Africans.

2.4.3 Factors in the environment

Various elements in an environment can influence a person's perceptions. Robbins (1996), highlights that the environment in which people see objects or events taking place is therefore very important. The environment does not only refer to the work and social setting that the individual participant finds themselves in but it also refers to the moment in time. The factors in the environment that may influence perception are discussed below:

- Time.
- Work setting.
- Social setting.

2.4.3.1 Time

Bergh and Theron (1999), asserts that human behaviour can seldom be interpreted without considering the context in which it occurs. Similarly, the time in which an object is considered is also important (i.e. a participant who consults with a chiropractor a day before the study is conducted is likely to have a different knowledge and perception of the chiropractic profession as compared to a participant who has never consulted with a chiropractor before).

2.4.3.2 Work setting

Taking into account that the medical course at The Nelson Mandela School of Medicine is a full time course, it can be assumed that participants spend most of their time at their place of study. Presumably, the longer the participants have spent studying medicine, the greater their exposure to other health professions, including CAM therapies. It is therefore expected that third year participants may have a greater knowledge and more positive perception of the chiropractic profession.

2.4.3.3 Social setting

2.4.3.3.1 Socio-economic conditions prevalent in South Africa, regarding the general population and hence medical students

Chiropractic is covered by 98% of medical aid schemes and since most chiropractors in South Africa work in the private sector (CASA, 2005), chiropractic caters for middle- and high-income earners who tend to be members of medical aid schemes (18% of the population) (About South Africa > Health, 2004). However, high levels of poverty (71 % in rural areas and 50 % overall) and unemployment (at least 38 %) make it difficult for most South Africans to belong to a medical aid scheme or pay for health services in South Africa (About South Africa, 2007). The majority of the South African population (82%), do not have medical aid cover. Therefore, due to financial reasons, the majority of South Africans, and hence medical students, may not have been exposed to chiropractic. Due to medicine being a full time course at The Nelson Mandela School of

Medicine (Faculty of Health Science, 2009), students are expected to still be covered by their parents' medical aid schemes, since they do not have full time employment. Participants may therefore not know much about their parents' medical aid policies and subsequently, the coverage of chiropractic.

Ethnicity (2.4.1.1.3) is associated with consistent patterns of health care service use and health outcomes, with majority groups commonly being at a substantial disadvantage. Taking into account the substantial differences in economic condition between various ethnic groups, income and health insurance coverage are frequently cited as potential explanations for these disparities (Van As, 2005). Due to their previous economic status, previously disadvantaged individuals may still not be fully exposed to chiropractic and may therefore have a poor knowledge and perception of the chiropractic profession.

2.4.3.3.2 Geographic barriers

Many studies in the last decade have discussed the increasing use of CAM therapies, including chiropractic, around the world (Ernst and White, 2000; Bodeker, 2001; Lewith *et al.*, 2001; Bodeker and Kronenberg, 2002; McFarland *et al.*, 2002; Hughes and Wingard, 2006; Wojcicowski *et al.*, 2006).

According to the Allied Health Professions Council of South Africa (2009), there are about four hundred chiropractors currently in practice in South Africa, with an approximate of two thousand two hundred chiropractors still needed in this country (Chiropractic Diplomatic Corps, 2007). With a population exceeding fourty five million people, there is approximately one chiropractor per one hundred and twenty thousand people in South Africa presently. This is significant in that, areas where chiropractic is under-represented, may create inaccessibility to chiropractors due to their geographic location. This may result in decreased exposure, and poor knowledge and perceptions regarding the chiropractic profession. The lowered availability of chiropractors, would

then reduce accessibility due to limited proximity and size, thus reducing the exposure of people to chiropractic.

However, due to the relatively high concentration of chiropractors in Durban, the level of exposure of participants to chiropractic whilst they were in Durban would be expected to be slightly higher, and this could also play a significant role in their knowledge and perception of the chiropractic profession.

2.4.3.3.3 The Medical Model

The biomedical model, which is the most widely used medical model in the western world, is based on three assumptions, namely: objectivism, determinism and positivism (Dacher, 1996), as discussed:

Objectivism follows the idea that accurate knowledge can be achieved through an impersonal assessment of sensory based information alone.

Determinism is the idea that causation is exclusively characterized by an upward, linear mechanistic linkage.

Positivism is the idea that the collection of data from positive results of sensory based experimentation, can alone lead to accumulation of knowledge.

With progressive urbanization of life, as well as the industrial and technological changes that have come about, mankind has experienced many new adversities which have resulted in a uniquely new category of modern day ailments that are closely related to personal attitudes and lifestyle. This has resulted in limitations in the medical model that does not effectively address psychological, psychosocial or spiritual factors (Dacher, 1996).

The sphere of influence of the medical model is clearly limited. If it is to exert an influence beyond these limits, its way forward should involve acceptance of other spheres of human existence, and their associated ‘methods’ and ‘evidence bases’. The objective is to harness the legitimate role of the medical model in an understanding of

illness, and not to remove this model. An integrated approach could potentially provide people with more choice, and empower them through self management and self help initiatives (McCulloch, Ryrie, Williamson, and St John, 2005).

2.4.4 The need for an integrated model

Integrative medicine, as defined by the National Centre for Complementary and Alternative Medicine (NCCAM), is a combination of CAM therapies and mainstream medical therapies for which there is quality scientific evidence of safety and effectiveness (NCCAM, 2002).

The patient's needs and interests can be best served through creating an integrated medical model with a resultant holistic approach to patient health care. This, however, may present a challenge, considering the historical animosity, economic competition and lack of agreed-upon defining principles on which to base the integration. A considerable change in professional attitudes and behavior is necessary for successful integration (Coulter, Singh, Riley, and Der- Martirosian, 2005).

2.5 Summary

South Africa is a nation varying in culture, health care delivery schemes, education of health care professionals, and inter-professional relations from more developed countries (Hupkes, 1990). It is for this reason that a review of the literature reveals a number of studies exploring the relationship between chiropractic, the public, and other health care professionals in South Africa (Reubens, 1996; Hunter, 2004; Louw, 2005; van As, 2005). These indicate that a poor level of knowledge and perception exists within these researched populations, mostly as a result of poor communication between chiropractic and other health care professions.

Based on the discussion of the above factors, it can be seen that there are many factors that could affect the exposure of medical students to chiropractic. Some of these

factors are internal and relate to the individual, such as their attitudes, experience and culture, and others are external, such as those relating to the environment and geographical location.

However, all these factors influence perception, and in this case, have an influence on the perceptions that medical students at The Nelson Mandela School of Medicine have towards chiropractic.

Thorvaldsen, (2007) conducted a study to determine the perception of third year medical students at the University of KwaZulu Natal and The University of Cape town towards homoeopathy. Overall, she found there to be a positive perception of homoeopathy, another CAM therapy, and the potential for it to become more widely accepted by the medical fraternity.

However, no studies have been done to assess the knowledge and perception that medical students in KwaZulu-Natal have towards the chiropractic profession. Based on their medical knowledge, and the recent growing popularity (Eisenberg *et al.,* 1998) of complementary/alternative health professions (such as chiropractic), a possible difference in the level of knowledge and perceptions may exist between current medical students and previously assessed health professionals through knowledge and perception studies of a similar nature.

This study, therefore, aimed to assess the knowledge and perception of second and third year medical students at The Nelson Mandela School of medicine regarding the chiropractic profession.

Chapter Three

Methodology

3.1 Introduction

This chapter deals with the methodology and the data collection processes utilized in this research study. The process of statistical analysis is also discussed in this chapter.

3.2 Research design

The design of this study was a cross-sectional, descriptive survey, (Fink, 1995) which is based on a self-administered questionnaire (Salant and Dillman, 1994). According to the secretary of The Nelson Mandela School of Medicine Anatomy Department (Naidoo, 2008), the number of students in the second and third year classes was 202 and 188 respectively, resulting in a total sample size of 390. The questionnaire (Appendix B3) was constructed utilizing the recommendation of Dyer (1997), Talmage (2007) and Maharaj (2008) in terms of question structure, sections and types of questions. Adaptation of the questionnaire was accomplished through the use of a focus group and a pilot study.

Based on the above study design the research was approved by the Faculty of Health Sciences Research and Ethics Committee (Appendix E) indicating that the research protocol satisfied the ethical requirements set out by the Faculty of Health Sciences Research and Ethics Committee, Durban University of Technology as well as the Declaration of Helsinki (Johnson, 2005).

3.3 Advertising/recruitment

Due to the nature of the study, no advertising was necessary.

Prior to recruitment of participants, permission to conduct the research was gained by letter from the Dean of The Nelson Mandela School of Medicine (Appendix A1a) as well as from the president of the Student Representative Council (Appendix A1b).

Recruitment of participants involved contacting relevant lecturers via a formal letter (Appendix A2) regarding the request for a fifteen minute time slot in a suitable lecture period for the duration of the study.

Upon the researcher's arrival at the suitable lecture period arranged, students present were verbally invited to participate in the study. All students who were willing to participate in this study were recruited.

3.4 Sample

3.4.1 Methodology

Self-selection sampling, based on participant response (Esterhuizen, 2008).

3.4.2 Size

The total sample size of the group was 390 students. In most cross sectional surveys the study population is required to be representative of the group being studied (Fink 1995).

Therefore, for statistical purposes the number of questionnaires required in the analysis process either needed to be representative 15% of the population or 50 questionnaires, whichever was greater (Esterhuizen, 2008). In terms of this study 15% of 390 (i.e. 58,5 (59) questionnaires) was greater and was therefore used for this research as a minimum benchmark. A minimum of 15% in each year was necessary to ensure proper representation by each group. However due to the

mode of the questionnaire administration (directly administered by the researcher) the research aimed to get at least 30% response rate from each group.

3.4.3 Group allocation

The participants were allocated to one group with two sub-groups (a group for each of the years of study: second and third year) as this allowed a comparison between groups.

Once the questionnaires had been distributed to the participants, they were asked to refrain from including any personal information that may enable the researcher to identify them (i.e. no personal details, signatures or identifying markings).

3.4.4 Characteristics

3.4.4.1 Inclusion Criteria

- Participants had to be medical students registered at The Nelson Mandela School of Medicine for the academic year 2009 in second and third years of study.
- Each participant had to be a willing participant of this study, which was indicated by signing of the Informed Consent Form (Appendix B2).
- All questionnaires were utilised in data recording and any missing data was recorded as missing.
- Participants had to read and/or understand English in order to complete the questionnaire proficiently. This, however, was not expected to restrict the participation of anyone from the research as the language of communication and education at The Nelson Mandela School of Medicine is primarily English (Silva, 1997).

3.4.4.2 Exclusion Criteria

- All first year students were excluded as it was felt that they were at the start of their studies and therefore their perceptions may be different from those students who have completed at least 1 year of medical school.
- All fourth and fifth year students were excluded as they are primarily working a hospital setting and therefore do not attend lectures at the University. Thus they were not easily accessible and total sample sizes could not be accurately determined to enable appropriate analysis of the group's knowledge and perception.
- Anyone who did not wish to voluntarily participate in the research study.
- Anyone who did not sign an Informed Consent Form.
- Anyone that did not return the questionnaire.
- Anyone who participated in the Focus Group or Pilot Study as they had already answered the questionnaire.

3.5 Procedure for questionnaire administration and data collection

- Permission to conduct the research was attained from the Dean of The Nelson Mandela School of Medicine as well as the president of the Students Representative council via a formal letter (Appendix A1).
- Upon approval of the study by the Research Ethics Committee of the Durban University of Technology, letters of request (Appendix A2) were hand-delivered by the researcher, along with a brief verbal explanation of the study by the researcher, to each relevant lecturer.
- At this meeting with the lecturer a 15 minute time-slot at the selected lecture period was requested for completion of the questionnaires by the participants.
- Upon receipt of the reply slips from the relevant lecturers, which granted permission and confirmed a suitable lecture period for the study to be performed, the researcher personally contacted the lecturers to confirm the scheduled lecture period for the study to be conducted.

- Upon arrival at the confirmed lecture, the researcher introduced himself and briefly explained the purpose of the research as indicated in the Letter of Information (Appendix B1), which was handed to every student present.
- Upon signing of the Informed Consent Form (Appendix B2) by all keen participants, the forms were placed into a “ballot” box (Box A).
- The final questionnaire (Appendix B3) was then distributed at the lecture by the researcher to these participants.
- The handing out of questionnaires for current students was administered in a semi supervised fashion (Bourque and Fielder, 1995). For the purpose of this research, students were given questionnaires to complete in a group environment. They were all given the same instructions, and if an individual had any questions or comments, they were handled in a similar way.
- Participants were requested to refrain from communicating with each other during the completion of the questionnaires.
- Completed questionnaires were then collected by means of a “ballot” box (Box B). The order of the collection of the completed questionnaires was not executed in the same order as the collection of the signed Informed Consent Forms, to prevent identification of the participants.
- Two separate sets of “ballot” boxes were used for the collection of completed questionnaires which corresponded to each of the two sample groups (one set of “ballot” boxes for second year students and one set of “ballot” boxes for third year students). This ensured the separation of group responses which would serve to ease the process of data analysis.
- The number of questionnaires were counted and compared to the number of students present so that a response rate could be determined.
- Each group was allocated a number corresponding with the year of study. Furthermore, each questionnaire within each group was coded for statistical purposes (i.e. second, 1 {which refers to second year of

study, questionnaire number 1}, third 5 {which refers to third year of study, questionnaire number 5}.

- As answers were confidential, the questionnaires were stored in a locked filing cabinet in the custody of the researcher. Only the researcher and the research supervisor(s) had access to the questionnaires.
- Data analysis was then completed, by entering of the data onto an Excel spreadsheet in order that it could be imported to the latest SPSS version.

3.6 Measurement tool

The measurement tool for this study was a cross-sectional, descriptive survey, (Fink, 1995) which was based on a self-administered questionnaire (Salant and Dillman, 1994). The questionnaire (Appendix B3) was constructed utilizing the recommendation of Dyer (1997), Talmage (2007) and Maharaj (2008) in terms of question structure, sections and types of questions.

3.7 Procedure for the development of the measurement tool

Factors listed in the literature review (Butt, 2008; Chiropractic Association of South Africa, 2008; Cloete, 2008; Heslop, 2008; Maharaj, 2008; Naidoo, 2008; Palmer, 2008; About South Africa, 2007; Rattan, 2007; Talmage, 2007; Kew, 2006; Pillay, 2006; Louw, 2005; Van As, 2005; Hunter, 2004; Gaumer, *et al.* 2002; Dyer, 1997; Rubens, 1996; Hupkes, 1990) were taken into account and used to generate a variety of possible questions contextualised to the South African context so as to allow for information to be generated with regards to the level of knowledge and the perception of the respondents.

The questionnaire (Appendix C5) was then constructed utilising different sections and types of questions to ascertain an array of information pertaining to the level of knowledge and the perception of the participants towards the chiropractic profession (Butt, 2008; Chiropractic Association of South Africa, 2008; Cloete, 2008; Heslop, 2008; Maharaj, 2008; Naidoo, 2008; Palmer, 2008; About South Africa, 2007; Rattan,

2007; Talmage, 2007; Kew, 2006; Pillay, 2006; Louw, 2005; Van As, 2005; Hunter, 2004; Gaumer, *et al.* 2002; Dyer, 1997; Rubens, 1996; Hupkes, 1990).

The questionnaire was then subjected to a Focus Group which analysed and constructively criticised the questionnaire. Following this constructive criticism, amendments to the questionnaire were done and an improved questionnaire (Appendix D1) was formed. It was then initially piloted at a Chiropractic Department Research Committee meeting where some changes were made and an amended questionnaire was formed. Secondary piloting of this questionnaire followed thereafter within a group of medical students at The Nelson Mandela School of Medicine. Again amendments to the questionnaire (Appendix D2) were made following analysis and constructive criticism by the Pilot Study group.

The final questionnaire (Appendix B3) was then developed.

3.7.1 Questionnaire Development

The questionnaire considered the factors listed in the literature review which, studies have shown to influence perception in South Africa (Bergh *et al*., 1999; Robbins, 1996; Eysenck, 1996; Hayes, 1994). The questionnaire (Appendix B3) was constructed utilizing sections and types of questions which were adapted from Dyer (1997), Talmage (2007) and Maharaj (2007).

The questionnaire comprised 49 questions in 8 sections, covering demographic details, educational details, medical aid details, level of knowledge about chiropractic, personal experience of chiropractic treatment, integration of chiropractic in the primary health care system, the scope of practice of chiropractic and the perception of the chiropractic profession.

Adaptation of the questionnaire was accomplished through the use of a Focus Group, which gathered to discuss the questionnaire, and the factors that it covered, to rule out any ambiguity and syntax difficulties.

3.7.2 Focus Group:

Adaptation of the questionnaire was accomplished through the use of a Focus Group, which had gathered to discuss the questionnaire, and the factors that it covered, to rule out any ambiguity and syntax difficulties.

A group of at least 8-11 people (Salant and Dillman, 1994) are required for a constructive Focus Group yielding best results. For this study, the Focus Group consisted of 10 people (including the researcher and research co-supervisor).

The reason for holding the Focus Group was to stimulate individuals thinking about the research topic and to encourage them to develop ideas about it and suggestions in support of it (Salant and Dillman, 1994). The Focus Groups also encouraged the individuals to support the research process by increasing the relevance of the research with respect to time, place and people (Salant and Dillman, 1994).

<u>The members of the Focus Group included:</u>

- The researcher.
- The co-supervisor, who also acted as a qualified chiropractor.
- One homoeopathy and four chiropractic students who were able to offer their perspective on the questionnaire, especially questions pertaining to the scope of practise of chiropractors, and medical jargon used in the questionnaire.
- One other qualified chiropractor who was able to offer their perspective on the questionnaire, especially knowledge questions and medical jargon used in the questionnaire as well as changes to certain questions to rule out any ambiguity and syntax errors.
- One qualified medical doctor who provided critical insight into factors which may play a role in the formation of their perceptions of the chiropractic profession.
- One Biostatistician who was unable to attend the Focus Group meeting, offered input via electronic correspondence, on the

inclusion or exclusion of particular questions with respect to the statistical analysis of the responses to these questions.

This composition was necessary to maintain homogeneity of the group because it was vital for the groups' ability to share a discussion on the research topic; however also maintain a diversity to include all possible views and opinions that could support the research process (Morgan, 1997). Therefore, the Focus Group for this study consisted of 10 participants, some from health-care professions, some lay persons, including the researcher and a camera operator / witness. Sessions are usually tape-recorded (supervisor) and an observer (researcher) also takes notes on the discussion (Silverman, 2001 and Streiner and Norman, 1995)[1].

To verify that participants met the screening requirements for the Focus Group, it is common practice for a registration process to take place (Morgan, 1997).

This was done for the following reasons:

- To verify that participants are reasonably representative of the population, and
- To aid in analysis, as there may be a factors in the backgrounds of participants that may help to explain certain views.

Therefore each member of the Focus Group was initially required to sign the following documentation:

- Letter of Information (Appendix C1)
- Informed Consent Form (Appendix C2)
- Confidentiality Statement (Appendix C3)
- Code of Conduct (Appendix C4)

The collective purpose of these forms was to ensure that the participants of the Focus Group were informed about and understood the intentions of the researcher, the topic involved and the nature of this study from the outset. They also served to

[1] Therefore for purposes of the research development, these recordings are available as Appendix C4 only for purposes of examination in order to maintain participant confidentiality and anonymity.

formalise the whole process by the participant providing a written Informed Consent Form (Appendix C2). This confirmed that they participated willingly and of their own sanction and that they would abide by a certain Code of Conduct and behaviour during and after the discussions (Appendix C3 and Appendix C4). Finally, the focus group participants also agreed in writing, that all information and material discussed in the Focus Group is confidential and not for general public discussion (Appendix C4).[2]

After reading and signing the corresponding documentation (Appendices C1, C2, C3, and C4), the focus group members were each handed the questionnaire (Appendix C5) and asked to read through it briefly. The researcher then sequentially read out aloud each question in the questionnaire.

In this way each question was presented to the Focus Group to determine if:

- It was relevant to this study and applicable to medical students.
- It was understandable and unambiguous.
- The instructions to answer the questions were clear and simple to follow.

The recommendations made by the Focus Group as a whole were taken into account and upon unanimous agreement by the Focus Group participants suggested changes were implemented to produce a redefined version of the questionnaire (Appendix D1). Through this process the face validity[3] of the questionnaire was tested / determined.

[2] Therefore for purposes of the research development, these recordings are available as Appendix F only for purposes of examination in order to maintain participant confidentiality and anonymity.

[3] Face validity, which is the simplest type of validity, is determined by agreement between the researcher and those who have a vested interest in the questionnaire (represented by participants in the Focus Group). In this respect face validity refers to whether "on the face of it" the questionnaire seems unambiguous, valid and easily interpreted by the participants taking part in the Focus Group (Bernard, 2000; Hicks, 2004).

The same Focus Group further tested the questionnaire for its content validity and construct validity (Bernard, 2000; Mouton, 1996). In this context, content validity is achieved when the content of the questionnaire is considered effective, and well rounded enough to be able to assess the particular concept – in this instance the concept of chiropractic (Bernard, 2000). Construct validity is achieved when answers to questions in the questionnaire reflect theoretical predictions of the particular construct within the questionnaire (Bernard, 2000). The purpose of the Focus Group was to therefore ensure that the questionnaire was sound in establishing the information to be used for the context of the research title's aim and objectives (Bernard, 2000).

Changes were made to the questionnaire to satisfy the above mentioned validity criteria following the suggestions made at the Focus Group meeting, (e.g. the inclusion of the question: "Do you read any chiropractic journals?", The exclusion of the question: "Have you encountered any promotional material related to chiropractic?").

3.7.2.1 Pre Focus Group Questionnaire (Appendix C5) changes to produce Post Focus Group/Pre Departmental Meeting Questionnaire (Appendix D1):

Questions omitted or added; or it was combined, omitted or added in modification:

Question 1.6	was added.
Question 2.4	was added.
Question 3.10	was added.
Question 3.11	was added.
Question 5.3	was added
Question 5.6	was split up into 5.5 and 5.6 to address the separate levels of acceptance by the medical profession and the public.
Question 5.9	was omitted.
Questions 6.1 and 6.2	were combined.
Question 7.2	was omitted.

Questions or answer options modified:

In question 2.1, "including Matriculation" was added as an example.

In question 2.3 Examples of the qualifications "Bachelors degree" and "PhD" were added.

3.1 was changed to 4.2, 3.2 was changed to 4.3, 3.3 was changed to 4.4 and "chiropractic intern" was added and the question "Was the treatment satisfactory?" was changed to "Did the provided care meet your expectations?".

3.5 was changed to 4.5 and the answer option "I am undecided" was changed to " I am unsure".

4.1 was changed to 3.1 and "currently legislated" was changed to "have a legislative body".

4.3 was changed to 3.3 and "(You may choose more than one option)" was omitted.

4.6 was changed to 3.6 and "within a clinic environment with medical supervision, in addition to time spent training?" was changed to "in order to complete their internship and community service requirements?".

4.7 was changed to 3.7 and answer options "certificate" and "national higher certificate" was added.

4.8 was changed to 3.8 and the answer options "acupuncture" and "Intensive care unit (ICU) training" was added.

4.9 was changed to 3.9 and the answer option "dry needling tender (trigger) points" was added.

4.11 was changed to 3.12 and "an organizational professional body" was changed to "a professional association".

4.12 was changed to 3.13 and "registered" was omitted and "there are resident/practice" was added.

4.13 was changed to 3.14 and "care" was added.

5.1 was changed to 4.1, "a" was changed to "any" and the answer option of "other (please specify)" was added.

5.2 was changed to 5.1 and "to your place of residence" was changed "to you" and the answer option "other (specify)" was added.

5.3 was changed to 5.2 and the question was changed to “In your opinion, which health care provider is best suited to treat the following conditions:”.

5.5 was changed to 5.4 and “Please” was omitted and the answer option “podiatrist” was added to “chiropody”.

Question 5.8 was rephrased to “How many chiropractors or chiropractic interns are you acquainted with?” and the answer option “I do not know” was omitted.

In question 6.2. the word “medical” was omitted.

Question 6.3 was rephrased to “In your opinion, what is the primary focus of chiropractic care?” and the answer options “Curative”, “Diagnostic”, “Emergency”, “Preventative”, “Prophylactic”, “Rehabilitative” and “Surgical” were added.

In question 6.4 the answer options “Administration of drugs by injection” and “Auscultation” were omitted and “(heart rate, blood pressure, respiration)” from the “Vital signs” option, were omitted, “review” was replaced by “exam” throughout all affected options and the answer option “General exam” was added.

7.3 was changed to 7.2 and “(registered with the Allied Health Professionals Council of South Africa)” was omitted from the answer option “a scientific alternative health care profession” and all answer options were to start with a capital letter.

7.5.2 was changed to 7.3.3 and the words “If you have answered **Yes** to question 7.3.2,” were added to the beginning of the question.

Heading changes:

Part 4 “Level of knowledge about chiropractic” was changed to part 3 “Level of knowledge about chiropractic”.

Part 3 “Personal experience of chiropractic treatment” was changed to part 4 “Level of knowledge about chiropractic”.

Questions completely unchanged:

1. 1.1.
2. 1.2
3. 1.3.
4. 1.4.1.
5. 1.4.2.
6. 1.4.3
7. 1.5
8. 2.2
9. 5.7
10. 7.1

Questions completely unchanged except for numbering:

3.6 was changed to 4.6
4.2 was changed to 3.2
4.4 was changed to 3.4
4.5 was changed to 3.5
4.14 was changed to 4.7
7.4 was changed to 7.3.1
7.5.1 was changed to 7.3.2

Sessions are usually tape-recorded (in this case, by the research supervisor), and the researcher also took notes on the subjects discussed (Silverman, 2001 and Streiner and Norman, 1995). In addition, videos of the proceedings were made and placed in a locked filing cabinet along with all documentation gained in the Focus Group, Pilot Study and completion of final questionnaires, to support the notes made by the researcher in the Focus Group meeting. The information was available to the researcher and research supervisor and provided evidence of all individuals involved and the content of the discussion. Due to the confidentiality agreement signed by all parties present at the Focus Group, this video footage is available to anyone who gains written permission from the researcher/research supervisor to view it.

For purposes of examination only, the video has been attached in the form of a DVD as Appendix F, at the back of this dissertation for examiner's reference only – the

DVD will not be available in the final published dissertation so to comply with the confidentiality agreement surrounding the Focus Group.

3.7.3 Post Focus Group /Pre Departmental Meeting Questionnaire (Appendix D1) changes to produce Post Departmental Meeting /Pre Pilot Study Questionnaire (Appendix D2):

Formatting Changes (including answer format options):

In Question 1.3, a line was added next to the option: "Other (Please specify").

Question 3.14 was changed to question 4.13, "what percentage of" was changed to "how many", and the answer format changed from percentage options to "None", "Some", "Majority", "All" and "Unsure".

Questions omitted or added; or it was combined, omitted or added in modification:

Question 1.5 omitted.

Question 3.5 was changed to 4.1 and the word "course" was changed to "program".

Question 3.6 became 4.7 and the question was reworded from: "How long do you think chiropractors have to work in order to complete their internship and community service requirements?" to "Are chiropractic students required to complete an internship? If yes, how long does this take?"

Question 3.11 was changed to 4.9 and was modified from "Is the chiropractic profession, in South Africa, regulated by a statutory body?" to "Does the chiropractic profession have a legislative body in South Africa?"

Question 4.10 was added.

Question 4.14 was added.

Question 5.7 was added.

Question 5.1 was changed to 6.1 and "How close is the nearest

practitioner to you?" was changed to "How close is the nearest practitioner to where you live?"

Question 5.8 was changed to 5.9 and "interns" was changed to "students".

Heading changes:

A new heading, "Medical Aid details" was added as Part 3.

Part 3 (Level of Knowledge about chiropractic) became Part 4.

Part 4 (Personal experience of chiropractic treatment) became part 5.

Part 5 (Integration of chiropractic in the primary health care system) became part 6.

Part 6 (The scope of practice of chiropractic) became part7.

Part 7 (Perception of the chiropractic profession) became part 8.

Questions completely unchanged except for numbering:

1.4.1 was changed to 3.1

1.4.2 was changed to 3.2

1.4.3 was changed to 3.3

1.6 was changed to 4.14

3.1 was changed to 4.9

3.2 was changed to 4.10

3.3 was changed to 4.2

3.4 was changed to 4.3

3.7 was changed to 4.4

3.8 was changed to 4.5

3.9 was changed to 4.6

3.10 was changed to 4.8

3.12 was changed to 4.11

3.13 was changed to 4.12

4.1 was changed to 5.1

4.2 was changed to 5.2

4.3 was changed to 5.3

4.4 was changed to 5.4

4.5 was changed to 5.5

4.6 was changed to 5.6
4.7 was changed to 5.8
5.2 was changed to 6.2
5.3 was changed to 6.3
5.4 was changed to 6.4
5.5 was changed to 6.5
5.6 was changed to 6.6
5.7 was changed to 6.7
6.1 was changed to 7.1
6.2 was changed to 7.2
6.3 was changed to 7.3
6.4 was changed to 7.4
7.1 was changed to 8.1
7.2 was changed to 8.2
7.3.1 was changed to 8.3.1
7.3.2 was changed to 8.3.2
7.3.3 was changed to 8.3.3

3.7.4 Pilot study:

A pilot study was used to review the refined questionnaire. The questionnaire, following the changes made by the focus group, departmental and faculty meeting, was sent to five respondents who met the inclusion criteria of this study (Esterhuizen 2008). Students participating in the pilot study were excluded from the final study to ensure accurate representation.

Therefore, the participants selected were representative of the study population being researched (i.e. medical students) to ensure that the study population would easily understand the questionnaire. They were required to answer the questionnaire (Appendix D2), to determine if the questionnaire was understandable and simple to complete. Members involved in the pilot study were to complete an evaluation form thereafter (Appendix D3) that served to evaluate the content of this questionnaire to produce the final questionnaire to be completed by the medical students of The Nelson Mandela School of Medicine (Appendix B3).

The Pilot Study was used to ascertain the following information (Fink and Kosecoff, 1985; Hicks, 2004):

- Were any of the questions misleading or ambiguous to the participant?
- Were the questions appropriate for the participants in the survey?
- Was the information obtained in the survey consistent?
- Was the information obtained in the survey accurate?
- Would the questionnaire yield the correct and necessary information?
- Would the researcher be able to use the information collected in the survey correctly?
- Whether a reasonable amount of time had been allocated for the task.
- Whether or not the instructions were clearly understood by the participants.

The Post Departmental Meeting / Pre Pilot Study questionnaire (Appendix D2) was to be answered by the members of the Pilot Study in order to determine if the questionnaire was easily understandable and simple to complete. It was judged in terms of its readability and simplicity. Members involved in the Pilot Study, then completed an evaluation form, which served to further amend the questionnaire to produce the final questionnaire (Appendix B3).

3.7.4.1 Changes to the Post Departmental Meeting /Pre Pilot Study Questionnaire (Appendix D2) to produce the final Questionnaire (Appendix B3).

The changes to the Post Departmental Meeting /Pre Pilot Study questionnaire (D2) in the piloting process included:

Additions to the instructions page:

"Your results will be treated confidentially" was added.

"Thank you very much for your time! The results will be treated confidentially" was omitted from the last page.

3.7.5 Discussion of the final Questionnaire (Appendix B3)

The self-administered questionnaire was divided into Parts 1, 2, 3, 4, 5, 6, 7 and 8.

Part 1: Demographic details – Questions 1.1 - 1.3

Information collected in ***Part 1*** was concerned with the participants' current demographic data (e.g. age, gender, and ethnic group).

Part 2: Educational details – Questions 2.1 - 2.4

Information collected in ***Part 2*** was that regarding the participants' educational details (e.g. highest qualification achieved, institution at which highest qualification was obtained, other qualifications achieved, current year of study).

Part 3: Medical aid details – Questions 3.1 - 3.3

Information in ***Part 3*** was that regarding medical aid details of the participants (e.g. Are they covered by medical aid, name of medical aid, is chiropractic funded by their medical aid).

Part 4: Level of knowledge about chiropractic – Questions 4.1 - 4.14

Questions in ***Part 4*** were concerned with assessing the respondent's level of knowledge about the chiropractic profession.

Part 5: Personal experience of chiropractic treatment – Questions 5.1 – 5. 9

The function of ***Part 5*** was to gather information regarding any personal experience by the participant with a chiropractor and chiropractic treatment.

Part 6: Integration of chiropractic in primary health care system – Questions 6.1 - 6.7

Questions in ***Part 6*** were constructed to assess the degree of integration of the chiropractic profession in the primary health care system of South Africa.

Part 7: Scope of practice of chiropractic- Questions 7.1 - 7.4

Information collected in ***Part 7*** was concerned with evaluating participants' views with the scope of practice of chiropractors.

Part 8: Perception of the chiropractic profession – Questions 8.1 – 8.3

Information gathered in ***Part 8*** indicated the perception of the participants towards the chiropractic profession and chiropractic treatment.

3.8 Measurement frequency

Due to the nature of the study, the intervention was once off, with the filling out of the questionnaire. The intervention frequency, with regard to this study was only once.

3.9 Data analysis

SPSS version 15.0 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data. A p value <0.05 was considered as statistically significant.

Knowledge was scored using the questions and scale in appendix A. The score was measured such that the higher the score the greater the knowledge of chiropractic.

The maximum score was 57. Knowledge was expressed as a percentage of 57 by dividing the raw score by 57 and multiplying by 100.

Perceptions were scored using the questions and scale in appendix B. The score was additive, the higher the score the more positive the perceptions, and the maximum score was 68. Perception scores were expressed as a percentage of 68 by dividing the raw score by 68 and multiplying by 100.

Descriptive analysis entailed frequency Tables and bar graphs for categorical variables, and summary statistics such as mean or median, standard deviation or inter-quartile range, and range. Comparisons between variables were assessed using bivariate statistical methods. Pearson's correlation analysis was used to assess relationships between quantitative variables, while Pearson's chi square tests were used to assess associations between categorical variables. Student's t-tests and ANOVA tests were used to compare mean knowledge and perception scores between two independent groups.

Chapter four

4.1 Introduction

This chapter presents and discusses in detail the results of the study following statistical analysis. The results and discussion are not normally discussed together in one chapter, but it is done so in the context of this study.

OBJECTIVE ONE: To document the demographic factors of the second and third year students.

OBJECTIVE TWO: To determine the level of knowledge and exposure of the second and third year students to chiropractic.

OBJECTIVE THREE: To determine the perceptions of second and third year students regarding chiropractic, and to compare this between the second and third year participants.

To determine participant's views of the scope of chiropractic.

OBJECTIVE FOUR: To determine the utilization of chiropractic by second and third year students.

OBJECTIVE FIVE: To determine if any relationship existed between demographic factors, knowledge, perception and utilization of chiropractic.

4.2 Data Sources

Data from both primary and secondary sources were used in this chapter.

4.2.1 Primary Data

Primary sources of data included information collected from the respondents of this study in the form of a completed questionnaire (Appendix B3).

4.2.2 Secondary Data

Secondary sources of data included personal communication with the statistician (Esterhuizen, 2008) and the supervisor of the research project (Matkovich, 2009). The discussion of this chapter also required the use of the literature outlined in chapter two, which was obtained from research dissertations, journal articles, internet sources, books and other appropriate sources used to construct arguments and hypotheses and with which to compare the results of the study.

4.3 Abbreviations pertinent to this chapter

- **=** = implies “equals to”.
- **%** = percentage.
- < = refers to a figure “less than” the figure reported.
- **>** **=** refers to a figure “greater than” the figure reported.
- **ANOVA** **=** analysis of variance.
- **df** **=** degrees of freedom.
- **N** **=** number.
- **n** = refers to the sample size.
- **p** = refers to the p-value, which indicates the data statistical significance. If the p value is very small then it can be concluded that the results are significant (Hicks, 2004).
- **Q** **=** question.
- **Sig.** **=** Significance.

4.4 Response rates

According to the secretary of The Nelson Mandela School of Medicine Anatomy Department, Naidoo (2008), the number of students in the second and third year classes, were 202 and 188 respectively, resulting in a total sample size of 390. However, a total of 166 students participated in the study resulting in a total response rate of 42.5%. Of the 166 participants, 73 (44%) were in 2nd year and 93 (56%) were in 3rd year. This is in keeping with the required 15% of the population or 50 questionnaires, which ever was greater, that was required to ensure statistical validity (Esterhuizen, 2008).

Louw and Myburgh (2007), stated that, irrespective of context, a response rate of less than 20% cannot be generalised. Lindstroem (2007), stated that a 40% to 100% response rate can be generalised to an entire population that has similar but not necessarily the same characteristics as those in the study, if the study criteria are broad enough to incorporate broader spectrums of individuals.

Based on the above literature, a 42,5% response rate, which was achieved in this study is a response rate which is high enough to be generalised and to make the study valid to the rest of the population that elected not to participate in the study.

Taking into account that the research questionnaires were personally handed out to participants by the researcher, a higher response rate was expected. A possible reason for a lower response rate in this study is that questionnaires were handed to participants in lecture periods that were scheduled one week before participants began writing examinations. Another possible reason is that questionnaires were handed to participants at the end of the lecture period, after the lecture had been completed.

4.5 Results

4.5.1 Objective one: To document the demographic factors of the second and third year students.

4.5.1.1 Q1.1 "Gender"

Table 4.1: Gender of participants by year and in total

		2nd year		3rd year		Total	
		Count	%	Count	%	Count	%
gender	female	47	64.4%	51	54.8%	98	59.0%
	Male	26	35.6%	42	45.2%	68	41.0%

Table 4.1 demonstrates that the majority of participants in second year 47 (64.4%) and in third year 51 (54.8%), were female resulting in a total of 98 (59%), whereas 68 (41%) were male participants.

Studies have found that women are more likely than men to use CAM therapies (MacLennan and Wilson, 1996; Durant, Verhoef, Conway and Sauve, 2001; Tatalias, 2006). Since the majority of participants were female, it is expected that the analysis of the knowledge questions be good and the perceptions positive.

4.5.1.2 Q1.2 "What was your age at your last birthday?"

Table 4.2: Age of Participants

N	Valid	165
	Missing	1
Mean		20.37
Std. Deviation		2.317
Minimum		18
Maximum		32

Table 4.2 shows the minimum age of participants being 18 years old and the maximum age of participants being 32 years old. The calculated mean age was 20.37. One participant did not include their age, and this was recorded as missing. Literature shows that older patients were more likely to use CAM therapies such as chiropractic than younger patients (Kayne, Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). All participants were below the age of 33, which would indicate that they would be likely to have a poor knowledge and perception of chiropractic.

4.5.1.3 Q1.3 "Ethnic Group"

Table 4.3 Ethnic group of participants by year and in total

		2nd year		3rd year		Total	
		Count	%	Count	%	Count	%
Ethnic group	Asian	3	4.1%	3	3.2%	6	3.6%
	Black	31	42.5%	32	34.4%	63	38.0%
	Coloured	4	5.5%	5	5.4%	9	5.4%
	Indian	30	41.1%	40	43.0%	70	42.2%
	White	4	5.5%	7	7.5%	11	6.6%
	Other	1	1.4%	6	6.5%	7	4.2%

Table 4.3 above demonstrates the numbers and percentages of participants of different ethnic groups in each year of study, and in total. It also demonstrates that in the second year group, 3 (4.1%) were of Asian origin, 31 (42.5%) were of Black origin, 4 (5.5%) were of Coloured origin, 30 (41.1%) were of Indian origin, 4 (5.5%) were of White origin, and 1 (1.4%) was of "other" ethnicity. In the third year group, 3 (3.2%) were of Asian origin, 32 (34.4%) were of Black origin, 5 (5.4%) were of Coloured origin, 40 (43%) were of Indian origin, 7 (7.5%) were of White origin and 6 (6.5%) were of "other" ethnicity, including participants from Botswana and Lesotho. Myburgh and Mouton (2007) found chiropractic to be underappreciated by the South African Black population, who has no notion of what chiropractic is. They also stated that the reason for this is due to their cultural upbringing which does not facilitate interaction with this predominantly western health care profession. A large portion of the participants, were shown to be of Black origin, indicating that there may be a poor knowledge and negative perception of the chiropractic profession.

4.5.1.4 Educational Details

4.5.1.4.1 Q2.1 "What is your highest qualification achieved (including matriculation)?"

Table 4.4: Highest level of qualification

			year of study		Total
			2	3	2
Highest qualification	B.Dental Therapy	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	B.Physiotherapy (Hons)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	B.Rad	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Bachelor of Pharmacy	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BGCSE	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BSc	Count	1	4	5
		% within year of study	1.4%	4.3%	3.0%
	BSc (Bio and Chemistry)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BSc (Bio Chem)	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	BSc (Biochemistry)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BSc (Biology)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BSc (Med Sciences)	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	BSc (Medical science)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	BSc Hons	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	BSc Hons (Human Biology)	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	BSc Hons (Microbiology)	Count	2	0	2
		% within year of study	2.7%	.0%	1.2%
	BSc Physiotherapy	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Honours (Anatomy)	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Matric	Count	65	76	141
		% within year of study	89.0%	81.7%	84.9%
	Paramedics course	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Pre med study	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.4 demonstrates that the majority of participants in second and third years indicated matriculation as their highest qualification achieved (84.9%), but some had a previous degree (15.1%). No significant differences existed between the groups. An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Most participants did not receive any previous tertiary education, which could indicate a lower knowledge and negative perception of chiropractic.

4.5.1.4.2 Q2.2 "Institution at which highest qualification was achieved (E.g. School, Institute.)"

Table 4.5: Institution of highest level of qualification

			year of study		Total
			2	3	2
Institution	Botswana	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Institution	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Medunsa	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	National University of Lesotho	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
	School	Count	65	76	141
		% within year of study	89.0%	81.7%	84.9%
	University of Cape Town	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	University of Durban Westville	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	University of KwaZulu-Natal	Count	3	4	7
		% within year of study	4.1%	4.3%	4.2%
	University	Count	0	3	3
		% within year of study	.0%	3.2%	1.8%
	University of Botswana	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
	University of Lesotho	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	University of Limpopo	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	University of Zululand	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Wits University	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.5 shows that the majority of second and third year participants achieved their highest qualifications at school 141 (84.9%) while 25 (15.1%) participants achieved their highest qualifications at national and international universities and institutes. No significant differences were seen between the two groups. An association exists between tertiary education and higher use of CAM therapies, with individuals more likely to use CAM therapies if they had a tertiary level of education (MacLennan and

Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Taking into account that most participants received their highest level of qualification at school level, they are expected to have lower knowledge and poorer perception of chiropractic.

4.5.1.4.3 Q2.3 "Have you achieved any other qualifications within the health care field (NOT the highest qualification obtained) E.g. Diploma, Bachelors degree, Phd. Please list all:"

Table 4.6: Number of participants with other qualifications

		2nd year		3rd year		Total	
		Count	%	Count	%	Count	%
Other qualification	yes	0	.0%	2	2.2%	2	1.2%
	no	73	100.0%	91	97.8%	164	98.8%

Table 4.6 shows that none of the participants in the second year of study obtained any other qualification, and two participants in third year obtained other qualifications. The other qualifications attained were Bachelor of Science and Bachelor of Pharmacy degrees. Due to only two participants having other qualifications, it is not expected to have a major impact on the level of knowledge and perception towards chiropractic.

4.5.1.4.4 Q2.4 "What year of study are you currently in?"

Table 4.7: Year of study of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	73	44.0	44.0	44.0
	3	93	56.0	56.0	100.0
	Total	166	100.0	100.0	

Table 4.7 demonstrates that 73 (44%) participants were in their second year of study and 93 (56%) participants were in their third year of study, with a total of 166 participants in the study. Literature shows that older patients were more likely to use CAM therapies such as chiropractic than younger patients (Kayne, Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). The majority of participants were from

their third year of study which indicates that they are likely to be older than the second year participants. However, all participants were below the age of 33 and were therefore expected to have a poor knowledge and negative perception of the chiropractic profession.

4.5.1.5 Medical aid details

4.5.1.5.1 Q3.1 "Are you covered by medical aid?"

Table 4.8: Medical aid details of participants

		2nd year		3rd year		Total	
		Count	%	Count	%	Count	%
medical aid	Yes	52	71.2%	67	72.0%	119	71.7%
	No	21	28.8%	26	28.0%	47	28.3%

Table 4.8 demonstrates that 52 (71.2%) participants in second year and 67 (72%) participants in third year were covered by medical aid. There were no significant differences between the 2nd and 3rd year students regarding medical aid (p=0.908 and 0.078 respectively). Chiropractic is covered by 98% of medical aid schemes and since most chiropractors in South Africa work in the private sector (CASA, 2005), chiropractic caters for middle- and high-income earners who tend to be members of medical aid schemes (18% of the population) (About South Africa > Health, 2004). The majority of participants, 119 (71.7%), belonged to a medical aid scheme, indicating that they may have greater exposure to chiropractic and therefore a greater knowledge and perception of the chiropractic profession.

4.5.1.5.2 Q3.2 "If you have answered yes to the previous question, please indicate which medical aid carrier you utilize"

Table 4.9: Medical aid of participants

			year of study		Total
			2	3	2
Which medical aid		Count	22	31	53
		% within year of study	30.1%	33.3%	31.9%
	Bank Med	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Best Med	Count	1	0	1

Bonitas	Count	5	7	12
	% within year of study	6.8%	7.5%	7.2%
CIMA	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
De Beers	Count	1	0	1
	% within year of study	1.4%	.0%	.6%
Discovery	Count	13	10	23
	% within year of study	17.8%	10.8%	13.9%
Fed Health	Count	1	1	2
	% within year of study	1.4%	1.1%	1.2%
GEMS	Count	11	13	24
	% within year of study	15.1%	14.0%	14.5%
Genesis	Count	1	0	1
	% within year of study	1.4%	.0%	.6%
Ingwe	Count	3	5	8
	% within year of study	4.1%	5.4%	4.8%
Key Health	Count	1	0	1
	% within year of study	1.4%	.0%	.6%
Med scheme	Count	1	0	1
	% within year of study	1.4%	.0%	.6%
Med shield	Count	1	2	3
	% within year of study	1.4%	2.2%	1.8%
Medihelp	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
Momentum	Count	3	3	6
	% within year of study	4.1%	3.2%	3.6%
Nampak	Count	2	0	2
	% within year of study	2.7%	.0%	1.2%
Netcare	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
Oxygen	Count	1	1	2
	% within year of study	1.4%	1.1%	1.2%
Pharos	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
Polmed	Count	2	3	5
	% within year of study	2.7%	3.2%	3.0%
Pro Sano	Count	0	2	2
	% within year of study	.0%	2.2%	1.2%
Prof Med	Count	1	5	6
	% within year of study	1.4%	5.4%	3.6%
Resolution Health	Count	1	1	2
	% within year of study	1.4%	1.1%	1.2%
Sizwe	Count	0	2	2
	% within year of study	.0%	2.2%	1.2%
Tiger Brands	Count	1	0	1
	% within year of study	1.4%	.0%	.6%
Transmed	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
UKZN	Count	0	1	1
	% within year of study	.0%	1.1%	.6%
Umvuzo Health	Count	0	1	1

	% within year of study	.0%	1.1%	.6%
Total	Count	73	93	166
	% within year of study	100.0%	100.0%	100.0%

Table 4.9 demonstrates the numbers and percentages of specific medical aid carriers of the participants. Chiropractic treatment is covered by 98% of medical aid schemes, and chiropractic generally caters for the middle to high income individuals who belong to medical aid schemes (About South Africa > Health, 2004). Therefore, most participants are expected to have a better knowledge and perception towards chiropractic based on the fact that they are part of a medical aid scheme.

4.5.1.5.3 Q3.3 "Is chiropractic treatment funded by your medical aid?"

Table 4.10: Funding of chiropractic by medical aid

		2nd year		3rd year		Total	
		Count	%	Count	%	Count	%
Is chiropractic treatment funded by your medical aid	Yes	3	5.7%	13	19.4%	16	13.3%
	No	49	92.5%	52	77.6%	101	84.2%
	don't know	1	1.9%	2	3.0%	3	2.5%

Table 4.10 demonstrates that 49 (92.5%) second year participants and 52 (77.6%) third year participants, who were covered by medical aid, stated that chiropractic was not funded by their medical aid. Literature reveals that chiropractic is covered by 98% of medical aid schemes (CASA, 2005). This demonstrates that the majority of participants are not aware that chiropractic is covered by their medical aid, and indicates poor awareness of chiropractic, and could indicate a poor knowledge and perception of chiropractic.

4.5.1.5.4 Summary of objective one

Most participants were female, and were covered by medical aid, which indicated an expected increase in knowledge and a better perception of the chiropractic profession. A large number of participants were of Black ethnicity and all the participants were below 33 years of age, which indicates a possible decreased knowledge and perception of chiropractic. The majority of participants indicated that matriculation was their highest qualification achieved, indicating that a decreased

knowledge and perception could be expected. The major factors of ethnicity, level of education and age, indicate that there may be a generally low knowledge and a poor perception of chiropractic.

4.5.2 Objective two: To determine the level of knowledge and exposure of the second and third year students to chiropractic.

The responses of the group as a whole to the individual knowledge questions are shown in the following Tables and Figures. In the event of a statistically significant difference being found between the responses of the 2nd and 3rd year students to any individual question, the cross- tabulation and significance test is shown. All non significant differences are not shown.

4.5.2.1 Q4.1 "What level of education is required to enter a chiropractic program?"

Table 4.11 Level of education required to enter chiropractic program

			year of study		Total
			2	3	
What level of education is required to enter a chiropractic program	None	Count	2	0	2
		% within year of study	2.7%	.0%	1.2%
	Grade 10	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Grade 12 without exemption	Count	4	8	12
		% within year of study	5.5%	8.6%	7.2%
	Grade 12 with exemption	Count	38	55	93
		% within year of study	52.1%	59.1%	56.0%
	Medical or paramedical	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	I don't know	Count	27	29	56
		% within year of study	37.0%	31.2%	33.7%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.11 shows that 93 (56%) participants, correctly indicated Grade 12 with exemption to be the correct answer but there were 56 (33.7%) participants who indicated that they did not know the correct answer. This outcome, however, was expected after taking into account the young age of all participants and the literature

which shows that older patients were more likely to use CAM therapies than younger patients (Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). Other literature also revealed that chiropractic was generally underappreciated by the black population of South Africa (Myburgh and Mouton, 2007). This is another reason that the participants were expected to have a poor knowledge of chiropractic.

4.5.2.2 Q4.2 "At which institution/s can chiropractic be studied in South Africa?"

Figure 4.1 shows that 66.3% of participants believed that chiropractic could be studied at the Durban University of Technology and 26.5% believed that it could be studied at the University of Johannesburg. The University of KwaZulu-Natal was also a popular choice, with 39.8% choosing it and so was the University of Cape Town with 30.1%. There are 102 chiropractors in KwaZulu-Natal, currently registered with the Chiropractic Association of South Africa (CASA, 2008), which is a relatively high number in comparison to many other provinces. This may be a possible reason for the majority of participants knowing that chiropractic could be studied at the Durban Universtiy of Technology in KwaZulu-Natal.

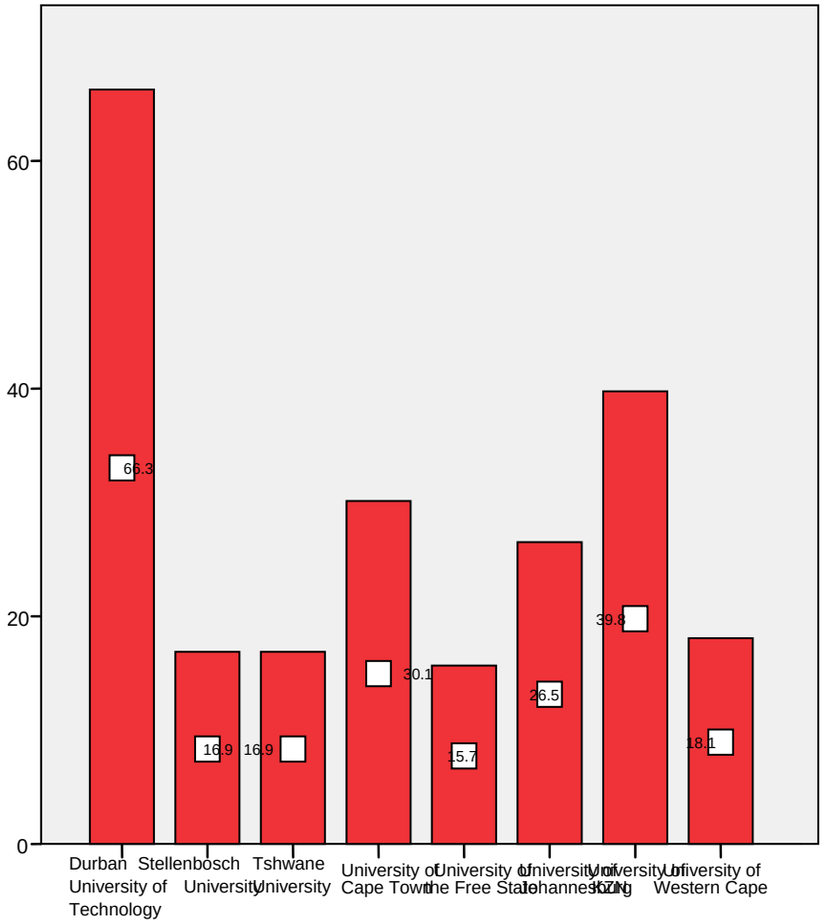


Figure 4.1: Institutions at which chiropractic can be studied in South Africa

There was a significant difference in the response to where chiropractic could be studied between the 2nd and 3rd years students, specifically at DUT (P=0.002) and University of Johannesburg (p=0.045). The 3rd year students tended to answer these questions more correctly than the 2nd year students. There are 102 chiropractors in KwaZulu-Natal, currently registered with the Chiropractic Association of South Africa (CASA, 2008). This is a relatively low number as compared to the population size in KwaZulu-Natal, but is a relatively high number as compared to the other provinces in South Africa. This may be a reason that the majority of participants were aware that chiropractic could be studied at the Durban University of Technology in KwaZulu-Natal. The Nelson Mandela School of Medicine has employed chiropractic students as human anatomy demonstrators during the last three years (Naidoo, 2008). This exposure of the participants to chiropractic via personal interaction during the dissection sessions may play an important role in the knowledge that they have of

chiropractic. The relatively high number of chiropractors in KwaZulu-Natal, may also be a factor as to why many participants thought chiropractic could be studied at the University of KwaZulu-Natal. Another reason for this may be that participants associate chiropractic with physiotherapy, and since physiotherapy can be studied at the University of KwaZulu-Natal, they may have thought that chiropractic could also be studied there. Question 4.5 says "The chiropractic course includes training in the following subjects/treatment methods. Place an X in the box to indicate "TRUE" or "FALSE". One of the options for this question was "Physiotherapeutic Modalities" which could have also made participants believe that there was a further association between physiotherapy and chiropractic. The University of Cape Town may be seen as a high performance specialty centre, and this could have been a possible reason that many participants believed chiropractic to be studied there. An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Reasons for this include a greater awareness of health care options, greater ability to understand the efficacy of different treatment options due to increased accessibility to information (e.g. libraries, internet) and better understanding of disease processes and treatment procedures. It can be assumed that the third year group would have a better understanding of disease processes and treatment methods than the second year group, due to the fact that they have completed an extra year of study, and this could lead to them having a better knowledge of the chiropractic profession.

Table 4.12a: South African Institutions where chiropractic is studied (Durban University of Technology)

			Durban University of Technology		Total
			Yes	No	
Year of study	2	Count	39	34	73
		% within year of study	53.4%	46.6%	100.0%
	3	Count	71	22	93
		% within year of study	76.3%	23.7%	100.0%
Total		Count	110	56	166
		% within year of study	66.3%	33.7%	100.0%

Pearson's chi square 9.61, p=0.002

Table 4.12a demonstrates that 39 (53.4%) second year participants and 71 (76.3%) third year participants correctly believed chiropractic to be studied at the Durban University of Technology. This relatively high knowledge of chiropractic could be expected due to the fact that both, The Nelson Mandela School of Medicine and the Durban University of Technology are based in Durban, which would bring about increased exposure of medical students to chiropractic students. Another important factor that would possibly increase exposure and knowledge of participants to chiropractic is that many chiropractic students were employed as human anatomy demonstrators for the first and second year medical students at The Nelson Mandela School of Medicine over the last three years (Naidoo, 2008).

Table 4.12b: South African institutes where chiropractic is studied (University of Johannesburg)

			University of Johannesburg		Total
			Yes	No	
Year of study	2	Count	25	48	73
		% within year of study	34.2%	65.8%	100.0%
	3	Count	19	74	93
		% within year of study	20.4%	79.6%	100.0%
Total		Count	44	122	166
		% within year of study	26.5%	73.5%	100.0%

Pearson's chi square 4.008, p=0.045

Table 4.12b demonstrates that 25 (34.2%) second year participants and 19 (20.4%) third year participants correctly believed chiropractic to be studied at the University of Johannesburg. Possible reasons for the low level of knowledge for this question, is that medical students from The Nelson Mandela School of Medicine, may not have been exposed to students from the University of Johannesburg, as a result of the distance between the two institutes.

4.5.2.3 Q4.3 "What type of course do you think chiropractors follow?

Table 4.13: Type of course chiropractors follow

			year of study		Total
			2	3	2
What type of course do you think chiropractors follow?	Week-end course	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Part time course	Count	4	3	7
		% within year of study	5.5%	3.2%	4.2%
	Full time course	Count	54	75	129
		% within year of study	74.0%	80.6%	77.7%
	Don't know	Count	14	14	28
		% within year of study	19.2%	15.1%	16.9%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.13 demonstrates that 129 (77.7%) of the participants correctly believed chiropractic to be a full time course. This included 54 (74%) of the second year participants and 75 (80.6%) of the third year participants, indicating no significant difference between the groups. 16.9% of participants claimed that they did not know the correct answer. Many studies in the last decade, have indicated a worldwide increasing use of chiropractic treatment (Hughes and Wingard, 2006; Wojcicowski et al, 2006; Bodeker and Kronenberg, 2002; McFarland et al, 2002; Bodeker, 2001; Lewith et al, 2001; Ernst, 2000). Also, much of the public are only now starting to hear about chiropractic, and experience chiropractic treatment for themselves (Higgs, 2009). It seems that there is a perceived novelty or "newness" regarding chiropractic as more people are only now beginning to understand its benefits as a drug-free and surgery free approach to the treatment of neuromusculoskeletal conditions. An increase in the usage of chiropractic around the world shows increased exposure to chiropractic. This, along with the perceived novelty of chiropractic, would in turn increase the knowledge about the chiropractic profession amongst the general public and medical students.

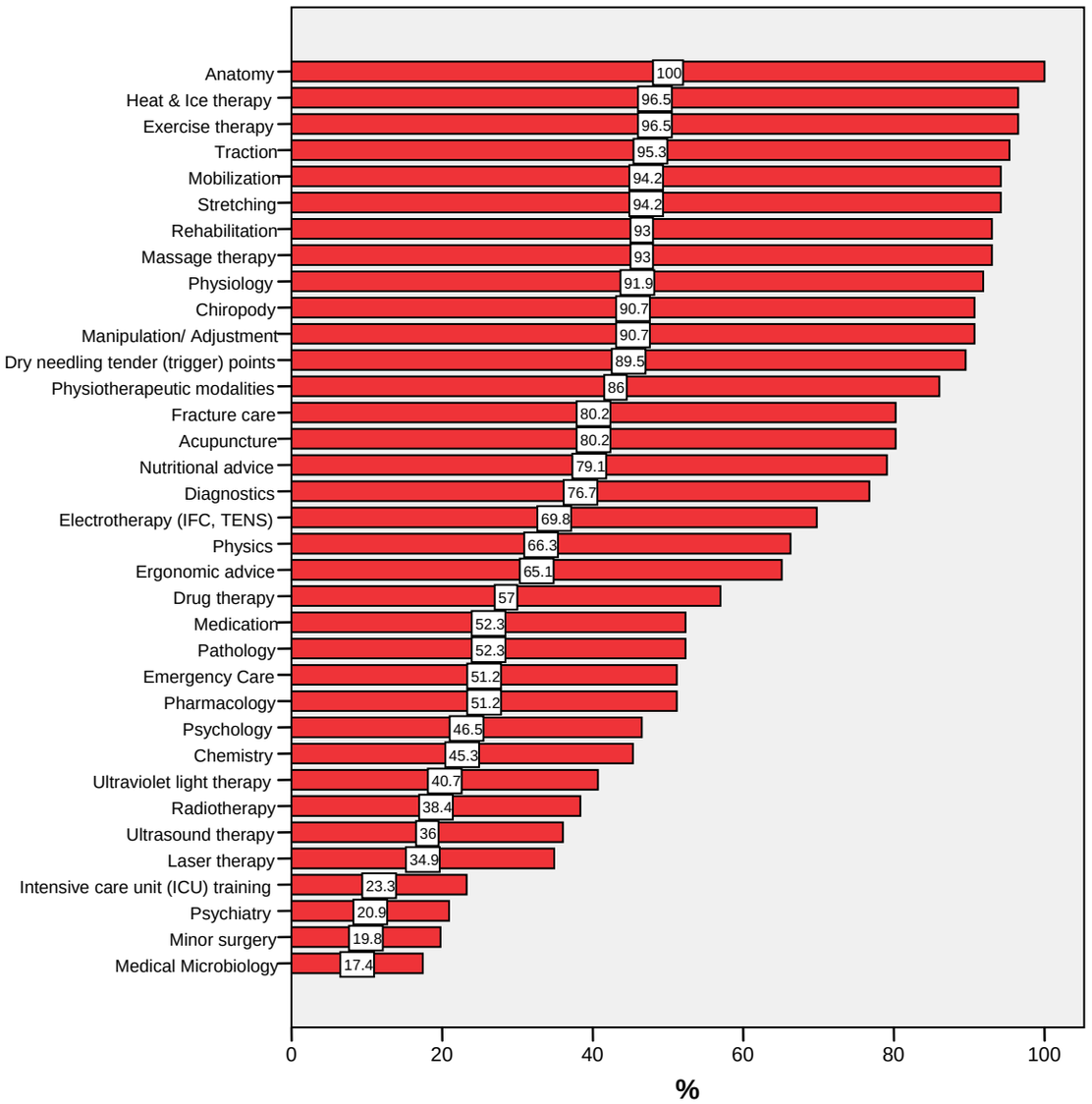
4.5.2.4 Q4.4 "A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?"

Table 4.14: Degree with which chiropractors qualify

			year of study		Total
			2	3	2
A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?	Bachelors	Count	42	58	100
		% within year of study	58.3%	62.4%	60.6%
	Certificate	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Diploma	Count	7	24	31
		% within year of study	9.7%	25.8%	18.8%
	Masters	Count	13	5	18
		% within year of study	18.1%	5.4%	10.9%
	National Higher certificate	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	National Higher diploma	Count	3	3	6
		% within year of study	4.2%	3.2%	3.6%
	PhD	Count	2	0	2
		% within year of study	2.8%	.0%	1.2%
	Other	Count	3	1	4
		% within year of study	4.2%	1.1%	2.4%
Total		Count	72	93	165
		% within year of study	100.0%	100.0%	100.0%

Table 4.14 demonstrates that the majority of 100 (60.6%) of the participants believed chiropractors to qualify from their studies with a Bachelors degree. This included 42 (58.3%) of the second year participants and 58 (62.4%) of the third year participants. Only 18 (10.9%) of the participants chose the correct option of a Masters degree, including 13 (18.1%) of the second year participants and 5 (5.4%) of the third year participants. This indicated no significant differences between the choices of the two groups. Myburgh and Mouton (2007) found chiropractic to be underappreciated by the South African Black population. It has also been found that most South Africans cannot afford chiropractic treatment, and therefore have decreased experience of chiropractic treatment (CASA, 2009). A large number of participants were from the Black population and the majority of participants are South African citizens, who may not be able to afford chiropractic treatment, and may therefore have decreased exposure to chiropractic. These are the possible reasons for the majority of the participants having a poor knowledge of the degree that chiropractors qualify with.

4.5.2.5 Q4.5 "<u>The chiropractic course includes training in the following subjects/treatment methods: Place an "X" in the correct box to indicate "TRUE" or "FALSE" (Please leave out any option which you are unsure of)".</u>



<u>Figure 4.2: Subjects/treatment methods included in chiropractic course</u>

Figure 4.2 demonstrates the percentages of participants that believed the listed subjects and treatment methods to be part of the chiropractic course. It was incorrectly believed by 90.7% of participants that chiropody formed part of the

chiropractic course. It was also incorrectly believed by many participants, that drug therapy, fracture care, ultraviolet light therapy, radiotherapy, ICU training, psychiatry and minor surgery formed part of the chiropractic course. All the other options did form part of the chiropractic course.

Table 4.15a: Diagnostics as a subject in the chiropractic course

			Diagnostics		Total
			True	False	
Year of study	2	Count	55	7	62
		% within year of study	88.7%	11.3%	100.0%
	3	Count	69	23	92
		% within year of study	75.0%	25.0%	100.0%
Total		Count	124	30	154
		% within year of study	80.5%	19.5%	100.0%

Pearson's chi square =4.438, p=0.035

Table 4.15a demonstrates that 55 (88.7%) second year participants and 69 (75%) third year participants correctly believed chiropractors to study Diagnostics. There was a significant difference in response between the years (p=0.035). Surprisingly the 2nd years were more likely to answer correctly than the 3rd years. During the last three years, chiropractic students have been employed as human anatomy demonstrators at The Nelson Mandela School of Medicine. At the time when chiropractors first started as demonstrators, the students at The Nelson Mandela School of Medicine may not have been very comfortable with the demonstrators, due to the fact that they were new. However, the second year students would have gotten to know the demonstrators later on, when they were not so new anymore, and may therefore have had a better relationship with them, which may have allowed them to gain more insight about chiropractic.

Table 4.15b: Ergonomic advice as a subject in the chiropractic course

			Ergonomic advice		Total
			True	False	
Year of study	2	Count	17	34	51
		% within year of study	33.3%	66.7%	100.0%
	3	Count	72	18	90
		% within year of study	80.0%	20.0%	100.0%
Total		Count	89	52	141
		% within year of study	63.1%	36.9%	100.0%

Pearson's chi square =30.455, p<0.001

Table 4.15b demonstrates that 17 (33.3%) second year participants and 72 (80%) third year participants correctly believed chiropractors to study ergonomic advice. There was a significant difference in response between the years (p<0.001).

Table 4.15c: Laser therapy as a subject in the chiropractic course

			Laser therapy		Total
			True	False	
Year of study	2	Count	13	49	62
		% within year of study	21.0%	79.0%	100.0%
	3	Count	33	55	88
		% within year of study	37.5%	62.5%	100.0%
Total		Count	46	104	150
		% within year of study	30.7%	69.3%	100.0%

Pearson's chi square =4.676, p=0.031

Table 4.15c demonstrates that 13 (21%) second year participants and 33 (37.5%) of third year participants correctly believed chiropractors to study laser therapy. There was a significant difference in response between the years (p=0.031). The 3rd years were more likely to answer correctly than the 2nd years.

Table 4.15d: Radiotherapy as a subject in the chiropractic course

			Radiotherapy		Total
			True	False	
Year of study	2	Count	32	35	67
		% within year of study	47.8%	52.2%	100.0%
	3	Count	25	68	93
		% within year of study	26.9%	73.1%	100.0%
Total		Count	57	103	160
		% within year of study	35.6%	64.4%	100.0%

Pearson's chi square =7.403, p=0.007

Table 4.15d demonstrates that 32 (47.8%) second year participants and 25 (26.9%) third year participants believed chiropractors to study radiotherapy. This belief was not correct. There was a significant difference in response between the years (p=0.007). The 3rd years were more likely to answer correctly than the 2nd years.

Table 4.15e: Rehabilitation as a subject in the chiropractic course

			Rehabilitation		Total
			True	False	
year of study	2	Count	56	7	63
		% within year of study	88.9%	11.1%	100.0%
	3	Count	91	2	93
		% within year of study	97.8%	2.2%	100.0%
Total		Count	147	9	156
		% within year of study	94.2%	5.8%	100.0%

Pearson's chi square =5.547, p=0.019

Table 4.15e demonstrates that 56 (88.9%) second year participants and 91 (97.8%) third year participants correctly believed chiropractors to study rehabilitation. There was a significant difference in response between the years (p=0.019). The 3rd years were more likely to answer correctly than the 2nd years.

4.5.2.6 Q4.6 "Because of their training, chiropractors can focus their treatment in the following areas: Please place an "X" in the correct box to indicate "TRUE" or "FALSE".

Table 4.16a: Areas in which chiropractors can focus their treatment

	True		False	
	Count	%	Count	%
Acupuncture	112	67.5%	54	32.5%
Dry needling tender (trigger) points	138	83.1%	28	16.9%
Extremities (e.g. knee, elbow, wrist)	153	93.3%	11	6.7%
Neuromusculoskeletal system (nerves, muscles and bones)	157	94.6%	9	5.4%
Paediatrics	44	26.7%	121	73.3%
Radiology	45	27.6%	118	72.4%
Rehabilitation	149	90.3%	16	9.7%
Sports medicine	151	91.5%	14	8.5%
Surgery	24	14.6%	140	85.4%

Table 4.16a demonstrates participant's views of whether chiropractors can specialize in Acupuncture, Dry needling, Extremities, Neuromusculoskeletal system, Paediatrics, Radiology, Rehabilitation, Sports medicine and Surgery. There were no significant differences between the groups regarding Acupuncture, Dry needling, Extremities, Neuromusculoskeletal system, Paediatrics and Radiology, with the majority of participants answering correctly for all the options except for Paediatrics and Radiology.

The first chiropractic learners were accepted into Technikon Natal in 1989 (Till, 1997; Brantingham and Snyder, 1999). Due to the large number of practicing South African chiropractors as well as the influence of the two academic chiropractic institutes, public knowledge and perception may have been improved. Most medical aid schemes (98%), cover chiropractic treatment. The majority of participants indicated that they were covered by medical aid which may have positively influenced these participant's responses. Medical students would be expected to know more about the study of chiropractic in South Africa, due to their increased knowledge and awareness of matters relating to the medical field. Another factor that could play a role in increasing the participants knowledge of chiropractic, is that many chiropractic students were employed as human anatomy demonstrators at The Nelson Mandela School of Medicine over the past three years (Naidoo, 2008), as well as the fact that chiropractic interns offer treatment at the Durban University of Technology (CASA, 2009), which could have increased the participants exposure to chiropractic.

Table 4.16b: Rehabilitation as a specialized treatment by chiropractor

			Rehabilitation		Total
			True	False	
Year of study	2	Count	59	13	72
		% within year of study	81.9%	18.1%	100.0%
	3	Count	90	3	93
		% within year of study	96.8%	3.2%	100.0%
Total		Count	149	16	165
		% within year of study	90.3%	9.7%	100.0%

Pearson's chi square =10.19, p=0.001

Table 4.16b demonstrates that 59 (81.9%) second year participants and 90 (96.8%) third year participants stated it true that chiropractors can focus their treatment in

rehabilitation. There was a significant difference in response between the years (p=0.001) as more 3rd years answered correctly than 2nd years.

Table 4.16c: Sports medicine as a specialized treatment by chiropractors

			Sports medicine		Total
			True	False	True
Year of study	2	Count	62	10	72
		% within year of study	86.1%	13.9%	100.0%
	3	Count	89	4	93
		% within year of study	95.7%	4.3%	100.0%
Total		Count	151	14	165
		% within year of study	91.5%	8.5%	100.0%

Pearson's chi square =4.804, p=0.028

Table 4.16c demonstrates that 62 (86.1%) second year participants and 89 (95.7%) third year participants stated it true that chiropractors can focus their treatment in sports medicine. There was a significant difference between the years (p=0.028). The 3rd years were more likely to answer correctly than the 2nd years.

Table 4.16d: Surgery as a specialized treatment by chiropractors

			Surgery		Total
			True	False	
Year of study	2	Count	15	56	71
		% within year of study	21.1%	78.9%	100.0%
	3	Count	9	84	93
		% within year of study	9.7%	90.3%	100.0%
Total		Count	24	140	164
		% within year of study	14.6%	85.4%	100.0%

Pearson's chi square =4.225, p=0.040

Table 4.16d demonstrates that 56 (78.9%) second year participants and 84 (90.3%) third year participants stated it false that chiropractors can focus their treatment in surgery. There was a significant difference between the years (p=0.040). The 3rd years were more likely to answer correctly than the 2nd years.

4.5.2.7 Q4.7 "Are chiropractic students required to complete an internship? If yes, how long does this take?"

Table 4.17a: Internship as a requirement of chiropractic registration

			year of study		Total
			2	3	
Are chiropractic students required to complete an internship? If yes, how long does this take?	No	Count	2	8	10
		% within year of study	2.7%	8.6%	6.0%
	Yes, 1 year	Count	9	27	36
		% within year of study	12.3%	29.0%	21.7%
	Yes, 2 years	Count	21	12	33
		% within year of study	28.8%	12.9%	19.9%
	Yes, 3 years	Count	5	3	8
		% within year of study	6.8%	3.2%	4.8%
	Don't know	Count	36	43	79
		% within year of study	49.3%	46.2%	47.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.17a demonstrates that 79 (47.6%) participants stated that they did not know if chiropractors were required to complete an internship. This included 36 (49.3%) second year participants and 43 (46.2%) third year participants. 9 (12.3%) second year participants and 27 (29%) third year participants chose the correct option of a required one year internship, indicating that the third years had a greater knowledge about the required internship than the second years. Literature shows that older patients were more likely to use CAM therapies such as chiropractic than younger patients (Kayne, Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). Myburgh and Mouton (2007) also found chiropractic to be underappreciated by the South African Black population. It has also been found that most South Africans cannot afford chiropractic treatment, and therefore have decreased experience of chiropractic treatment (CASA, 2009). It must also be noted that medical students are placed in hospitals where they serve their internship (Faculty of Health, 2009). They may therefore not perceive chiropractors going to hospitals, and as a result, may assume that chiropractors are not required to complete an internship. These may be possible reasons that most participants believed that they did not know whether chiropractors were required to complete an internship, and only a minority chose the correct option as shown below.

Table 4.17b: Duration of internship required of the chiropractic course

			Are chiropractic students required to complete an internship? If yes, how long does this take?					Total
			No	Yes, 1 year	Yes, 2 years	Yes, 3 years	Don't know	
Year of study	2	Count	2	9	21	5	36	73
		% within year of study	2.7%	12.3%	28.8%	6.8%	49.3%	100.0%
	3	Count	8	27	12	3	43	93
		% within year of study	8.6%	29.0%	12.9%	3.2%	46.2%	100.0%
Total		Count	10	36	33	8	79	166
		% within year of study	6.0%	21.7%	19.9%	4.8%	47.6%	100.0%

Pearson's chi square =13.968, p=0.007

Table 4.17b demonstrates that 9 (12.3%) second year participants and 27 (29%) third year participants chose the correct option that chiropractic internship was of one year duration. Third year students were more likely to know that chiropractors were required to complete a one year internship. The majority of 36 (49.3%) second year participants and 43 (46.2%) third year participants stated that they did not know the answer to the question.

4.5.2.8 Q4.8 "Are chiropractic students required to complete any community service before qualifying?"

Table 4.18: Community service as a requirement of the chiropractic course

			year of study		Total
			2	3	
Are chiropractic students required to complete any community service before qualifying?	Yes	Count	41	36	77
		% within year of study	56.2%	38.7%	46.4%
	No	Count	24	46	70
		% within year of study	32.9%	49.5%	42.2%
	Don't know	Count	8	11	19
		% within year of study	11.0%	11.8%	11.4%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.18 demonstrates that 77 (46.4%) participants comprising 41 (56.2%) second year participants and 36 (38.7) third year participants, chose the correct option that chiropractors were required to complete community service before qualifying. A minority of 11.4% stated that they did not know the correct answer. There was no

significant difference between the choices of second and third year participants. Medical students may classify internship and community service as being one and the same thing, due to there being no clear difference between the two in the medical course. As a result, internship and community service may be interchangeable to medical students.

4.5.2.9 Q4.9 "Does the chiropractic profession have a legislative body in South Africa?"

Table 4.19: Presence of a legislative body for the chiropractic profession in South Africa

			Year of study		Total
			2	3	
Does the chiropractic profession have a legislative body in South Africa?	Yes	Count	45	58	103
		% within year of study	61.6%	62.4%	62.0%
	No	Count	26	35	61
		% within year of study	35.6%	37.6%	36.7%
	Don't know	Count	2	0	2
		% within year of study	2.7%	.0%	1.2%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.19 demonstrates that 103 (62%) participants chose the correct option that the chiropractic profession has a legislative body in South Africa. There was no significant difference between the choices of second and third year participants. These results are similar to findings by Heslop (2008), which indicated that 66.7% of paediatricians knew that chiropractic was a legislated profession. The first chiropractic learners were accepted into Technikon Natal in 1989 (Till, 1997; Brantingham and Snyder, 1999). The study of chiropractic in South Africa could influence the public's level of knowledge and perception due to increased exposure to the profession by larger numbers of practicing South African chiropractors. Medical students would be expected to know more about the study of chiropractic in South Africa, due to their increased knowledge and awareness of matters relating to the medical field.

4.5.2.10 Q4.10 "For how long has chiropractic been practiced as a profession in South Africa, irrespective of legislature?"

Table 4.20: Duration of practice of chiropractic as a profession in South Africa

			Year of study		Total
			2	3	2
For how long has chiropractic been practised as a profession in South Africa, irrespective of legislature?	< 10 years	Count	2	5	7
		% within year of study	2.7%	5.4%	4.2%
	11-50 years	Count	7	16	23
		% within year of study	9.6%	17.2%	13.9%
	51-100 years	Count	10	5	15
		% within year of study	13.7%	5.4%	9.0%
	>100 years	Count	1	5	6
		% within year of study	1.4%	5.4%	3.6%
	Don't know	Count	53	62	115
		% within year of study	72.6%	66.7%	69.3%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.20 demonstrates that 115 (69.3%) participants believed that they did not know the answer to this, with 6 (3.6%) participants choosing the correct option of more than 100 years. There was no significant difference between the choices of second and third year participants. Literature reveals that chiropractic had a difficult and abnormal social development in South Africa (Coulter, 1992; Wardwell, 1994; Brantingham and Snyder, 1999), with the profession being banned, and re-legislated a number of times. This could be a major factor affecting the knowledge and perceptions of the public and participants towards chiropractic.

4.5.2.11 Q4.11 "Does the chiropractic profession in South Africa have a professional association?"

Table 4.21: Presence of a professional association for the chiropractic profession in South Africa

			Year of study		Total
			2	3	2
Does the chiropractic profession in South Africa have a professional association?	Yes	Count	47	62	109
		% within year of study	64.4%	66.7%	65.7%
	No	Count	25	30	55
		% within year of study	34.2%	32.3%	33.1%
	Don't know	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.21 demonstrates that 109 (65.7%) participants chose the correct answer that the chiropractic profession has a professional association in South Africa. There was no significant difference between the choices of second and third year participants. The first chiropractic learners were accepted into Technikon Natal in 1989 (Till, 1997; Brantingham and Snyder, 1999). The study of chiropractic in South Africa could influence the public's level of knowledge and perception due to increased exposure to the profession by larger numbers of practicing chiropractors in South Africa, as opposed to countries where chiropractic cannot be studied. Medical professionals in South Africa are required to register with the South African Medical Association (SAMA), in order to practice in South Africa (Faculty of Health, 2009). It may be assumed by the participants, that because it is a requirement for mainstream medical professionals to register with a professional association, chiropractors are also required to register with a similar professional association. More specialist professions may be percieved to have a professional association than non specialist professions, and this could be another possible reason that participants expected chiropractic to have a professional association. Medical students would also be expected to know more about the study of chiropractic in South Africa, due to their increased knowledge and awareness of matters relating to

the medical field. These are possible reasons as to why the majority of participants knew that chiropractic does have a professional association in South Africa.

4.5.2.12 Q4.12 "How many chiropractors do you think there are resident/practice in South Africa?"

Table 4.22: Number of chiropractors resident/practicing in South Africa

			Year of study		Total
			2	3	2
How many chiropractors do you think there are resident/practice in South Africa?	0-200	Count	8	14	22
		% within year of study	11.0%	15.1%	13.3%
	210-400	Count	8	6	14
		% within year of study	11.0%	6.5%	8.4%
	401-600	Count	6	1	7
		% within year of study	8.2%	1.1%	4.2%
	601-800	Count	4	3	7
		% within year of study	5.5%	3.2%	4.2%
	801-1000	Count	8	12	20
		% within year of study	11.0%	12.9%	12.0%
	1001-1200	Count	1	3	4
		% within year of study	1.4%	3.2%	2.4%
	>1200	Count	7	17	24
		% within year of study	9.6%	18.3%	14.5%
	Don't know	Count	31	37	68
		% within year of study	42.5%	39.8%	41.0%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.22 demonstrates that 68 (41%) participants believed that they did not know the answer, with 7 (4.2%) choosing the correct option of 401-600. There were no significant differences in choice between the two groups. It was stated by 14,5% of participants that there were more than 1200 practicing chiropractors in South Africa. Literature reveals that there are currently 102 registered chiropractors in KwaZulu-Natal (CASA, 2008). A possible reason that many participants believed there to be more practicing chiropractors in South Africa, is that they may have assumed that all the provinces in South Africa had a similar number of registered chiropractors, and may not have realized that KwaZulu-Natal had a relatively high number of qualified chiropractors as compared to other provinces. Another reason for this may be that students from The Nelson Mandela School of Medicine may be exposed to many chiropractors and chiropractic students due to the short distance between their

medical school, and the Durban University of Technology, as well as the presence of chiropractic students as human anatomy demonstrators at The Nelson Mandela School of Medicine.

4.5.2.13 Q4.13 "In your opinion, how many medical aid carriers cover chiropractic care/treatment?"

Table 4.23: Number of medical aid carriers that cover chiropractic care

			Year of study		Total
			2	3	
In your opinion, how many medical aid carriers cover chiropractic care/treatment?	None	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Some	Count	39	40	79
		% within year of study	53.4%	43.0%	47.6%
	Majority	Count	6	11	17
		% within year of study	8.2%	11.8%	10.2%
	All	Count	2	0	2
		% within year of study	2.7%	.0%	1.2%
	Unsure	Count	25	41	66
		% within year of study	34.2%	44.1%	39.8%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.23 demonstrates that 79 (47.6%) participants believed that chiropractic was covered by "some" medical aid carriers, and 17 (10.2%) chose the correct option that chiropractic was covered by the "majority" of medical aid carriers. A large number of participants (66 (39.8%)), were unsure. The mean age of the participants was 20.37, and the maximum age was 32. This indicates that most of the participants would still be on their parent's medical aids. As a result, most of the participants were not expected to know much about medical aid policies, and this is a possible reason that they did not know the correct answer to this question. The majority of participants indicated that chiropractic treatment was covered by "some" medical aid carriers, which is seen to be a safe answer, as it is neither positive nor negative. There was no significant difference between the choices of second and third year participants.

4.5.2.14 Q6.3 "Do chiropractors process workmen's compensation claims"

Table 4.24: Processing of workmen's compensation claims by chiropractors

			Do chiropractors process workman's compensation claims			Total
			yes	no	Don't know	
Year of study	2	Count	12	61	0	73
		% within year of study	16.4%	83.6%	.0%	100.0%
	3	Count	21	68	4	93
		% within year of study	22.6%	73.1%	4.3%	100.0%
Total		Count	33	129	4	166
		% within year of study	19.9%	77.7%	2.4%	100.0%

Table 4.24 demonstrates that 33 (19.9%) participants correctly stated that chiropractors process workmen's compensation claims, with the majority of 129 (77.7%) believing the opposite. A small number of second years, (12 (16.4%)) and 21 (22.6%) third year participants correctly believed chiropractors to process workmen's compensation claims. Studies by Kayne, Beattie and Reeves (1999), Reid (2002) and Tatalias (2006), show that older patients were more likely to use CAM therapies such as chiropractic than younger patients. It has also been found that most South Africans cannot afford chiropractic treatment, and therefore have decreased experience of chiropractic treatment (CASA, 2009). The majority of participants were young South Africans, with a large number being from the Black population. These are possible reasons that most participants answered incorrectly. Also, taking into account that all participants were full time students and have not previously been working, it can be assumed that they have not been exposed to situations where they would need to claim workman's compensation, and the only exposure they would have had with it, is if they knew someone who previously received workman's compensation.

Table 4.25: Summary of knowledge score in all participants

N	Valid	166
	Missing	0
Mean		58.9727
Std. Deviation		10.22730
Minimum		26.32
Maximum		75.44
Percentiles	25	52.6316
	50	59.6491
	75	66.6667

Table 4.25 shows that the mean knowledge score was 58.9%. The standard deviation was 10% and the range of scores was from 26% to 75%. Therefore there was a wide range of knowledge of chiropractic in this group of students with the average score indicating a relatively satisfactory level of knowledge.

There was a highly significant difference in knowledge score between the 2nd and 3rd year students ($p<0.001$). The mean knowledge score for the 3rd year students was higher than that for the second year students. Studies have found that women are more likely than men to use CAM therapies (MacLennan and Wilson, 1996; Durant, Verhoef, Conway and Sauve, 2001; Tatalias, 2006). An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). There are 102 chiropractors in KwaZulu-Natal, currently registered with the Chiropractic Association of South Africa (CASA, 2008). People living in a region that does not recognize chiropractic or that has a very low doctor to patient ratio, would potentially have a decreased knowledge and poor perception of the chiropractic profession, due to decreased exposure to chiropractic. The fact that the majority of participants were female and all participants were in their second and third years of tertiary education, are important factors that play a role in the knowledge that they may have of the chiropractic profession. According to CASA (2009), there are only 102 currently registered chiropractors in KwaZulu-Natal which is still a relatively high number as compared to most other provinces in South Africa (10 in Mpumalanga, 5 in North West Province, 66 in The Western Cape, 32 in The Eastern Cape), and may be a reason that most participants had only a satisfactory level of knowledge regarding chiropractic.

Table 4.26: T-test to compare mean knowledge score between the 2nd and 3rd year student groups.

	Year of study	N	Mean	Std. Deviation	Std. Error Mean	p value
Knowledge score percentage	2	73	54.8186	11.80063	1.38116	<0.001
	3	93	62.2335	7.36002	.76320	

4.5.2.15 Q5.9 "How many chiropractors/ chiropractic interns are you acquainted with?

Table 4.27: Number of chiropractors, participants are acquainted with

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
How many chiropractors or chiropractic students are you acquainted with?	None	38	52.1%	56	60.2%	94	56.6%
	1	13	17.8%	16	17.2%	29	17.5%
	2	6	8.2%	9	9.7%	15	9.0%
	3-5	8	11.0%	11	11.8%	19	11.4%
	6-10	7	9.6%	1	1.1%	8	4.8%
	>10	1	1.4%	0	.0%	1	.6%

(p=0.154).

Table 4.27 shows that the majority of respondents knew no chiropractors or chiropractic students with fewer third years being acquainted with chiropractors or chiropractic students than second years. Taking into the account the interaction of these participants with chiropractic interns who were employed as human anatomy demonstrators at The Nelson Mandela School of Medicine, these results were unexpected. This possibly indicates that most participants neglected to consider the demonstrators when answering this question. Younger patients were less likely to utilise CAM therapies such as chiropractic (Reid, 2002). Differences in health care, that were traditionally associated with differences in culture, may be a limiting factor in access to health care outside that culture (Dreyer, 2004). If their cultural background does not facilitate interaction with the chiropractic profession, there is expected to be decreased exposure to the profession. The low ratio of chiropractors to the general population in KwaZulu-Natal (CASA, 2009), may be a reason for decreased exposure of patients to chiropractors. Most participants were young, and the majority were female. A large number of participants were also of the black

population, indicating that they would be likely to have poor awareness of chiropractic due to their decreased exposure to the profession, as well as because of their attitudes towards chiropractic which may not have been recognised by their culture.

4.5.2.16 Q6.1 "How close is the nearest practitioner to where you live?"

Table 4.28: Distance of practitioners from where participants live

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Biokineticist	0-10 km	5	6.8%	10	10.8%	15	9.0%
	10-20 km	3	4.1%	7	7.5%	10	6.0%
	20-30 km	0	.0%	1	1.1%	1	.6%
	30-40 km	1	1.4%	2	2.2%	3	1.8%
	40-50 km	1	1.4%	1	1.1%	2	1.2%
	>50 km	2	2.7%	1	1.1%	3	1.8%
	I don't know	61	83.6%	71	76.3%	132	79.5%
Chiropractor	0-10 km	18	24.7%	23	24.7%	41	24.7%
	10-20 km	7	9.6%	8	8.6%	15	9.0%
	20-30 km	2	2.7%	1	1.1%	3	1.8%
	30-40 km	0	.0%	2	2.2%	2	1.2%
	40-50 km	0	.0%	2	2.2%	2	1.2%
	>50 km	3	4.1%	1	1.1%	4	2.4%
	I don't know	43	58.9%	56	60.2%	99	59.6%
General Practitioner	0-10 km	60	82.2%	76	81.7%	136	81.9%
	10-20 km	6	8.2%	8	8.6%	14	8.4%
	20-30 km	3	4.1%	4	4.3%	7	4.2%
	30-40 km	1	1.4%	1	1.1%	2	1.2%
	40-50 km	0	.0%	0	.0%	0	.0%
	>50 km	0	.0%	0	.0%	0	.0%
	I don't know	3	4.1%	4	4.3%	7	4.2%
Homeopath	0-10 km	12	16.4%	16	17.2%	28	16.9%
	10-20 km	3	4.1%	7	7.5%	10	6.0%
	20-30 km	5	6.8%	2	2.2%	7	4.2%
	30-40 km	2	2.7%	3	3.2%	5	3.0%
	40-50 km	0	.0%	0	.0%	0	.0%
	>50 km	0	.0%	2	2.2%	2	1.2%
	I don't know	51	69.9%	63	67.7%	114	68.7%
Pharmacist	0-10 km	61	83.6%	68	73.1%	129	77.7%
	10-20 km	6	8.2%	12	12.9%	18	10.8%
	20-30 km	3	4.1%	5	5.4%	8	4.8%
	30-40 km	1	1.4%	1	1.1%	2	1.2%
	40-50 km	0	.0%	1	1.1%	1	.6%
	>50 km	0	.0%	0	.0%	0	.0%
	I don't know	2	2.7%	6	6.5%	8	4.8%

Physiotherapist	0-10 km	31	42.5%	49	52.7%	80	48.2%
	10-20 km	13	17.8%	12	12.9%	25	15.1%
	20-30 km	5	6.8%	7	7.5%	12	7.2%
	30-40 km	2	2.7%	1	1.1%	3	1.8%
	40-50 km	0	.0%	1	1.1%	1	.6%
	>50 km	1	1.4%	1	1.1%	2	1.2%
	I don't know	21	28.8%	22	23.7%	43	25.9%
Specialist	0-10 km	28	38.4%	33	35.5%	61	36.7%
	10-20 km	18	24.7%	12	12.9%	30	18.1%
	20-30 km	6	8.2%	13	14.0%	19	11.4%
	30-40 km	1	1.4%	6	6.5%	7	4.2%
	40-50 km	0	.0%	2	2.2%	2	1.2%
	>50 km	6	8.2%	8	8.6%	14	8.4%
	I don't know	14	19.2%	19	20.4%	33	19.9%
Traditional healer	0-10 km	18	25.0%	23	24.7%	41	24.8%
	10-20 km	7	9.7%	5	5.4%	12	7.3%
	20-30 km	2	2.8%	2	2.2%	4	2.4%
	30-40 km	0	.0%	0	.0%	0	.0%
	40-50 km	0	.0%	1	1.1%	1	.6%
	>50 km	1	1.4%	4	4.3%	5	3.0%
	I don't know	44	61.1%	58	62.4%	102	61.8%

The distance to each type of practitioner is shown in Table 4.28. There were no significant differences between the 2nd and 3rd year students' responses. The majority were not aware of a chiropractic practice in their area (almost 60% overall). Only 25.9% of participants did not know the proximity of physiotherapists to them. A small minority of participants (4.2%) were not aware of the proximity of a general practitioner to them. According to the Allied Health Professions Council of South Africa (2009), there are about four hundred (400) chiropractors currently in practice in South Africa, with an approximate of two thousand two hundred chiropractors still needed in this country (Chiropractic Diplomatic Corps, 2007). With a population exceeding forty five million people, there is approximately one chiropractor per one hundred and twenty thousand people in South Africa. This may be a major reason that the majority of participants were unaware of the proximity of a chiropractor to them, because there are too few chiropractors spread over a large distance and most practicing chiropractors are in private practice in middle to high income areas (Chiropractic Diplomatic Corps, 2007).

4.5.2.17 Q8.3.1 "Do you feel adequately informed about chiropractic?"

Table 4.29: Views of whether participants felt adequately informed about chiropractic

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Do you feel adequately informed about chiropractic?	Yes	6	8.2%	13	14.0%	19	11.4%
	No	67	91.8%	80	86.0%	147	88.6%

As shown in table 4.29, 67 (91.8%) second year participants and 80 (86%) third year participants did not feel adequately informed about chiropractic. According to Coulter (1992), Wardwell (1994) and Jamison (1995), the medical profession in South Africa remains sceptical about chiropractic, even though it is a popular health care option in countries other than South Africa. Referrals by general practitioners to physiotherapists are more common, mainly due to a better understanding that they may have of physiotherapy (Breen, *et al*. 2000). This scepticism of the medical profession in South Africa, of chiropractic, may be a major factor influencing the amount of knowledge medical professionals and medical students have of the chiropractic profession.

4.5.2.18 Q8.3.2 "Would you like to know more about the chiropractic profession?"

Table 4.30: Would participants like to know more about chiropractic

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Would you like to know more about the chiropractic profession	Yes	65	89.0%	73	78.5%	138	83.1%
	No	8	11.0%	20	21.5%	28	16.9%

Table 4.30 demonstrates that 65 (89%) second year participants and 73 (78.5%) third year participants would like to know more about the chiropractic profession. There was no significant difference between the groups.

4.5.2.19 Q8.3.3 "If you have answered yes to question 8.3.2, how would you like to be informed about chiropractic?"

Table 4.31: Methods by which participants would like to be informed about chiropractic

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
1. By an informative lecture/seminar	Yes	34	46.6%	36	38.7%	70	42.2%
	No	39	53.4%	57	61.3%	96	57.8%
2. By meeting with relevant associations/organizations	Yes	14	19.2%	10	10.8%	24	14.5%
	No	59	80.8%	83	89.2%	142	85.5%
3. by personal contact	Yes	27	37.0%	13	14.0%	40	24.1%
	No	46	63.0%	80	86.0%	126	75.9%
4. by printed information packages	Yes	36	50.0%	31	33.3%	67	40.6%
	No	36	50.0%	62	66.7%	98	59.4%
5. by research publications	Yes	7	9.6%	12	12.9%	19	11.4%
	No	66	90.4%	81	87.1%	147	88.6%
6. by the media/press	Yes	24	32.9%	35	37.6%	59	35.5%
	No	49	67.1%	58	62.4%	107	64.5%
7. Other	Yes	2	2.7%	3	3.2%	5	3.0%
	No	71	97.3%	90	96.8%	161	97.0%

The methods of how participants would like to be informed differed significantly between the year cohorts in terms of personal contact (p=0.001) and printed information (p=0.031) both of which the 2nd year participants preferred over the 3rd year participants. Many chiropractic students were employed as human anatomy demonstrators during the past three years (Naidoo, 2008). The preference of personal contact by the second year participants could imply that they felt that they did not have adequate personal contact with or exposure to chiropractors. A possible reason for the third year participants not choosing personal contact as a preferred method of gaining information, may be that they had adequate personal contact with chiropractors, in the form of demonstrators, and due to the fact that they are in their third year of study, they would have had two years of personal contact with the chiropractic demonstrators as opposed to the one year of contact that the second years may have had.

Tables 4.27 to 4.31 show that the general awareness that participants had of the chiropractic profession was poor. It has been found by Kayne, Beattie and Reeves (1999), Reid (2002) and Tatalias (2006) that there is a greater predisposition for older patients to use CAM therapies. According to Mouton (2007), the South African Black population was less likely to acknowledge chiropractic. All participants were under the age of 33, and a large part of the population was of Black ethnicity. These are possible reasons for the lack of awareness of the chiropractic profession. The fact that there are only 102 registered chiropractors in KwaZulu-Natal, could also be a major factor limiting the exposure and awareness of participants to chiropractic because there was a relative lack of knowledge about chiropractic. A previous study by Thorvaldsen (2007), also found third year medical students at the Universtiy of Cape Town and The University of KwaZulu-Natal to have a poor knowledge of homeopathy, another CAM therapy.

4.5.3 **Objective three:**

4.5.3.1 Part one: To determine the perceptions of second and third year students regarding chiropractic, and to compare this between the second and third year participants.

The responses of the group as a whole to the individual perceptions questions are shown in the following Tables and Figures. In the event of a statistically significant difference being found between the responses of the 2nd and 3rd year students to any individual question, the cross- tabulation and significance test is shown. Non significant differences are not shown.

4.5.3.1.1 Q5.5 "If you have answered yes to question 5.2 (Have you consulted with a chiropractor/chiropractic intern before?), would you continue to consult with a chiropractor for the same or a different condition in the future?"

Table 4.32: Continued consultation with a chiropractor

			Year of study		Total
			2	3	2
Would you continue to consult with a chiropractor for the same or a different condition	Yes	Count	1	4	5
		% within year of study	1.4%	4.3%	3.0%
	No	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Not Applicable	Count	71	89	160
		% within year of study	97.3%	95.7%	96.4%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.32 demonstrates that the question was "not applicable" to 160 (96.4%) participants, with 5 (3%) answering "yes" and 1 (0.6%) answering "no". There were no significant differences between the groups.

4.5.3.1.2 Q5.6 "If you have answered yes to question 5.2 (Have you consulted with a chiropractor/chiropractic intern before?), would you recommend chiropractic treatment to your colleagues, friends".

Table 4.33: Recommendation of chiropractic to others

			year of study		Total
			2	3	
would you recommend chiropractic treatment to your colleagues, friends and/or family?	Yes	Count	1	4	5
		% within year of study	1.4%	4.3%	3.0%
	No	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Not Applicable	Count	71	89	160
		% within year of study	97.3%	95.7%	96.4%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.33 shows that the question was "not applicable" to 160 (96.4%) participants, with 5 (3%) answering "yes" and 1 (0.6%) answering "no". No significant differences existed between the groups.

Sanchez (1991), found that non-utilization of chiropractic care, could be caused by gaps in the knowledge of the public, about the chiropractic profession and the less, the public understood about the chiropractic profession, the less likely they were to identify a condition as one that could be treated by a chiropractor. However, as demonstrated in Table 4.32, most participants who had been to a chiropractor before would continue to consult with a chiropractor. Table 4.33 illustrates that most participants who had been to a chiropractor before, would recommend chiropractic treatment to their colleagues and friends. These indicate that the knowledge gained during the consult, improved the way in which the participants viewed the value of the chiropractic profession.

4.5.3.1.3 Q5.7 "In your professional role, would you refer a patient to a chiropractor? If no please elaborate"

Table 4.34a: Referral of patients to a chiropractor

			Year of study		Total
			2	3	2
In your professional role, would you refer a patient to a chiropractor?	Yes	Count	50	74	124
		% within year of study	68.5%	79.6%	74.7%
	No	Count	23	19	42
		% within year of study	31.5%	20.4%	25.3%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.34a demonstrates that 124 (74.7%) participants would refer patients to a chiropractor and 42 (25.3%) participants would not refer patients to a chiropractor. Chiropractic has met with scepticism from the South African medical profession (Coulter, 1992; Wardwell, 1994 and Jamison, 1995). However, the majority of participants in this study said that they would refer patients to a chiropractor, indicating a positive change in the way chiropractic is perceived by the medical field.

Table 4.34b: Reasons for not referring patients to a chiropractor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		140	84.3	84.3	84.3
	Don't know what chiropractic is	18	10.8	10.8	95.2
	Don't think it works	1	.6	.6	95.8
	Feel that Chiropractors aren't skilled enough	1	.6	.6	96.4
	Not cost effective + May be painful	1	.6	.6	97.0
	Not sure if it is legal to refer to a chiropractor	1	.6	.6	97.6
	Unsure of Chiropractors knowledge	1	.6	.6	98.2
	Unsure of treatment techniques	1	.6	.6	98.8
	Would refer to Physiotherapist	2	1.2	1.2	100.0
	Missing statements	26	15.7	0	
	Total	166	100.0	100.0	

Table 4.34b demonstrates that of the 42 (25.3%) participants who would not refer patients to a chiropractor, 18 (10.8%) participants said they would not refer because they did not know what chiropractic is. This however, does not correlate with the generally positive knowledge score obtained by the participants. Traditionally, there was an association between differences in culture and differences in health care which may be a limiting factor of access to health care outside that culture (Dreyer,

2004). It has been found that culture and its associated political surroundings have a strong influence in the way members of a particular group, react to different constructs (Philbin, Lozada, Zuniga, Mantsios, Case, Magis-Rodriguez, Latkin and Strathdee, 2008). Also, previous consultation with a chiropractor, and whether or not they were satisfied with the treatment received, may affect their knowledge and perception of the chiropractic profession, since chiropractic patients generally know more about chiropractic than non-patients (Rattan, 2007). These are possible reasons that the majority of participants who would not refer to a chiropractor, did not know what chiropractic was.

4.5.3.1.4 Q5.8 "How do you get information about chiropractic?"

Tables 4.35a to 4.35i demonstrate the ways participants obtained their information about chiropractic, with the majority of 76 (45.8%) participants getting their information from friends, colleagues and doctors and 31.9% getting their information from internet websites. Although these may not be seen as reliable sources of information, the high knowledge scores indicate that they may indeed be reliable sources for this group of participants. A significant amount of students (35.5%) had not received information about chiropractic, which could be a possible explanation for many participants selecting the "don't know" option in this and previous questions. No significant differences existed between the groups.

Table 4.35a: From friends, colleagues, doctors etc.

			Year of study		Total
			2	3	
From friends, colleagues, doctors etc.	Yes	Count	33	43	76
		% within year of study	45.2%	46.2%	45.8%
	No	Count	40	50	90
		% within year of study	54.8%	53.8%	54.2%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35b: From internet websites

			Year of study		Total
			2	3	
From internet websites	Yes	Count	25	28	53
		% within year of study	34.2%	30.1%	31.9%
	No	Count	48	65	113
		% within year of study	65.8%	69.9%	68.1%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35c: From medical journals or research

			Year of study		Total
			2	3	
From medical journals or research	Yes	Count	6	10	16
		% within year of study	8.2%	10.8%	9.6%
	No	Count	67	83	150
		% within year of study	91.8%	89.2%	90.4%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35d: From my family/friends who have been treated by a chiropractor

			Year of study		Total
			2	3	
From my family/friends who have been treated by a chiropractor	Yes	Count	21	20	41
		% within year of study	28.8%	21.5%	24.7%
	No	Count	52	73	125
		% within year of study	71.2%	78.5%	75.3%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35e: From being treated by a chiropractor

One participant failed to complete this question, and it was recorded as missing.

			Year of study		Total
			2	3	
From being treated by a chiropractor	Yes	Count	10	11	21
		% within year of study	13.9%	11.8%	12.7%
	No	Count	62	82	144
		% within year of study	86.1%	88.2%	87.3%
Total		Count	72	93	165
		% within year of study	100.0%	100.0%	100.0%

Table 4.35f: From reading about chiropractic in the media (e.g. magazine/newspaper/flier)

			Year of study		Total
			2	3	
From reading about chiropractic in the media (e.g. magazine/newspaper/flier)	Yes	Count	8	11	19
		% within year of study	11.0%	11.8%	11.4%
	No	Count	65	82	147
		% within year of study	89.0%	88.2%	88.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35g: From doing my own research

			Year of study		Total
			2	3	
From doing my own research	Yes	Count	7	9	16
		% within year of study	9.6%	9.7%	9.6%
	No	Count	66	84	150
		% within year of study	90.4%	90.3%	90.4%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35h: I have not received any information about chiropractic

			Year of study		Total
			2	3	
I have not received any information about chiropractic	Yes	Count	27	32	59
		% within year of study	37.0%	34.4%	35.5%
	No	Count	46	61	107
		% within year of study	63.0%	65.6%	64.5%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.35i: Other

			year of study		Total
			2	3	
Other (please specify) _____ _____ _____ _____ __	Yes	Count	2	0	2
		% within year of study	2.7%	.0%	1.2%
	No	Count	71	93	164
		% within year of study	97.3%	100.0%	98.8%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

4.5.3.1.5 Q6.2 "In your opinion, which health care professional is best suited to treat the following conditions:"

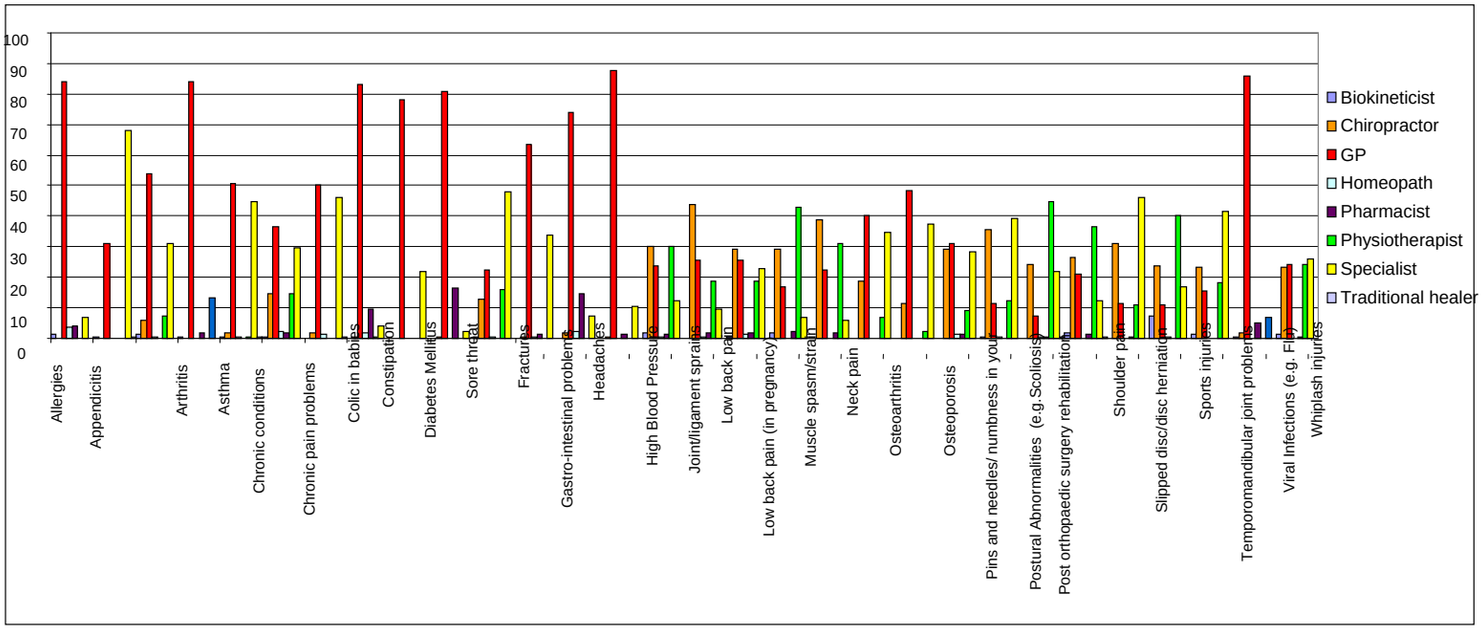


Figure 4.3: Opinions of participants as to which health care provider is best suited to treat the listed conditions

Most participants believed that chiropractors were best suited to treat low back pain, and postural abnormalities and neck pain. With respect to joint/ligament sprains, sports injuries, post orthopaedic surgery rehabilitation, shoulder pain and whiplash injuries, participants believed physiotherapists to be better suited. With more systemic conditions such as asthma, constipation, chronic conditions, diabetes, sore throat and high blood pressure, they believed general practitioners to be best suited, and with more severe conditions such as appendicitis, fractures and osteoporosis, they felt that a specialist would be best suited to deal with the condition. According to Blydenburgh and Freedman (1988), Jamison (1995) and Gaumer *et al* (2002), a significant segment of the public (in Australia and America) prefers chiropractic treatment to medical care for low back pain. Most chiropractic consumers and other potential consumers view chiropractors as back specialists (Gaumer *et al.,* 2002). This is a possible reason that most participants believed chiropractors to be best suited to treat low back pain. The less, the public understood about the chiropractic profession, the less likely they were to identify a condition as one that could be treated by a chiropractor (Sanchez, 1991). The limited understanding that participants may have of the chiropractic profession, may be a major reason that they believed physiotherapists and general practitioners to be more suited to treat certain musculoskeletal conditions such as whiplash injuries, shoulder pain, sports injuries and osteoarthritis than chiropractors.

4.5.3.1.6 Q6.4 "Please rate each of the following professions in terms of their importance in serving in the South African health care system."

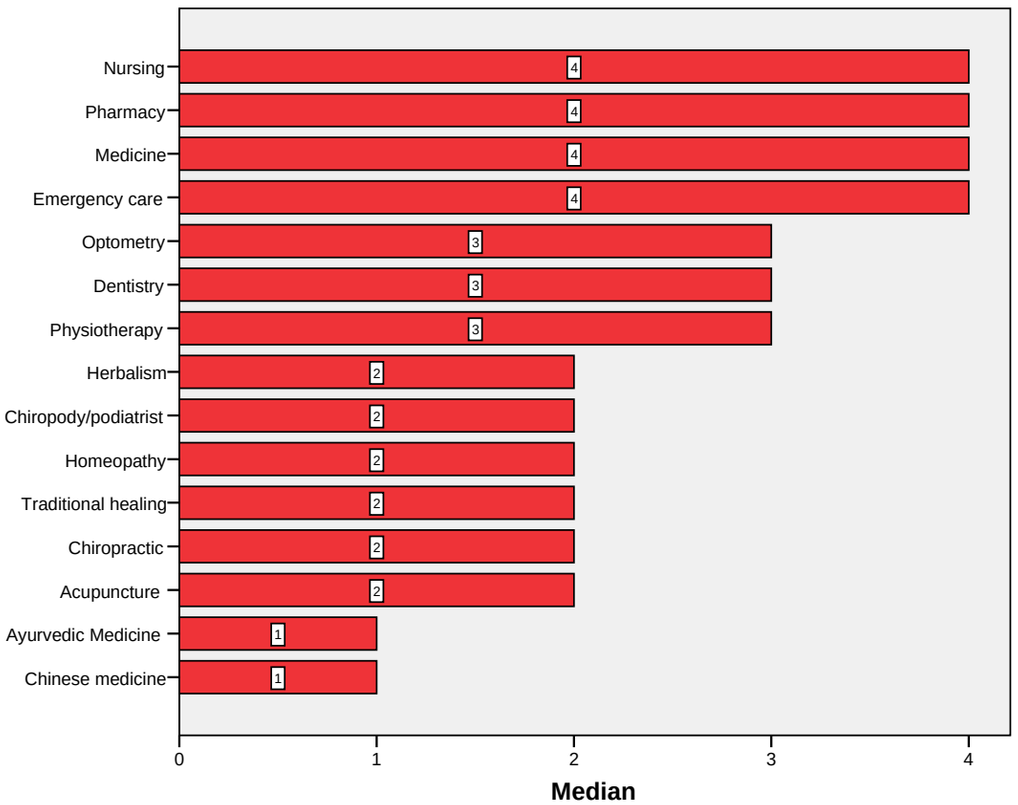


Figure 4.4: Median rank for each profession

Figure 4.4 summarises the ranking given to each health professional category. The groups which received the highest rank were nursing, pharmacy, medicine and emergency care. Physiotherapy received a score of 3 out of 4. Chiropractic received a median rank of 2 out of 4 along with herbalism, homeopathy, chiropody and acupuncture. Ayurvedic medicine and Chinese medicine received the lowest score of 1 out of 4. People with high expectations of chiropractic and its usefulness should also have a high knowledge and better perception of chiropractic (Louw, 2005). Therefore, medical student's expectations of the usefulness of CAM therapies such as chiropractic may depend on their level of knowledge of the profession. Participants may be predominantly trained in professions that fall within the allopathic field of medicine (Hupkes, 1990). There could therefore be a reduced expectation of the chiropractic profession due to the decreased knowledge of chiropractic among participants. According to Coulter (1992), Wardwell (1994) and Jamison (1995), South African medical professionals remain doubtful about

chiropractic, when compared to its popularity in other countries. It can also be assumed that people may rank things according to their level of knowledge on the subject, which may be a possible reason why many participants ranked nursing, emergency care and pharmacy highly, and CAM therapies like chiropractic, homeopathy and herbalism poorly.

4.5.3.1.7 Q6.5 "To what extent is chiropractic accepted by the medical profession in South Africa?".

Table 4.36: Opinion of extent to which chiropractic is accepted by the South African medical profession

			Year of study		Total
			2	3	
To what extent is chiropractic accepted by the *medical profession of South Africa*	Great extent	Count	10	11	21
		% within year of study	13.7%	11.8%	12.7%
	Moderate extent	Count	26	40	66
		% within year of study	35.6%	43.0%	39.8%
	Slight extent	Count	28	40	68
		% within year of study	38.4%	43.0%	41.0%
	Not at all	Count	9	2	11
		% within year of study	12.3%	2.2%	6.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.36 demonstrates that 68 (41%) participants felt that chiropractic was accepted to a "slight extent" by the medical profession of South Africa and 66 (39.8%) felt it to be accepted to a "moderate extent". There was no significant difference between the groups. Since the inception of chiropractic into the health care field over 100 years ago, chiropractic teachings and techniques have been scrutinized by many influential medical groups including medicine and sociology (Wardwell, 1994). The chiropractic profession was viewed with much concern by allopathic medicine (Curtis and Bove, 1992). In the past, chiropractic was condemned particularly because it lacked the scientific evidence to substantiate its claims (Sanchez, 1991). These may be reasons for the majority of participants not expecting chiropractic to be well accepted by the South African medical profession.

4.5.3.1.8 Q6.6 "To what extent is chiropractic accepted by the public of South Africa?".

Table 4.37: Opinion of the extent to which chiropractic is accepted by the South African public

			Year of study		Total
			2	3	
To what extent is chiropractic accepted by the *public of South Africa*	Great extent	Count	3	8	11
		% within year of study	4.1%	8.6%	6.6%
	Moderate extent	Count	27	40	67
		% within year of study	37.0%	43.0%	40.4%
	Slight extent	Count	36	39	75
		% within year of study	49.3%	41.9%	45.2%
	Not at all	Count	7	6	13
		% within year of study	9.6%	6.5%	7.8%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.37 demonstrates that 75 (45.2%) participants felt that chiropractic was accepted to a slight extent by the South African public and 67 (40.4%) participants believed chiropractic to be accepted to a moderate extent by the South African public. This could be greatly affected by the demographic details in South Africa. Myburgh and Mouton (2007), found that the black population in South Africa, had no notion of what chiropractic is. It has also been found that most South Africans cannot afford chiropractic treatment, and therefore have decreased experience of chiropractic treatment (CASA, 2009). This is possibly why most of the participants did not expect chiropractic to be accepted by the public of South Africa to a great extent.

4.5.3.1.9 Q7.1 "To what extent do you believe chiropractors to be competent in neuromusculoskeletal (nerves, muscles and bones) examination and diagnosis?

Table 4.38: Opinion of the extent of chiropractor's competency regarding the neuromusculoskeletal system

			Year of study		Total
			2	3	
To what extent do you believe chiropractors to be competent in neuromusculoskeletal (nerves, muscles & bones) examination and diagnosis?	Very competent	Count	24	32	56
		% within year of study	32.9%	34.4%	33.7%
	Moderately competent	Count	19	32	51
		% within year of study	26.0%	34.4%	30.7%
	Slightly competent	Count	15	13	28
		% within year of study	20.5%	14.0%	16.9%
	Incompetent	Count	2	2	4
		% within year of study	2.7%	2.2%	2.4%
	Very incompetent	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Unable to comment	Count	13	13	26
		% within year of study	17.8%	14.0%	15.7%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.38 demonstrates that 56 (33.7%) participants believed chiropractors to be very competent in neuromusculoskeletal examination and diagnosis. 26 (15.7%) participants felt that they were unable to comment, indicating a high lack of knowledge on this subject. No significant differences existed between the groups. An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Reasons for this include a greater awareness of health care options, greater ability to understand the efficacy of different treatment options due to increased accessibility to information (e.g. libraries, internet) and better understanding of disease processes and treatment procedures. Another factor that may affect participants' views of the competency of chiropractors with regard to the neuromusculoskeletal system is the fact that most chiropractic consumers and other potential consumers view chiropractors as back specialists **(**Gaumer *et al.,* 2002).

4.5.3.1.10 Q7.2 "To what extent do you believe chiropractors to be competent in general management of patients? (Definition of general management is "the ability to diagnose, treat, rehabilitate and refer the patient for optimum patient benefit").

Table 4.39: Opinion of the extent of chiropractor's competency regarding general management of patients

			Year of study		Total
			2	3	
To what extent do you believe chiropractors to be competent in general management of patients?	Very competent	Count	10	18	28
		% within year of study	13.7%	19.4%	16.9%
	Moderately competent	Count	25	34	59
		% within year of study	34.2%	36.6%	35.5%
	Slightly competent	Count	22	24	46
		% within year of study	30.1%	25.8%	27.7%
	Incompetent	Count	2	1	3
		% within year of study	2.7%	1.1%	1.8%
	Very incompetent	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	Unable to comment	Count	13	15	28
		% within year of study	17.8%	16.1%	16.9%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.39 demonstrates that 59 (35.5%) participants believe chiropractors to be "moderately competent" in general management of patients, with 28 (16.9%) being "unable to comment", indicating a high lack of knowledge regarding this subject. No significant differences existed between the groups. Rattan (2007) stated that a persons knowledge and perception of the chiropractic profession was influenced greatly by previous consultation with a chiropractor and the level of satisfaction thereof. Also, people are always more inclined to see what they expect to see, due to their belief systems, therefore their perceptions may also be distorted by their expectations (Berg and Theron, 1999). There could therefore be a reduced expectation of the chiropractic profession due to the decreased knowledge of chiropractic among participants. As discussed earlier, most participants had never consulted with a chiropractor before, and as a result, their knowledge of a chiropractor's management of patients would be decreased. Most chiropractic consumers and other potential consumers view chiropractors as back specialists

(Gaumer *et al.,* 2002), and this could be a possible reason that participants' view chiropractors as "very competent" when dealing with the neuromusculoskeletal system, but only "moderately competent" when dealing with general management of a patient. This is a possible reason that only 16.9% of participants felt that chiropractors were "very competent" in general management of patients.

4.5.3.1.11 Q8.1 "Please rate each of the following statements reflecting your perception of the chiropractic profession.".

Table 4.40a: Median values for statements regarding perception towards chiropractic

	Median
I have never heard of chiropractic before; I do not know what it is	Strongly disagree
I have heard of it before but I do not know much about it	Agree
Chiropractic does more harm than good	Strongly disagree
It is a very effective treatment for muscle, joint and nerve conditions	Agree
I am uncomfortable with chiropractic	Disagree
I think it has a valuable role in the health care system	Agree
It may be effective for some patients	Agree
I prefer chiropractic treatment over most other physical therapies	Disagree
I am not informed enough to comment	Agree

Table 4.40a demonstrates the median values for each of the statements mentioned, regarding perception towards chiropractic. Generally, there was a positive perception towards chiropractic. An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Reasons for this include a greater awareness of health care options, greater ability to understand the efficacy of different treatment options due to increased accessibility to information (e.g. libraries, internet) and better understanding of disease processes and treatment procedures. Studies have found that women are more likely than men to use CAM therapies (MacLennan and Wilson, 1996; Durant, Verhoef, Conway and Sauve, 2001; Tatalias, 2006). Taking into account that the majority of patients were female, and that all participants were in their second and third years of study, these factors may be important in the reason most participants had a generally positive perception of chiropractic.

Table 4.40b: Differences in opinion between second and third year participants regarding chiropractic as an effective treatment for muscle, joint and nerve conditions

			It is a very effective treatment for muscle, joint and nerve conditions				Total
			Strongly disagree	Disagree	Agree	Strongly agree	
Year of study	2	Count	7	18	40	8	73
		% within year of study	9.6%	24.7%	54.8%	11.0%	100.0%
	3	Count	7	19	39	28	93
		% within year of study	7.5%	20.4%	41.9%	30.1%	100.0%
Total		Count	14	37	79	36	166
		% within year of study	8.4%	22.3%	47.6%	21.7%	100.0%

Pearson's chi square 8.870, p=0.031

The only question where the responses differed significantly between the student groups was shown in Table 4.40b. The 2nd year group disagreed to a larger extent than the 3rd years. An association exists between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). A possible reason for this difference in response between the groups is that the third year participants have one extra year of tertiary education experience than the second year participants, and may therefore know more about other health professions.

4.5.3.1.12 Q8.2 "Do you agree with the following views about the chiropractic profession?"

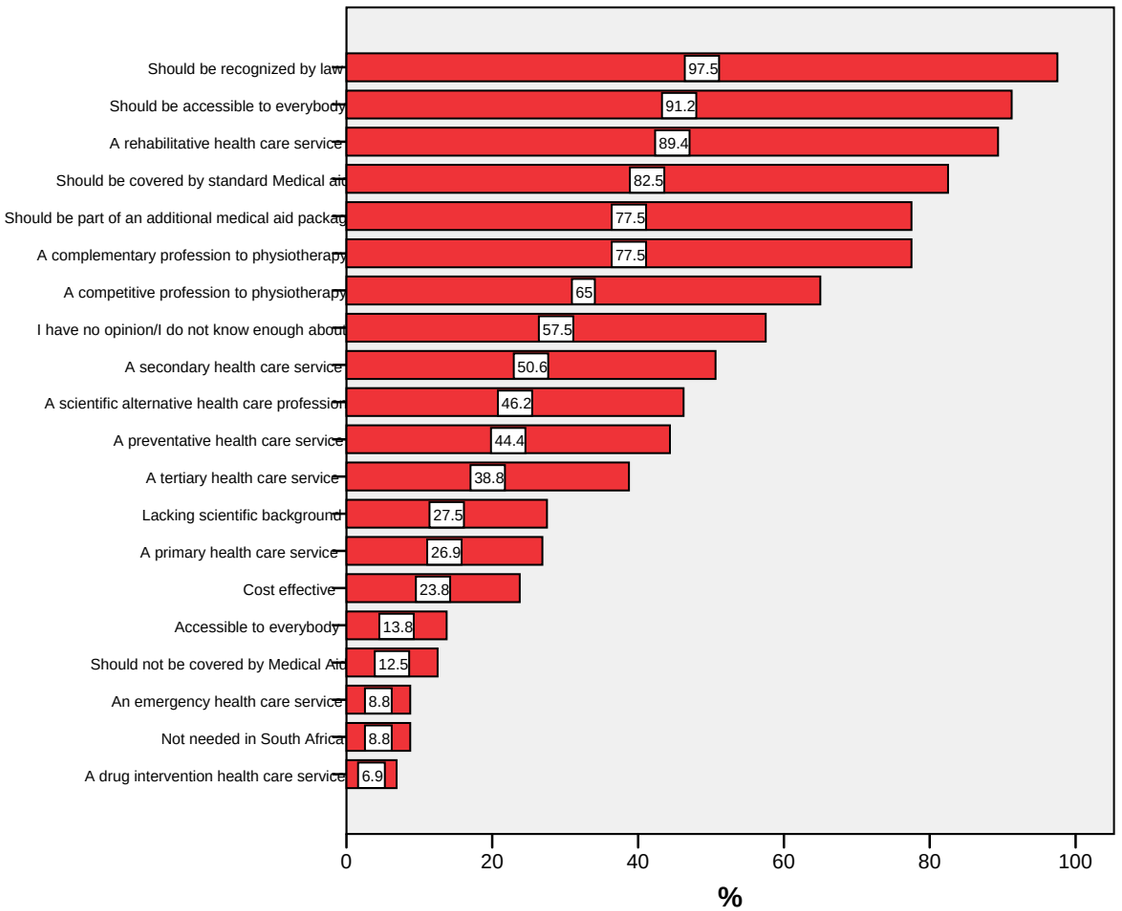


Figure 4.5: Percentage of agreement with the listed statements

Figure 4.5 shows the percentage of agreement with the listed statements in the group as a whole. There were no significant differences between responses to these statements between the year groups. The statement with the highest agreement was "Chiropractic should be recognized by law" (97.5% agreement). This may indicate that many participants are not aware that chiropractic is recognized by law, or that they feel chiropractic should be properly regulated. There was a generally positive perception towards chiropractic. There is a definite association between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Research demonstrates that CAM therapies are more often used by women

(MacLennan and Wilson, 1996; Durant, Verhoef, Conway and Sauve, 2001; Tatalias, 2006). Taking into account that the majority of patients were female, and that all participants were in their second and third years of study, these factors may be important in the reason most participants had a generally positive perception of chiropractic.

Table 4.41: Summary of perception score in all participants

N	Valid	163
	Missing	3
Mean		36.0061
Std. Deviation		8.36180
Minimum		17.00
Maximum		60.00
Percentiles	25	31.0000
	50	36.0000
	75	42.0000

Table 4.41 shows that the mean perceptions score was 36%. The standard deviation was 8% and the range of scores was from 17% to 60%. Therefore, there was a wide range of perceptions of chiropractic in this group of students with the average score indicating a relatively negative level of perception. This score does not compare favourably with the total knowledge score. The score was missing in three participants since they had missing responses to some perceptions questions and the score could only be computed in the absence of missing data or else it would be meaningless. There was a no significant difference in perceptions score between the 2nd and 3rd year students (p=0.859). The mean perceptions score for the 3rd year students was slightly higher than that for the second year students. Culture and its associated political surroundings, also have a strong influence in the way members of a particular group, react to different constructs (Philbin, Lozada, Zuniga, Mantsios, Case, Magis-Rodriguez, Latkin and Strathdee, 2008). Taking into account that all participants were younger than 33 years of age, and that a large part of the population group was of Black ethnicity, they were expected to have a poor knowledge and perception of chiropractic, which is congruent to findings by Myburgh and Mouton (2007). Also, most participants indicated that they had never consulted with a chiropractor before, which could be another important reason for their poor perception score. Another contributing factor could be that in the past, chiropractic

was condemned particularly because it lacked the scientific evidence to substantiate its claims (Sanchez, 1991). Due to these factors, participants were seen to have a generally negative perception towards the chiropractic profession.

Table 4.42: T-test to compare mean perceptions score between the 2nd and 3rd year student groups.

	year of study	N	Mean	Std. Deviation	Std. Error Mean	p value
Perceptions	2	70	35.8714	8.68435	1.03798	0.859
	3	93	36.1075	8.15670	.84581	

Table 4.42 shows the mean perception scores for the second and third year participants to be 35.87% (n=70) and 36.12% (n=93) respectively. There was no significant difference between the two groups. These scores were significantly lower than the mean knowledge scores for both groups.

4.5.3.2 Part two: To determine participant's views of the scope of chiropractic.

4.5.3.2.1 Q6.7 "In which sector would you say chiropractic plays a more significant role?"

Table 4.43: Sector in which participants thought chiropractors to play a more important role

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
In which sector would you say chiropractic plays a more significant role	Public	6	8.2%	14	15.1%	20	12.0%
	Private	67	91.8%	79	84.9%	146	88.0%

Table 4.43 demonstrates that the vast majority of participants, which comprised of 67 (91.8%) in second year and 79 (84.9%) in third year, felt that chiropractic plays a more important role in the private sector. This was not significantly different between the year cohorts. There is an association between tertiary education and higher use of CAM therapies (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). A greater awareness of health

care options, greater ability to understand the efficacy of different treatment options due to increased accessibility to information (e.g. libraries, internet) and better understanding of disease processes and treatment procedures are possible reasons for this. Numerous studies in the last ten years, have indicated a worldwide increasing use of chiropractic treatment (Hughes and Wingard, 2006; Wojcicowski et al, 2006; Bodeker and Kronenberg, 2002; McFarland et al, 2002; Bodeker, 2001; Lewith et al, 2001; Ernst, 2000). An increase in the usage of chiropractic around the world, shows increased exposure to chiropractic which would, in turn, increase the knowledge about the chiropractic profession. These may be possible reasons that the majority of participants knew in which sector chiropractors played a more important role.

4.5.3.2.2 Q7.3 "In your opinion, what is the primary focus of chiropractic care?"

Table 4.44: Participants' opinions of the primary focus of chiropractic care

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
In your opinion, what is the primary focus of chiropractic care?	Curative	20	27.4%	18	19.4%	38	22.9%
	Diagnostic	1	1.4%	1	1.1%	2	1.2%
	Emergency	2	2.7%	1	1.1%	3	1.8%
	Preventative	7	9.6%	6	6.5%	13	7.8%
	Prophylactic	0	.0%	0	.0%	0	.0%
	Rehabilitative	41	56.2%	67	72.0%	108	65.1%
	Surgical	2	2.7%	0	.0%	2	1.2%

Table 4.44 demonstrates that the primary focus of chiropractic was mainly thought to be rehabilitative by 41 (56.2%) second year participants and 67 (72%) third year participants, followed by curative by 20 (27.4%) of second year participants and 18 (19.4%) of third year participants. This did not differ by year of study. A possible reason for this view, is that the participants may view chiropractors as being similar to physiotherapists, and since they may be more familiar with physiotherapy, they may expect chiropractic care to fall within a similar focus.

4.5.3.2.3 Q7.4 "What kind of procedures would you expect a chiropractor to be able to perform, when necessary, in his/her assessment of a patient?"

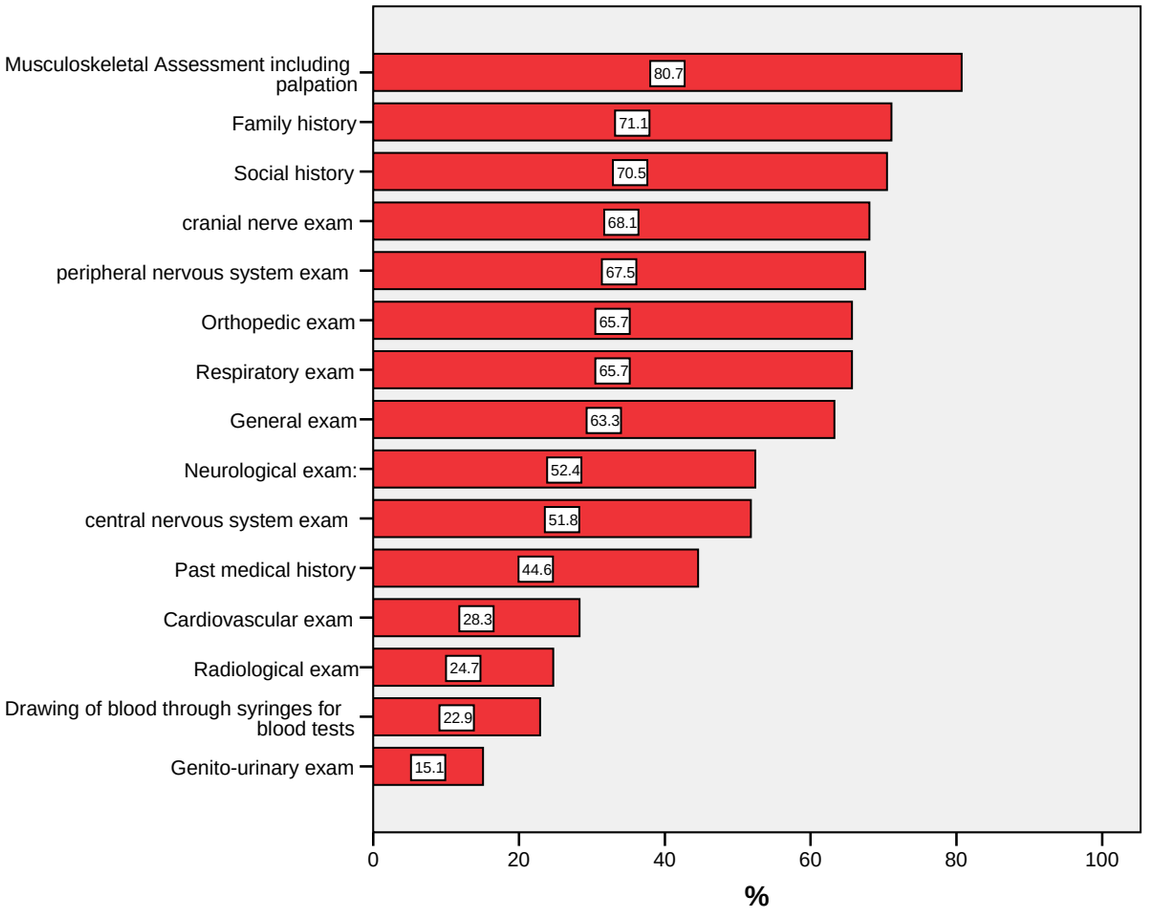


Figure 4.6: Percentage agreement with procedures expected of a chiropractor

Figure 4.6 above shows that most participants expected chiropractors to be able to do a musculoskeletal assessment (81%). The expectations were mostly similar between the 2nd and 3rd years except for those shown in Tables 4.45a to 4.45c. Only 15.1% of students expected chiropractors to be able to perform a genitor-urinary exam. There was however, a generally positive view of the types of assessment that a chiropractor could perform. Numerous studies in the last ten years, have indicated a worldwide increasing use of chiropractic treatment (Hughes and Wingard, 2006; Wojcicowski et al, 2006; Bodeker and Kronenberg, 2002; McFarland et al, 2002; Bodeker, 2001; Lewith et al, 2001; Ernst, 2000). An increase in the usage of chiropractic around the world shows increased exposure to chiropractic which would, in turn, increase the knowledge about the chiropractic profession. Higher use of

CAM therapies, was found to be associated with tertiary education (MacLennan and Wilson, 1996; Astin, 1998; Menniti-Ippolito *et al.,* 2002; Haertela and Volgera, 2004; Tatalias, 2006). Taking into account that all participants were in their second and third years of tertiary education, they would be expected to have a better knowledge of the scope of chiropractic.

There was a marginally significant difference in response to the following three questions between the two groups, with the third year participants having a better view of the scope of chiropractic. Because the third year participants were one year ahead of the second year participants in terms of tertiary education, they would have a higher knowledge of the scope of chiropractic which is congruent to findings in studies by MacLennan and Wilson (1996), Astin (1998), Menniti-Ippolito *et al. (*2002), Haertela and Volgera (2004) and Tatalias (2006).

Table 4.45a: Participants expectation of chiropractors to draw blood for tests

			Drawing of blood through syringes for blood tests		Total
			Yes	No	
Year of study	2	Count	22	51	73
		% within year of study	30.1%	69.9%	100.0%
	3	Count	16	77	93
		% within year of study	17.2%	82.8%	100.0%
Total		Count	38	128	166
		% within year of study	22.9%	77.1%	100.0%

Pearson's chi square = 3.875, p=0.049

Table 4.45a shows that more 2nd year participants (22 (30.1%)) thought that chiropractors were expected to draw blood, as compared to 16 (17.2%) third year participants. (p=0.049)

Table 4.45b: Participants expectation of chiropractors to perform a peripheral nervous system exam

			Peripheral Nervous System exam		Total
			Yes	No	
Year of study	2	Count	43	30	73
		% within year of study	58.9%	41.1%	100.0%
	3	Count	69	24	93
		% within year of study	74.2%	25.8%	100.0%
Total		Count	112	54	166
		% within year of study	67.5%	32.5%	100.0%

Pearson's chi square = 4.256, p=0.037

Table 4.45b shows that more third year participants (69 (74.2%)) thought that chiropractors were expected to conduct a peripheral nervous system exam, as compared to 43 (58.9%) second year participants. (p=0.037)

Table 4.45c: Participants expectation of chiropractors to perform an orthopaedic exam

			Orthopedic exam		Total
			Yes	No	
Year of study	2	Count	41	32	73
		% within year of study	56.2%	43.8%	100.0%
	3	Count	68	25	93
		% within year of study	73.1%	26.9%	100.0%
Total		Count	109	57	166
		% within year of study	65.7%	34.3%	100.0%

Pearson's chi square = 5.214, p=0.022

Table 4.45c shows that more third year participants (68 (73.1%)) thought that chiropractors were expected to conduct an orthopaedic exam, as compared to 41 (56.2%) second year participants. (p=0.022).

In all three of the above Tables, more of the third year participants knew the correct answers than the second year participants. A possible reason for this may be that the third year participants had more education and experience regarding other forms of therapy, during their study, than the second year participants.

4.5.4 Objective four: To determine the utilization of chiropractic by second and third year students.

4.5.4.1 Q5.1 "Which health care practitioner would you consult with FIRST if you had any medical concern?"

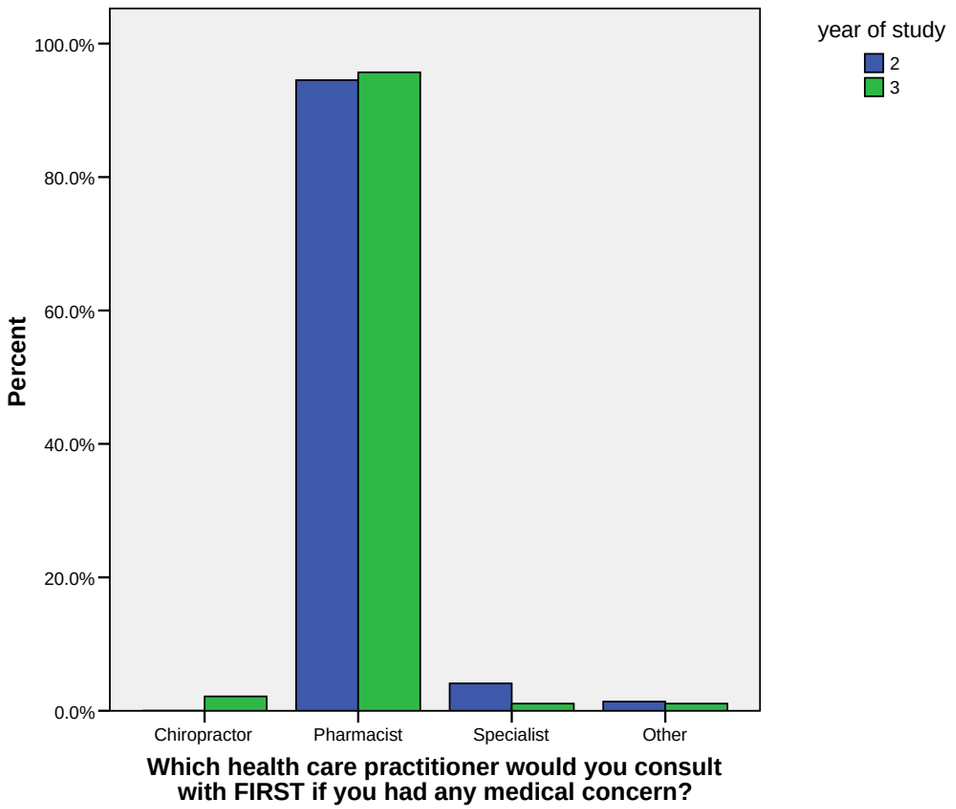


Figure 4.7: Bar chart of percentage responses to each type of practitioner by year of study

Figure 4.7 above shows that pharmacists were considered the first line of treatment option by the vast majority of participants, regardless of year of study. Unexpectedly GP was not chosen by any of the participants. A possible reason may be that they felt they were able to diagnose themselves, as a result of them studying to become doctors. Two respondents chose a chiropractor. People with high expectations of chiropractic and its usefulness should also have a high knowledge and better perception of chiropractic (Louw, 2005). The participants' lower knowledge of the

chiropractic profession is a possible reason that they would not use chiropractic as a first option for their medical concerns.

4.5.4.2 Q5.2 "Have you consulted with a chiropractor/chiropractic intern before?

Table 4.46a: Personal consultation with a chiropractor

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Have you consulted with a Chiropractor/chiropractic intern before?	Yes	1	1.4%	4	4.3%	5	3.0%
	No	72	98.6%	89	95.7%	161	97.0%

Table 4.46a shows that the personal utilization of chiropractic amongst medical students is very low (3%). There was a very small difference between the two years of study. These findings are congruent with previous findings regarding personal experience of chiropractic treatment and referral to a chiropractor.

Table 4.46b: When did the last consult take place?

			Year of study		Total
			2	3	2
When did last consult take place?	Never	Count	72	90	162
		% within year of study	98.6%	96.8%	97.6%
	3months ago	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	1yr ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	3yrs ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	5yrs ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.46b demonstrates when the participant last consulted with the chiropractor/ chiropractic intern. One participant, who had consulted with a chiropractor previously, did not answer the above question, and this was recorded as missing.

Table 4.46c: For what condition was the last consult?

			Year of study		Total
			2	3	2
For what condition was the last consult?	None	Count	72	91	163
		% within year of study	98.6%	97.8%	98.2%
	Back pain	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Groin injury	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Muscle spasm	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.46c shows that participants only consulted with a chiropractor for back pain, groin injury and muscle spasm, indicating that these participants may see chiropractors as musculoskeletal specialists. Two participants, who had consulted with a chiropractor previously, did not answer the above question, and this was recorded as missing.

Table 4.46d: Fulfilment of participant's expectations by chiropractor/chiropractic intern

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Did the provided care meet your expectations?	Yes	1	100.0%	4	100.0%	5	100.0%
	No	0	.0%	0	.0%	0	.0%

Table 4.46d demonstrates that the chiropractic care met the expectations of all participants who had previously consulted with a chiropractor. There was no difference between the two years of study. This positive expectation of chiropractic, that was fulfilled, indicates that increased contact with chiropractors may be beneficial in improving perceptions towards chiropractic.

4.5.4.3 Q5.3 "Have your family members consulted with a chiropractor/chiropractic intern before?"

Table 4.47a: Chiropractic consultation by participant's family members

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Have your family members consulted with a chiropractor/chiropractic intern before?	yes	14	19.2%	17	18.3%	31	18.7%
	no	59	80.8%	76	81.7%	135	81.3%

Table 4.47a shows that among family members of participants, the utilization of chiropractic was 19%, which is significantly higher than the 3% of participants who had been to a chiropractor before.

Table 4.47b: When did the last consult take place?

			year of study		Total
			2	3	2
When did last consult take place?	Never	Count	68	80	148
		% within year of study	93.2%	86.0%	89.2%
	1week ago	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	1month ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	2months ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	3months	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
	6months ago	Count	9	2	2
		% within year of study	.0%	2.2%	1.2%
	1yr ago	Count	2	4	6
		% within year of study	2.7%	4.3%	3.6%
	2yrs ago	Count	2	1	3
		% within year of study	2.7%	1.1%	1.8%
	4yrs ago	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	9yrs	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.47b shows when the last consult of the participant's family member took place with the chiropractor.

Table 4.47c: For what condition was the last consult?

			year of study		Total
			2	3	2
For what condition was the last consult?	Not applicable	Count	66	81	147
		% within year of study	90.4%	87.1%	88.6%
	Arthritis	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Back ache	Count	0	3	3
		% within year of study	.0%	3.2%	1.8%
	Back injury	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Back pain	Count	3	0	3
		% within year of study	4.1%	.0%	1.8%
	Back spasms	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Disc herniation	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Foot pain	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Low back pain	Count	0	3	3
		% within year of study	.0%	3.2%	1.8%
	Muscle spasm	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Post bypass	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Rehabilitation	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Slipped disc	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Unknown	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.47c shows the conditions for which the family members of participants last visited a chiropractor/ chiropractic intern, and all the listed conditions were for conditions relating to the neuromusculoskeletal system. This may indicate that they view chiropractors as treating this kind of condition.

Table 4.47d: Fulfilment of expectations of participant's family members by chiropractor/ chiropractic intern

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Did the provided care meet your expectations?	Yes	13	100.0%	15	88.2%	28	93.3%
	No	0	.0%	2	11.8%	2	6.7%

Table 4.47d demonstrates that the care met their expectations a high percentage of the time. This indicates that increased contact with chiropractors may increase perceptions of the chiropractic profession. There was no significant difference between the two years of study.

4.5.4.4 Q5.4 "Have your friends consulted with a chiropractor/chiropractic intern before?"

Table 4.48a: Chiropractic consultation by friends of participants

		Year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Have your friends consulted with a chiropractor/chiropractic intern before?	Yes	13	17.8%	17	18.3%	30	18.1%
	No	60	82.2%	76	81.7%	136	81.9%

Table 4.48a demonstrates that utilization of chiropractic among friends of participants was 18%, which was higher than that of the participants themselves (3%).

The higher level of contact with the family and peers of participants and a chiropractor is a positive sign that chiropractic is not only accessible to those who are studying in the medical field.

Table 4.48b: When did the last consult take place?

			Year of study		Total
			2	3	2
When did the last consult take place?	Never	Count	70	90	160
		% within year of study	95.9%	96.8%	96.4%
	1week	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	1yr	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
	3yrs	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	5yrs	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Recent	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.48b demonstrates when the participant's friends' last consult with a chiropractor took place.

Table 4.48c: For what condition was the last consult?

			Year of study		Total
			2	3	2
For what condition was the last consult?	Not applicable	Count	70	87	157
		% within year of study	95.9%	93.5%	94.6%
	Abnormal posture	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Back ache	Count	0	2	2
		% within year of study	.0%	2.2%	1.2%
	Neck pain	Count	1	1	2
		% within year of study	1.4%	1.1%	1.2%
	research	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
	Shoulder injury	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	spine problems	Count	1	0	1
		% within year of study	1.4%	.0%	.6%
	Spine related	Count	0	1	1
		% within year of study	.0%	1.1%	.6%
Total		Count	73	93	166
		% within year of study	100.0%	100.0%	100.0%

Table 4.48c demonstrates the condition for which the participants' friends last consulted with a chiropractor. All the listed conditions were for conditions relating to

the neuromusculoskeletal system. This may indicate that they view chiropractors as treating this kind of condition.

Table 4.48d: Fulfilment of expectations of participant's friends by chiropractor/ chiropractic intern

		year of study					
		2		3		Total	
		Count	%	Count	%	Count	%
Did the provided care meet their expectations?	yes	13	100.0%	13	81.3%	26	89.7%
	no	0	.0%	3	18.8%	3	10.3%

Table 4.48d demonstrates that the care met their expectations a high percentage of the time. There was no difference between the two years of study. One participant did not answer the above question, and this was recorded as missing.

4.5.4.5 Summary of Utilization

Generally, the utilization of chiropractic by the participants, their friends and family was low. Only 3% of the participants, 18.7% of their family and 18.1% of their friends had previously consulted with a chiropractor. It has been found that culture and its associated political surroundings have a strong influence in the way members of a particular group, react to different constructs (Philbin, Lozada, Zuniga, Mantsios, Case, Magis-Rodriguez, Latkin and Strathdee, 2008). Most chiropractic consumers and other potential consumers view chiropractors as back specialists **(**Gaumer *et al.,* 2002). The experience of the general South African population may include physiotherapists, traditional healers and other members of the health care sector (Hupkes, 1990), who may also be seen as professionals who address back pain, and with whom patients may be more comfortable. Chiropractors practice in 109 countries all over the world (Chiropractic Diplomatic Corps, 2007), but the majority of people (76%), only see a ratio of one chiropractor per one hundred thousand to ten million people (Diplomatic chiropractic global strategy). The Chiropractic Association of South Africa recognises 102 chiropractors currently registered in KwaZulu-Natal (CASA, 2008). This low doctor to patient ratio could impact on the poor knowledge and perception of chiropractic. Taking into account, that a major portion of the participants were of Black ethnicity, were young (under 33 years of age), and were

from the allopathic medical field, the above mentioned points would explain why the utilization among participants was low.

4.5.5 Objective five: To determine if any relationship existed between demographic factors, knowledge, perception and utilization of chiropractic.

4.5.5.1 Experience of chiropractic vs. knowledge and perceptions

Table 4.49: T-test for comparison of mean knowledge and perception scores between those who have and have not consulted a chiropractor

	Have you consulted with a Chiropractor/chiropractic intern before?	N	Mean	Std. Deviation	Std. Error Mean	p value
Knowledge score percentage	Yes	5	68.0702	8.63044	3.85965	0.043
	No	161	58.6902	10.16551	.80115	
Perceptions	Yes	5	47.2000	9.17606	4.10366	0.002
	No	158	35.6519	8.11692	.64575	

Personal experience of chiropractic had a significant effect on improvement of knowledge and perceptions of chiropractic (p=0.043 and 0.002 respectively). However, it must be taken into account that due to the lower numbers that had experience with a chiropractor as opposed to those that did not, the effect on improvement of the knowledge and perceptions of chiropractic may not be as significant as initially thought. Chiropractors in South Africa play an important role in the private sector, and most chiropractors in South Africa, work in urban areas (CASA, 2008). Therefore, people from rural areas, were expected to have a poor knowledge and perception of chiropractic, due to decreased exposure to chiropractors caused by accessibility barriers. In a study conducted by Rattan (2007), it was found that a person's knowledge and perception of the chiropractic profession could depend on a previous consultation with a chiropractor, and their level of satisfaction with the treatment received. She also stressed that chiropractic patients had a greater knowledge of chiropractic than non-patients. These are possible reasons that the knowledge and perception scores were higher in those participants who had previously consulted with a chiropractor.

4.5.5.2 Perceptions vs. knowledge:

There was a statistically significant although weak positive correlation between knowledge and perceptions scores due to the fact that knowledge has to double in order to increase perception by 50% (r=0.233, p=0.003). As the one increased, so did the other. This is graphically illustrated in the scatter plot below. It can be seen that there was a large scatter around the prediction line thus knowledge is not a good predictor of perceptions, but there is some degree of relationship between the two.

Table 4.50: Pearson's correlation analysis of knowledge and perceptions scores

		perceptions
Knowledge score percentage	Pearson Correlation	0.233(**)
	Sig. (2-tailed)	.003
	N	163

Correlation is significant at the 0.01 level (2-tailed).

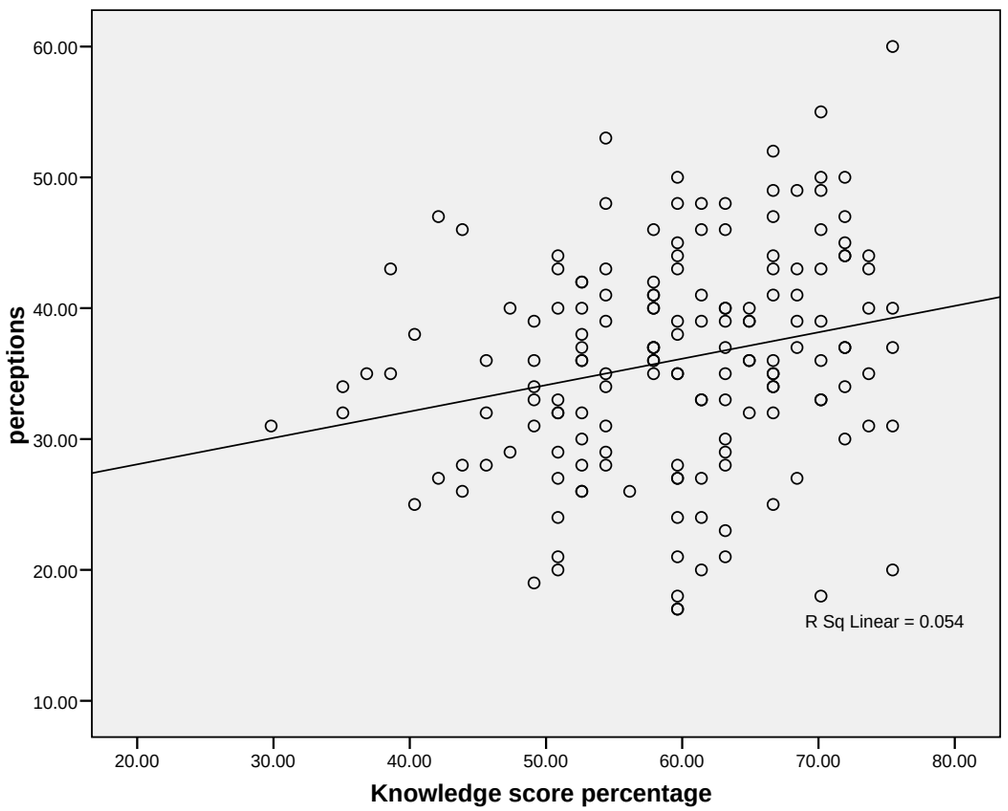


Figure 4.8: Scatter plot of knowledge score and perceptions score

4.5.5.3 Demographics vs. Knowledge and Perception score

Table 4.51: T-test for comparison of mean knowledge and perception scores between males and females

	Gender	N	Mean	Std. Deviation	Std. Error Mean	p value
Knowledge score percentage	Female	98	58.5034	11.02428	1.11362	0.480
	Male	68	59.6491	8.99175	1.09041	
perceptions	Female	95	36.7895	8.16309	.83752	0.158
	Male	68	34.9118	8.57232	1.03955	

Gender was not associated with knowledge or perceptions. Studies have found that women are more likely than men to use CAM therapies (MacLennan and Wilson, 1996; Durant, Verhoef, Conway and Sauve, 2001; Tatalias, 2006). However, this was not a significant factor in affecting the knowledge and perceptions of participants towards chiropractic, as seen in Table 4.51.

Table 4.52: Correlation between age and knowledge and perception scores

		Age
Knowledge score percentage	Pearson Correlation	0.110
	Sig. (2-tailed)	0.159
	N	165
Perceptions	Pearson Correlation	0.113
	Sig. (2-tailed)	0.153
	N	162

Table 4.52 shows that there was no correlation between age and either knowledge or perceptions scores. Literature shows that older patients were more likely to use CAM therapies such as chiropractic than younger patients (Kayne, Beattie and Reeves, 1999; Reid, 2002; Tatalias, 2006). However, taking into account that all patients were under the age of 33 years old, the differences in age may not have been large enough to reflect any correlation between age, knowledge and perception.

Table 4.53: Summary statistics of knowledge and perceptions scores by Ethnic group

Ethnic group		Knowledge score percentage	perceptions
Asian	Mean	60.8187	37.0000
	N	6	6
	Std. Deviation	10.32954	12.04990
Black	Mean	55.2492	33.7833
	N	63	60
	Std. Deviation	10.58216	8.64378
Coloured	Mean	58.0897	41.1111
	N	9	9
	Std. Deviation	4.91889	8.25295
Indian	Mean	61.1278	36.1143
	N	70	70
	Std. Deviation	10.18445	7.53454
White	Mean	67.6236	40.1818
	N	11	11
	Std. Deviation	4.79584	9.11941
Other	Mean	56.8922	40.0000
	N	7	7
	Std. Deviation	4.51360	3.10913
Total	Mean	58.9727	36.0061
	N	166	163
	Std. Deviation	10.22730	8.36180

There was a significant difference between the ethnic groups in terms of knowledge (p=0.001) and perception (p=0.032). The main difference lay between the Black and White students, with White students having higher knowledge and perception scores. White people live mostly in suburbs (About South Africa, 2007), where the majority of chiropractors practice, thereby increasing their exposure to the profession (CASA, 2008). Therefore, White students may have previously attended schools in which chiropractic may have been suggested as a potential career choice. White parents are most probably middle income earners, and like them, the students may have access to libraries, internet etc. placing information about chiropractic within their reach (MacLennon and Wilson, 1996).

Table 4.54: ANOVA test to compare mean knowledge and perceptions score between the ethnic groups

		Sum of Squares	df	Mean Square	F	P value
Knowledge score percentage	Between Groups	2079.545	5	415.909	4.384	.001
	Within Groups	15179.074	160	94.869		
	Total	17258.619	165			
Perceptions	Between Groups	841.200	5	168.240	2.519	.032
	Within Groups	10485.794	157	66.788		
	Total	11326.994	162			

Table 4.55: t-tests to compare mean knowledge and perceptions score between those with and without medical aid.

	Medical aid	N	Mean	Std. Deviation	Std. Error Mean	P value
Knowledge score percentage	Yes	119	60.1209	9.80718	.89902	0.021
	No	47	56.0657	10.78972	1.57384	
Perceptions	Yes	117	36.5897	8.40480	.77702	0.156
	No	46	34.5217	8.15336	1.20215	

The knowledge score was significantly associated with having medical aid (p=0.021) but the perceptions were not. Chiropractic is covered by 98% of medical aid schemes and since most chiropractors in South Africa work in the private sector (CASA, 2008). Due to the increased accessibility that individuals belonging to a medical aid carrier have to chiropractic care, their exposure would be greater and their knowledge and perception of chiropractic would also be greater.

4.6 Summary and Conclusion

Generally knowledge and perception of chiropractic was low amongst 2nd and 3rd year medical students. There were not many factors found to significantly influence these outcomes, except prior experience and knowledge were found to influence perceptions. Thus increasing the awareness and knowledge of chiropractic in this group may lead to more experiences with chiropractors which may lead in improved perceptions.

Conclusion and Recommendations

5.1 Conclusion

The response rate of the study was 166 which consisted of 73 from second year and 93 from third year of study. The majority of participants were female of Black ethnicity, and all participants were under the age of 33 years old. The highest level of education of most participants was matriculation.

There was a highly significant difference in knowledge score between the 2nd and 3rd year students ($p<0.001$). The mean knowledge score for the 3rd year students was higher than that for the second year students.

There was a wide range of perceptions of chiropractic in this group of students with an average score indicating a relatively negative level of perception. This score did not compare favourably with the total knowledge score. The mean perceptions score for the 3rd year students was slightly higher than that for the second year students.

Generally, the third year participants had a better view of the scope of chiropractic than the second year participants, with an overall positive view of the scope of chiropractic.

Also, the utilization of chiropractic by the participants, their friends and family was low with only 3% of the participants, 18.7% of their family and 18.1% of their friends having previously consulted with a chiropractor.

Gender was not associated with knowledge or perceptions, despite a female majority of participants in this study. There was no correlation between age and either knowledge or perceptions scores. There was a significant difference between the ethnic groups in terms of knowledge. The main difference was between the Black and White students, with White students having higher knowledge and perception

scores. The knowledge score was significantly associated with having medical aid but the perceptions were not different from those participants not on medical aid.

5.2 Recommendations

Methodologically, the following recommendations should be taken into account for:

1.) Chapter three:

- The questionnaires for the study should have been handed out to participants at the beginning or middle of the year, away from examination schedules.
- The questionnaires for the study should have been handed out to participants at the beginning of the lecture period rather than at the end, to ensure participants did not leave prior to filling out the questionnaire.
- Terminology in some of the questions should have been changed to make the questionnaire less ambiguous, and to prevent the leading of participants into having a certain view.

2.) Practically, the following recommendations should be taken into account:

- Further studies should be done to investigate the effects that chiropractic students have as human anatomy demonstrators at The Nelson Mandela School of Medicine.

3.) Professionally, the following recommendations should be taken into account:

- More information about chiropractic should be available on websites, as participants indicated this as an important source of their information.
- A course on chiropractic should be included at The Nelson Mandela School of Medicine to educate medical students on chiropractic.

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LIST OF APPENDICES

Appendix A1

LETTER OF PERMISSION

Dear Sir/Madam

RE: REQUEST FOR PERMISSION TO PERFORM CHIROPRACTIC RESEARCH

I hereby introduce myself as Sarvesh Maharajh, Master's degree student of chiropractic at the Durban University of Technology. I am currently conducting research regarding "The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards Chiropractic."

I would like to request your permission to conduct my research at The Nelson Mandela School of Medicine. The research, in the form of a simple questionnaire, will include all medical students in second and third years of study. A 15 minute time slot will be requested and arranged with lecturers involved. Upon confirmation of a suitable lecture period, questionnaires will be handed out to all willing participants, and thereafter completed questionnaires will be retrieved.

Your assistance in this regard is much appreciated.

I await your expeditious and favourable response in the form of the reply slip attached below.

Thank you.

Researcher: **Sarvesh Maharajh: 084 8888 308 or 031-7062886**
Supervisor: **Dr G. Matkovich: 031-2018204**
Co-supervisor: **Dr. C. Korporaal: 031-3732611**

---**REPLY SLIP**

I …… hereby grant permission to Sarvesh Maharajh to conduct his masters degree research entitled, "The knowledge and perception of medical students at a medical school in KwaZulu-Natal towards Chiropractic" at The Nelson Mandela School of Medicine:

Signed: …….. Date: …….....

`

Appendix A1b

LETTER OF PERMISSION

Dear Sir/Madam

RE: REQUEST FOR PERMISSION TO PERFORM CHIROPRACTIC RESEARCH

I hereby introduce myself as Sarvesh Maharajh, Master's degree student of chiropractic at the Durban University of Technology. I am currently conducting research regarding "The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards Chiropractic."

I would like to request your permission to conduct my research at The Nelson Mandela School of Medicine. The research, in the form of a simple questionnaire, will include all medical students in second and third years of study. A 15 minute time slot will be requested and arranged with lecturers involved. Upon confirmation of a suitable lecture period, questionnaires will be handed out to all willing participants, and thereafter completed questionnaires will be retrieved.

Your assistance in this regard is much appreciated.

I await your expeditious and favourable response in the form of the reply slip attached below.

Thank you.

Researcher: **Sarvesh Maharajh: 084 8888 308 or 031-7062886**
Supervisor: **Dr G. Matkovich: 031-2018204**
Co-supervisor: **Dr. C. Korporaal: 031-3732611**

----------**REPLY SLIP**

I …… hereby grant permission to Sarvesh Maharajh to conduct his masters degree research entitled, "The knowledge and perception of medical students at a medical school in KwaZulu-Natal towards Chiropractic" at The Nelson Mandela School of Medicine:

Signed: …….. Date: …….....

Appendix A2

LETTER OF REQUEST

Dear Sir/Madam

RE: REQUEST FOR 15 MINUTE TIME SLOT DURING LECTURE PERIOD

I hereby introduce myself as Sarvesh Maharajh, Master's degree student of chiropractic at the Durban University of Technology. I am currently conducting research regarding "The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards Chiropractic".

I humbly request your permission for a 15 minute time slot during your next lecture period to hand out and thereafter retrieve completed questionnaires compiled for students as part of my study.

Your assistance in this regard is much appreciated.

I await your expeditious and favourable response in the form of the reply slip attached below.

Thank you.

Researcher: Sarvesh Maharajh: 084 8888 308 or 031-7062886
Supervisor: Dr G. Matkovich: 031-2018204
Co-supervisor: Dr. C. Korporaal : 031-3732611

----------**REPLY SLIP**

I ……. hereby grant permission of a 15 minute time-slot to Sarvesh Maharajh to conduct his research in the following lecture period:

Date: ……..

Time: ……..

Venue: ……..

Signed: …….. Date: ……..

Appendix B1

COVERING LETTER - QUESTIONNAIRE

Dear participant

Welcome to my research study.

Title: **The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards Chiropractic.**

Name of researcher: **Sarvesh Maharajh: 084 8888 308 or 031 - 7062886**
Name of supervisor: **Dr. Grant Matkovich: 031-2018204**
Name of co-supervisor: **Dr. C. Korporaal : 031-3732611**

Introduction:
A lot of confusion exists in society about what chiropractic really entails. The purpose of my study is to investigate the knowledge and perceptions that students at the Nelson Mandela School of Medicine have towards the chiropractic profession.

The above information is important to medical students as you are the future medical practitioners with whom Chiropractors may interact in an effort to find the best possible medical care for a particular patient. This research may assist medical students to better understand the quality of education that chiropractors obtain and the types of conditions that chiropractors commonly treat, as well as the different treatment methods that are used by chiropractors.

Procedure: You are requested to complete in full the accompanying survey, which should take an average of **fifteen minutes**. The participant must be a full time student at the Nelson Mandela School of Medicine and must be a willing participant. **My research will not focus on individual cases but will aim to establish general trends and patterns.** Please note that **this is NOT a test**, there are no right or wrong answers. You are kindly requested to **answer ALL questions with absolute honesty and to the best of your ability.**

Please note that most questions are in multiple-choice format. Place and "X" in the box that you think is most correct. Once you have FULLY completed all the sections of the survey, you may hand it to the researcher. This will not cost you anything other than a few minutes of your time.

Please be assured that **all your personal particulars will remain anonymous** throughout the research procedure. Please do not place your name or anything (student numbers etc.) that may identify you on the questionnaire.

Benefits: The results of this study will be published in an article in a journal and a manuscript will be available. Your participation will help to investigate what the medical students at the Nelson Mandela School of Medicine know about and perceive chiropractic. Your participation will help to eliminate misconceptions people may have about chiropractic and may also increase your personal awareness of what chiropractic is about.

Remuneration: None. Participation in this study is voluntary.

Persons to contact for problems or questions:
Researcher: **Sarvesh Maharajh: 084 8888 308 or 031-7062886**
Supervisor: **Dr. Grant Matkovich: 031-2018204**
Co-supervisor: **Dr. C. Korporaal : 031-3732611**

Your time and assistance with this research is greatly appreciated.

Appendix B2
INFORMED CONSENT FORM – QUESTIONNAIRE

DATE:

TITLE OF RESEARCH PROJECT:
The knowledge and perception of second and third year medical students at The Nelson Mandela School of Medicine towards Chiropractic.

NAME OF SUPERVISOR: Dr. Grant Matkovich: 031-2018204

NAME OF CO-SUPERVISOR: Dr. Charmaine Korporaal: 031-3732611

NAME OF RESEARCHER: Sarvesh Maharajh: 084 8888 308 or 031-7062886

Please circle the appropriate answer:

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 you 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 this study at any time, without reasons given?	Yes	No
	c) withdraw from this study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the Durban University 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?		

_____

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

<u>Please print in block letters:</u>

Participant Name: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

Co-Supervisor's Name: _____ Signature: _____

Appendix B3
Final Questionnaire

Instructions:

Dear Participant

Completing this questionnaire should take approximately 10 minutes of your time.

You will remain anonymous throughout. Please do not place any identifying markings on the questionnaire.

Please answer ALL the questions, with candid honesty and to the best of your ability. You are requested to answer the questionnaire without consultation with other participants.

This is NOT a test. There are NO right or wrong answers.

I am looking at general trends and NOT individual cases.

Please note that questions refer to the chiropractic profession specifically in South Africa.

Thank you for your time!

1. Demographic Details

1.1 Gender: (Please cross the relevant block)

Female ☐ Male ☐

1.2 What was your age at your last birthday? _____ years

1.3 Ethnic Group: (Please cross the relevant block) (For statistical purposes only)

South African of Asian origin ☐
South African of Black origin ☐
South African of Coloured origin ☐
South African of Indian origin ☐
South African of White origin ☐
Other (please specify) _____ ☐

2. Educational Details

2.1 What is your highest qualification achieved (including Matriculation)?

_____

2.2 Institution at which highest qualification was obtained (E.g. School, institute.)

_____

2.3 Have you achieved any other qualifications within the health care field (NOT the highest qualification obtained)
E.g. Diploma, Bachelors degree, Phd. Please list all:

_____

_____

2.4 What year of study are you currently in?_____

3. Medical aid details

3.1 Are you covered by medical aid?

Yes ☐ No ☐

3.2 If you have answered **yes** to the previous question, please indicate which medical aid carrier you utilize:

_____

3.3 Is chiropractic treatment funded by your medical aid?

Yes ☐
I do not know ☐
No ☐

4. Level of knowledge about chiropractic

4.1 What level of education is required to enter a chiropractic program? (Please cross the relevant block)

None		Medical or paramedical education	
Grade 10		Medical or paramedical propedeuse (Pre-medical or B. Sc degree)	
Grade 12 (without matric exemption)		I do not know	
Grade 12 (with matric exemption)			

4.2 At which institution/s can chiropractic be studied in South Africa?

Durban University of Technology		University of the Free State	
Stellenbosch University		University of Johannesburg	
Tshwane University		University of KZN	
University of Cape Town		University of Western Cape	

4.3 What type of course do you think chiropractors follow? (Please cross the relevant block)

Weekend Course		Full-Time Course	
Part-time Course		I do not know	

4.4 A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?

Bachelor's degree	
Certificate	
Diploma	
Master's degree	
National Higher certificate	
National Higher Diploma	
PhD	
Other: _____	

4.5 The chiropractic course includes training in the following subjects/treatment methods**:**
Place an "**X**" in the correct box to indicate **"TRUE"** or "**FALSE"** (Please leave out any option which you are unsure of).

Acupuncture	T	F
Anatomy	T	F
Chemistry	T	F
Diagnostics	T	F
Drug therapy	T	F
Dry needling tender (trigger) points	T	F
Electrotherapy (IFC, TENS)	T	F
Emergency Care	T	F
Ergonomic advice	T	F
Exercise therapy	T	F
Fracture care	T	F
Chiropody	T	F
Heat & Ice therapy	T	F
Intensive care unit (ICU) training	T	F
Laser therapy	T	F
Manipulation/ Adjustment	T	F
Massage therapy	T	F
Medication	T	F
Medical Microbiology	T	F
Minor surgery	T	F
Mobilization	T	F
Nutritional advice	T	F
Pathology	T	F
Pharmacology	T	F
Physics	T	F
Physiology	T	F
Physiotherapeutic modalities	T	F
Psychiatry	T	F
Psychology	T	F
Radiotherapy	T	F
Rehabilitation	T	F
Stretching	T	F
Traction	T	F
Ultrasound therapy	T	F
Ultraviolet light therapy	T	F

4.6 Because of their training, chiropractors can focus their treatment in the following areas:
Please place an "**X**" in the correct box to indicate "**TRUE**" or "**FALSE**".

Acupuncture	T	F
Dry needling tender (trigger) points	T	F
Extremities (e.g. knee, elbow, wrist)	T	F
Neuromusculoskeletal system (nerves, muscles and bones)	T	F
Pediatrics	T	F
Radiology	T	F
Rehabilitation	T	F
Sports medicine	T	F
Surgery	T	F

4.7 Are chiropractic students required to complete an internship? If yes, how long does this take?

No, Not at all		Yes, 3 years	
Yes, 1 year		I do not know	
Yes, 2 years		Other (please specify)	

4.8 Are chiropractic students required to complete any community service before qualifying?

Yes		No	
I do not know			

4.9 Does the chiropractic profession have a legislative body in South Africa?

Yes		No	
I do not know			

4.10 For how long has chiropractic been practised as a profession in South Africa, irrespective of legislature?

<10 years		>100 years	
11-50 years		I do not know	
51-100 years			

4.11 Does the chiropractic profession in South Africa have a professional association?

Yes		No	
I do not know			

4.12 How many chiropractors do you think there are resident/practice in South Africa?

0-200		801-1000	
201-400		1001-1200	
401-600		> 1200	
601-800		I do not know	

4.13 In your opinion, how many medical aid carriers cover chiropractic care/treatment? (Please cross the relevant block)

None	Some	Majority	All	Unsure

4.14 Do you read any chiropractic journals? ☐ Yes ☐ No

5. Personal Experience of chiropractic treatment

5.1 Which health care practitioner would you consult with **FIRST** if you had any medical concern? (Please cross the relevant block)

Biokineticist	Chiropractor	GP	Homeopath	Pharmacist	Physiotherapist	Specialist	Traditional healer

Other (please specify) _____

			WHEN DID LAST CONSULT TAKE PLACE?	**FOR WHAT CONDITION WAS THE LAST CONSULT?**	**Did the provided care meet your expectations?**	
5.2 Have **you** consulted with a Chiropractor/chiropractic intern before?	YES	NO			YES	NO
5.3 Have **your family members** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO
5.4 Have **your friends** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO

5.5 If you have answered **yes** to question 5.2, would you continue to consult with a chiropractor for the same or a different condition in the future?

Yes ☐ No ☐
I am unsure ☐ Not applicable ☐

5.6 If you answered yes to 5.2, would you recommend chiropractic treatment to your colleagues, friends and/or family?

Yes ☐ No ☐
I am undecided ☐ Not applicable ☐

5.7 In your professional role, would you refer a patient to a chiropractor?

Yes ☐
No ☐

If no, please elaborate ……..

5.8 How do you get information about chiropractic? (You may choose more than one option)

From friends, colleagues, doctors etc. ☐
From internet websites ☐
From medical journals or research ☐
From my family/friends who have been treated by a chiropractor ☐
From being treated by a chiropractor ☐
From reading about chiropractic in the media (e.g. magazine/newspaper/flier) ☐
From doing my own research ☐
I have not received any information about chiropractic ☐
Other (please specify) _____ ☐

5.9 How many chiropractors or chiropractic students are you acquainted with?

None		3 to 5	
1		6 to 10	
2		>10	

6. Integration of chiropractic in the primary health care system

6.1 How close is the nearest practitioner to where you live? Please select ONE option for each practitioner with a cross.

PRACTITIONER	0-10 km	10-20 km	20-30 km	30-40 km	40-50 km	> 50 km	I do not know
Biokineticist							
Chiropractor							
GP							
Homeopath							
Pharmacist							
Physiotherapist							
Specialist							
Traditional healer							
Other (specify) _____							

6.2 In your opinion, which health care provider is best suited to treat the following conditions:

CONDITION	**Bio-kineticist**	**Chiro-practor**	**GP**	**Homeo-path**	**Pharm-acist**	**Physio-therapist**	**Specialist**	**Traditional Healer**
Allergies								
Appendicitis								
Arthritis								
Asthma								
Chronic conditions								
Chronic pain problems								
Colic in babies								
Constipation								
Diabetes Mellitus								
Sore throat								
Fractures								
Gastro-intestinal problems								
Headaches								
High Blood Pressure								
Joint/ligament sprains								
Low back pain								
Low back pain (in pregnancy)								
Muscle spasm/strain								
Neck pain								
Osteoarthritis								
Osteoporosis								
Pins and needles/ numbness in your arms or legs								
Postural Abnormalities (e.g.Scoliosis)								
Post orthopaedic surgery rehabilitation								
Shoulder pain								
Slipped disc/disc herniation								
Sports injuries								
Temporomandibular joint problems								
Viral Infections (e.g. Flu)								
Whiplash injuries								

6.3 Do chiropractors process workman's compensation claims?

Yes ☐ No ☐

I do not know ☐

6.4 Please rate each of the following professions in terms of their importance in serving in the South African health care system.
Please cross a number for each profession, with: [1] indicating 'least important' role and [4] indicating the "most important" role (leave out any profession/s which you are unsure of).

Acupuncture	**Least**	1	2	3	4	**Most**
Ayurvedic Medicine	**Important**	1	2	3	4	**Important**
Chinese medicine	**Role**	1	2	3	4	**Role**
Chiropody/podiatrist		1	2	3	4	
Chiropractic		1	2	3	4	
Dentistry		1	2	3	4	
Emergency care		1	2	3	4	
Herbalism		1	2	3	4	
Homeopathy		1	2	3	4	
Medicine		1	2	3	4	
Nursing		1	2	3	4	
Optometry		1	2	3	4	
Pharmacy	**Least**	1	2	3	4	**Most**
Physiotherapy	**Important**	1	2	3	4	**Important**
Traditional healing	**Role**	1	2	3	4	**Role**

6.5 To what extent is chiropractic accepted by the medical profession of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

6.6 To what extent is chiropractic accepted by the public of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

6.7 In which sector would you say chiropractic plays a more significant role?

Public sector	
Private sector	

7. The scope of practice of chiropractic

7.1 To what extent do you believe chiropractors to be competent in neuromusculoskeletal (nerves, muscles & bones) examination and diagnosis? (Please cross one box only)

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

7.2 To what extent do you believe chiropractors to be competent in general management of patients?
(Definition of 'general management' is "the ability to diagnose, treat, rehabilitate and refer the patient for optimum patient benefit")

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

7,3 In your opinion, what is the primary focus of chiropractic care?

Curative	
Diagnostic	
Emergency	
Preventative	
Prophylactic	
Rehabilitative	
Surgical	

7.4 What kind of procedures would you expect a chiropractor to be able to perform, when necessary, in his/her assessment of a patient? (You may choose more than one option)

Cardiovascular exam	
Drawing of blood through syringes for blood tests	
Family history	
General exam	
Genito-urinary exam	
Musculoskeletal Assessment including palpation	
Neurological exam:	
- central nervous system exam	
- cranial nerve exam	
- peripheral nervous system exam	
Orthopedic exam	
Past medical history	
Radiological exam	
Respiratory exam	
Social history	
Vital signs	

8. Perception of the chiropractic profession

8.1 Please rate each of the following statements reflecting your perception of the chiropractic profession.
Please cross a number for each statement, with: [1] indicating “strongly disagree” and [4] indicating “strongly agree”

I have never heard of chiropractic before; I do not know what it is	**Strongly**	1	2	3	4	**Strongly**
I have heard of it before but I do not know much about it	**Disagree**	1	2	3	4	**Agree**
Chiropractic does more harm than good		1	2	3	4	
It is a very effective treatment for muscle, joint and nerve conditions		1	2	3	4	
I am uncomfortable with chiropractic		1	2	3	4	
I think it has a valuable role in the health care system		1	2	3	4	
It may be effective for some patients		1	2	3	4	
I prefer chiropractic treatment over most other physical therapies	**Strongly**	1	2	3	4	**Strongly**
I am not informed enough to comment	**Disagree**	1	2	3	4	**Agree**

8.2 Do you agree with the following views about the chiropractic profession? Please place an "**X**" in the correct box to indicate “**YES**” or “**NO**”. Chiropractic is:

Accessible to everybody	Y	N
A competitive profession to physiotherapy	Y	N
A complementary profession to physiotherapy	Y	N
A drug intervention health care service	Y	N
A preventative health care service	Y	N
A primary health care service	Y	N
A rehabilitative health care service	Y	N
A secondary health care service	Y	N
A tertiary health care service	Y	N
A scientific alternative health care profession	Y	N
An emergency health care service	Y	N
Cost effective	Y	N
Lacking scientific background	Y	N
I have no opinion/I do not know enough about it	Y	N
Not needed in South Africa	Y	N
Should be accessible to everybody	Y	N
Should be part of an additional medical aid package	Y	N
Should be covered by standard Medical aid	Y	N
Should be recognized by law	Y	N
Should not be covered by Medical Aid	Y	N

8.3.1 Do you feel adequately informed about chiropractic?

Yes	
No	

8.3.2 Would you like to know more about the chiropractic profession?

Yes	
No	

8.3.3 If you have answered **yes** to question 8.3.2, how would you like to be informed about chiropractic?

By an informative lecture/seminar	
By meeting with relevant associations/organizations	
by personal contact	
by printed information packages	
by research publications	
by the media/press	
Other (please specify) _____	

Thank you very much for your time! The results will be treated confidentially

Appendix C1
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:
The knowledge and perception of medical students at a medical school in KwaZulu-Natal of Chiropractic.

Background to the study:
Chiropractic is a health profession specializing in the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the affects of these disorders on the function of the nervous system and general health. Chiropractic practitioners essentially rely upon non-invasive treatment methods and will refer patients to various other medical practitioners should medication or surgery be indicated. This approach is further reinforced by chiropractors in their promotion of healthy lifestyles such as the avoidance of smoking and excess stress, proper diet and exercise.

Chiropractors are primary contact health physicians who are able to diagnose and treat patients for a range of conditions, but still a lot of confusion exists in society about what chiropractic really entails. The purpose of my study is to determine the level of knowledge and perception of the chiropractic profession amongst medical students at The Nelson Mandela School of Medicine.

The above information is important to medical students as you are the future medical practitioners with whom Chiropractors may interact in an effort to find the best possible medical care for a particular patient. This research may assist medical students to better understand the quality of education that chiropractors obtain and the types of conditions that chiropractors commonly treat, as well as the different treatment methods that are used by chiropractors.

Objective of the study:
The data obtained by means of this questionnaire will allow for further assessment of the role of chiropractic in the South African health care system. The questions are concerned with the knowledge and perception of the chiropractic profession, the integration and role of chiropractic in the South African health care system, as well as the scope of practice of chiropractors in South Africa.

Your participation in this study is much appreciated and you are assured your comments and contributions to the discussion will be kept confidential throughout. The results of the discussion will only be used for research purposes.

Procedure:
Before commencing the focus group discussion, kindly read and sign the Informed Consent Form, Confidentiality Statement and Code of Conduct Statement. Each member will then receive a copy of the questionnaire, after which each of the questions will be discussed in sequential order. Please recommend any suggestions that you may have regarding the questions in order to limit any misinterpretation by the respondents (Students at Nelson Mandela School of Medicine). You are requested to comment on how the questionnaire should be modified in order to enhance the understanding of the questions to accurately assess the medical students' perception and knowledge of chiropractic. If inconsistencies are found or changes proposed, a unanimous vote is required to institute change to the questionnaire.

If you have any further questions please feel free to contact either my supervisor or myself.
Researcher: Sarvesh Maharajh: 084 8888 308 or 031-7062886
Supervisor: Dr. Grant Matkovich: 031-2018204
Co-supervisor: Dr. C. Korporaal : 031-3732611

Your time, opinion and assistance with this project are greatly appreciated.

Sarvesh Maharajh.

Appendix C2
INFORMED CONSENT FORM – FOCUS GROUP

DATE:

TITLE OF RESEARCH PROJECT:
The knowledge and perception of medical students at a medical school in KwaZulu-Natal of Chiropractic.

NAME OF SUPERVISOR: Dr. Grant Matkovich: 031-2018204

NAME OF CO-SUPERVISOR: Dr. Charmaine Korporaal: 031-3732611

NAME OF RESEARCHER: Sarvesh Maharajh: 084 8888 308 or 031-7062886

Please circle the appropriate answer:

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 you 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 this study at any time, without reasons given?	Yes	No
	c) withdraw from this study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the Durban University 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?		

_____

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

<u>Please print in block letters:</u>

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

Co-Supervisor's Name: _____ Signature: _____

Appendix C3

CONFIDENTIALITY STATEMENT – FOCUS GROUP

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.

DECLARATION

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

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

Co-Supervisor's Name: _____ Signature: _____

Appendix C4
CODE OF CONDUCT – FOCUS GROUP

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.

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 organization 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.

No.	Member represents	Member's Name	Signature	Contact details
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Appendix C5
QUESTIONNAIRE - PRE FOCUS GROUP

QUESTIONNAIRE

Instructions:

Dear Participant

Completing this questionnaire should take approximately 15 minutes of your time.

Please answer ALL the questions, with candid honesty and to the best of your ability.

This is NOT a test. There are NO right or wrong answers.

I am looking at general trends and NOT individual cases.

Please note that questions refer to the chiropractic profession specifically in South Africa.

You will remain anonymous throughout.

Thank you for your time!

1. Personal Details

1.1 Gender: (Please cross the relevant block)

Female ☐ Male ☐

1.2 What was your age at your last birthday? _____ years

1.3 Ethnic Group: (Please cross the relevant block) (For statistical purposes only)

South African of Asian origin ☐ South African of Indian origin ☐

South African of Black origin ☐ South African of White origin ☐

South African of Coloured origin ☐ Other (please specify) _____ ☐

1.4.1 Are you covered by medical aid?

Yes ☐ No ☐

1.4.2 If you have answered **yes** to the previous question, please indicate which medical aid carrier you utilize:

_____

1.4.3 Is chiropractic treatment funded by your medical aid?

Yes ☐ No ☐

I do not know ☐

1.5 Language/s spoken: (Please cross the relevant block)

		Predominant First Language	Predominant Second Language	Predominant Third Language
1.	Afrikaans			
2.	English			
3.	isiNdebele			
4.	isiSwazi			
5.	isiXhosa			
6.	isiZulu			
7.	Sepedi			
8.	SeSotho			
9.	seTswana			
10.	TshiVenda			
11.	XiTsonga			
12.	Other: (Please specify)			

2. Educational Details

2.1 What is your highest qualification achieved? _____

2.2 Institution at which highest qualification was obtained _____

2.3 Have you achieved any other qualifications within the health care field (NOT the highest qualification obtained).
E.g. Nursing diploma. Please list all:

_____

_____

3. Personal Experience of chiropractic treatment

			WHEN DID LAST CONSULT TAKE PLACE?	FOR WHAT CONDITION WAS THE LAST CONSULT?	WAS THE TREATMENT SATISFACTORY ?	
3.1 Have **you** consulted with a chiropractor before?	YES	NO			YES	NO
3.2 Have **your family members** consulted with a chiropractor before?	YES	NO			YES	NO
3.3 Have **your friends** consulted with a chiropractor before?	YES	NO			YES	NO

3.4 If you have answered **yes** to question 3.1, would you continue to consult with a chiropractor for the same or a different condition in the future?

Yes ☐ No ☐
I am undecided ☐ Not applicable ☐

3.5 Would you recommend chiropractic treatment to your colleagues, friends and/or family?

Yes ☐ No ☐
I am undecided ☐ Not applicable ☐

4. Level of knowledge about chiropractic

4.1 Is the chiropractic profession currently legislated in South Africa?

Yes ☐ No ☐
I do not know ☐

4.2 For how long has chiropractic been practised as a profession in South Africa?

<10 years ☐ >100 years ☐
11-50 years ☐ I do not know ☐
51-100 years ☐

4.3 At which institution/s can chiropractic be studied in South Africa? (You may choose more than one option)

Durban University of Technology ☐ University of the Free State ☐
Stellenbosch University ☐ University of Johannesburg ☐
Tshwane University ☐ University of KZN ☐
UNISA ☐ University of Western Cape ☐
University of Cape Town ☐ Varsity College ☐

4.4 What type of course do you think chiropractors follow? (Please cross the relevant block)

Weekend Course ☐ Full-Time Course ☐
Part-time Course ☐ I do not know ☐

4.5 What level of education is required to enter a chiropractic course? (Please cross the relevant block)

None ☐ Medical or paramedical education ☐
Grade 10 ☐ Medical or paramedical courses (e.g. Pre-medical or B. Sc degree) ☐
Grade 12 (without matric exemption) ☐ I do not know ☐
Grade 12 (with matric exemption) ☐

4.6 How long do you think chiropractors have to work within a clinic environment with medical supervision, in addition to time spent traini

Not at all		3 years	
1 year		I do not know	
2 years		Other (please specify)	

4.7 A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?

Bachelor's degree	
Diploma	
Master's degree	
National Higher Diploma	
PhD	
Other (specify): _____	

4.8 The chiropractic course includes training in the following subjects/treatment methods:
Place an "**X**" in the correct box to indicate "**TRUE**" or "**FALSE**" (Please leave out any option which you are unsure of).

Anatomy	T	F
Chemistry	T	F
Diagnostics	T	F
Drug therapy	T	F
Dry needling tender (trigger/acupuncture) points	T	F
Electrotherapy (IFC, TENS)	T	F
Emergency Care	T	F
Ergonomic advice	T	F
Exercise therapy	T	F
Fracture care	T	F
Chiropody	T	F
Heat & Ice therapy	T	F
Laser therapy	T	F
Manipulation/ Adjustment	T	F
Massage therapy	T	F
Medication	T	F
Medical Microbiology	T	F
Minor surgery	T	F
Mobilization	T	F
Nutritional advice	T	F
Pathology	T	F
Pharmacology	T	F
Physics	T	F
Physiology	T	F
Psychiatry	T	F
Psychology	T	F
Radiotherapy	T	F
Rehabilitation	T	F
Stretching	T	F
Traction	T	F
Ultrasound therapy	T	F
Ultraviolet light therapy	T	F

4.9 Because of their training, chiropractors can focus their treatment in the following areas:
Please place an "X" in the correct box to indicate "**TRUE**" or "**FALSE**".

	T	F
Acupuncture		
Extremities (e.g. knee, elbow, wrist)		
Neuromusculoskeletal system (nerves, muscles and bones)		
Pediatrics		
Radiology		
Rehabilitation		
Sports medicine		
Surgery		

4.11 Does the chiropractic profession in South Africa have an organizational professional body?

Yes ☐ No ☐

I do not know ☐

4.12 How many registered chiropractors do you think there are in South Africa?

0-200 ☐ 801-1000 ☐

201-400 ☐ 1001-1200 ☐

401-600 ☐ > 1200 ☐

601-800 ☐ I do not know ☐

4.13 In your opinion, what percentage of medical aid carriers covers chiropractic treatment? (Please cross the relevant block)

0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%

4.14 How do you get information about chiropractic? (You may choose more than one option)

From friends, colleagues, doctors etc. ☐

From internet websites ☐

From medical journals or research ☐

From my family/friends who have been treated by a chiropractor ☐

From being treated by a chiropractor ☐

From reading about chiropractic in the media (e.g. magazine/newspaper/flier) ☐

From doing my own research ☐

I have not received any information about chiropractic ☐

Other (please specify) _____ ☐

5. Integration of chiropractic in the primary health care system

5.1 Which health care practitioner would you consult with **FIRST** if you had a medical concern? (Please cross the relevant block)

Biokineticist	Chiropractor	GP	Homeopath	Pharmacist	Physiotherapist	Specialist	Traditional healer

5.2 How close is the nearest practitioner to your place of residence? Please select ONE option for each practitioner with a cross.

PRACTITIONER	0-10 km	10-20 km	20-30 km	30-40 km	40-50 km	> 50 km	I do not know
Biokineticist							
Chiropractor							
GP							
Homeopath							
Pharmacist							
Physiotherapist							
Specialist							
Traditional healer							

5.3 Please indicate which health care provider you would choose **FIRST** for treatment if you had each of the following conditions. (Please cross on box per condition only)

CONDITION	Bio-kineticist	Chiro-practor	GP	Homeo-path	Pharm-acist	Physio-therapist	Specialist	Traditiona Healer
Allergies								
Appendicitis								
Arthritis								
Asthma								
Chronic conditions								
Chronic pain problems								
Colic in babies								
Constipation								
Diabetes Mellitus								
Sore throat								
Fractures								
Gastro-intestinal problems								
Headaches								
High Blood Pressure								
Joint/ligament sprains								
Low back pain								
Low back pain (in pregnancy)								
Muscle spasm/strain								
Neck pain								
Osteoarthritis								
Osteoporosis								
Pins and needles/ numbness in your arms or legs								
Postural Abnormalities (e.g.Scoliosis)								
Post orthopaedic surgery rehabilitation								
Shoulder pain								
Slipped disc/disc herniation								
Sports injuries								
Temporomandibular joint problems								
Viral infections (e.g. Flu)								
Whiplash injuries								

5.5 Please rate each of the following professions in terms of their importance in serving in the South African health care system.
Please cross a number for each profession, with: [1] indicating 'least important' role and [4] indicating the "most important" role
(Please leave out any profession/s which you are unsure of).

	Least Important Role						Most Important Role
Acupuncture	1	2	3	4			
Ayurvedic Medicine	1	2	3	4			
Chinese medicine	1	2	3	4			
Chiropractic	1	2	3	4			
Dentistry	1	2	3	4			
Emergency care	1	2	3	4			
Chiropody	1	2	3	4			
Herbalism	1	2	3	4			
Homeopathy	1	2	3	4			
Medicine	1	2	3	4			
Nursing	1	2	3	4			
Optometry	1	2	3	4			
Pharmacy	1	2	3	4			
Physiotherapy	1	2	3	4			
Traditional healing	1	2	3	4			

5.6 To what extent is chiropractic accepted by the medical profession and the public of South Africa? (Please cross one box only)

- Great extent ☐
- Moderate extent ☐
- Slight extent ☐
- No active role ☐

5.7 In which sector would you say chiropractic plays a more significant role?

- Public sector ☐
- Private sector ☐

5.8 How many practicing chiropractors are you acquainted with?

- None ☐
- 1 ☐
- 2 ☐
- I do not know ☐
- 3 to 5 ☐
- 6 to 10 ☐
- >10 ☐

5.9 Have you encountered any promotional material related to chiropractic? ☐ Yes ☐ No
If yes, please elaborate on what promotional material you have encounted _____

6. The scope of practice of chiropractic

6.1 To what extent do you believe chiropractors to be competent in neurological (nervous) examination and diagnosis? (Please cross one box only)

- Very competent ☐
- Moderately competent ☐
- Slightly competent ☐
- Incompetent ☐
- Very incompetent ☐
- Unable to comment ☐

6.2 To what extent do you believe chiropractors to be competent in musculoskeletal (muscles and bony) examination and diagnosis? (Please cross one box only)

- Very competent ☐
- Moderately competent ☐
- Slightly competent ☐
- Incompetent ☐
- Very incompetent ☐
- Unable to comment ☐

6.2 To what extent do you believe chiropractors to be competent in general medical management of patients?

(Definition of 'general medical management' is "the ability to diagnose, treat, rehabilitate and refer the patient for optimum patient bene

- Very competent ☐
- Moderately competent ☐
- Slightly competent ☐
- Incompetent ☐
- Very incompetent ☐
- Unable to comment ☐

6.3 Do you think it is useful for patients to consult with chiropractors for preventative or maintenance care on a regular basis?

- Yes ☐
- No ☐

6.4 What kind of procedures would you expect a chiropractor to be able to perform, when necessary, in his/her assessment of a patient? (You may choose more than one option)

Administration of drugs by injection	☐
Auscultation	☐
Cardiovascular review	☐
Drawing of blood through syringes for blood tests	☐
Family history	☐
Genito-urinary review	☐
Musculoskeletal Assessment including palpation	☐
Neurological exam:	
- central nervous system review	☐
- cranial nerve review	☐
- peripheral nervous system review	☐
Orthopedic exam	☐
Past medical history	☐
Prescribe scheduled medication	☐
Radiological exam	☐
Respiratory review	☐
Social history	☐
Vital signs (heart rate, blood pressure, respiration)	☐

7. Perception of the chiropractic profession

7.1 Please rate each of the following statements reflecting your perception of the chiropractic profession.
Please cross a number for each statement, with: [1] indicating "strongly disagree" and [4] indicating "strongly agree"

I have never heard of chiropractic before; I do not know what it is	**Strongly**	1	2	3	4	**Strongly**
I have heard of it before but I do not know much about it	**Disagree**	1	2	3	4	**Agree**
Chiropractic does more harm than good		1	2	3	4	
It is a very effective treatment for muscle, joint and nerve conditions		1	2	3	4	
I am uncomfortable with chiropractic		1	2	3	4	
I think it has a valuable role in the health care system		1	2	3	4	
It may be effective for some patients		1	2	3	4	
I prefer chiropractic treatment over most other physical therapies	**Strongly**	1	2	3	4	**Strongly**
I am not informed enough to comment	**Disagree**	1	2	3	4	**Agree**

7.2 Which one of the following best reflects your view of chiropractic treatment? (Please tick one box only)

Chiropractic provides excellent treatment for some neuro-musculo-skeletal conditions.	☐
I am uncomfortable with chiropractic but it is effective for some patients	☐
Not informed enough to comment.	☐
Chiropractic is quackery and does more harm than good.	☐

7.3 Do you agree with the following views about the chiropractic profession? Please place an "**X**" in the correct box to indicate "**YES**" or "**NO**". Chiropractic /is:

accessible to everybody	Y	N
a competitive profession to physiotherapy	Y	N
a complementary profession to physiotherapy	Y	N
a drug intervention health care service	Y	N
a preventative health care service	Y	N
a primary health care service	Y	N
a rehabilitative health care service	Y	N
a secondary health care service	Y	N
a tertiary health care service	Y	N
a scientific alternative health care profession (registered with the Allied Health Professions Council of South Africa)	Y	N
an emergency health care service	Y	N
cost effective	Y	N
lacking scientific background	Y	N
I have no opinion/I do not know enough about it	Y	N
not needed in South Africa	Y	N
should be accessible to everybody	Y	N
should be part of an additional medical aid package	Y	N
should be covered by standard Medical aid	Y	N
should be recognized by law	Y	N
should not be covered by Medical Aid	Y	N

7.4 Do you feel adequately informed about chiropractic?

Yes ☐

No ☐

Please elaborate .....

7.5.1 Would you like to know more about the chiropractic profession?

Yes ☐

No ☐

7.5.2 How would you like to be informed about chiropractic?

by an informative lecture/seminar ☐

by meeting with relevant associations/organizations ☐

by personal contact ☐

by printed information packages ☐

by research publications ☐

by the media/press ☐

other (please specify) _____ ☐

Thank you very much for your time! The results will be treated confidentially

Appendix D1
Post focus-group pre departmental meeting questionnaire

Instructions:

Dear Participant

Completing this questionnaire should take approximately 10 minutes of your time.

You will remain anonymous throughout. Please do not place any identifying markings on the questionnaire.

Please answer ALL the questions, with candid honesty and to the best of your ability. You are requested to answer the questionnaire without consultation with other participants.

This is NOT a test. There are NO right or wrong answers.

I am looking at general trends and NOT individual cases.

Please note that questions refer to the chiropractic profession specifically in South Africa.

Thank you for your time!

1. Demographic Details

1.1 Gender: (Please cross the relevant block)

Female ☐ Male ☐

1.2 What was your age at your last birthday? _____ years

1.3 Ethnic Group: (Please cross the relevant block) (For statistical purposes only)

South African of Asian origin ☐ South African of Indian origin ☐

South African of Black origin ☐ South African of White origin ☐

South African of Coloured origin ☐ Other (please specify) _____ ☐

1.4.1 Are you covered by medical aid?

Yes ☐ No ☐

1.4.2 If you have answered yes to the previous question, please indicate which medical aid carrier you utilize:

_____

1.4.3 Is chiropractic treatment funded by your medical aid?

Yes ☐ No ☐

I do not know ☐

1.5 Language/s spoken: (Please cross the relevant block)

		Predominant First Language	Predominant Second Language	Predominant Third Language
1.	Afrikaans			
2.	English			
3.	isiNdebele			
4.	isiSwazi			
5.	isiXhosa			
6.	isiZulu			
7.	Sepedi			
8.	SeSotho			
9.	seTwana			
10.	TshiVenda			
11.	XiTsonga			
12.	Other: (Please specify)			

1.6 Do you read any chiropractic journals? ☐ Yes ☐ No

2. Educational Details

2.1 What is your highest qualification achieved (including Matriculation)?

_____

2.2 Institution at which highest qualification was obtained (E.g. School, institute.)

_____

2.3 Have you achieved any other qualifications within the health care field (NOT the highest qualification obtained)
E.g. Diploma, Bachelors degree, Phd. Please list all:

_____

_____

2.4 What year of study are you currently in?

_____

3. Level of knowledge about chiropractic

3.1 Does the chiropractic profession have a legislative body in South Africa?

Yes		No	
I do not know			

3.2 For how long has chiropractic been practised as a profession in South Africa, irrespective of legislature?

<10 years		>100 years	
11-50 years		I do not know	
51-100 years			

3.3 At which institution/s can chiropractic be studied in South Africa?

Durban University of Technology		University of the Free State	
Stellenbosch University		University of Johannesburg	
Tshwane University		University of KZN	
University of Cape Town		University of Western Cape	

3.4 What type of course do you think chiropractors follow? (Please cross the relevant block)

Weekend Course		Full-Time Course	
Part-time Course		I do not know	

3.5 What level of education is required to enter a chiropractic program? (Please cross the relevant block)

None		Medical or paramedical education	
Grade 10		Medical or paramedical propedeuse (Pre-medical or B. Sc degree)	
Grade 12 (without matric exemption)		I do not know	
Grade 12 (with matric exemption)			

3.6 How long do you think chiropractors have to work in order to complete their internship and community service requirements?

Not at all		3 Years	
1 Year		I do not know	
2 Years		Other (Please specify)	

3.7 A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?

Bachelor's degree	
Certificate	
Diploma	
Master's degree	
National Higher certificate	
National Higher Diploma	
PhD	
Other: _____	

3.8 The chiropractic course includes training in the following subjects/treatment methods**:**

Place an "**X**" in the correct box to indicate **"TRUE"** or "**FALSE"** (Please leave out any option which you are unsure of).

Acupuncture	T	F
Anatomy	T	F
Chemistry	T	F
Diagnostics	T	F
Drug therapy	T	F
Dry needling tender (trigger) points	T	F
Electrotherapy (IFC, TENS)	T	F
Emergency Care	T	F
Ergonomic advice	T	F
Exercise therapy	T	F
Fracture care	T	F
Chiropody	T	F
Heat & Ice therapy	T	F
Intensive care unit (ICU) training	T	F
Laser therapy	T	F
Manipulation/ Adjustment	T	F
Massage therapy	T	F
Medication	T	F
Medical Microbiology	T	F
Minor surgery	T	F
Mobilization	T	F
Nutritional advice	T	F
Pathology	T	F
Pharmacology	T	F
Physics	T	F
Physiology	T	F
Physiotherapeutic modalities	T	F
Psychiatry	T	F
Psychology	T	F
Radiotherapy	T	F
Rehabilitation	T	F
Stretching	T	F
Traction	T	F
Ultrasound therapy	T	F
Ultraviolet light therapy	T	F

3.9 Because of their training, chiropractors can focus their treatment in the following areas:
Please place an "**X**" in the correct box to indicate "**TRUE**" or "**FALSE**".

Acupuncture	T	F
Dry needling tender (trigger) points	T	F
Extremities (e.g. knee, elbow, wrist)	T	F
Neuromusculoskeletal system (nerves, muscles and bones)	T	F
Pediatrics	T	F
Radiology	T	F
Rehabilitation	T	F
Sports medicine	T	F
Surgery	T	F

3.10 Are chiropractic students required to complete any community service before qualifying?

Yes		No	
I do not know			

3.11 Is the chiropractic profession, in South Africa, regulated by a statutory body?

Yes		No	
I do not know			

3.12 Does the chiropractic profession in South Africa have a professional association?

Yes		No	
I do not know			

3.13 How many chiropractors do you think there are resident/practice in South Africa?

0-200		801-1000	
201-400		1001-1200	
401-600		> 1200	
601-800		I do not know	

3.14 In your opinion, how many medical aid carriers cover chiropractic care/treatment? (Please cross the relevant block)

0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%

4. Personal Experience of chiropractic treatment

4.1 Which health care practitioner would you consult with **FIRST** if you had any medical concern? (Please cross the relevant block)

Biokineticist	Chiropractor	GP	Homeopath	Pharmacist	Physiotherapist	Specialist	Traditional healer

Other (please specify) _____

			WHEN DID LAST CONSULT TAKE PLACE?	**FOR WHAT CONDITION WAS THE LAST CONSULT?**	**Did the provided care meet your expectations?**	
4.2Have **<u>you</u>** consulted with a Chiropractor/chiropractic intern before?	YES	NO			YES	NO
4.3 Have **<u>your family members</u>** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO
4.4 Have **<u>your friends</u>** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO

4.5 If you have answered **yes** to question 4.2, would you continue to consult with a chiropractor for the same or a different condition in the future?

Yes		No	
I am unsure		Not applicable	

4.6 If you answered yes to 4.2, would you recommend chiropractic treatment to your colleagues, friends and/or family?

Yes		No	
I am undecided		Not applicable	

4.7 How do you get information about chiropractic? (You may choose more than one option)

From friends, colleagues, doctors etc.	
From internet websites	
From medical journals or research	
From my family/friends who have been treated by a chiropractor	
From being treated by a chiropractor	
From reading about chiropractic in the media (e.g. magazine/newspaper/flier)	
From doing my own research	
I have not received any information about chiropractic	
Other (please specify) _____	

5. Integration of chiropractic in the primary health care system

5.1 How close is the nearest practitioner to where you live? Please select ONE option for each practitioner with a cross.

PRACTITIONER	0-10 km	10-20 km	20-30 km	30-40 km	40-50 km	> 50 km	I do not know
Biokineticist							
Chiropractor							
GP							
Homeopath							
Pharmacist							
Physiotherapist							
Specialist							
Traditional healer							
Other (specify) _____							

5.2 In your opinion, which health care provider is best suited to treat the following conditions:

CONDITION	**Bio-kineticist**	**Chiro-practor**	**GP**	**Homeo-path**	**Pharm-acist**	**Physio-therapist**	**Specialist**	**Traditional Healer**
Allergies								
Appendicitis								
Arthritis								
Asthma								
Chronic conditions								
Chronic pain problems								
Colic in babies								
Constipation								
Diabetes Mellitus								
Sore throat								
Fractures								
Gastro-intestinal problems								
Headaches								
High Blood Pressure								
Joint/ligament sprains								
Low back pain								
Low back pain (in pregnancy)								
Muscle spasm/strain								
Neck pain								
Osteoarthritis								
Osteoporosis								
Pins and needles/ numbness in your arms or legs								
Postural Abnormalities (e.g.Scoliosis)								
Post orthopaedic surgery rehabilitation								
Shoulder pain								
Slipped disc/disc herniation								
Sports injuries								
Temporomandibular joint problems								
Viral Infections (e.g. Flu)								
Whiplash injuries								

5.3 Do chiropractors process workman's compensation claims?

Yes ☐ No ☐

I do not know ☐

5.4 Please rate each of the following professions in terms of their importance in serving in the South African health care system.
Please cross a number for each profession, with: [1] indicating 'least important' role and [4] indicating the "most important" role (leave out any profession/s which you are unsure of).

Acupuncture	**Least**	1	2	3	4	**Most**
Ayurvedic Medicine	**Important**	1	2	3	4	**Important**
Chinese medicine	**Role**	1	2	3	4	**Role**
Chiropody/podiatrist		1	2	3	4	
Chiropractic		1	2	3	4	
Dentistry		1	2	3	4	
Emergency care		1	2	3	4	
Herbalism		1	2	3	4	
Homeopathy		1	2	3	4	
Medicine		1	2	3	4	
Nursing		1	2	3	4	
Optometry		1	2	3	4	
Pharmacy	**Least**	1	2	3	4	**Most**
Physiotherapy	**Important**	1	2	3	4	**Important**
Traditional healing	**Role**	1	2	3	4	**Role**

5.5 To what extent is chiropractic accepted by the medical profession of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

5.6 To what extent is chiropractic accepted by the public of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

5.7 In which sector would you say chiropractic plays a more significant role?

Public sector	
Private sector	

5.8 How many chiropractors or chiropractic interns are you acquainted with?

None		3 to 5	
1		6 to 10	
2		>10	

6. The scope of practice of chiropractic

6.1 To what extent do you believe chiropractors to be competent in neuromusculoskeletal (nerves, muscles & bones) examination and diagnosis? (Please cross one box only)

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

6.2 To what extent do you believe chiropractors to be competent in general management of patients?
(Definition of 'general management' is "the ability to diagnose, treat, rehabilitate and refer the patient for optimum patient benefit")

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

6,3 In your opinion, what is the primary focus of chiropractic care?

Curative	
Diagnostic	
Emergency	
Preventative	
Prophylactic	
Rehabilitative	
Surgical	

6.4 What kind of procedures would you expect a chiropractor to be able to perform, when necessary, in his/her assessment of a patient? (You may choose more than one option)

Cardiovascular exam	
Drawing of blood through syringes for blood tests	
Family history	
General exam	
Genito-urinary exam	
Musculoskeletal Assessment including palpation	
Neurological exam:	
- central nervous system exam	
- cranial nerve exam	
- peripheral nervous system exam	
Orthopedic exam	
Past medical history	
Radiological exam	
Respiratory exam	
Social history	
Vital signs	

7. Perception of the chiropractic profession

7.1 Please rate each of the following statements reflecting your perception of the chiropractic profession.
Please cross a number for each statement, with: [1] indicating “strongly disagree” and [4] indicating “strongly agree”

I have never heard of chiropractic before; I do not know what it is	**Strongly**	1	2	3	4	**Strongly**
I have heard of it before but I do not know much about it	**Disagree**	1	2	3	4	**Agree**
Chiropractic does more harm than good		1	2	3	4	
It is a very effective treatment for muscle, joint and nerve conditions		1	2	3	4	
I am uncomfortable with chiropractic		1	2	3	4	
I think it has a valuable role in the health care system		1	2	3	4	
It may be effective for some patients		1	2	3	4	
I prefer chiropractic treatment over most other physical therapies	**Strongly**	1	2	3	4	**Strongly**
I am not informed enough to comment	**Disagree**	1	2	3	4	**Agree**

7.2 Do you agree with the following views about the chiropractic profession? Please place an "**X**" in the correct box to indicate “**YES**” or “**NO**”. Chiropractic is:

Accessible to everybody	Y	N
A competitive profession to physiotherapy	Y	N
A complementary profession to physiotherapy	Y	N
A drug intervention health care service	Y	N
A preventative health care service	Y	N
A primary health care service	Y	N
A rehabilitative health care service	Y	N
A secondary health care service	Y	N
A tertiary health care service	Y	N
A scientific alternative health care profession	Y	N
An emergency health care service	Y	N
Cost effective	Y	N
Lacking scientific background	Y	N
I have no opinion/I do not know enough about it	Y	N
Not needed in South Africa	Y	N
Should be accessible to everybody	Y	N
Should be part of an additional medical aid package	Y	N
Should be covered by standard Medical aid	Y	N
Should be recognized by law	Y	N
Should not be covered by Medical Aid	Y	N

7.3.1 Do you feel adequately informed about chiropractic?

Yes	
No	

7.3.2 Would you like to know more about the chiropractic profession?

Yes	
No	

7.3.3 If you have answered **yes** to question 8.3.2, how would you like to be informed about chiropractic?

By an informative lecture/seminar	
By meeting with relevant associations/organizations	
by personal contact	
by printed information packages	
by research publications	
by the media/press	
Other (please specify) _____	

Thank you very

Appendix D2
Post departmental meeting/ pre pilot study questionnaire

Instructions:

Dear Participant

Completing this questionnaire should take approximately 10 minutes of your time.

You will remain anonymous throughout. Please do not place any identifying markings on the questionnaire.

Please answer ALL the questions, with candid honesty and to the best of your ability. You are requested to answer the questionnaire without consultation with other participants.

This is NOT a test. There are NO right or wrong answers.

I am looking at general trends and NOT individual cases.

Please note that questions refer to the chiropractic profession specifically in South Africa.

Thank you for your time!

1. Demographic Details

1.1 Gender: (Please cross the relevant block)

Female ☐ Male ☐

1.2 What was your age at your last birthday? _____ years

1.3 Ethnic Group: (Please cross the relevant block) (For statistical purposes only)

South African of Asian origin ☐ South African of Indian origin ☐

South African of Black origin ☐ South African of White origin ☐

South African of Coloured origin ☐ Other (please specify) _____ ☐

2. Educational Details

2.1 What is your highest qualification achieved (including Matriculation)?

_____

_____

2.2 Institution at which highest qualification was obtained (E.g. School, institute.)

_____

2.3 Have you achieved any other qualifications within the health care field (NOT the highest qualification obtained)
E.g. Diploma, Bachelors degree, Phd. Please list all:

_____

_____

_____

_____

2.4 What year of study are you currently in?_____

3. Medical aid details

3.1 Are you covered by medical aid?

Yes ☐ No ☐

3.2 If you have answered **yes** to the previous question, please indicate which medical aid carrier you utilize:

_____

3.3 Is chiropractic treatment funded by your medical aid?

Yes ☐ No ☐

I do not know ☐

4. Level of knowledge about chiropractic

4.1 What level of education is required to enter a chiropractic program? (Please cross the relevant block)

None		Medical or paramedical education	
Grade 10		Medical or paramedical propedeuse (Pre-medical or B. Sc degree)	
Grade 12 (without matric exemption)		I do not know	
Grade 12 (with matric exemption)			

4.2 At which institution/s can chiropractic be studied in South Africa?

Durban University of Technology		University of the Free State	
Stellenbosch University		University of Johannesburg	
Tshwane University		University of KZN	
University of Cape Town		University of Western Cape	

4.3 What type of course do you think chiropractors follow? (Please cross the relevant block)

Weekend Course		Full-Time Course	
Part-time Course		I do not know	

4.4 A chiropractor that qualifies from his/her studies in South Africa does so with which ONE of the following qualifications?

Bachelor's degree	
Certificate	
Diploma	
Master's degree	
National Higher certificate	
National Higher Diploma	
PhD	
Other: _____	

4.5 The chiropractic course includes training in the following subjects/treatment methods**:**
Place an "**X**" in the correct box to indicate **"TRUE"** or "**FALSE"** (Please leave out any option which you are unsure of).

Acupuncture	T	F
Anatomy	T	F
Chemistry	T	F
Diagnostics	T	F
Drug therapy	T	F
Dry needling tender (trigger) points	T	F
Electrotherapy (IFC, TENS)	T	F
Emergency Care	T	F
Ergonomic advice	T	F
Exercise therapy	T	F
Fracture care	T	F
Chiropody	T	F
Heat & Ice therapy	T	F
Intensive care unit (ICU) training	T	F
Laser therapy	T	F
Manipulation/ Adjustment	T	F
Massage therapy	T	F
Medication	T	F
Medical Microbiology	T	F
Minor surgery	T	F
Mobilization	T	F
Nutritional advice	T	F
Pathology	T	F
Pharmacology	T	F
Physics	T	F
Physiology	T	F
Physiotherapeutic modalities	T	F
Psychiatry	T	F
Psychology	T	F
Radiotherapy	T	F
Rehabilitation	T	F
Stretching	T	F
Traction	T	F
Ultrasound therapy	T	F
Ultraviolet light therapy	T	F

4.6 Because of their training, chiropractors can focus their treatment in the following areas:
Please place an "**X**" in the correct box to indicate "**TRUE**" or "**FALSE**".

Acupuncture	T	F
Dry needling tender (trigger) points	T	F
Extremities (e.g. knee, elbow, wrist)	T	F
Neuromusculoskeletal system (nerves, muscles and bones)	T	F
Pediatrics	T	F
Radiology	T	F
Rehabilitation	T	F
Sports medicine	T	F
Surgery	T	F

4.7 Are chiropractic students required to complete an internship? If yes, how long does this take?

No, Not at all		Yes, 3 years	
Yes, 1 year		I do not know	
Yes, 2 years		Other (please specify)	

4.8 Are chiropractic students required to complete any community service before qualifying?

Yes		No	
I do not know			

4.9 Does the chiropractic profession have a legislative body in South Africa?

Yes		No	
I do not know			

4.10 For how long has chiropractic been practised as a profession in South Africa, irrespective of legislature?

<10 years		>100 years	
11-50 years		I do not know	
51-100 years			

4.11 Does the chiropractic profession in South Africa have a professional association?

Yes		No	
I do not know			

4.12 How many chiropractors do you think there are resident/practice in South Africa?

0-200		801-1000	
201-400		1001-1200	
401-600		> 1200	
601-800		I do not know	

4.13 In your opinion, how many medical aid carriers cover chiropractic care/treatment? (Please cross the relevant block)

None	Some	Majority	All	Unsure

4.14 Do you read any chiropractic journals? ☐ Yes ☐ No

5. Personal Experience of chiropractic treatment

5.1 Which health care practitioner would you consult with **FIRST** if you had any medical concern? (Please cross the relevant block)

Biokineticist	Chiropractor	GP	Homeopath	Pharmacist	Physiotherapist	Specialist	Traditional healer

Other (please specify) _____

			WHEN DID LAST CONSULT TAKE PLACE?	**FOR WHAT CONDITION WAS THE LAST CONSULT?**	**Did the provided care meet your expectations?**	
5.2 Have **you** consulted with a Chiropractor/chiropractic intern before?	YES	NO			YES	NO
5.3 Have **your family members** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO
5.4 Have **your friends** consulted with a chiropractor/chiropractic intern before?	YES	NO			YES	NO

5.5 If you have answered **yes** to question 5.2, would you continue to consult with a chiropractor for the same or a different condition in the future?

Yes		No	
I am unsure		Not applicable	

5.6 If you answered yes to 5.2, would you recommend chiropractic treatment to your colleagues, friends and/or family?

Yes		No	
I am undecided		Not applicable	

5.7 In your professional role, would you refer a patient to a chiropractor?

Yes	
No	

If no, please elaborate ……..

5.8 How do you get information about chiropractic? (You may choose more than one option)

From friends, colleagues, doctors etc.	
From internet websites	
From medical journals or research	
From my family/friends who have been treated by a chiropractor	
From being treated by a chiropractor	
From reading about chiropractic in the media (e.g. magazine/newspaper/flier)	
From doing my own research	
I have not received any information about chiropractic	
Other (please specify) _____	

5.9 How many chiropractors or chiropractic students are you acquainted with?

None		3 to 5	
1		6 to 10	
2		>10	

6. Integration of chiropractic in the primary health care system

6.1 How close is the nearest practitioner to where you live? Please select ONE option for each practitioner with a cross.

PRACTITIONER	0-10 km	10-20 km	20-30 km	30-40 km	40-50 km	> 50 km	I do not know
Biokineticist							
Chiropractor							
GP							
Homeopath							
Pharmacist							
Physiotherapist							
Specialist							
Traditional healer							
Other (specify) _____							

6.2 In your opinion, which health care provider is best suited to treat the following conditions:

CONDITION	**Bio-kineticist**	**Chiro-practor**	**GP**	**Homeo-path**	**Pharm-acist**	**Physio-therapist**	**Specialist**	**Traditional Healer**
Allergies								
Appendicitis								
Arthritis								
Asthma								
Chronic conditions								
Chronic pain problems								
Colic in babies								
Constipation								
Diabetes Mellitus								
Sore throat								
Fractures								
Gastro-intestinal problems								
Headaches								
High Blood Pressure								
Joint/ligament sprains								
Low back pain								
Low back pain (in pregnancy)								
Muscle spasm/strain								
Neck pain								
Osteoarthritis								
Osteoporosis								
Pins and needles/ numbness in your arms or legs								
Postural Abnormalities (e.g.Scoliosis)								
Post orthopaedic surgery rehabilitation								
Shoulder pain								
Slipped disc/disc herniation								
Sports injuries								
Temporomandibular joint problems								
Viral Infections (e.g. Flu)								
Whiplash injuries								

6.3 Do chiropractors process workman's compensation claims?

Yes ☐ No ☐

I do not know ☐

6.4 Please rate each of the following professions in terms of their importance in serving in the South African health care system.
Please cross a number for each profession, with: [1] indicating 'least important' role and [4] indicating the "most important" role (leave out any profession/s which you are unsure of).

Acupuncture	**Least**	1	2	3	4	**Most**
Ayurvedic Medicine	**Important**	1	2	3	4	**Important**
Chinese medicine	**Role**	1	2	3	4	**Role**
Chiropody/podiatrist		1	2	3	4	
Chiropractic		1	2	3	4	
Dentistry		1	2	3	4	
Emergency care		1	2	3	4	
Herbalism		1	2	3	4	
Homeopathy		1	2	3	4	
Medicine		1	2	3	4	
Nursing		1	2	3	4	
Optometry		1	2	3	4	
Pharmacy	**Least**	1	2	3	4	**Most**
Physiotherapy	**Important**	1	2	3	4	**Important**
Traditional healing	**Role**	1	2	3	4	**Role**

6.5 To what extent is chiropractic accepted by the medical profession of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

6.6 To what extent is chiropractic accepted by the public of South Africa? (Please cross one box only)

Great extent	
Moderate extent	
Slight extent	
Not at all	

6.7 In which sector would you say chiropractic plays a more significant role?

Public sector	
Private sector	

7. The scope of practice of chiropractic

7.1 To what extent do you believe chiropractors to be competent in neuromusculoskeletal (nerves, muscles & bones) examination and diagnosis? (Please cross one box only)

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

7.2 To what extent do you believe chiropractors to be competent in general management of patients?
(Definition of 'general management' is "the ability to diagnose, treat, rehabilitate and refer the patient for optimum patient benefit")

Very competent	
Moderately competent	
Slightly competent	
Incompetent	
Very incompetent	
Unable to comment	

7,3 In your opinion, what is the primary focus of chiropractic care?

Curative	
Diagnostic	
Emergency	
Preventative	
Prophylactic	
Rehabilitative	
Surgical	

7.4 What kind of procedures would you expect a chiropractor to be able to perform, when necessary, in his/her assessment of a patient? (You may choose more than one option)

Cardiovascular exam	
Drawing of blood through syringes for blood tests	
Family history	
General exam	
Genito-urinary exam	
Musculoskeletal Assessment including palpation	
Neurological exam:	
- central nervous system exam	
- cranial nerve exam	
- peripheral nervous system exam	
Orthopedic exam	
Past medical history	
Radiological exam	
Respiratory exam	
Social history	
Vital signs	

8. Perception of the chiropractic profession

8.1 Please rate each of the following statements reflecting your perception of the chiropractic profession.
Please cross a number for each statement, with: [1] indicating “strongly disagree” and [4] indicating “strongly agree”

I have never heard of chiropractic before; I do not know what it is	**Strongly**	1	2	3	4	**Strongly**
I have heard of it before but I do not know much about it	**Disagree**	1	2	3	4	**Agree**
Chiropractic does more harm than good		1	2	3	4	
It is a very effective treatment for muscle, joint and nerve conditions		1	2	3	4	
I am uncomfortable with chiropractic		1	2	3	4	
I think it has a valuable role in the health care system		1	2	3	4	
It may be effective for some patients		1	2	3	4	
I prefer chiropractic treatment over most other physical therapies	**Strongly**	1	2	3	4	**Strongly**
I am not informed enough to comment	**Disagree**	1	2	3	4	**Agree**

8.2 Do you agree with the following views about the chiropractic profession? Please place an "**X**" in the correct box to indicate “**YES**” or “**NO**”. Chiropractic is:

Accessible to everybody	Y	N
A competitive profession to physiotherapy	Y	N
A complementary profession to physiotherapy	Y	N
A drug intervention health care service	Y	N
A preventative health care service	Y	N
A primary health care service	Y	N
A rehabilitative health care service	Y	N
A secondary health care service	Y	N
A tertiary health care service	Y	N
A scientific alternative health care profession	Y	N
An emergency health care service	Y	N
Cost effective	Y	N
Lacking scientific background	Y	N
I have no opinion/I do not know enough about it	Y	N
Not needed in South Africa	Y	N
Should be accessible to everybody	Y	N
Should be part of an additional medical aid package	Y	N
Should be covered by standard Medical aid	Y	N
Should be recognized by law	Y	N
Should not be covered by Medical Aid	Y	N

8.3.1 Do you feel adequately informed about chiropractic?

Yes	
No	

8.3.2 Would you like to know more about the chiropractic profession?

Yes	
No	

8.3.3 If you have answered **yes** to question 8.3.2, how would you like to be informed about chiropractic?

By an informative lecture/seminar	
By meeting with relevant associations/organizations	
by personal contact	
by printed information packages	
by research publications	
by the media/press	
Other (please specify) _____	

Thank you very much for your time! The results will be treated confidentially

Appendix D3
PRE-TEST EVALUATION OF QUESTIONNAIRE

1. What is your opinion of the subject matter presented in this questionnaire?
   (Please mark 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. Was the questionnaire too long?

   5.1 Yes ☐
   5.2 No ☐

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

   6.1 The meaning of **all questions** is very 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 down the number/s of the question/s in the space below with a suggestion on how the question/s could 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.

ETHICS CLEARANCE CERTIFICATE

Student Name	Sarvesh Maharajh	Student No	20100717
Ethics Reference Number	FHSEC 2009-159	Date of FRC Approval	12/03/2009
Research Title:	**The knowledge and perception of second and third year medical students at the Nelson Mandela School of medicine towards Chiropractic**		

In terms of the ethical considerations for the conduct of research in the Faculty of Health Sciences, Durban University of Technology, this proposal meets with Institutional requirements and confirms the following ethical obligations:

1. The researcher has read and understood the research ethics policy and procedures as endorsed by the Durban University of Technology, has sufficiently answered all questions pertaining to ethics in the DUT 186 and agrees to comply with them.
2. The researcher will report any serious adverse events pertaining to the research to the Faculty of Health Sciences Research Ethics Committee.
3. The researcher will submit any major additions or changes to the research proposal after approval has been granted to the Faculty of Health Sciences Research Committee for consideration.
4. The researcher, with the supervisor and co-researchers will take full responsibility in ensuring that the protocol is adhered to.
5. ***The following section must be completed if the research involves human participants:***

	YES	NO	N/A
❖ Provision has been made to obtain informed consent of the participants	X		
❖ Potential psychological and physical risks have been considered and minimised	X		
❖ Provision has been made to avoid undue intrusion with regard to participants and community	X		
❖ Rights of participants will be safe-guarded in relation to: - Measures for the protection of anonymity and the maintenance of Confidentiality.	X		
- Access to research information and findings.	X		
- Termination of involvement without compromise	X		
- Misleading promises regarding benefits of the research	X		

SIGNATURE OF STUDENT/RESEARCHER — DATE: 10/03/2009

SIGNATURE OF SUPERVISOR/S — DATE: 10/3/2009

SIGNATURE OF HEAD OF DEPARTMENT — DATE: 10 MARCH 2009

SIGNATURE: CHAIRPERSON OF RESEARCH ETHICS COMMITTEE — DATE: 10/03/09