CHAPTER ONE – INTRODUCTION

According to Meeker (2003), throughout the world more and more people were using Complementary and Alternative Medicine (CAM) and a greater demand for co-operation was being called for amongst orthodox medical professionals and CAM therapy professionals. However, according to Berman, Singh, Hartnoll, Singh and Reilly (1998) physician's attitudes toward alternative treatments varied amongst countries, therefore there was no clear definition between alternative and conventional treatments and that many therapies once considered alternative, were becoming more mainstream and accepted.

According to Wardwell (1992), orthodox medicine had a long history of opposing Chiropractic and due to the American Medical Association's anti-Chiropractic campaign, Chiropractic acceptance had been delayed by convincing health professionals, as well as the layperson, that Chiropractic was unscientific.

Even more recently, according to Jarvis (2000), Chiropractic had been labeled the most significant non-scientific health-care delivery service in the United States.

According to Langworthy and Birkelid (2001), a growing trend towards and a greater public demand for integration of orthodox and non-orthodox medicine was occurring. According to Coulter (1998), medical professionals were increasingly accepting Chiropractic in the United States.

However, according to Manga (2000), there was no qualification of the level of integration of Chiropractic and that integration may be more apparent in the United States than in other countries.

The aim of this research was to determine what the Western Region of Johannesburg medical doctors understood about Chiropractic, their general opinion of Chiropractic and how effective they viewed Chiropractic treatment compared to physiotherapy and to whom they generally referred their patients too. It also aimed to determine whether more education within the medical professions with regards to Chiropractic was needed, at which level and to which medical professions this education should be targeted.

A questionnaire was hand-delivered to each Doctor of Orthopedics, Neurologists/Neuro-surgeons and General Practitioners practising within the West Rand. The doctor was free not to participate and could withdraw at anytime. The questionnaire assessed their knowledge, usage of and attitude towards Chiropractic. This populace had been chosen as the desired field of research as many patients treated in their practices could also be effectively treated by Chiropractors.

The following literature review elaborated on the history of Chiropractic in South Africa, Chiropractic struggle with medicine both in South Africa and abroad, gave an explanation as to why medicine opposed Chiropractic, how Chiropractic was defined in South Africa and what the potential future of Chiropractic was as a profession world-wide.

CHAPTER TWO - LITERATURE REVIEW

2.1 A Brief History of Chiropractic in South Africa

Dr Mario Milani (2000), former President of the Chiropractic Association of South Africa (CASA), chairperson of the Allied Health Professions Council of South Africa (AHPSA) and currently a member of the Executive Committee of AHPSA, stated that Chiropractic had been in South Africa for more than one hundred years, initially brought to South Africa by missionaries.

Dr Reginald Engelbrecht (1986), the Chief Executive Officer of the Chiropractic Association of South Africa (CASA), said that these early pioneers came to South Africa as graduates from Chiropractic Schools in the United States of America, and four or five of these pioneers had set up private practice around the country. Their following steadily grew and several new practices were started.

By 1928, according to Dr Milani (2000), Chiropractic had begun to establish itself in the major cities and towns in South Africa. However, the profession was still relatively small and unknown and when the South African Medical and Dental Act of 1928 was promulgated, Chiropractic services were not included.

According to Dr Milani (2000), between 1940 and 1958, Chiropractors formed the South African Manipulative Practitioners Association and attempted to get legislation passed to legalise Chiropractic in South Africa. However, during this time, professional conflict existed between orthodox medicine and Chiropractic in the United States. This conflict took root in South Africa as well.

By 1960, according to Dr Engelbrecht (1986), Chiropractic had grown considerably and it became apparent that legislation was needed to govern and control the profession. However, in that same year, the South African Medical Association (SAMA) had successfully removed Chiropractic from all medical aids thereby causing economic hardship and humiliation to the Chiropractic profession. SAMA influenced the non-payment of Chiropractic services based upon the argument that Chiropractic had no scientific validation.

Dr Engelbrecht (1986) stated that in 1962, a Private Members Bill seeking legal recognition for Chiropractic was introduced to Parliament by a member of the public, Mr B. J. Van Der Walt, which resulted in the then Minister of Health, Dr A. Hertzog, appointing a Commission of Inquiry into Chiropractic.

According to Dr Milani (2000), the Commission of Inquiry members where medically orientated and unfamiliar with Chiropractic principles or practice. During the investigation, no Chiropractic expert, training facility or learning institution in South Africa or elsewhere was visited nor consulted. The Commissions findings were: Chiropractic should not be recognised as a profession; Chiropractors should be given until 1970 to become qualified medical doctors or register as physiotherapists and that after 1963, no other person be allowed to practise as a Chiropractor in South Africa.

According to Dr Engelbrecht (1986), Dr A. Hertzog realised the report was biased and that it would not be beneficial to the profession nor the public to follow the recommendations and shelved the report. In the interim, Chiropractors in South Africa formed various associations, dividing themselves into 'straights' and 'mixers', each claiming to represent 'true' Chiropractic.

According to Kaptchuk and Eisenberg (1998), 'straights' tend to rely on spinal manipulation only and believed that all disease came from the subluxation, while 'mixers' used manipulation as well as other physical therapy modalities, for example, massage, nutritional supplements and exercise, were open to conventional medicine, and believed that the subluxation was one of many causes of disease and seeked to situate themselves as neuromusculoskeletal specialists.

According to Dr Engelbrecht (1986) during this time many unqualified persons were found practising under the name of Chiropractic. The need for legislation became apparent. In 1970, Dr C. De Wet, the new Minister of Health, was approached to initiate positive legislation for Chiropractic. Dr De Wet stood against any form of complete recognition for Chiropractic and re-presented the 1962 Report to Parliament. Chiropractic professionals and patients lobbied strongly for recognition and many debates followed in Parliament which resulted in the passing of the Chiropractic Act, Act 76 of 1971.

According to Dr Engelbrecht (1986) this Act effectively froze the Chiropractic profession, by not allowing any future Chiropractors being able to register and practise in South Africa. The South African Medical and Dental Council (SAMDC) and Medical Association of South Africa (MASA) viewed this as a great victory and believed Chiropractic in South Africa would eventually be phased out. The Chiropractic Associations in South Africa were optimistic and favoured the Act for several reasons: The Act gave the profession some form of legal recognition; and made it possible for Associations to get their 'house in order' and establish ethical controls over the profession. Thus it came about that Chiropractors in South Africa set aside their ideological differences and formed one association, namely the Chiropractic Association of South Africa (CASA). Once CASA was formed and the profession spoke with 'one voice', the Minister of Health, Dr C. De Wet, granted the profession interviews and re-opened negotiations for recognition within the healthcare profession.

Dr Engelbrecht (1986) stated that in February of 1977, after further representation to the new Minister of Health, Dr S. Van Der Merwe, CASA had to defend themselves against the 1962 Report. A memorandum on the development within the Chiropractic profession and rebuttals to the 1962 Report took two years to present, costing several thousand rands. By this time Chiropractic had reached a critical stage. Of the 176 qualified Chiropractors registered under the Act, only 102 were still in practice, Chiropractic was seen to be dying out in South Africa.

According to Dr Engelbrecht (1986), on 22nd March 1980, Dr L.A.P.A. Munnik, the new Minister of Health granted CASA an interview. Dr Munnik was sympathetic to the Chiropractic struggle and its need for legislation in order for the profession to survive. Subsequently the Chiropractic Ethical Rules were published in the Government Gazette on 1st July 1980.

On the 6th March 1981, CASA held a meeting with the SAMDC. The Minister of Health then arranged another meeting in Cape Town on 10th August 1981, this time other interested health groups where included. At this meeting, evidence to support Chiropractic was presented according to Dr Engelbrecht (1986)

However, according to Dr Milani (2000), a proposal had in the interim been tabled that should the SAMDC not accept Chiropractic as a profession, the Government should then grant Chiropractic their own Council with the same rights as the SAMDC. The proposal was brilliant. It allowed the politicians to save face with the SAMDC. They would not have to pronounce on the already rejected views of the Commission of Inquiry by some medical doctors. Also, some past presidents, politicians and their voters had enjoyed and benefited from the services offered by Chiropractors and one could imagine the revolt if those services ceased to exist. By allowing Chiropractors their own Council, the SAMDC did not need to recognise Chiropractic; the public would continue to benefit from Chiropractic services and the politicians and voters, who had been lobbying and petitioning on the behalf of Chiropractic, would be grateful.

According to Dr Engelbrecht (1986), the SAMDC was at the time, the Advisory Body to the Department of Health. The SAMDC had to advise the Minister of Health on the merits and possible inclusion of Chiropractic under the healthcare disciplines in South Africa. However, to the dismay of the Chiropractic profession, the SAMDC voted 17 to 16 against the inclusion of Chiropractic, stating that it was unscientific and had no place in the realm of medicine.

According to Dr Engelbrecht (1986), Dr Munniks policy at the time was to recognise the need for proper control of the various health professions not covered by the Medical and Dental Act of 1928, and after due deliberation proposed that a Statutory Board be established for Chiropractic having the same powers as the Medical Council. Thus the Associated Health Professions Board was formed which included Homeopathy, Osteopathy and Naturopathy. The duty of the Board was to exercise strict control over its members and act as an Advisory Body to the Minister of Health. The Associated Health Professions Act, Act 63 of 1982 was subsequently passed through Parliament and Chiropractic had finally gained statutory recognition.

Dr Engelbecht (1986) stated that the Associated Health Service Professions Board (AHSP) held its first meeting in Pretoria on the 9th August 1982. The Minister of Health appointed the members of the Board, which consisted of two Medical Practitioners, one Advocate and Professor of Law, one Educationist, one Osteopath, one Naturopath, three Homeopaths and five Doctors of Chiropractic. The five

Chiropractors were Dr Reginald Engelbrecht (Doctor of Chiropractic, Palmer Graduate), Dr Christopher Diedericks (Doctor of Chiropractic, Palmer Graduate), Dr Glynn Till (Doctor of Chiropractic, Lincoln Graduate), Dr Mario Milani (Doctor of Chiropractic, Lincoln Graduate) and Dr Brain Peters (Doctor of Chiropractic, CMCC Graduate). The Board controlled all matters relating to 'non-medical' disciplines and had liased with CASA to pass further legislation with regards to ethical and professional conduct.

Dr Engelbrecht (1986) stated that in August 1982, Dr N. van der Merwe was appointed Minister of Health. Dr van der Merwe was a Member of Parliament for the same constituency that Dr Engelbrecht was resident. Dr Engelbrecht requested an interview with the Minister of Health, Dr van der Merwe, who responded by paying a personal visit to the consulting rooms of Dr Engelbrecht. Many questions were asked and answered in this interview and evidence concerning the Chiropractic profession was made immediately available to the Minister. Ultimately tremendous steps were made towards re-opening the Chiropractic Register during that visit.

According to Dr Engelbecht (1986), 1984 was a significant year for Chiropractic. A small delegation from the Board were sent to Europe and the United States to assess various training facilities, standards of education as well as entrance requirements for Chiropractic students and other disciplines. In May of 1984, an invitation was extended to Dr Engelbrecht to attend a Spinal Instruction seminar arranged by the Orthopedic Association of South Africa. Still, AHSP and CASA continued their struggle to have the Chiropractic Register re-opened. Stressing that the profession had met all the requirements of the previous Minister of Health and that the re-opening of the register was long overdue, Dr van der Merwe agreed and assured Dr Engelbrecht that everything possible would be done to call for a bill that allowed for registration of new Chiropractors during the current parliamentary session. CASA and AHSP Board set about compiling as much documentation and evidence as possible submitting these to as many parliamentarians as possible. However, on the 24th April 1985, Dr van der Merwe passed away and the likelihood of an Amendment Bill being presented during the current parliamentary session seemed unlikely. Fortunately, Dr Munnik was appointed as the Acting Minister of Health and he pressed forward for Chiropractic with the Amendment Bill, where Dr van der Merwe had left off.

Dr Engelbrecht (1986) stated that the Medical Association strongly opposed the Amendment Bill and presented documentation against Chiropractic to Parliament. However this documentation was quite outdated. Rebuttals were submitted which were well received by Parliament. Dr Milani, President of CASA and Chairman of AHSP, as well as other delegates, travelled to Cape Town on several occasions during this time to present evidence to the Standing Committee on Health matters and held several meetings with significant members. Dr Milani and Dr P. van der Veen, the Registrar of the AHSP Board, were present during some crucial debating sessions and were able to present immediate counsel to the Minister on many issues. All these efforts supported and encouraged Dr Munnik to have the Amendment Bill approved by Parliament.

According to Dr Engelbrecht (1986), on Friday evening, 7th June 1985, the Bill was finally approved with little opposition. The Associated Health Service Professions Amendment Act (Act 108 of 1985) was passed. This Act included new Doctors of Chiropractic to register who were duly qualified and met the requirements of the AHSP Board.

According to Haldeman (1992), the first academic training course for Chiropractic in South Africa was opened in January of 1987 at the Technikon Natal in Durban and in January 1993 the second academic training course was opened in Johannesburg at Technikon Witwatersrand.

2.2 Medical Opposition towards Chiropractic in South Africa

According to the South African Medical Journal (SAMJ) (1971), Dr A. Hertzog formed a Commission of Enquiry into Chiropractic in September of 1962. The commission members were Dr H.O.Monning (Chairman), Mr A.I. Malan, Dr H.E. Brink, Dr L.M. Jonck, Dr J.J.D. de Wit, Dr W.G. Sutton and Dr D. Craven and was called the Monning Commission. The Commissions duty was to ascertain whether firstly Chiropractic rendered a useful and necessary function of a medical nature; secondly whether their services constitute a danger to society and thirdly if Chiropractic was found to be useful, should they be recognised as a professional group.

According to the SAMJ (1971), none of the committee members were medical doctors and therefore no bias was found in their findings which favoured the medical profession as a whole. However, according to Dr Engelbrecht (1986), the committee was more medically orientated, the committee members were more familiar with medicine and worked with medical doctors and were unfamiliar with Chiropractic. They did not interview any Chiropractors nor did they visit any training facilities or learning institutions.

The SAMJ (1971) states that their findings rejected Chiropractic as a necessary and useful para-medical profession. The Commission found that the indifferent methods of diagnosis made it impossible to take curative actions which would be acceptable to the medical profession, therefore the commission concluded that Chiropractic may do harm. It did find that for orthopedic conditions, manipulation was beneficial, but cures for dermatitis and diabetes claimed by patients receiving Chiropractic treatment were unfounded.

According to the SAMJ (1971), on the 10 February 1971, Dr De Wet tabled a Draft Bill which would have resulted in the eventual disappearance of Chiropractic as practising Chiropractors retired or stopped practising due to the Bill. The Bill stated that no person might practise for gain as a Chiropractor. However, the Bill did allow for Chiropractors already in practice and South African citizens already studying Chiropractic, in South Africa or abroad, to practise as a Chiropractor in South Africa thereby ensuring that the Chiropractor still had a means to support themselves and their livelihoods would not be affected.

According to the Chisholm (1971) Minister of Health, Dr De Wet explained his negative attitude towards Chiropractic stating that there was no scientific basis for Chiropractic. He believed Chiropractic was false because medical professionals around the world had found that Chiropractic had no scientific basis.

As stated by the Chisholm (1971), the American Medical Association declared that Chiropractic was unscientific and a hazard to health education of the public. The South African Medical Council had stated that Chiropractic theories on disease were false.

According to the Chisholm (1971), Dr De Wet also explained that an inquiry had found that the quality and duration of Chiropractic training was insufficient. Chiropractors trained for four years compared with the seven years required for medical doctors. He further stated even after seven years, that doctors still made mistakes and by training for such a long period of time, these mistakes would be eliminated. He laid the emphasis not on the treatment given but rather the methods of diagnosis, for example, the fact that Chiropractors used and read radiographs while a radiologist had to study for 12 years in order to do so. Dr De Wet did however dismiss the opinion that Chiropractic was in competition with the medical profession.

The SAMJ (1971) acknowledged that the orthopedic doctors, physiotherapists and physical medicine specialists owed much of their manipulative skills to Chiropractors. The Bill did make provision for registered professions who used manipulation as part of their treatment protocols to continue doing so even though the techniques stemmed from Chiropractic. Medical schools were encouraged to give full attention to training medical students and physiotherapists in the art of manipulation and all that it entailed. This would ensure that the services offered by Chiropractors would not be lost. The medical professions were encouraged to view the new Bill with a positive attitude and accept the added burden on the medical profession once Chiropractic services were no longer available. It was the duty of medical doctors and physiotherapists to educate patients and patients-to-be that Chiropractic services available in the past would be provided under more carefully controlled conditions to avoid an underground Chiropractic profession from developing.

2.3 Medical Opposition to Chiropractic Outside South Africa

2.3.1 Organised Medical Campaigns Against Chiropractic

According to Wardwell (1992), organised medicine had a long history of opposing any type of healing that encroached on their scope of practice.

Wardwell (1992) stated that in 1963, the American Medical Association (AMA) formed the Committee on Quackery, originally known as the Committee on Chiropractic. Its main aim was to contain and ultimately destroy Chiropractic. It also aimed to ensure that Chiropractic education accreditation was not achieved. In 1967, the United States Congress asked the Department of Health, Education, and Welfare (DHEW) to conduct a study on Chiropractic. The decision was made that the Surgeon General of the United States Public Health Services (USPHS) would do the study using outside consultants. The consultants consisted of 22 representatives from various medical and public health professions, but no Chiropractor or naturopath was included. The final recommendation made by the committee was that Chiropractic should not be included in the Medicare program, due to the fact that the Chiropractic theory and practice was not based on basic knowledge related to health, disease and health care that was accepted by the scientific community. The scope of practice and education quality did not prepare the practitioner to make an adequate diagnosis and provide appropriate treatment.

2.3.1.1 Antitrust Suit: Wilk versus the American Medical Association

According to Wardwell (1992), in 1975, the United States Supreme Court ruled that learned professionals were not exempt from antitrust laws, but constituted trade and commerce as they engaged in economic competition.

According to Wilk (1996) Antitrust was an issue dating back to the 19th century where larger business would lower the prices of their commodities to a point where smaller business were unable to compete thus resulting in the smaller business going bankrupt or closing down. This then resulted in the larger business having the monopoly and once again the prices of their commodities could be raised without the fear of competition. Left unchecked, the American economy would be destroyed.
Therefore, Senator J. Sherman aided in drafting the Sherman Antitrust Act of 1890 which declared formation of monopolies and combinations in restraint of trade to be illegal. In 1914, the Clayton Act was passed, which allowed victims of antitrust violations to sue for damages caused by violators.

According to Wardwell (1992) in 1976, 5 Chiropractors from Northern Illinois launched an antitrust suit against the AMA and other medical associations. The charges brought against them were, refusal of the AMA to allow for medical doctors and doctors of orthopedics to 1. refer patients to Chiropractors, 2. to accept patients referrals from Chiropractors, 3. treat patients in co-operation with Chiropractors, 4. share office space, 5. collaborate in research, 6. teach at Chiropractic colleges, 7. lecture at professional seminars, 8. publish in Chiropractic journals, 9. deny Chiropractors hospital privileges (including taking radiographs) and 10. persuading insurance groups not to cover Chiropractic services.

Wardwell (1992) stated that the remedies sought were firstly finding the defendants guilty, secondly the injunction to prevent the defendant from enforcing the Code of Medical Ethics as they applied to inter-professional relations with Chiropractors, thirdly the publication of the courts findings in the association journals and the revision of the policy stating that it was ethical to deal with Chiropractors operating within the scope of state licenses, fourthly payment of damages to the plaintiff and fifthly payment by the defendants to establish and maintain an inter-professional research institute controlled equally by both medical doctors and Chiropractors for promoting inter-professional research, education and developing a common dictionary. Concerned with the financial vulnerability, especially if they were to loose, the AMA proposed to modify its Code of Ethics to allow the physician to decide if they wanted to accept referrals from Chiropractors. Four speciality groups, namely physicians, surgeons, orthopedic surgeons and radiologists, opposed the changes and wanted to retain the old code.

According to Wardwell (1992) the Wilk suit came to trial in 1980, lasting two months. The jury found the medical defendants not guilty on all accounts, but the Seventh Circuit Court of Appeals reversed that decision in 1983 and a new trial was ordered. For the retrial, the Chiropractors decided to drop the claim for monetary damages to prevent the AMA from arguing that the plaintiffs were motivated by personal greed, as the AMA had accused the Chiropractors in the first trial. In the retrial, Judge Getzendanner found the defendants guilty and Chiropractic won their suit.

According to Wilk (1996), Judge Getzendanner found the defendants guilty of violating the Sherman Antitrust Act of 1890. The court found that the conduct of the AMA and its members constituted a conspiracy to restrain trade based on the following: the purpose of the boycott was to eliminate Chiropractic; Chiropractic was in competition with some medical doctors; the AMA boycott had an anti-competitive effect; there were no pro-competitive effects of the AMA boycott and as a result the plaintiffs were injured. The defendants were given the opportunity to establish a patient care defense. The court found that the AMA had a genuine concern for scientific methods of patient care and therefore their concern was the motive for its conduct, but failed to prove that this concern was objectively reasonable throughout the boycott period, that was from 1966 to 1980. The court reached the conclusion that on the basis of testimonies from witnesses for the plaintiff as well as AMA testimonies that Chiropractic treatment was effective and that the AMA recognized that Chiropractic had begun to change in the 1970s and because the Code of Ethics was only removed in 1980, the AMA was unable to establish that its conduct was objectively reasonable. The court ruled that the AMA's concern for scientific methods in patient care did not justify the elimination of a licensed profession and therefore the court found that the AMA had failed to establish the patient care defense.

According to Wardwell (1992), the AMA adopted a new Code of Ethics in 1981 stating that a physician would be able to refer patients to a licensed Chiropractor, chose to accept or decline referrals from a licensed Chiropractor, and may engage in teaching at a Chiropractic college or seminar for which he was qualified, without fear of disciplinary actions, or sanctions from the AMA.

Wardwell (1992) stated that the AMA's anti-Chiropractic campaign probably delayed Chiropractic acceptance for many decades, convincing health professionals and laypersons to believe that Chiropractic was an unscientific cult.

2.3.1.2 The Australian Medical Professions Resistance to Chiropractic

The Chiropractic Journal (1992) stated that Australian Chiropractors were still dealing with medical ignorance and prejudice. A report released by the Australian Medical Association in September 1992 opposed governmental and other agencies

recognition of Chiropractic. The report stated that Chiropractic manipulation was unsafe and performed inappropriately. Medical doctors were encouraged to oppose Chiropractic as spinal manipulation treatment was linked to severe complications which could have been avoided with the appropriate medical investigation. However, the report noted that spinal manipulation was not confined to Chiropractic and that if a patient required such treatment they should consult their medical doctor or physiotherapist who had done the postgraduate training in spinal manipulation techniques which were meant to be safer and gentler compared to Chiropractic techniques. Reviewing the report, the main reason for opposing Chiropractic was because Chiropractors enjoyed a considerable following and that an increasing number of patients choose to consult a Chiropractor for initial assessment and treatment. The report did however acknowledge that it was treading a fine line both ethically and legally by advising medical doctors that those choosing to warn patients about Chiropractic manipulation and its lack of scientific evidence to do so carefully.

2.4 The Subluxation

According to Nansel and Szlazak (1995) the earliest Chiropractic 'somato-visceral disease' models were simplistic as the scientific knowledge of the human nervous system at the time was extremely limited. These models included the Pinched Nerve theory originally stated by D.D. Palmer.

Haldeman (1992) described the 'Pinched Nerve' theory as one based on the notion that misalignment of the vertebrae was capable of compressing somato-motor as well as viscero-motor nerve fibres as they exited the inter-vertebral foramina. This encroachment resulted in nerve interference and stopped the nerve flow of signals to various segmentally related internal organs thereby resulting in disease of that organ.

According to Nansel and Szlazak (1995) as the knowledge of the anatomy and physiology of somatic and autonomic neuronal mechanisms had improved in the scientific literature, the 'Pinched Nerve' theory had been abandoned for more modern theories like 'Reflex-based' theories. This theory maintained that afferent nociceptive signals generated by dysfunction involving nociceptive paraspinal muscles, arrived at the central nervous system and acted on the somato-motor and

visero-motor neural cell bodies at that segmental level. This then resulted in a pathological vasoconstriction response to the segmentally orientated internal organ which resulted in disease of that organ. However, with advances in the autonomic nervous system, this theory was far from plausible.

According to Leach (2004) there was little to no support of the 'Pinched Nerve' theory. Some Chiropractic philosophers believed that by abandoning the original theory, the profession was selling out to orthodox medicine while other Chiropractic scientists believed that there was no clinical evidence to support the vertebral subluxation complex (VSC).

However, Leach (2004) believed that there was evidence to support modifications of the VSC theory and that there was no single subluxation theory, but rather that there were multiple hypotheses that form the basis of the VSC model and that not all are scientifically proven or disproven.

According to Nansel and Szlazak (1995) it had been established that both visceral afferents (internal organ transmission of nociceptive information) and somatic afferents (deep connective tissue structures transmission of nociceptive information) converged on a common pool of inter-neurons within the spinal cord and brainstem. The afferent neuronal convergence could result in patterns of signs and symptoms that were identical and indistinguishable from visceral diseases. This afferent confusion resulted in misdiagnosis and failed medical treatment as primary organ disease diagnosis was made via symptomology. Due to the patient's frustration of the failed medical treatment, the patient then sought out 'alternative' health care practitioners. With the application of adjustment and manipulations, the patient got relief of the symptoms and therefore both the patient and practitioner believed that the condition was cured and thus the notion of somato-visceral disease continued.

Nansel and Szlazak (1995) believe that due to the existence of somatic-visceral disease mimicry syndromes far more co-operation between medical practitioners and Chiropractors, who dealt with the evaluation and treatment of somatic dysfunction, was needed.

2.4.1 The Subluxation – The Unscientific Theory of Chiropractic

According to Jarvis (2000), Chiropractic had been labeled the most significant non-scientific health-care delivery service in the United States. Jarvis (2000) did acknowledge that spinal manipulative therapy (SMT) was useful, that there was sufficient evidence of its effectiveness, and that Chiropractors were highly skilled in its use. However, it was the Chiropractic theoretical basis for SMT that was unscientific, that was, the subluxation.

Benedetti and MacPhail (2002) stated that there was no evidence to support the existence of a Chiropractic subluxation.

According to Leach (1994), medicine had historically defined a subluxation as a manipulable lesion in which vertebrae were slightly misaligned, involve spinal curvature and irritation, resulting in a variety of illnesses. Loss of motion with point tenderness was also characteristic of this lesion.

According to Leach (1994) early Chiropractors defined a subluxation as a partial or incomplete separation where one of the articulating surfaces remained in contact; while others defined it as a misalignment between vertebrae which resulted in occlusion of a foramen, which caused pressure on the nerve thus resulting in interference of nerve impulses. Some later Chiropractors also considered joint motion as a factor where the vertebrae would become stuck or fixated in a position in which it normally moved.

According to the Association of Chiropractic Colleges (ACC) (1996) a subluxation was defined as ‘a complex of functional and/or structural and/or pathological articular changes that compromises neural integrity and may influence organ system function and general health. A subluxation was evaluated, diagnosed and managed through the use of Chiropractic procedures based on the best available rational and empirical evidence’.

Keating, Hyde, Menke, Seaman, Vincent and Wyatt (2004) believed that the ACC definition of a subluxation was scientifically unsubstantiated and conflicted with accepted scientific standards, therefore medical doctors did not accept Chiropractic and the credibility of Chiropractic was diminished.

According to Leach (1994), modern day Chiropractic and medical subluxation definition center around the use of radiography. Confusion between the professions arose because of the differing radiographic criteria regarding diagnosis of the lesion as well as differences in semantics.

Chapman-Smith (1997) stated that Chiropractic subluxation and medical subluxation had different and contradictory meanings.

According to Chapman-Smith (1997) a medical subluxation was a purely orthopedic lesion with separation of joint surfaces, but was still less than a total dislocation.

Chapman-Smith (1997) stated that the difference between a Chiropractic subluxation and a medical subluxation was that the Chiropractic subluxation was a functional lesion, not visible on x-ray and was best treated with an adjustment, while the medical subluxation involved joint instability and/or hypo-mobility, was always visible on x-ray and was contra-indicated to manipulation. Leach (1994) stated that the medical subluxation was generally considered an operable lesion which was unstable.

Due to the difference in the diagnosis and treatment of subluxation, Chapman-Smith (1997) concluded that many medical doctors doubted the validity of Chiropractic.

2.5 The Safety of Chiropractic Neck Manipulation

Chapman-Smith (1986) stated that Chiropractic cervical adjustments were conservative and safe and very rarely were there any complications resulting from it with vertebral artery injury being the only serious complication.

Chapman-Smith (2003) discussed three possible causes of vertebrobasilar stroke (VBS) following manipulation.

2.5.1 Model One: Manipulation as a direct cause of Vertebrobasilar Stroke

Firstly, it had been hypothesised that manipulation may be a direct cause of VBS in normal healthy individuals via two models of injury: by damaging the vertebral artery wall which resultes in tissue damage/dissection followed by thrombosis and or embolism formation blocking the blood flow to the brain.

However, according to Symons, Leonard and Hertzog (2002), strains from manipulation were lower than those required to mechanically disrupt the vertebral artery therefore under normal circumstances, a single typical high-velocity/low-amplitude manipulation thrust was unlikely to tear or otherwise mechanically disrupt the vertebral artery.

Chapman-Smith's (2003) second model of injury was of lesser trauma to the artery, but sufficient disruption to cause vasospasm of the artery, decreasing blood flow to the brain and a resultant VBS. However vasospasm had only been suggested as it was a major cause of harm to the vertebral and cerebral arteries following severe trauma, thus this made vasospasm of the artery wall following manipulation as a new injury hard to attribute to the manipulation.

According to Licht, Christensen, Svendsen and Flemming Hoilund-Carlson (1999) experimental studies showed that cervical manipulation had a modest effect on vertebral artery blood flow. In their experiments there was approximately a 20% increase after 20-40 seconds after which the blood flow returned to normal values, therefore manipulation of the cervical spine had a transient and modest effect on the blood flow.

Chapman-Smith (2003) stated that due to this evidence, this model of injury causing VBS could be dismissed.

2.5.2 Model Two: Manipulation does not cause Vertebrobasilar Stroke

Chapman-Smith's (2003) second possibility was that manipulation was never the cause of VBS and therefore entirely simply co-incidental; individuals with underlying pathologies may have had spontaneous VBS triggered by normal daily neck movements and activities. Some patients may have had mishaps before seeking Chiropractic treatment, some while receiving Chiropractic treatment and some from normal neck movement during hours or days post-treatment. However, if the patient had significant symptoms immediately after a manipulation, it was strongly suggestive that the treatment was one of the causative factors, but not the actual cause. Therefore not all VBS patients could be dismissed as co-incidental.

Symons *et al.* (2002) showed that manipulation placed less force/strain on the artery than common rotational neck movements it was hard to argue that VBS with first symptoms experienced several minutes or more post Chiropractic treatment was the sole cause of the VBS, as any neck movement between treatment and the VBS could have resulted in the VBS.

2.5.3 Model Three: Manipulation as an Aggravating Factor for Vertebrobasilar Stroke

Chapman-Smith's (2003) third possibility was that manipulation, mobilisation, or normal neck movements might have been an aggravating factor that exacerbated pre-existing and undiagnosed pathology. If a patient had severe neck pain before Chiropractic treatment, the patient may already have had a vertebral artery dissection in progress. If sudden new symptoms developed after manipulation/mobilisation, the fundamental cause of the VBS may be underlying arterio-pathologies as yet not fully understood and incapable of being diagnosed.

According to Terret (2002) these pre-existing factors could have led to an identical outcome even if the neck had not been manipulated.

Chapman-Smith (2003) concluded that manipulation with the intent to move a facet joint had no more impact on the vertebral artery than normal daily movement and that

tearing of the vertebral artery had been hypothesised and that there was no evidence to suggest that this was true.

Hurwitz, Aker, Adams, Meeker and Shekelle (1996) stated that 6 per 10 million cervical manipulations result in serious complications with 3 per 10 million being fatal.

2.5.4 The Unsafe Chiropractic Manipulation

According to Menke (2003), an issue of debate was the safety of Chiropractic and that the medical profession viewed Chiropractic as “risky”.

According to a Neurologist, Dr Stewart (2002), in the book Spin Doctors by Benedetti and MacPhail (2002), he had dealt with all types of Chiropractic complications. He claimed these complications ranged from spinal cord compression, crushed nerves, torn arteries and muscles in the neck, fractured necks, strokes and death.

According to Benedetti and MacPhail (2002) neck manipulation was potentially harmful whether it was performed by a Chiropractor or anyone else. The key to the issue was because all interventions were risky, the risk versus benefit ratio should be considered. If the risk was low and the benefit substantial, then intervention was desirable. However, if the risk was high or had possible disastrous outcomes, and the benefit doubtful, then intervention should be abandoned. This was why there was controversy about the safety of Chiropractic neck manipulations.

According to Benedetti and MacPhail (2002), in personal correspondence with Dr John Norris, a neurologist, about 80 people a year suffered from a Chiropractic-induced stroke in Canada. He believed that this figure was low and that most neck manipulation strokes went unreported. Firstly the people doing the manipulations (mainly Chiropractors) were reluctant to report any adverse effects; secondly that many Chiropractors did not recognise the signs of stroke; thirdly physicians dealing with stroke patients seldom question them about visits to a Chiropractor or physiotherapist and fourthly, minor strokes from dissecting arteries were missed entirely by the patient, Chiropractor and/or the physician. Norris believed that neck

pain was often misdiagnosed. If the patient had residual minor deficits after a stroke they seldom related it to the Chiropractic treatment if they had Chiropractic treatment and in other cases the symptoms resolved spontaneously and the stroke went unnoticed and unreported.

According to Benedetti and MacPhail (2002), when complications from neck manipulation arose, it was the neurologists who were left to correct the mistakes of the Chiropractor.

2.6 How Scientific and Safe is Medicine?

According to Kohn, Corrigan and Donaldson (1999), the health care system in the U.S. was not as safe as it should be. The risk of dying due to a medical error was far greater than the risk of dying in an airplane accident, but less attention was paid to improving health care safety when compared with airplane safety.

According to Kohn *et al*. (1999) medical errors were one of the leading causes of death in the U.S.

Kohn *et al.* (1999) found that medication-related errors were the most frequent to occur. Although not all complications resulted in harm, they were costly and with an ever-increasing amount of new drugs being introduced for a wider range of indications, the potential for medication errors increased. Most medication-associated errors occurred due to improper drug administration or the wrong drug being prescribed.

Dieppe, Bartlett, Davey, Doyal and Ebrahim (2004) stated that in non-steroidal anti-inflammatory drugs (NSAID) trials, older patient and patients that were likely to suffer from an adverse reaction to the drug were deliberately excluded from the trials and that the benefit versus harm of the drug was not measured on a comparable scale.

Perneger, Whelton and Klag (1994) found that people who used NSAIDs were at an increased risk of end-stage renal failure. Page and Henry (2000) found that NSAIDs

caused congestive heart failure and that damage caused by NSAIDs to the gastro-intestinal tract may be of less concern compared to heart failure.

Kohn *et al.* (1999) stated that other patient safety issues were errors in transfusions, incorrect surgical procedures, injury during surgery, injury or death due to restraints, hospital-acquired and treatment-acquired infections, pressure ulcers and burns. It was stated that the more technical the department or procedure, the more likely an error would occur. The highest error rates occurred in the intensive care unit, operating rooms and emergency departments. Medical errors and safety issues were not reported or went unreported due to the doctors' fear of persecution by fellow doctors and prosecution.

According to Albetri (2001), operative errors, medical procedures and diagnosis were the main cause of adverse effects in medicine. Better training could minimise diagnostic errors and improve surgical outcomes, but fewer operations and procedures needed to be done. However, medication errors would always occur as there were too many drug interactions for the medical doctor to remember and incorrect dosages would remain a problem.

Weingart, Wilson, Gibberd and Harrison (2000) stated that the exact prevalence and magnitude of medical errors was unknown, but most likely enormous. No matter what the patient's age, sex or health status, all patients were at risk of medical error. The longer a patient was in hospital, the more complex the treatment and the more ill the patient was, the more likely the patient would experience a medical error.

2.6.1 Spinal Surgery and its Complications

According to the National Institute of Neurological Disorders and Stroke (NINDS) Low Back Pain Fact Sheet (2005), there are numerous treatments for low back pain. These included heat/ice, traction in hospital, bed rest, exercise, acupuncture, Trans-cutaneous Electrical Nerve Stimulation (TENS), ultrasound, medications (consisting of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)) and spinal manipulation. They only recommended surgery if all other treatments had failed and there was progressive nerve disease or damage.

Gibson, Grant and Waddell (1999) stated that there was no scientific evidence for most surgical procedures in spinal surgery. It was also found that of all the surgical procedures performed, spinal surgery patients were fewer but this group incurred the greatest amount of costs.

According to Deyo, Nachemson and Mirza (2004), spinal fusion rates had increased rapidly in the U.S. Spinal fusion rates had increased by 77% between 1996 and 2001. Initially, indications for spinal fusion were for the treatment of scoliosis, spinal tuberculosis and fractures. These indications now account for a small portion of spinal fusion patients. Widening indications for fusion had contributed to the increase in fusion rates. These indications include spondylosis, disc disorders, spinal stenosis and more recently, discogenic pain. Discogenic pain was the most controversial indication for spinal surgery.

Barrick, Schofferman, Reynolds, Goldthwaite, McKeener, Keaney and White (2000) stated that there were no prospective, randomised, controlled trial studies to show the benefit of spinal surgery for discogenic pain.

Barrick *et al.* (2000) defined post laminectomy pain syndrome or failed back surgery syndrome as continued pain experienced after a fusion. Postero-lateral fusion surgeries were well known to have continued pain after the fusion. The causes for continued pain after a fusion were many, namely pseudoarthrosis, recurrent/residual disc herniation, residual foraminal sclerosis, psychological disorders, neuropathic pain, infection and discogenic pain. Discogenic pain could be the most unrecognisable cause for failed back surgery.

According to Talbot (2003), failed back surgery syndrome was a common problem to the medical profession. The patients were generally young and previously active, but now faced many years of chronic pain and increasing disability. The patients were referred from surgeons to another doctor as the patient would no longer benefit from surgery, and fell into the gap between surgery and medicine. Medicine was poorly equipped to handle this condition and focused primarily on pain control and not on rehabilitation of those failed back surgery syndrome patients.

According to a study by Slosar, Reynolds, Schofferman, Goldthwaite, White and Keaney (2000), 38% of the patients had an unsuccessful surgical outcome. A 20% complication rate was reported, with temporary motor weakness being the most common complication. There was one death due to pulmonary embolism.

Loupasis, Stamos, Katonis, Sapkas, Korres and Hartofilakidis (1999) found that after 12.2 years, a patient that had undergone a lumbar laminectomy or discetomy 7 to 20 years previously, 36% of the patients had unsatisfactory results and 28% complained of significant pain in the legs or back. Only short-term follow-up studies showed high satisfaction rates.

In a study done by Losco (2001) Chiropractic treatment of post laminectomy pain syndrome was shown to be effective in improving function and reducing pain. However, Losco (2001) found that treating both the osseous and muscular components resulted in better pain relief and that a combined treatment would be more effective than just manipulation alone.

Wilson-MacDonald (1996) stated that Chiropractic treatment had a 40-50% success rate of decreasing pain and that patients that had undergone spinal fusion would benefit more from undergoing conservative treatment than spinal surgery, as spinal fusion for back pain had not yet been scientifically proven.

As stated by Manga, Swan, Papadopoulus and Angus (1998), Chiropractic management of low back pain was more cost effective than medical management and that medical therapies were questionable or inadequate. It was further stated that Chiropractic was safer than medical management of low back pain.

2.7 Chiropractic and Medical Education

According to Sawyer, Haas, Nelson & Elkington (1997), in 1971 the Council on Chiropractic Education was established in the U.S. This council implemented standards for colleges, developed processes by which accreditation was achieved and created a form for educators to meet and discuss issues of common interest and concern.

According to Wilk (1996), in the United States, a Chiropractic degree required two years of pre-professional college training followed by four academic years of resident study and 4200 hours in the classroom. In the first two years, Chiropractic programs concentrated on basic sciences, the same as in the medical programs.

Brussee, Assendelft and Breen (2001) further explained that the first two years of Chiropractic education was the same as the curriculum for medical students, but that after the second year their curriculums did somewhat diverge in the United States.

Wilk (1996) stated that while the second half of the training for medical doctors focused on drugs and surgery, Chiropractic training focused on the spine: the analysis of the spine, manipulation, orthopedic assessment, physical therapy, radiology, neurology and nutrition.

Wilk (1996) stated that Chiropractic training focused mainly on the neuro-musculoskeletal system as more than 60% of the body was comprised of this system. Because of this training, Chiropractic had far greater success with neuro-musculoskeletal complaints without needing to rely on harmful drugs and surgery. Therefore Chiropractic was the best and safest approach to treat cases of muscle and joint pain, loss of joint motion and related conditions.

However, Brussee *et al.* (2001) stated that the Chiropractic view of musculoskeletal and non-musculoskeletal problems and the treatment of them differed from that of the medical views, thus leading to misunderstandings which resulted in poor relationships and stereo-typing.

According to the University of Witwatersrand Medical School Faculty Rules and Syllabuses booklet (2005) and the Chiropractic Association of South Africa Booklet (2004), the first two years of medicine and Chiropractic followed the same subjects and then diverged after the second year. However some subjects like microbiology were taught in the second year of Chiropractic whereas it was covered only in the third year of medicine. (Appendix A)

Unfortunately as Menke (2003) discussed, Chiropractic training provided very little exposure to new medical procedures, pharmaceutical uses and drug interactions.

However, according to Chapman-Smith (2002b) Chiropractic education was changing to meet the demands of inter-professional relationships and integration, for example, hospital-based clinical training both here in South Africa and elsewhere in the world.

2.7.1 The Chiropractors Lack of Education

According to Homola (1999), Chiropractors suggestion that their schooling was similar or equivalent to that of medical doctors was wishful thinking.

According to Dr S. Barrett (1997), in Inside Chiropractic (1999), Chiropractic schools did not provide the depth of diagnostic and therapeutic training that medical doctors received due to the lack of specialist physicians in Chiropractic departments as well as students having to primarily treat patients with only musculoskeletal problems. Although Chiropractic courses used standard medical textbooks, Chiropractic students lacked the ability to make the information meaningful as they saw mainly musculoskeletal patients where as medical students saw patients that encompassed a full range of diseases, however medical students lacked knowledge of the neuro-musculoskeletal system.

A study by Doxey and Phillips (1997) found that standards for Chiropractic school admissions were lower than five other professional schools, which included medical, osteopathy, podiatry, optometry and dental schools.

Homola (1999) stated that even though Chiropractic educational requirements had improved, these advances had little influence on Chiropractic dogma, and that some colleges permitted Chiropractic philosophy to overshadow science and teach the subluxation theory, which resulted in a lack of diagnosis. Some ‘straight’ Chiropractors believed that an adjustment was all a patient needed to allow the body to heal itself therefore no diagnosis was needed.

2.8 Chiropractic Scope of Practice

2.8.1 Defining Chiropractic Scope

According to the Board of Healthcare Funders of South Africa (BHF) (2003), Chiropractic Practitioners evaluated and facilitated biomechanical and neuro-biological function and integrity through the use of conservative, diagnostic and Chiropractic techniques because the body was a neurological integrated system. Therefore, direct access to Chiropractic formed a vital part of everyone's health care regimen.

2.8.2 Defining Chiropractic Practice

According to Caldis, McLeod & Smith (2001) Chiropractors were neuromusculoskeletal specialists.

The BHF (2003) stated that Doctors of Chiropractic were primary health care providers that employed their education, knowledge, diagnostic skill, and clinical judgment required to determine what the appropriate Chiropractic care and management of the patient should be. Chiropractors have access to diagnostic procedures which were limited according to the medical aids, and/or referral sources to other alternative and medical practitioners when required.

According to the BHF (2003) case management by Chiropractors was via the establishment of a patient/doctor relationship, using adjustments or manipulation and other techniques unique to Chiropractic. Chiropractors could also make use of other conservative procedures when required and also collaborate with or refer to other healthcare providers such as general practitioners, orthopedic surgeons, and neurologists. Doctors of Chiropractic educated their patients in structural and spinal health and healthy living practises.

The BHF (2003) stated that Chiropractic was a system of specific manipulation or adjustments of the articular segments and tissues of the body, especially the spine, for the correction of neurological and biomechanical integrity of the body and included

the use of recognised diagnostic and treatment methods as taught by Chiropractic Institutions in South Africa.

According to the BHF (2003), registered Chiropractors could diagnose and treat the human body with manual or mechanical manipulation and nutritional methods, including the use of modalities, orthotics, supportive appliances and diagnostic x-rays.

The Allied Health Professions Council of South Africa (2003) defined Chiropractic as the treatment and prevention of any physical defect, illness or deficiency related to the spine, pelvis, spinovisceral and general neuromusculoskeletal conditions.

According to Waddell (1998), Chiropractic was entirely outpatient, non-surgical and 'drug-free'.

Caldis *et al*. (2001) defined Chiropractic practice as focusing on the relationship between structure and function, that was primarily the relationship between the spine and the nervous system which co-ordinates movement, and how the structure/function relationship affected the preservation and restoration of health. It was due to poor posture, nutrition and stress that joints became restricted in their motion and that this restricted motion then affected the spinal nerves that communicate with the muscles, tendons and the body organs. When joints became restricted, muscle strain and pain occurred. Chiropractic care relieved problems associated with muscle spasm, joint inflammation, spinal column injury as well as problems with other joints of the body. The Chiropractor performed spinal adjustments, muscle and tendon manipulation and gave advice with regards to posture and nutrition. Best results were achieved for a specific problem with a series of Chiropractic treatments.

2.9 The Future of Chiropractic

According to Wardwell (1992) Chiropractic success as a health care profession was dependant on acceptance by the scientific community, medical doctors and other health care practitioners as competent colleagues.

However, according to Coulter (1999), Chiropractic success had never been dependant on being accepted by medicine and although increasingly, it was achieving just that. The future of Chiropractic would not depend on it.
With alternative care expanding and finding more acceptance, orthodox medicine itself was moving towards an integrative medicine.

Rees and Weil (2001) defined integrated medicine as practising medicine in such a way that complementary and alternative medicine were incorporated into treatment plans along with orthodox methods into diagnosis and treatment of the patient. Integrative medicine focused on health and maintaining health by changing lifestyle factors instead of normal conventional medicine which used expensive technology and treated the condition and not the patient.

According to Nelson, McMillin, Richards and Mein (2000) Chiropractic had made significant steps in establishing itself for integration into the emerging health care system and that Chiropractic had much to offer. However, some problems facing Chiropractic integration was how Chiropractic defined itself, research methodology, treatment of visceral disorders and professional relationships.

Cooper and McKee (2003) felt that the future of Chiropractic was uncertain as there was growing competition from acupuncturists and massage therapists. They stated that Chiropractors were expanding into both alternative and primary health care. However with Chiropractors increasingly combining other manual techniques with exercise and physical therapy, the profession ran the risk of just becoming another form of physical therapy and the profession ran the risk of moving too far from its specialty, that was, spinal manipulative therapy.

Wardwell (1992) maintained that Chiropractic would take five separate paths in the future. Apart from disappearing entirely, Chiropractic could follow one of four paths:

Firstly, according to Wardwell (1992), fusion with or be taken over by medicine. Chiropractic could follow Osteopathy. In the U.S., Osteopathy was regulated by the medical profession. Today osteopaths are indistinguishable from medicine, with most of whom practising family medicine with ever decreasing amounts of osteopathic manipulative techniques being used. However, this was not true for other countries where osteopathy was still seen as being similar to Chiropractic.

Wardwell (1992) believed that Chiropractic was less likely to follow this route as there would be even more resistance by the medical profession than in the past.

According to Wardwell (1992), Chiropractors had come to a suitable place of recognition that was satisfying and a lot could be lost if attempts to fuse with medicine were made, like licensure, third-party payments, academic accreditation, increased professional acceptance for the limited scope of practice.

Secondly, as stated by Wardwell (1992), practice under medical supervision. Therefore, becoming an ancillary/auxiliary profession where the practitioner was dependant on physicians for direction, prescription or supervision. Chiropractic was not, never was and most likely never would be an ancillary profession as Chiropractors had enjoyed independent access to patients without referrals since its inception.

Thirdly, according to Wardwell (1992), retains its present status as marginal or parallel to medicine and retain its present relationship with medicine and other health care professionals. A marginal profession was one that did not allow medical doctors to supervise over their practices, like ancillary professions, nor did they limit their treatment to a specific part of the body, like limited professions. Chiropractors used a wide variety of therapies, such as manipulation and physical therapy, without the use of drugs and surgery to treat a broad spectrum of neuromusculoskeletal conditions. Chiropractic marginality was diminished as increased amounts of research demonstrated benefits from adjusting the VSC, new relationships with medical doctors and hospitals were created and shifting scientific concepts of how disease was caused and how to treat the various diseases. Chiropractic was most likely not going to remain marginal.

According to Konrad, Fletcher and Carey (2004), Chiropractic had moved from a marginal profession due to increased recognition by insurance companies and managed care plans to one of a number of options in the healthcare market in the United States and other countries.

Fourthly, become a limited medical profession, which seemed to be the way Chiropractic was becoming at present as thought by Wardwell (1992). Limited professions restricted their practice to one part of the body, the range of illness treated and the range of procedures, instruments and therapies they used. Referral from medical doctors was not needed, but the profession must be able to screen for conditions beyond their scope of practice so that the patient could be referred to the appropriate profession for care. They did not challenge medicine's fundamental principles nor did they advance different or contradictory theories of disease and treatment, as Chiropractic had previously done. The limited professional had accepted medicines superiority in treating systemic conditions and major complications thereby developing a homeostatic relationship with the medical profession being dominant.

According to Wardwell (1992), Chiropractic was moving towards a limited profession as the profession was recognising the need for elective surgery, medicines for certain diseases and inoculations when needed. Chiropractors agreed that the VSC was part of several factors of disease and that adjustments did not treat all conditions and therefore medical supplementation was indicated for some conditions. Chiropractic was best described here as they already have independent access to patients, practice a limited scope of practice with limited conditions being treated, limited therapies being used and Chiropractic education was paying less attention to somato-visceral conditions and focused primarily on musculoskeletal conditions.

According to Triano, Rashbaum and Hanson (1998) with evidenced-based health care and good business, Chiropractors, medical doctors and ancillary therapists were co-operating and integrating with each other more today than in the past.

According to Manga (2000), for much of Chiropractic history, it had been seen as an alternative therapy and separated from or marginalised from the mainstream health care services.

Manga (2000) urged that Chiropractic should become alternative and mainstream for economic reasons and for the benefit of patients. While remaining unique, maintaining its identity, therapeutic paradigm and continuing to be seen as alternative to medicine, it should become mainstream and thus available and more assessable to the public by integration into the health care system. According to Manga (2000) integration may be more apparent in the United States than in other countries where Chiropractic still remained separate and alternative.

CHAPTER THREE – METHODOLGY

3.1 Introduction

This chapter serves to explain and describe the way in which the research was conducted and the questionnaire designed.

3.2 Study Design

From September 2005 to December 2005, a census was taken of the medical professionals, namely General Practitioners and Specialists practicing in the Western Region of Johannesburg. The Specialist group consisted of Orthopedic Surgeons, Neurosurgeons and Neurologists. Doctor information was obtained from the Health Professions Council of South Africa.

A questionnaire was hand-delivered to each doctor's consulting rooms with an instruction letter, informing the doctor of confidentiality, anonymity, how long the questionnaire would take to answer and contact details of the researcher. (Appendix B)

3.3 Questionnaire Design

The questionnaire was designed by the researcher with the aid of a statistician at STATKON in order to obtain specific information with regards to the respondents opinion of Chiropractic and its effectiveness. The questionnaire was a structured questionnaire: the doctor was asked a question and had to choose from 4 or 5 options as to what their answer would be. The questionnaire consisted of three sections. Section A assessed the doctors' background and biographical information. Section B assessed the doctors' opinion of Chiropractic. Section C assessed the doctors' opinion of how effective they viewed Chiropractic compared to physiotherapy in the treatment of certain neuromusculoskeletal conditions that were listed.

The final question was an open question which allowed the doctor to make any comment that they wanted to with regards to Chiropractic. (Appendix C)

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

Doctors were allowed to participate if:

- ✓ The doctor practiced in the Western Region of Johannesburg.
- ✓ The doctor had to be a GP, orthopedic surgeon, neurosurgeon or neurologist.
- ✓ The doctor had to be qualified and in practice.
- ✓ Any age or sex was allowed to participate.

3.4.2 Exclusion Criteria

Doctors were not allowed to participate if:

- ✓ The doctor practiced outside or moved into another area outside of the Western Region of Johannesburg.
- ✓ The doctor was not part of the selected professional groups.
- ✓ The doctor was still a medical student.

3.5 Data Collection and Analysis

The researcher collected the questionnaires from the participating doctors consulting rooms. The completed questionnaires were than handed over to the statistician for analysis.

A statistician at Statkon evaluated the results of the questionnaire statistically. The results were described using basic statistical analysis comprising of frequencies and percentages. The results were evaluated using the SPSS 13 (2005), SPSS Incorporated, Chicago. A comparison of Chiropractic treatment compared to physiotherapy was evaluated using a Paired Sample Test (T-Test) to determine if any statistical significance existed.

The results were then organised into graphs and figures according to the information gathered.

CHAPTER FOUR – RESULTS

4.1 Response Rate

The target population consisted of 121 general practitioners (GP's) and 33 specialists. A third of the target population from each group, namely GP's and specialists, was required to respond.

Of the 121 GP's within the target population, 107 questionnaires were hand-delivered to the practice consulting rooms. The remaining 14 GPs were unreachable due to change of address with no new forwarding address or they had moved out of the target area. Of the 107 questionnaires delivered 45 were completed and returned, resulting in a response rate of 42%.
Thirty specialists were contactable and a questionnaire was hand-delivered to each doctor. Three specialists had moved to other hospitals and thus fell out of the target area. Ten questionnaires in total were returned, the response rate was 33%.

Due to the small size of the specialist group, all the completed questionnaires were combined into one group of medical doctors. The total number of questionnaires returned was 55 out of 137 delivered, achieving a response rate of 40%.

4.2 Demographics

Table 4.2.1: Profession, Years in Practice and Gender of Respondents

		Frequency	%	Valid %
Profession	General Practitioner	45	81.8	81.8
	Specialist	10	18.2	18.2
Years in Practice	1-10 years	14	25.4	25.4
	11-20 years	24	43.7	43.7
	21 or more years	17	30.9	30.9
Gender	Male	37	67.3	67.3
	Female	18	32.7	32.7

As seen in Table 4.2.1, the majority of doctors to respond were general practitioners (81.8%) and male (67.3), with the majority of doctors being in practice for 11-20 years (43.7%).

Table 4.2.2: Ages Amongst Respondents

	N	Minimum	Maximum	Std Devia -tion
Age	52	27	74	9.640

Table 4.2.2 showed the minimum age and maximum age of the doctors that responded. Three doctors did not fill in the space provided for age, therefore N = 52, with a standard deviation of 9.640. The youngest doctor was 27 and the eldest 74, with a mean age of 44.08.

4.3 Socioeconomic Status of Patients according to the Respondents

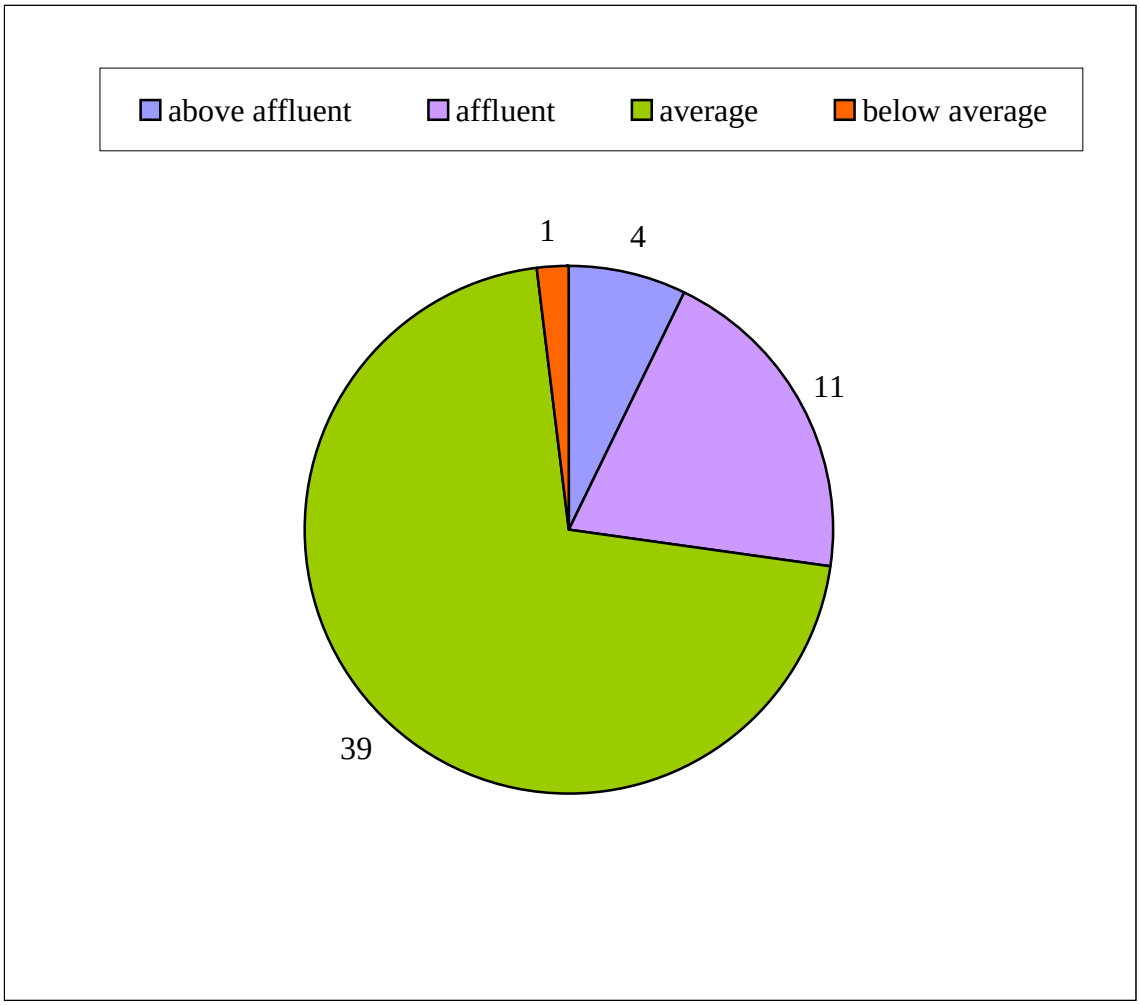

Figure 4.3.1: Socio-economic Status of Patients According to Respondents

Figure 4.3.1 showed that 72% (39) of the doctors believed that their patients were of an average socioeconomic status, 20% (11) believed their patient to be affluent, 7% (4) believed their patients were above affluent and 1% (1) believed that their patient were below average.

4.4 Referral Patterns

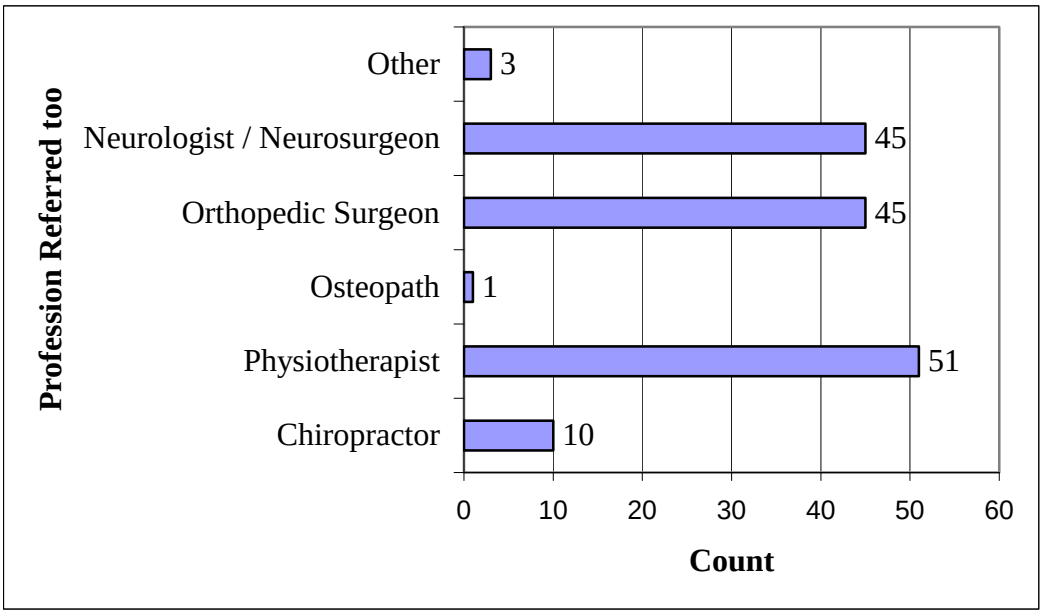

Figure 4.4.1: Graphical representation of the referral patterns of medical doctors on the West Rand

Figure 4.4.1 showed that ninety two percent of the medical doctors referred patients with neuromusculoskeletal conditions to physiotherapists, followed by 81% referrals to either a neurologist/neurosurgeon or orthopedic surgeon. Only 18% of doctors referred patients to a Chiropractor.

4.5 Medical Opinion of Chiropractic

Figure 4.5.1 showed the various statements made to which the doctor had to answer Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree. The Strongly Disagree and Disagree where combined as was the Agree and Strongly Agree in order to avoid zero values for some answers.

Figure 4.5.1 demonstrated the medical doctors perspective on Chiropractic.

4.5.1 Medical Opinion with regards to Manipulation and Mobilisation

Regarding manipulation and mobilisation, 85% of the respondents believed that not just any medical practitioner should be allowed to perform spinal manipulation; 40% disagreed to the statement that Chiropractors should only do mobilisation and not manipulation, but 36% were neutral to this statement. The majority of respondents (51%) believed that Chiropractors should not be restricted to spinal manipulation only.

4.5.2 Medical Opinion as to the Status of Chiropractors

To the statement that Chiropractors are primary healthcare givers, 49% of the respondents agreed to this being true, 28% disagreed and 23% were neutral. The majority of the respondents agreed that Chiropractors were not 'quacks', 22% were neutral to the statement and 7 % agreed that Chiropractors were 'quacks'.

4.5.3 Medical Opinion regarding Chiropractic as an Alternative to Surgery

According to the respondents, the majority (54%) agreed that Chiropractic was a non-invasive alternative to surgery, 26% were neutral, and 20% disagreed.

With regards to whether or not Chiropractic was scientifically proven to be an alternative to surgery, 44% were neutral, 33% agreed that Chiropractic was scientifically proven to be an alternative, while 23% thought that Chiropractic was not scientifically proven as an alternative.

4.5.4 Medical Opinion of Chiropractic and Physiotherapy

With regards to the respondents thoughts on physiotherapy and Chiropractic, the majority of the respondents (55%) felt that Chiropractic did not provide a similar service as to physiotherapy, 26% agreed that the 2 professions provided a similar service and 19% were neutral.

However, 47% of the doctors preferred referring neuromusculoskeletal patients to a physiotherapist for medico-legal purposes, 27% of the respondents disagreed to the statement while 26% were neutral.

4.5.5 Medical Opinion of Chiropractic causing Strokes

Sixty nine percent of the respondents disagreed with Chiropractic caused strokes in patients with neck problems, 9% agreed that Chiropractors caused strokes and 22% were neutral.

4.5.6 Medical Opinion of Chiropractors treating Osteoporotic patients

To the statement that Chiropractors should not treat patients with osteoporosis, the majority (42%) of the respondents agreed with the statement, 27% disagreed and 31% were neutral.

4.5.7 Medical Opinion regarding the Benefits of Chiropractic

The majority (64%) of the respondents agreed that Chiropractic did more good than harm to patients with neuromusculoskeletal conditions, 27% were neutral and 9% responded that Chiropractors did more harm than good.

4.5.8 Medical Opinion on Referral of Patients to a Chiropractor

With regards to referring patients to a Chiropractor only if he/she asked them to, 57% agreed that they would do so if their patient requested them to, 28% disagreed, and 15% were neutral.

However, 45% of the respondents disagreed that they would only refer a patient to a Chiropractor if all other treatments had failed, 35% were neutral and 20% agreed that they would only refer once all other treatments had failed.

4.5.9 Medical Opinion on Where Chiropractors should be Taught and Trained

Interestingly, 73% of the respondents agreed that Chiropractors should be trained at medical schools in Universities, while 16% remained neutral and 11% disagreed.

4.5.10 Medical Opinion with regards to Chiropractors treating Workmen's Compensation Patients

With regards to Workman's Compensation patients being referred to Chiropractor from another medical practitioner, 49% agreed, 38% remained neutral and 13% disagreed.

4.6 Medical Doctors Opinion on the Effectiveness of Chiropractic versus Physiotherapy in the treatment of listed Neuromusculoskeletal Conditions

A list of some common neuromusculoskeletal condition was provided to the doctors to rate in their opinion how effective or ineffective they viewed Chiropractic treatment and physiotherapy treatment of each condition. The doctors were asked to rate the effectiveness on a 4 point scale, those being: Highly Ineffective (1), Ineffective (2), Effective (3) and Highly Effective (4). The highly ineffective and ineffective option was combined into one becoming just ineffective as was the effective and highly effective was combined to make only an effective option, to avoid any zero responses.

Figure 4.6.1 demonstrated the effectiveness of Chiropractic in the treatment of certain neuromusculoskeletal conditions.

Figure 4.6.1 demonstrated the effectiveness of Chiropractic compared to physiotherapy in the treatment of various neuromusculoskeletal conditions. Physiotherapy was seen as more effective than Chiropractic in the treatment for all of the listed conditions.

4.6.1 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Low Back Pain

In the treatment of acute low back pain (LBP), 95% of the respondents believed physiotherapy to be more effective than Chiropractic treatment (81%).

For the treatment of chronic low back pain (LBP), physiotherapy was also seen as more effective (93%) than Chiropractic treatment (80%).

4.6.2 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Disc Herniation

For the treatment of disc herniation, both Chiropractic and physiotherapy showed to be ineffective (65% and 55% respectively); however, 45% of the respondents believed that physiotherapy was more effective than Chiropractic treatment for disc herniation patients (35%).

4.6.3 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Headaches and Migraines

Physiotherapy was seen by 76% of the respondent to be more effective than Chiropractic treatment (62%) in the treatment of headaches and migraines.

4.6.4 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Neck Pain

Chiropractic treatment of neck pain showed to be effective by 81% of the respondents, however, 93% responded physiotherapy treatment to be effective.

4.6.5 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Whiplash

Eighty seven percent of the respondents agreed physiotherapy to be effective in the treatment of whiplash, while only 65% agreed Chiropractic treatment to be effective.

4.6.6 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Sports Injuries involving sprain or strain of the muscles, tendons or ligaments

All the respondents (100%) viewed physiotherapy treatment to be effective in the treatment of sports injuries involving sprain or strain of the muscles, tendons or ligaments. Only 63% viewed Chiropractic treatment to be effective.

4.6.7 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Arthritis

Physiotherapy was seen as more effective treatment for arthritis than Chiropractic (58% versus 38% respectively).

4.6.8 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Joint Pain

For joint pain, 60% of respondents found physiotherapy to be effective compared to 42% who found Chiropractic to be effective.

4.6.9 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Sciatica

Sciatica was seen as more effectively treated by physiotherapists (76% of respondents) than by Chiropractors (60% of respondents).

4.6.10 Medical Opinion of Physiotherapy compared to Chiropractic in the treatment of Post Laminectomy Pain Syndrome

For the treatment of post laminectomy pain syndrome, 69% of the respondents found physiotherapy treatment to be effective compared to 49% of the respondents who found Chiropractic to be effective.

4.7 The Statistics for the Medical Doctors Opinion on the Effectiveness of Chiropractic compared to Physiotherapy in the treatment of listed Neuro-musculoskeletal Conditions

A T-test comparison of the efficacy of Chiropractic treatment compared to physiotherapy treatment of certain neuromusculoskeletal conditions in the opinion of the medical doctors was performed. The general efficacy as well as the efficacy for each condition listed was performed.

The null hypothesis stated that if there was a statistically significant difference between the means of the two professions, $p<0.05$. Therefore, if $p>0.05$, then there was no statistically significant difference between the two professions.

Table 4.7.1: General Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors

Mean	Std Deviation	t	df	P
Minus 0.26180	0.43505	Minus 4.209	48	0.000

Table 4.7.1 showed that there was a statistically significant difference between physiotherapy and Chiropractic. Physiotherapy was seen as more effective in the treatment of all the listed neuromusculoskeletal conditions when compared to Chiropractic ($p=0.000$, $p<0.05$).

Table 4.7.2: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Acute Low Back Pain

Mean	Std Deviation	t	df	P
Minus 0.241	0.581	Minus 3.047	53	0.004

Table 4.7.2 demonstrated that in the treatment of acute low back pain, physiotherapy was believed to be more effective than Chiropractic ($p=0.004$, $p<0.05$).

Table 4.7.3: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Whiplash

Mean	Std Deviation	t	df	P
Minus 0.308	0.643	Minus 3.451	51	0.001

Table 4.7.3 depicted that physiotherapy was seen to be statistically more effective than Chiropractic in the treatment of Whiplash injuries ($p=0.001$, $p<0.05$).

Table 4.7.4 Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Sports Injuries involving sprain or strain of muscle, tendon or ligaments

Mean	Std Deviation	t	df	P
Minus 0.706	0.807	Minus 6.244	50	0.000

Table 4.7.4 showed that in the treatment of sports injuries involving sprain or strain of the muscle, tendons and ligaments, physiotherapy was seen as more effective than Chiropractic by the respondents ($p=0.000$, $p<0.05$).

Table 4.7.5: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Arthritis

Mean	Std Deviation	t	df	P
Minus 0.245	0.648	Minus 2.757	52	0.008

When the treatment of arthritis was compared, table 4.7.5 demonstrated that physiotherapy was believed to more effective compared to Chiropractic ($p=0.008$, $p<0.05$).

Table 4.7.6: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Joint Pain

Mean	Std Deviation	t	df	P
Minus 0.226	0.577	Minus 2.859	52	0.006

For the treatment of joint pain, table 4.7.6 showed that the respondents felt that physiotherapy was more effective than Chiropractic ($p=0.006$, $P<0.05$).

Table 4.7.7: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Sciatica

Mean	Std Deviation	t	df	P
Minus 0.264	0.771	Minus 2.704	52	0.009

Table 4.7.7 demonstrated that physiotherapy treatment of sciatica was seen as more effective than Chiropractic treatment ($p=0.009$, $p<0.05$).

Table 4.7.8: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Post Laminectomy Pain Syndrome

Mean	Std Deviation	t	df	P
Minus 0.283	0.794	Minus 2.596	52	0.012

Table 4.7.8 showed that for the treatment of post laminectomy pain syndrome, physiotherapy was viewed as more effective than Chiropractic ($p=0.012$, $p<0.05$).

Therefore, as seen from Table 4.7.1 to Table 4.7.8 in the opinion of the medical doctors, physiotherapy was seen to be more effective than Chiropractic treatment in general as well as in the treatment of those conditions listed ($p<0.05$).

Table 4.7.9: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Chronic Low Back Pain

Mean	Std Deviation	t	df	P
Minus 0.148	0.711	Minus 1.531	53	0.132

Table 4.7.9 showed that there was no statistically significant difference in the treatment of chronic low back pain given by physiotherapist and Chiropractors ($p=0.132$, $p>0.05$).

Table 4.7.10: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Disc Herniation

Mean	Std Deviation	t	df	P
Minus 0.167	0.694	Minus 1.766	53	0.083

In the treatment of disc hernaition, table 4.7.10 demonstrated that there was no statistically significant difference between Chiropractic and physiotherapy treatment ($p=0.083$, $p>0.05$).

Table 4.7.11: Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Headache/Migraines

Mean	Std Deviation	t	df	P
Minus 0.096	0.634	Minus 1.093	51	0.279

Table 4.7.11 showed that there was no statistically significant difference between Chiropractic and physiotherapy treatment of headaches and migraines ($p=0.279$, $p>0.05$).

Table 4.7.12 Efficacy of Chiropractic compared to Physiotherapy in the opinion of the medical doctors in the treatment of Neck Pain

Mean	Std Deviation	t	df	P
Minus 0.113	0.577	Minus 1.428	52	0.159

For the treatment of neck pain, table 4.7.12 demonstrated that there was no statistically significant difference between Chiropractic treatment and physiotherapy treatment ($p=0.159$, $p>0.05$).

Therefore, for the treatment of chronic low back pain (Table 4.7.9), disc herniation (Table 4.7.10), headache/migraines (Table 4.7.11) and neck pain (Table 4.7.12), there was no statistically significant difference between the treatments given by Chiropractors compared to physiotherapists in the opinion of the medical doctors ($p>0.05$). However, the t-value in each instance was less than zero, therefore even though there was no statistically significant difference in the treatments given by Chiropractors when compared to physiotherapy, the medical doctors still viewed physiotherapy as more effective in the treatment of those conditions listed.

CHAPTER FIVE – DISCUSSION

5.1 Introduction

The purpose of this chapter is to discuss and further explain the various results obtained in the previous chapter. Supporting evidence of the results was given whenever possible.

5.2 Response Rate

The overall response rate achieved was 40% which is considered a high response rate according to STATKON.

According to Berman *et al.* (1998) poor response rates from medical doctors was well known. The sample chosen for this study was small and very specifically chosen because of the patients that are treated by these professionals. However, according to Berman *et al.* (1998) because medical doctors are educated in similar ways, large sample groups were not required to obtain reliable results.

5.3 Demographics

The majority of the respondents were general practitioners, but this group was the largest. Most respondents were male and the mean age of the respondents was 44.08, the youngest doctor was 27 and the eldest 74.

5.4 Socioeconomic Status of Patients according to the Respondents

In the opinion of the respondents, most of their patients were of an average socioeconomic status, followed by a smaller affluent group.

5.5 Referral Patterns

As seen in the previous chapter, referral patterns of the respondents were 51 (93%) of the respondents referred to physiotherapists, 45 (82%) to neurologists/neurosurgeons and orthopedics, and 10 (18%) of the respondents referred to a Chiropractor.

According to Jamison (1995) reasons for non-referrals to Chiropractors was simply because medical doctors preferred physiotherapists.

Berman *et al.* (1998) explain that a lack of knowledge and understanding of alternative therapies results in non-referral to alternative practitioners.

According to Simpson (1998), Queensland medical doctors still felt that having a professional relationship with a Chiropractor was unethical.

This could also possibly explain why West Rand doctors also had low patient referral rates to Chiropractors, but further studies would have to be undertaken to determine if this was true.

5.6 Medical Opinion of Chiropractic

5.6.1 Medical Opinion with regards to Manipulation and Mobilisation

According to Symons *et al.* (2002) an increasing number of non-Chiropractic health care practitioners were incorporating spinal manipulative techniques into their treatment protocols; these included nurses, physicians, physiotherapists and orthopedic specialists.

Concerning whether any medical practitioner should perform spinal manipulations, 46 (85%) believed that not all practitioners should, while 6 (11%) were neutral and 3 (4%) agreed that any practitioner should be allowed to manipulate.

To the question as to whether only Chiropractors should manipulate, 28 (51%) of the participants disagreed.

And to the question of Chiropractors only being allowed to perform mobilisation, 22 (40%) disagreed.

Therefore this implied that the majority of the respondents felt that Chiropractors should be allowed to do more than manipulation or mobilisation.

According to Curtis, Carey, Evans, Rowane, Garrett and Jackman (2000), limited training in manual therapy offered little benefit to improving low back pain outcomes. In Gatterman (1990) the New Zealand Government called for the 1979 Commission of Inquiry into Chiropractic, which was summarized into the principle findings of the Commission:

- Chiropractic was the only health profession that was equipped to perform spinal manipulative therapy (SMT) due to their education and training.
- General medical practitioners and physiotherapists were not adequately trained in SMT, though some had gained skills in it.
- SMT was safe in the hands of a Chiropractor.
- Education and training of Chiropractors was sufficient to determine what was contra-indicated to SMT and whether medical care should be sort.
- SMT was effective in relieving some musculoskeletal ailments.
- In limited cases, somatic-visceral conditions could be relieved with Chiropractic treatment, but the patient should be under concurrent medical care.
- Chiropractors should be accepted as part of the general health care system in the best interest of the public.
- No other medical profession was well enough equipped to diagnose spinal mechanical dysfunction and treat the condition with SMT.

According to Manga *et al.* (1998) spinal manipulation was less effective and less safe when performed by non-Chiropractors.

5.6.2 Medical Opinion as to the Status of Chiropractors

According to the Stedman's Medical Dictionary (1990), a quack was a medical fraud that claimed to cure diseases using questionable procedures, remedies and useless diagnostic and therapeutic machines. The Collins Concise Dictionary and Thesaurus (1991) defined a quack as a person who pretended to practice medicine.

In this study, the respondents, 39 (71%) showed that Chiropractors were not quacks, 12 (22%) remained neutral, while 4 (7%) responded that Chiropractors were quacks.

Menke (2003) explained that ostracism of Chiropractic persisted in the form of 'quack-buster' such as the National Association of Chiropractic Medicine and the National Council Against Health Fraud. These were organisations that attempted to disprove Chiropractic and advised that the public and governmental bodies should not support Chiropractic.

According to Barrett (2001), quackery entailed methods that were not scientifically accepted. Unproven methods however were not quackery, but rather experimental. Researchers and practitioners did not promote unproven methods, but conducted properly designed and responsible studies.

Grimm, Cunningham and Burke (2005) stated that dysfunction of the somatic structures, namely the musculoskeletal system, may have significant impact on the autonomic nervous system therefore influencing visceral function and health as being one of the core hypotheses of Chiropractic. It was this hypothesis that made Chiropractic unscientific according to Jarvis (2000).

However, Sato (1995) conducted animal studies which showed that noxious and innocuous stimuli of the somatic afferents resulted in reflex changes in the sympathetic efferent activity therefore affecting organ function. Those phenomena occurred in the heart, gastro-intestinal tract, urinary tract, lymphatic tissue, brain, blood vessels and the peripheral nervous system.

Grimm *et al.* (2005) found that humans with acute musculoskeletal injury, had alterations in autonomic function which occurred when interaction between the cutaneous and vasomotor sympathetic neurons took place.

According to Nansel and Szlazak. (1995) it had been established that both visceral afferents (internal organ transmission of nociceptive information) and somatic afferents (deep connective tissue structures transmission of nociceptive information) converged on a common pool of inter-neurons within the spinal cord and brainstem. This created a mimicry syndrome that with the application of adjustment and manipulations, the patient got relief of symptoms.

Leach (2004) showed that there was evidence to support modifications of the VSC theory and that there was not a single subluxation theory, but rather that there were multiple hypotheses that formed the basis of the VSC model. Not all of these hypotheses were scientifically proven or disproven.

It must be remembered that according to Wilson-MacDonald (1996), spinal fusion had not yet been proven to be effective.

Grimm *et al.* (2005) stated that due to the musculoskeletal systems impact on the efferent sympathetic activity which impacted on health and wellness, Chiropractors should be seen as primary health care practitioners specialising in the treatment of the musculoskeletal system as a whole and not just the spine.

The majority of the respondents, 26 (49%), agreed that Chiropractors were primary health care practitioners.

5.6.3 Medical Opinion regarding Chiropractic as an Alternative to Surgery

Twenty-nine of 55 respondents (53%) believed Chiropractic to be an alternative to surgery in the treatment of back pain.

Menke (2003) stated that medical doctors follow a well-established treatment protocol of medication and physiotherapy. If the patient did not respond to conservative medical management, the patient was then referred to a neurologist,

neurosurgeon or orthopedic surgeon. Chiropractic was relatively unknown and was not considered a valuable treatment option.

The study confirmed these referral patterns as the 51 (93%) of the respondents referred to physiotherapists, 45 (82%) to neurologists/neurosurgeons and orthopedics, and 10 (18%) of the respondents referred to a Chiropractor.

According to Wilson-MacDonald (1996) Chiropractic had been shown to have a success rate of 30-50% in the treatment of acute low back pain. However, in the treatment of chronic low back pain, Chiropractic and physiotherapy was seen to be just as effective as surgical intervention.

In a study done by Loupasis *et al.* (1999), short-term studies of lumbar discetomy, showed a high satisfaction rate, but long-term results after surgery showed a very high unsatisfactory rate, with a large portion of surgical patients complaining of significant back and leg pain.

According to Menke (2003) Chiropractic manipulations were not always a substitute for back surgery. It had been found that in countries with greater numbers of back surgeons, the higher the surgery rate was, thus implying that many unnecessary surgeries and expensive diagnostic tests were being performed.

According to Deyo, Nachemson and Mirza (2004) spinal fusion surgery was rapidly increasing in the U.S. Malter, McNeney, Loeser and Deyo (1998) found that the fusion rate had increased 100% between 1979 and 1990.

The U.S. Agency for Healthcare Research and Quality (2004), stated that between 1996 and 2001 the spinal fusion rate had increased by 77%. Deyo *et al*. (2004) suggested that spinal fusion rates may have increased due to advances in technology, advances in anesthetics which allow high risk patients such as older patients suffering from degenerative spinal conditions to be operated on, uncertainty with regards to indications, widening of the indications for surgery, axial spine imaging and financial incentives for surgeons, hospitals and the device industry. Another factor was that reimbursements for spinal procedures were more favourable than for any other procedure performed by orthopedic surgeons and neurosurgeons.

According to Deyo *et al.* (2004) spinal fusion was initially used for severe scoliosis, spinal tuberculosis, fractures and poliomyelitis. These indications accounted for a small fraction of spinal fusion procedures performed. The ever-widening indications included: pain due to degenerative conditions (spondylosis), disc disorders, spinal stenosis and discogenic pain (low back pain without sciatica in patients with degenerative disc disease).

Deyo *et al.* (2004) stated that spinal stenosis with associated lumbar spondylolisthesis was one degenerative condition that could benefit from lumbar fusion. The other indications had yet to be proven.

According to Hendiques (2001) spinal fusion for a disc herniation was well documented and was a common procedure with cauda equina syndrome being a complication of lumbar disc surgery with an incident rate of 0.5% to 2.8%.

Deyo *et al.* (2004) stated that there was little evidence for spinal fusion together with a discetomy procedure for disc herniations. In the cervical spine, discetomy alone had been shown to be effective, but a growing number of cervical disc operations included a fusion procedure as well.

Gibson, Grant and Waddell (1999) stated that there was some evidence for clinical effectiveness of discetomy in the relief of pain from acute herniation for carefully selected patients with sciatica caused by a lumbar disc herniation.

Deyo *et al.* (2004) stated that lumbar fusion surgery required decortication of bone, implant placement, extensive dissection and longer operation times. Therefore, suggesting that fusions were associated with more complications than any other type of spinal surgery.

Malter *et al.* (1998) found that the complication rate for spinal fusion was 18% compared with 7% for laminectomy/discetomy procedures.

Thomsen, Christensen, Eiskjaer, Hansen, Fruensgaard and Bunger (1997) found complications included increased blood loss and higher re-operation rates.

Malter *et al.* (1998) stated that re-operation was seen as an unsuccessful surgery and that re-operation rates occurred more frequently in patients with spinal fusions, spinal fusions for degenerative disc disease, spondylolisthesis and non-specific low back pain and disc herniation.

Myers, Hamilton, Bogosian, Smith and Wagner (1997) found that a complication of spinal fusion was visual loss which occurred 2 days post-operatively and seldom improved over time. Visual loss occurred more frequently in operations that took longer and where there was an increased blood loss. They estimated that visual loss occurred in 1 case for every 100 spinal surgeons.

According to Deyo *et al*. (2004), critics of the Fritzell, Hagg, Wessberg and Nordwall (2001) study that compared spinal fusion with non-surgical care which found surgical patients to have a greater success rate when compared to non-surgical care patients, found that the surgical group success rate was reduced and that improvement after surgery was minimal (30%), with 1 in 6 patients becoming pain free, that improvement decreased after 1 and 2 year follow ups. Therefore the surgical benefits were only temporary. The conservative treatment options in the study were physiotherapy, acupuncture and pain relieving injections. However, critics stated that these therapies did not represent the full range of conservative therapies available.

Deyo *et al*. (2004) found that discogenic pain was the most controversial indication for spinal fusion.

In a trial by Ivar Brox, Sorenson, Friis, Nygaard, Idahl, Keller, Ingebrigtsen, Eriksen, Holm, Koller, Riise and Reiskeras (2003) comparing spinal fusion and rehabilitation for patients with discogenic pain, the patients that had surgery had no advantage in pain relief or functional improvement compared to those who were treated conservatively.

Gibson *et al.* (1999) stated that there was no acceptable evidence of the efficiency of any form of fusion for degenerative spondylolisthesis, back pain or instability. Fouyas, Statham and Sandercock (2002) found similar results with regards to neck pain resulting from degenerative cervical spondylosis.

Malter *et al.* (1998) stated that even though there was little evidence of its efficacy and that spinal fusion had a higher complication rate, the rate of this surgical procedure was rapidly increasing compared to other spinal procedures.

Criticism from Benedetti and MacPhail (2002) on the safety of Chiropractic was that all treatment types were risky and that the risk versus benefit of a particular treatment should be considered. If the risk was low and the benefit substantial, then intervention was desirable. However, if the risk was high or had possible disastrous outcomes, and the benefit doubtful, then intervention should be abandoned.

The researcher must highlight that there was no overwhelming evidence for most surgical procedures being greatly beneficial with a low risk rate.

As stated by Saal (1996) surgery had not been shown to be more effective than conservative care.

According to Fritzell, Hagg and Nordwall (2003), surgery had a 24% complication rate, 12% being major complications and 8% of patients had to have a re-operation.

Slosar *et al.* (2000) found that after lumbar fusion surgery, 38% of the patients had unsuccessful surgical outcomes. There was a 20% complication rate which mainly involved temporary motor weakness, with an increased complication rate in re-operations. One death occurred in this study due to pulmonary embolism. A large portion (44%) of patients were not satisfied with the outcome of the surgery.

As stated by Oliphant (2004), the possibility of causing a disc herniation was another issue of safety against Chiropractic. However, herniation appeared to be only possible if the disc was already fragmented or fissured.

When calculating the risk of disc herniation, Oliphant (2004) found that this risk was 1 in 3.7 million manipulations. The common medical treatment for disc herniation was NSAIDs and surgery. NSAIDs had a complication rate of 1%-4% and lumbar disc herniation surgery had a complication rate, such as cauda equina, of 1.3%-12%. This then made manipulation 37000-148000 times safer than NSAIDs and 55500 to 444000 times safer than surgery. With the risk of cauda equina syndrome, by using

the same calculation, the risk of cauda equina syndrome occurring in surgeries was 0.2%-1%, therefore cauda equina was 7400- 37000 more likely to occur as a complication of surgery than due to spinal manipulation.

Oliphant (2004) believed that Chiropractic treatment of patients with disc herniation was effective and safer than normal medical management.

In the treatment of post laminectomy pain syndrome, Losco (2001) found Chiropractic treatment to be effective either by itself or in conjunction with dry needling of the lower back musculature.

Alcantara, Plaugher, Thornton and Salem (2001) found Chiropractic treatment, which consisted of adjustments to vertebral subluxations and rehabilitative exercise following unsuccessful cervical disc herniation surgery to be effective in decreasing pain and increasing mobility in the neck and arm on the affected side.

5.6.4 Medical Opinion of Chiropractic and Physiotherapy

According to Menke (2003) a large number of medical doctors viewed treatments given by physiotherapists and Chiropractors as being similar.

The participants in this study however, did not believe this to be true, 29 (53%) viewed Chiropractic to provide a dissimilar service to physiotherapists.

According to Menke (2003) services provided by the 2 professions may appear similar on the surface, but differences existed in the cases managed, as well as the patient preferences between the 2 professions for the treatment of various musculoskeletal conditions.

As stated by Menke (2003) Chiropractors were more likely to treat acute conditions, had direct access to patients, treat back and neck pain and headaches effectively with SMT, assess spinal and neurological diseases and were better trained in providing a differential diagnosis.

Physiotherapists on the other hand, would treat more chronic-type patients, rehabilitate patients with strokes and burns and treat patients in post-operative rehabilitation.

5.6.5 Medical Opinion of Chiropractors causing Strokes

The question of as to whether it was believed by the respondents that Chiropractic manipulations caused strokes in patients with neck problems, 37 (69%) of the respondents did not believe Chiropractors caused strokes, 12 (22%) remained neutral, and 5 (9%) felt that Chiropractors did indeed cause strokes.

According to Terrett (1995) many complications after manipulation were described in the literature by medical authors, in medical peer reviewed journals and by medical organisations as being due to a Chiropractic procedure or by a Chiropractor therefore adversely affecting the readers' opinion of Chiropractic. He stated three ways in which Chiropractic was mis-represented:

Firstly, according to Terrett (1995), the misuse of Chiropractor/ Chiropractic in literature could be due to medical misrepresentation. Examples of injury were given and ascribed to Chiropractic, but in the original case report no mention of the word Chiropractic nor Chiropractor was made nor did it state that a Chiropractor caused the injury.

Secondly, as stated by Terrett (1995), misuse of inaccurate reporting by medical authors who stated that the injury was caused by a Chiropractor, but on communication with the author, it was revealed that this was simply not true.

Thirdly, according to Terrett (1995), inaccurate reporting by medico-legal journalists suggested that there was a bias against Chiropractic in reports in popular newspapers which gave an incorrect and negative impression of Chiropractic.

Terrett (2002) suggested that vertebral artery dissection had a multi-factorial pathology which could predispose the patient to stroke, but could not be examined for or suspected by the practitioner.

According to Symons *et al.* (2002) cervical spinal manipulation resulted in strains to the vertebral artery which were below the magnitude required to disrupt the arterial wall, therefore under normal circumstances, a single typical high velocity, low amplitude thrust was unlikely to tear or mechanically disrupt the vertebral artery.

According to Terrett (2002) the development of a stroke post-spinal manipulation, could not imply a cause and effect relationship between the manipulation and the injury. The reason the patient consulted the practitioner could be due to an already existing arterial wall disruption which was causing pain, therefore there was a requirement to take a thorough history and check for brain ischaemia symptoms.

According to the American Chiropractic Association (ACA) website, cervical manipulation was 100 times safer than the most common medical treatment for neck pain, headache and other musculoskeletal conditions. The ACA stated that the risk of a major complication or death due to a manipulation was 1 in 4 million, whereas major complication or death due to NSAIDs was 400 in 4 million, due to spinal surgery 7 in 10000, due to cervical spine surgery 4-10 in 10000 and serious life threatening complications due to spinal stenosis surgery was 5 in 100.

Haldeman, Kohlbeck and McGregor (1999) stated that the risk of a stroke following cervical manipulation was about 1 in 1.3 million treatments.

With regards to effectiveness, Manga (2000) stated that there was a large amount of literature that supported Chiropractic effectiveness and high degree of patient satisfaction.

As stated by Manga, Swan, Papadopoulus and Angus (1998), Chiropractic management of low back pain was more cost effective than medical management and that medical therapies were questionable or inadequate. It was further stated that Chiropractic was safer than medical management of low back pain.

5.6.6 Medical Opinion of Chiropractors treating Osteoporotic Patients

Treating patients with osteoporosis, 23 (42%) of the respondents felt that Chiropractors should not treat these patients at all.

According to Jarvik and Deyo (2002) about 4% of all back pain was due to osteoporosis.

Ernst (2003) stated that osteoporosis should be a contra-indication for Chiropractic treatment.

However Gatterman (1990) stated that osteoporotic patients could be successfully treated with gentle manipulation.

5.6.7 Medical Opinion regarding the Benefits of Chiropractic

Ernst and Assendelft (1998) suggested that Chiropractic might actually do more harm than good in the treatment of neuromusculoskeletal conditions due to a lack of evidence of effectiveness, safety of manipulation and its cost-effectiveness.

However, Rivett and Milburn (1997) stated that a large proportion of all spinal manipulation complications were caused by physiotherapists that went unrecognised.
Of the respondents, 35 (63%) believed that Chiropractic did more good than harm in the treatment of patients with neuromusculoskeletal conditions.

5.6.8 Medical Opinion on Referral of Patients to Chiropractors

For medico-legal purposes 26 (47%) of the participants preferred referring to a physiotherapist rather than to a Chiropractor.

Wardwell (1992) stated that a possible reason for this was that physiotherapy was largely dominated and supervised by the medical profession and therefore inter-professional referrals were acceptable and there was no threat of competition.

According to Cherkin (1992), despite the improvement in Chiropractic education and research, the negative history of the Chiropractic profession with the AMA, and the AMA's rules of medical doctors in their relation with Chiropractors as being unethical, had a lingering effect and influenced a doctors decision to refer patients to a Chiropractor.

According to Simpson (1998), Queensland doctors still felt that having a professional relationship with a Chiropractor was unethical.

Should a patient request a referral to a Chiropractor, 31 (57%) responded that they would refer the patient to a Chiropractor, 8 (15%) were neutral and 15 (20%) responded that they would not refer a patient to a Chiropractor even if the patient requested them to.

Twenty-five (45%) respondents disagreed that they would only send a patient to a Chiropractor if all other treatment had failed, 19 (35%) of the respondents remained neutral and 11(20%) respondents agreed that they would only refer once all other treatments had failed.

According to Simpson (1998) 20% of doctors in Queensland would refer to a Chiropractor if the patient requested it compared to 95% indicating that they would refer to a physiotherapist if the patient requested it or not.

5.6.9 Medical Opinion on Where Chiropractors should be Taught and Trained

To the question as to whether Chiropractic students should be taught at Medical Schools of Universities, 40 (73%) of the respondents agreed.

Wardwell (1992) believed that medicine could aid in improving Chiropractic education by providing students the opportunity to participate in hospital rounds together with medical students. This would assist in two ways, firstly, Chiropractic students would be exposed to the full range of conditions making it possible for the Chiropractor to diagnose more readily and identify conditions that are contrary to manipulation, and secondly, that would improve inter-professional collaboration and decrease paranoia and suspicion of both professions toward each other.

According to Menke (2003) Chiropractic education provided little exposure to new medical procedures, medical vocabulary, pharmaceutical uses and drug/drug-herb interactions. By studying with medical students, the Chiropractic student would be taught the various models of health and disease. With deeper knowledge and understanding of medical procedures, practice and protocols, Chiropractors would be able to maximise professional collaboration and decrease confusion between the two professions.

Chapman-Smith (2002b) stated that Chiropractic education was changing to meet the demands of collaboration and integration with various Chiropractic schools around the world now being able to treat patients in hospital-type settings.

5.6.10 Medical Opinion with regards to Chiropractors treating Workmen's Compensation Patients

According to the Compensation for Occupational Injuries and Diseases Act (Act no 30 of 1993), Chiropractors could treat workman injured on duty without a referral letter from a medical practitioner and that all costs incurred would be paid by Workmen's Compensation.

However, 27 (49%) of the respondents felt that Chiropractors should only be allowed to treat Workmen's Compensation patients if they had been referred from a medical doctor.

Simpson (1998) found that in Queensland, Australia, for Workmen's Compensation public patients who needed a referral letter were rarely referred to Chiropractors as the general practitioner felt more comfortable referring patients to a physiotherapist.

Chapman-Smith (2002a) stated that current scientific evidence supported treating Workmen's Compensation patients with manipulation and NSAID's for acute pain as well as keeping the patient active. For the treatment of chronic pain, manipulation and exercise was appropriate. Care given by general practitioners included rest, analgesics, muscle relaxants, massage or physiotherapy which was not evidence-based nor appropriate.

According to Phelon, Armstrong, Knox, Hubka and Ainbinder (2004) there were lower costs, less days lost at work due to injury and lower utilisation of ancillary medical services by patients who were treated by Chiropractors for Workmen's Compensation.

5.7 The Respondents Opinion of Chiropractic compared to Physiotherapy

5.7.1 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Acute and Chronic Low Back Pain

The South African Society of Physiotherapy (2006), defined physiotherapy as being concerned with assessing, treating and preventing movement disorders, restoring normal function or minimising dysfunction and pain, preventing recurring injury and disability in the workplace, at home or during recreational activities and promoting health for all ages. Physiotherapy used evaluation, hands on therapy such as mobilisation and manipulation, massage, exercises, relaxation techniques, hydrotherapy and biofeedback, specialised electrotherapy equipment, heat, ice and traction to relieve pain and assisted healing and recovery.

With regards to the effectiveness of Chiropractic and physiotherapy in the treatment of neuromusculoskeletal conditions, both professions were seen as effective, however, physiotherapy was seen as more effective than Chiropractic for every condition, except disc herniation.

In the treatment of acute low back pain, physiotherapy was seen as 94% effective, while Chiropractic was seen as 81% effective.

In the treatment of chronic low back pain, physiotherapy was seen as 93% effective, while Chiropractic was seen as 80% effective.

According to Skargen, Carlsson and Oberg (1998) in the treatment of acute uncomplicated low back pain, patients improved more from Chiropractic treatment

than from physiotherapy. However, in treating chronic low back pain, physiotherapy was found to be slightly more effective.

According to Bronfort, Haas, Evans and Bouter (2004) manipulation was shown to be moderately more effective than physiotherapy for both acute and chronic low back pain in the short and long-term regarding pain relief. For an episode of acute and chronic low back pain, SMT provided a better outcome in the short and long-term when compared to medical and physiotherapy treatments.

5.7.2 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Disc Herniation

The only condition that both professions were viewed as ineffective was in the treatment of disc herniations, but physiotherapy was still seen as less ineffective than Chiropractic. Physiotherapy was seen to be 55% ineffective while Chiropractic was see as 65% ineffective.

Troyanovich, Harrison and Harrison (1999) found that patients with a disc herniation or disc interruption could be treated by Chiropractic manipulation as it was safe, effective, cost-effective and had a high degree of patient satisfaction.

Oliphant (2004) believed that Chiropractic treatment of patients with disc herniation was effective and safer than normal medical management.

5.7.3 The Respondents opinion of Chiropractic compared to Physiotherapy in the treatment of Migraine and other Headaches

In the treatment of migraine and other headaches, physiotherapy was seen as 76% effective and Chiropractic as 62% effective.

According to Boline, Kassak, Bronfort, Nelson and Anderson (1995) in treating chronic tension-type headaches, Chiropractic was found to be more effective than conservative medical treatment and after a 4-week follow-up, patients had a sustained benefit with decreased frequency and less use of over-the-counter pain relievers.

In his discussion of the Duke Study, Chapman-Smith (2001) stated that the researcher found Chiropractic treatment of headaches to be superior to acupuncture and physiotherapy. And it was further stated that physiotherapy and acupuncture had insufficient data and no proven benefit in treating headaches.

5.7.4 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Neck Pain

The respondents saw physiotherapy as 93% effective in treating neck pain compared to 81% effectiveness for Chiropractic.

According to Bronfort *et al.* (2004) in the treatment of neck pain, SMT was slightly superior to medical management and similar relief was achieved when compared to high technology exercise programs.

Korthals-de Bos, Hoving, Van Tulder, Rutten-van Molken, Ader, de Vet, Koes, Vondeling and Bouter (2003) found that in the treatment of neck pain SMT incurred less costs and had a better outcome in the long term when compared to physiotherapy and that the patient's recovery was more effective.

5.7.5 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Whiplash, Sports Injuries, Arthritis and Joint pain

The respondents viewed physiotherapy to be 87% effective in treating whiplash patients and Chiropractic to be 65% effective.

In treating sports injuries that involve tendons, ligament and muscle, physiotherapy was seen as 100% effective, while Chiropractic was only 63% effective according to the respondents.

For the treatment of arthritis, physiotherapy was 58% effective while Chiropractic was only 38% effective.

Treatment of joint pain by physiotherapist was seen as 60% effective, while Chiropractic treatment of joint pain was seen as 42% effective.

5.7.6 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Sciatica

When treating a patient with sciatica, physiotherapy was seen as 76% effective compared to Chiropractic as only 60% effective.

Santilli, Beghi and Finucci (2006) found that Chiropractic manipulation relieved local as well as radiating acute low back pain, fewer days were spent in bed and fewer over-the-counter drugs were consumed. They concluded that Chiropractic provided relief of acute low back pain and sciatica with disc protrusion.

5.7.7 The Respondents Opinion of Chiropractic compared to Physiotherapy in the treatment of Post Laminectomy Pain Syndrome

In the treatment of post laminectomy pain syndrome, 69% viewed physiotherapy treatment to be effective compared to 49% effectiveness of Chiropractic.

CHAPTER SIX – CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The outcome of this study was similar to the findings of Berman *et al.* (1998) in that the respondents had a generally positive attitude towards Chiropractic, were more conducive to Chiropractic and that referral to Chiropractors were heavily dependant on the medical practitioners knowledge of Chiropractic.

The majority of the respondents felt that Chiropractic students should be taught at medical schools.

The respondents presented a strong view against any medical practitioner performing spinal manipulations.

The respondents felt that osteoporotic patient should not be treated by Chiropractors.

Most believed that Chiropractic cervical manipulation did not cause strokes in patients with neck problems.

However, even though the respondents were accepting of Chiropractic and its treatments, only a small percentage of the respondents did in fact refer patients to a Chiropractor.

Most of the respondents believed that they would refer to a Chiropractor if the patient requested it.

The respondents felt that they would refer a patient not as a last resort once all other treatment had failed.

When comparing physiotherapy and Chiropractic, the respondent's favoured physiotherapy. Brussee *et al.* (2001) found a statistically significant difference in the frequency of referral and knowledge of Chiropractic, therefore the more educated the doctor was about Chiropractic, the more likely they would refer a patient to a Chiropractor.

In the treatment of neuromusculoskeletal conditions, most of the respondents viewed Chiropractic to provide a different service in the treatment of these conditions to physiotherapy.

Sawyer *et al.* (1997) stated that there were only a few studies comparing Chiropractic and spinal manipulation to other therapeutic treatments (for example physiotherapy).

The perception of physiotherapy was seen to be superior to Chiropractic for treating neuromusculoskeletal conditions, even though physiotherapy was seen as ineffective in the treatment of disc herniations. However, physiotherapy was seen as less ineffective when compared to Chiropractic. It was difficult to compare Chiropractic treatment to physiotherapy for most of the conditions listed and where possible in this study, these comparisons were made.

When viewing the responses given in Section C of the questionnaire, it became apparent that the medical profession lacked knowledge about the Chiropractic profession. The respondents would often choose one option on how effective Chiropractic was in treating the listed condition and would not stray from it, or made very little change between all the options. Some respondents did not answer part of the question as they stated that they did not know how effective Chiropractic was in treating the listed neuromusculoskeletal condition (Appendix C). When assessing questions on physiotherapy, the respondents were able to give a more accurate opinion.

To the open question at the end of Section C, the most common comment made was that the medical profession lacked knowledge about Chiropractic (Appendix C).

6.2 Recommendations

1) The Chiropractic profession needed to be actively involved in the informative education of the medical profession as well as the public on the concepts and benefits of Chiropractic. This could be done by:

    - The Chiropractic Association of South Africa (CASA) could start an aggressive effort to promote Chiropractic to the medical profession as well as to the public. The South African Society of Physiotherapy was aggressively promoting their profession, with events such as the annual National Back Week. Another form of physiotherapy promotion was the 'Blue Book' which consisted of details of all physiotherapists who were members of the Society of Physiotherapy, which was distributed to all physiotherapists and general practitioners in the country. It may be argued by the Chiropractic profession that due to the small size of its members, funds were limited and promotional drives were therefore limited as well. However by following the lead from physiotherapists, instead of yearly congresses, the Chiropractic congress could be held every second year and use the saved funds to promote Chiropractic as well as create a Journal that could be used as a form of continuing professional development (CPD). The journal could consist of research findings in South Africa and/or overseas, other interesting articles and a section that needs to be answered and posted to CASA so that CPD points could then be allocated. The pioneer Chiropractors of 1970 fought long and hard to ensure the survival of Chiropractic in South Africa, it would be a pity to watch Chiropractic fall by the way side because of a lack of funds to promote the profession.

    - By utilising a portion of the membership fees, by obtaining sponsorship or by making use of homeopathic or pharmaceutical company representatives to deliver promotional items to general practitioners or specialists could be considered. These items (for example: note pads, pens, models, desk calendars) should contain the word 'Chiropractic' that should be easily seen by the patient and the doctor. By seeing these items, the medical doctor may be reminded that physiotherapy was not the only option, and

the patient may feel freer to ask for a referral to a Chiropractor or even feel free to discuss the treatment that they already received from a Chiropractor to their medical doctor. Brussee *et al.* (2001) stated that most general practitioners received their information about Chiropractic via their patients.

- The Chiropractic profession should start an educational drive along similar lines to Back Week to educate the public and medical doctors by making use of professional promotional consultants and dynamic marketing strategies such as being guests on various talk shows, having posters made that can be placed in hospitals, gymnasiums and schools and by responding timeously to any bad press on Chiropractic.

- Inviting medical doctors to congresses and conferences, not as speakers, but as guests therefore allowing the medical profession to see how professional Chiropractic was and the high level of Chiropractic education.

- Send dynamic professional presenters to various medical schools, if possible speak at medical conferences and in this way present Chiropractic to the medical profession. This presenter did not need to be a Chiropractor, but rather have a panel of Chiropractic doctors that could accompany the presenter to medical schools where students will soon be graduating so that any difficult question that may be asked can be answered by the panel of Chiropractors.

- Need to educate the medical profession on how Chiropractic and physiotherapy differ, therefore making it easier for medical doctors and patients to choose which treatment option would be most beneficial for the given problem.

2) Establish good quality research based on international standards and conducted in a randomised clinical trail (RCT) basis into the effectiveness of Chiropractic compared to other treatment modalities including physiotherapy.

Sawyer *et al.* (1997) stated that RCT was the best research design suited to Chiropractic research which compared one therapy to an already accepted therapy. Leach (2004) stated that poor research was worse than no research at all. Poor research led to the rejection of clinically beneficial procedures and adjustments. Brennan, Cramer, Kirstukas, Cullem. (1997) found that 60% of basic science research about Chiropractic was not published and therefore the larger scientific community did not get to review the results. They also found that most Chiropractic schools did not possess the necessary funds or infrastructure to perform good quality research and that often there was inadequate support staff. Leach (2004) stated that any promising findings of research with regards to effectiveness or theory validation should be professionally and aggressively presented to the public.

3) Research into why medical doctors preferred to refer patients to physiotherapists outside of the hospital situation could be conducted.

4) Apply this questionnaire to other regions of Johannesburg then compare region to region once all areas had been studied. This would identify areas that were lacking in the knowledge of Chiropractic and more effort can be aimed at those trouble areas.

5) Research patient opinion and experience of physiotherapy compared with Chiropractic and establish patient satisfaction between the two professions which could be used to demonstrate Chiropractic effectiveness. A simple questionnaire about physiotherapy treatment could be placed in the offices of Chiropractors that ask what condition was treated, how the patient was treated, the number of visits to the physiotherapist were required for the condition and did the treatment work for the patient.

REFERENCES

ACC Paradigm. (1996) **Association of Chiropractic Colleges: Position Paper No. 1**, *Journal of Manipulative and Physiological Therapies*, Vol. 19, No. 9, pp 634-637 Available at: www.worldchiropracticalliance.org/acc/acc.htm Assessed: 09-10-2005

Alberti KGMM. (2001) **Medical errors: a common problem**, *British Medical Journal*, Vol. 322, No. 7285, pp 501-502

Alcantara J, Plaugher G, Thornton RE, Salem C. (2001) **Chiropractic Care of a Patient with Vertebral Subluxations and Unsuccessful Surgery of the Cervical Spine**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 24, No. 7, pp 477

American Chiropractic Association. (2006) **Chiropractic Cervical Manipulation and Informed Consent**. Available at: www.masschiro.org/upload/research/46-0.pdf. Accessed: 26-02-2006

Barrett S. (2001) **Quackery: How Should it be Defined**. Available at: www.quackwach.com. Accessed: 28-01-2006

Barrick WT, Schofferman JA, Reynolds JB, Goldthwaite ND, McKeener M, Keaney D, White AH. (2000) **Anterior Lumbar Fusion Improves Discogenic Pain at Levels of Prior Posterolateral Fusion**, *Spine*, Vol. 25, No. 7, pp 853-857

Benedetti P, MacPhail W. (2002) **Spin Doctors: The Chiropractic Industry Under Examination**, *Canada: Dundurn Press*, pp 12,124-125, 130-131

Berman B M, Singh B B, Hartnoll S M, Singh B K, Reilly D. (1998) **Primary Care Physicians and Complementary-Alternative Medicine: Training, Attitudes, and Practice Patterns**, *Journal of American Board of Family Practice*, Vol. 11, No. 4, pp 272-281

Board of Healthcare Funders of Southern Africa (2003) **A Recommended Scale of Benefits for: Chiropractors**, pp 1

Boline PD, Kassak K, Bronfort G, Nelson A, Anderson AV. (1995) **Spinal Manipulation vs Amitriptyline for the Treatment of Chronic Tension-Type Headaches: A Randomized Clinical Trial**, *Journal of Manipulative and Physiological Therapeutics,* Vol.18, No. 3, pp 148-154

Brennan PC, Cramer GD, Kirstukas SJ, Cullum ME. (1997) **Basic Science Research in Chiropractic: The State of the Art and Recommendations for a Research Agenda**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 20, No. 3, pp 150-168

Bronfort G, Haas M, Evans RL, Bouter LM. (2004) **Efficiency of Spinal Manipulation and Mobilisation for Low Back Pain and Neck Pain: A Systematic Review and Best Evidence Synthesis**, *The Spine Journal,* Vol. 4, pp 356

Brussee WJ, Assendelft WJ, Breen AC. (2001**) Communication between general practitioners and chiropractors**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 24, No.1, pp 12-16

Caldis KS, McLeod HD, Smith PR. (2001) **The Fall of The Bamboo Curtain: A Review of Complmentary Medicine in South Africa**, *South African Actuarial Journal*, pp 63-93

Chapman-Smith D. (1986) **Cervical Adjustment – The Risk of Vertebral Artery Injury**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, September, Promotional Issue, pp 1

Chapman-Smith D. (1997) **The Role of Subluxation in Chiropractic**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, September, Vol. 11, No. 5, pp 1,2

Chapman-Smith D. (2001) **Safety and Effectiveness of Cervical Manipulation**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, May, Vol. 15, No. 3, pp 4

Chapman-Smith D. (2002a) **A New Analysis of Work Related Chronic Back Pain**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, November, Vol. 16, No. 2, p 7

Chapman-Smith D. (2002b) **New Game, New Rules – The Sao Paulo Conference**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, November, Vol. 16, No. 6, pp 8

Chapman-Smith D. (2003) **Manipulation as Safe as Normal Neck Movements**, *The Chiropractic Report*, Fumia Publication Inc, Toronto, Canada, January, Vol. 17, No. 1, pp 6,7,8

Cherkin DC. (1992) **Family Physicians and Chiropractors: What's Best for the Patient?**, *Journal of Family Practice*, Vol. 18, pp 302-307 IN Simpson K. (1998) **A Study of Referral Patterns Among Queensland General Medical Practitioners to Chiropractors, Osteopaths and Others**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 21, No. 4, pp 225-230

Chiropractic Association of South Africa. (2004) **National Register of Members and Information Booklet**, pp 10

Chiropractors. (1971) *South African Medical Journal*, Editorial, Vol. 45, No. 7, pp 161-162

Chisholm J. (1971) **Chiropractic 'false' – De Wet**, *The Star Newspaper*, Date Unknown

Collins Concise Dictionary and Thesaurus. (1991) *UK: HarperCollins Publishers*

Cooper RA and McKee HJ. (2003) **Chiropractic in the United States: Trends and Issues**, *Milbank Quarterly*, Vol. 81, No. 1, pp 107-138

Coulter ID. (1999) **Chiropractic: A Philosophy for Alternative Health Care**, *Oxford, Butterworth Heineman*, pp 108

Curtis P, Carey JS, Evans P, Rowane MP, Garrett JM, Jackman A. (2000) **Training Primary Care Physicians to give Limited Manuel Therapy for Low Back Pain,** *Spine*, Vol. 25 No. 22, pp 2961

Deyo RA, Nachemson A, Mirza SK. (2004) **Spinal-Fusion Surgery – The Case for Restraint,** *New England Journal of Medicine*, Vol. 350, No. 7, pp 722-726

Dieppe P, Bartlett C, Davey P, Doyal L, Ebrahim S. (2004) **Balancing benefits and harms: the example of non-steroidal anti-inflammatory drugs**, *British Medical Journal*, Vol. 329, No. 7456, pp 31-34

Doxey TT, Phillips. (1997) **Comparison of Entrance Requirements for Health Care Professions,** *Journal of Manipulative and Physiological Therapeutics*, Vol. 20, No. 2, pp 86-91

Engelbrecht R. (1986) **A Brief History of Chiropractic in South Africa**. *The Clinician*, Personal Communication 14-October-2005.

Ernst E, Assendelft WJJ. (1998) **Chiropractic for Low Back Pain: We don't know if it does more good than harm,** *British Medical Journal*, Vol. 317, p 106

Ernst E. (2003) **Chiropractic Spinal Manipulation for Back Pain**, *British Journal of Sports Medicine*, Vol. 37, pp 195-196

Fouyas IP, Statham PFX, Sandercock PAG. (2002) **Cochane Review on the Role of Surgery in Cervical Spondylotic Radiculopathy**, *Spine*, Vol. 27 No. 7, pp 736-747

Fritzell P, Hagg O, Nordwall A. (2003) **Complications in Lumbar Fusion Surgery for Chronic Low Back Pain: Comparison of Three Surgical Techniques in a Prospective Randomized Study,** *Spine*, Vol. 12, No. 11, pp 178-189

Fritzell P, Hagg O, Wessberg P, Nordwall A. (2001) **Lumbar Fusion versus nonsurgical treatment for chronic low back pain: a multicenter randomized controlled trial from the Swedish Lumbar Spine Study Group**, *Spine*, Vol. 26, No. 23, pp 2521-2532

Gatterman MI. (1990) **Chiropractic Management of Spine Related Disorders**, *Baltimore, Maryland: Williams and Wilkins*, pp xviii, 201, 405, 410

Gibson JNA, Grant IC, Waddell G. (1999) **The Cochrane Review of Surgery for Lumbar Disc Prolapse and Degenerative Lumbar Spondylosis**, *Spine,* Vol. 24, No. 17, pp 1820-1832

Grimm DR, Cunningham BM, Burke JR. (2005) **Autonomic Nervous System Function Among Individuals with Acute MusculoSkeletal Injury**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 28, No. 1, pp 44

Haldeman S. (1992) **Principle and Practice of Chiropractic**, *Norwalk, Connecticut*: *Appleton and Lange*, pp 600-601, 624

Haldeman S, Kohlbeck FJ, McGregor M. (1999) **Risk Factors and Precipitating Neck Movements Causing Vertebrobasilar Artery Dissection After Cervical Trauma and Spinal Manipulation**, *Spine,* Vol. 24, No. 8, pp 785-794

Hendriques T, Olerud C, Petren-Mallmin M, Ahl T. (2001) **Cauda Equina Syndrome as a Postoperative Complication in Five Patients Operated for Lumbar Disc Herniation**, *Spine,* Vol. 26, No. 3, pp 293

Homola S. (1999) **Inside Chiropractic: A Patients Guide**, *New York: Prometheus Books*, pp 53-54, 69

Hurwitz EL, Aker PD, Adams AH, Meeker WC, Shekelle PG. (1996) **Manipulation and mobilisation of the Cervical Spine: a Systematic Review of the Literature**, *Spine*, Vol. 21, pp 1746-1760

Ivar Brox J, Sorenson R, Friis A, Nygaard O, Idahl A, Keller A, Ingebrigtsen T, Eriksen HR, Holm I, Koller AK, Riise R, Reikeras O. (2003) **Randomised clinical trial of Lumbar instrumentation fusion and cognitive intervention and exercises in patients with chronic low back pain and disc disease**, *Spine,* Vol. 28, No. 17, pp 1913-1921

Jamison JR. (1995) **Medical Referrals for Chiropractic Care: A Survey of "Unconventional" Medical Practitioners**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 18, No. 8, pp 512-519

Jarvik JG, Deyo RA. (2002) **Diagnostic Evaluation of Low Back Pain with Emphasis on Imaging**, *Annuals of Internal Medicine*, Vol. 137, pp 586-597

Jarvis WT. (2000) **Chiropractic: A Skeptical View**. Available at: http://www.chirobase.org/01General/skeptic.html Accessed 12/02/2004

Kaptchuk TJ, Eisenberg DM. (1998) **Chiropractic: Origins, Controversies, and Contributions**, *Archives of Internal Medicine*, Vol. 158, No. 20, p 2219

Keating JC, Hyde TE, Menke JM, Seamen D, Vincent RE. (2004) **In the Quest for Cultural Authority**, *Dynamic Chiropractic*, Vol. 22, No. 26 Available at: www.chiroweb.com/archives/22/26/09.html Assessed: 09-10-2005

Korthals-de Bos IB, Hoving JL, Van Tulder MW, Rutten-van Molken MP, Ader HJ, de Vet HC, Koes BW, Vondeling H, Bouter LM. (2003) **Cost Effectiveness of Physiotherapy, Manual Therapy and General Practitioner Care for Neck Pain: Economic Evaluation Alongside a Randomized Controlled Trial**, *British Medical Journal*, Vol. 326**,** pp 911

Kohn LT, Corrigan JM, Donaldson MS. (1999) **To err is human. Building a safer health system**, *Washington DC: National Academy Press*, pp 26-42

Konrad TR, Fletcher GS, Carey TS. (2004) **Interprofessional Collaboration and Job Satisfaction of Chiropractic Physicians**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 27, No. 4, pp 245-252

Langworthy JM, Birkelid J. (2001) **General practice and Chiropractic in Norway: How well do they communicate and what do GPs want to know?,** *Journal of Manipulative and Physiological Therapeutics*, Vol. 24, No. 9, pp 576-581

Leach RA. (1994) **The Chiropractic Theories: Principles and Clinical Applications**, 3rd Edition, *Baltimore: Williams & Wilkins*, pp 8,15-17

Leach RA. (2004) **The Chiropractic Theories: A Textbook of Scientific Research**, 4th Edition, *Maryland: Lippincott Williams & Wilkins*, pp 10-12, 101, 102

Licht PB, Christensen HW, Svendsen P, Flemming Hoilund-Carlson P. (1999) **Vertebral Artery Flow and Cervical Manipulation: An Experimental Study**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 22, No. 7, pp 431-435

Losco B. (2001) **The Efficiency of Chiropractic Care in the management of Post-laminectomy Pain Syndrome utilising Chiropractic Spinal Manipulation/Mobilisation and Myofascial Dry Needling Techniques**, *Master Dissertation, Technikon Witwatersrand (University of Johannesburg)*

Loupasis GA, Stamos K, Katonis AG, Sapkas G, Korres DS, Hartofilakidis G. (1999) **Post-Laminectomy Pian Syndrome: Seven to Twenty Year Outcome of Lumbar Discetomy**, *Spine*, Vol. 24, No. 22, pp 2313-2317

Malter AD, McNeney B, Loeser JD, Deyo RA. (1998) **5-Year Re-operation Rates after Different Types of Lumbar Spine Surgery,** *Spine*, Vol.23, No. 7, pp 814-820

Manga P. (2000) **Economic case for the integration of Chiropractic services into the health care system**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 23, No. 2, pp 118-122

Manga P, Swan WR, Papadopoulus C, Angus DE. (1998) **The Effectiveness of Chiropractic Management of Low Back Pain**, *University of Ottawa, Canada*, p 2

Meeker WC. (2000) **Public Demand and the Integration of Complementary and Alternative Medicine in the US Health Care System**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 23, No. 2, pp 123

Menke JM. (2003) **Principles in Integrative Chiropractic**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 26, No. 4, pp 254-273

Milani M. (2000**) History of Chiropractic in South Africa**, Personal communication, 5 October 2004.

Myers MA, Hamilton SR, Bogosian AJ, Smith CH, Wagner TA. (1997) **Visual Loss as a Complication of Spine Surgery: A Review of 37 Cases**, *Spine,* Vol. 22, No. 12, pp 1325-1329

Nansel D, Szlazak M. (1995) **Somatic Dysfunction and the Phenomenon of Visceral Disease Simulation: A Probable Explanation for the Apparent Effectiveness of Somatic Therapy in Patients Presumed to be Suffering from True Visceral Disease**, *Journal of Manipulative and Physiological Therapies,* Vol. 18, No. 6, pp 379-97

National Institute of Neurological Disorders and Stroke. (2003) **Low Back Pain Fact Sheet**,
Available at: http://www. ninds.nih.gov/disorders/backpain/details_backpian.htm Updated November (2005), Accessed on 20-01-2006

Nelson CD, McMillin DL, Richards DG, Mein EA. (2000) **Manuel Healing Diversity and other Challenges to Chiropractic Manipulation**, *Journal of Manipulative and Physiological Therapies,* Vol. 23, No. 3, pp 203-207

Oliphant D. (2004) **Safety of Spinal Manipulation in the Treatment of Lumbar Disc Herniations: A Systemic Review and Risk Assessment**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 27, No. 3, pp 197-210

Page J, Henry D**.** (2000) **Consumption of NSAIDs and the Development of Congestive Heart Failure in Elderly Patients: An Underrecognized Public Health Problem**, *Archives of Internal Medicine,* Vol. 160, pp 777-784

Perneger TV, Whelton PK, Klag MJ. (1994**) Risk of Kidney Failure Associated with the use of Acetaminophen, Aspirin and Nonsteroidal Antiinflammatory Drugs**, *New England Journal of Medicine,* Vol. 331, No. 25, pp 1675-1679

Phelon SP, Armstrong RC, Knox DG, Hubka MJ, Ainbinder DA. (2004) **An Evaluation of Medical and Chiropractic Provider Utilization and Costs: Treating Injured Workers in N. Carolina**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 27, No. 7, pp 442-448

Rees L, Weil A. (2001) **Integrative medicine: imbues orthodox medicine with the values of complementary medicine**, *British Medical Journal,* Vol. 322, pp 119-120

Rivett DA, Milburn P. (1997) **Complications Arising from Spinal Manipulative Therapy in New Zealand**, *Physiotherapy,* Vol. 83, No. 12, pp 626

Saal J. (1996) **Natural History and Non-Operative treatment of Lumbar Disc Herniation**, *Spine,* Vol. 21, pp 2-9

Santilli V, Beghi E, Finucci S. (2006) **Chiropractic Manipulation in the treatment of Acute Low Back Pain and Sciatica with disc Protrusion: A Randomized Double-Blind Clinical Trail of Active and Simulated Spinal Manipulation**, *The Spine Journal,* p 6

Sato A. (1995) **Somatovisceral Reflexes**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 18, No. 9, pp 597

Sawyer C, Haas M, Nelson C, Elkington W. (1997) **Clinical Research within the Chiropractic Profession: Status, Needs, and Recommendations**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 20, No. 3, pp 169-178

Simpson K. (1998) **A Study of Referral Patterns Among Queensland General Medical Practitioners to Chiropractors, Osteopaths and Others**, *Journal of Manipulative and Physiological Therapeutics,* Vol. 21, No. 4, pp 225-230

Skargen E, Carlsson PG, Oberg BE. (1998) **One-Year Follow-up Comparison of the Cost and Effectiveness of Chiropractic and Physiotherapy as Primary Management for Back Pain**, *Spine,* Vol. 23, No. 17, pp 1884

Slosar PJ, Reynolds JB, Schofferman J, Goldwaithe N, White AH, Keaney D. (2000) **Patient Satisfaction After Circumferential Lumbar Fusion**, *Spine,* Vol. 25, No. 6, pp 722-726

South African Society of Physiotherapy. (2006) **What is Physiotherapy?** Available at: www.physiosa.org.za/frame.asp?page=what/whatis.asp, Accessed on: 28-02-2006

Stedman TL. (1990) **Stedman's Medical Dictionary**, 25th Edition, *U.S.A.: Williams & Wilkins*

Symons BP, Leonard T, Herzog W. (2002) **Internal Forces Sustained by the Vertebral Artery During Spinal Manipulative Therapy**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 25, No. 8, pp 504-510

Talbot L. (2003) **Failed Back Surgery Syndrome**, *British Medical Journal*, Vol. 327, No.7421, pp 985-986

Terrett AGJ. (1995) **Misuse of the Literature by Medical Authors in Discussing Spinal Manipulative Therapy Injury**, *Journal of Manipulative and Physiological Therapeutics*, Vol. 18, No. 4, pp 203-210

Terrett AGJ. (2002) **Did the SMT Practitioner Cause the Arterial Injury?** *Chiropractic Journal of Australia,* Vol. 32, No. 3, pp 99-110

The Chiropractic Journal (1992) **Australian M.D.s oppose Chiropractic.** Available at: www.worldchiropracticalliance.org. Accessed: 25-01-2006

Thomsen K, Christensen FB, Eiskjaer SP, Hansen ES, Fruensgaard S and Bunger CE. (1997) **The Effect of Pedicle Screw Instrumentation on Functional outcome and Fusion Rates in Posterolateral Lumbar Spinal Fusion: A Prospective, Randomised Clinical study**, *Spine,* Vol.22, No. 24, pp 2813-2822

Triano JJ, Rashbaum RF, Hansen DT. (1998) **Opening access to spine care in the evolving market: integration and communication**, *Top Clinical Chiropractor*, Vol.5, pp44-52 **IN** Manga P. (2000) **Economic case for the integration of**

Chiropractic services into the health care system, *Journal of Manipulative and Physiological Therapeutics*, Vol. 23, No. 2, pp 118-122

Troyanovich SJ, Harrison DD, Harrison DE. (1999) **Low Back Pain and the Lumbar Intervertebral Disc: Clinical Considerations for the Doctor of Chiropractic**, *Journal of Manipulative and physiological Therapeutics*, Vol. 22, No. 2, pp 96-104

University of the Witwatersrand, Johannesburg, The Faculty of Health Sciences. (2005) **Degrees and Diplomas in Health Sciences, Rules and Syllabuses**, Pp 32,33

U. S. Agency for Healthcare Research and Quality. (2004) **Healthcare Cost and Utilization Project, HCUPnet.** Available at: www.ahrq.gov/data/hcup/. Accessed: 25-02-2006

Waddell G. (1998) **The Back Pain Revolution**, *London: Churchill Livingstone*, Chapter 4, pp 58-61

Wardwell WI. (1992) **Chiropractic: History and Evolution of a New Profession**, *St. Louis: Mosby Year Book*, pp 44, 51, 52, 168-174, 279

Weingart SN, Wilson R McL, Gibberd RN, Harrison S. (2000) **Epidemiology of Medical Errors**, *British Medical Journal*, Vol. 320, No. 7237, pp 774-777

Wilk CA. (1996) **Medicine, Monopolies and Malice: How the Medical establishment tried to destroy Chiropractic in the US**, *Honesdale: Paragon Press*, pp 51-52, 175-176

Wilson-MacDonald J. (1996) **Controversies in Management: The Case For Spinal Fusion is Unproven**, *British Medical Journal*, Vol. 312, pp 39-40

www.ahpcsa.co.za/chiropractic

APPENDIX A: MEDICAL AND CHIROPRACTIC SUBJECT LISTS

Medical Subjects

First Year

Option 1	*Option 2*
Introduction to Medical Sciences	Introduction to Medical Sciences
Chemistry I	Chemisty (half-course)
Physics I	Physics (half-course)
One of the following:	*Two of the following:*
Zulu for Health Sciences Students	Zulu for Health Sciences
Biomedical Mathematics	Biomedical Mathematics
Psychology I	Psychology I
Human Behavioural Sciences	Human Behavioural Sciences

Second Year

Human Anatomy

Physiology and Medical Biochemistry I

Molecular Medicine

One of the following:

Introduction to Economics of Health (half-course)

Health Psychology (half-course)

The Social and Historical Context of Health and Disease (half-course)

Third Year

Integrated Basic Medical and Human Sciences A

Preliminary Concepts in Medical Sciences, *Includes one or more of the following topics:*

- Anatomical Pathology
- Anatomy
- Bioethics
- Microbiology
- Molecular Medicine
- Pharmacology
- Research Methodology

Elective Studies

Fourth Year

Integrated Basic Medical and Human Sciences B

Fifth Year

Integrated Clinical Medicine A, which is divided into eight blocks:

- Internal Medicine
- Surgery
- Gynaecology
- Paediatrics
- Otorhinolaryngology, Psychiatry, Family Medicine
- Community Medicine, Ophthalmology, Urology
- Integrated Practice
- Acute and Preoperative Care

Sixth Year

Integrated Clinical Medicine B, which is divided into eight blocks:

- Internal Medicine
- Surgery
- Obstetrics
- Paediatrics
- Psychiatry
- Integrated Primary Care
- Integrated Practice
- Orthopaedics, Internal Medicine

Elective Studies

Chiropractic Subjects

First Year	**Second Year**
Chemistry I	Anatomy II
Physics I	Biochemistry II
Biology I	Epidemiology II
Anatomy I	Physiology II
Physiology I	Medical Microbiology II
Philosophy: Principles and History I	Physiology II
	Social Studies I

As students begin third year they are introduced to clinically orientated subjects.

Third Year

Psychopathology II

Principles and Practice of Chiropractic II

General Pathology II

Systemic Pathology III

Auxillary Therapeutics III

Diagnostics III

Fourth Year

Diagnostics IV

Clinical Biomechanics and Kinesiology IV

Clinical Chiropractic IV

Chiropractic Principles and Practice IV

Research Methods and Techniques I

Radiology IV

Fifth Year

Clinical Chiropractic V

Principles and Practices of Chiropractic V

Clinical Biomechanics and Kinesiology V

Practice Management and Jurisprudence

Research Project and Dissertation

APPENDIX B: MEDICAL OPINION OF CHIROPRACTIC QUESTIONNAIRE INTRODUCTORY LETTER AND QUESTIONNAIRE

Dear Doctor

My name is Brenda Ratzeburg, a chiropractic student from the University of Johannesburg, currently doing my final year dissertation. I am conducting a survey on medical doctors/specialists opinion of chiropractics. The questionnaire will not take longer than ten (10) minutes to answer. Please answer the questions honestly. Your opinion will be greatly appreciated.

The questionnaire is of a confidential nature and your anonymity will be maintained through out the research. Please do not put your name or contact details on the questionnaire.

At the end of the questionnaire there is space for you to make any comments regarding the chiropractic profession.

A completed questionnaire may be sent back to me via fax at 011-475-9962 or contact me telephonically at 011-760-1450 / 082 295 2280 to collect it from your office.

Should you have any comments regarding this questionnaire, you are welcome to contact me telephonically at 011-760-1450.

Thank you for your participation.

Yours sincerely

Brenda Ratzeburg
Chiropractic Student

Medical Opinion of Chiropractic

Please indicate you answer by crossing the appropriate box
For example: If you are male, mark 2 as follows:

Female	1
Male	2

Section A

This section of the questionnaire refers to background or biographical information. Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents. Once again, we assure you that your response will remain anonymous. Your co-operation is greatly appreciated.

1. Which one of the following best describes your profession?

General Practitioner	1
Neurologist/Neurosurgeon	2
Orthopedic Surgeon	3
Other	4

2. How many years have you been in practice as a medical professional?

Less than 5 years	1
5-10 years	2
11-15 years	3
16-20 years	4
21 or more years	5

3. What is your age? (In complete years)

4. Your gender?

Female	1
Male	2

5. In which areas do you currently practice? Please mark all the applicable boxes.

Krugersdorp	1
Ruimsig	2
Wilgeheuwel	3
Little Falls	4
Discovery	5
Florida	6
Strubensvalley	7
Northcliff	8
Horison	9
Radiokop	10
Flora Park	11
Other	12

6. Which one of the following best describes the predominant socio-economic status of your patients?

Affluent	1
Above affluent	2

Average	3
Below average	4

7. On average, what percentage of your patients have neuro-musculoskeletal problems?

0%	1
1 – 5%	2
6 – 10%	3
11 – 20%	4
21 – 50%	5
51% or more	6

8. Of your patients with neuro-musculoskeletal problems, on average, what percentage do you refer to another medical practitioner?

Not Applicable (do not have patients with neuro-musculoskeleatl problems)	1
0%	2
1 – 5%	3
6 – 10%	4
11 – 20%	5
21 – 30%	6
31 - 50%	7
51% or more	8

9. Of the patients with neuro-musculoskeletal problems that you refer, which of the following do you refer to? Mark all applicable.

Not applicable – do not refer	
Chiropractor	
Physiotherapist	
Osteopath	
Orthopedic Surgeon	
Neurologist / Neurosurgeon	
Other	

Section B

This part of the questionnaire assesses your opinion of chiropractic. Remember your opinion is confidential and will remain anonymous. There are no right or wrong answers; we are only interested in your opinion.
Kindly indicate to which extent you agree with each of the following statements using the following 5-point scale where:

1 = Strongly Disagree **(SD)**
2 = Disagree **(D)**
3 = Neutral **(N)**
4 = Agree **(A)**
5 = Strongly Agree **(SA)**

Statement	**SD**	**D**	**N**	**A**	**SA**
10. Any medical practitioner should be allowed to do spinal manipulation	1	2	3	4	5
11. Chiropractors are primary health care professionals	1	2	3	4	5
12. Chiropractic is a non-invasive alternative therapy to surgery	1	2	3	4	5
13. Chiropractors provide a similar service to neuro-musculoskeletal patients as physiotherapists	1	2	3	4	5
14. Chiropractors cause strokes in patients with neck problems	1	2	3	4	5
15. Chiropractors do more harm to patients with neuro-musculoskeletal problems than good	1	2	3	4	5
16. I would only refer a patient to a chiropractor if he/she asks me to	1	2	3	4	5
17. A chiropractor should not treat a person with osteoporosis	1	2	3	4	5
18. I prefer to refer neuro-musculoskeletal patients to a physiotherapist rather than to a chiropractor for medico-legal purposes	1	2	3	4	5
19. I refer a patient to a chiropractor only if all other treatments have failed	1	2	3	4	5
20. Chiropractors should only do spinal manipulation	1	2	3	4	5
21. Chiropractors should only do mobilization, not spinal manipulation	1	2	3	4	5
22. Chiropractors should be trained at medical schools of universities	1	2	3	4	5
23. Chiropractors should not be allowed to do Workman's Compensation without a referral from another medical practitioner	1	2	3	4	5
24. Chiropractics is not scientifically proven to be a safe alternative to surgery	1	2	3	4	5
25. Chiropractors are quacks	1	2	3	4	5

Section C

This section assesses your opinion on how effective chiropractic and physiotherapy are in treating the following conditions.
Remember your opinion is confidential and will remain anonymous. There are no right or wrong answers; we are only interested in your opinion.
Kindly indicate to which extent you agree with each of the following statements using the following 4-point scale where:

1 = Highly Ineffective **(HI)**
2 = Ineffective **(I)**
3 = Effective **(E)**
4 = Highly Effective **(HE)**

25.

How effective do you believe a Chiropractor is in treating the following:	**HI**	**I**	**E**	**HE**
a) Acute lower back pain	1	2	3	4
b) Chronic lower back pain	1	2	3	4
c) Disc herniation	1	2	3	4
d) Headaches / Migraines	1	2	3	4
e) Neck pain	1	2	3	4
f) Whiplash	1	2	3	4
g) Sports Injuries involving sprain or strain of muscles, tendons or ligaments	1	2	3	4
h) Arthritis	1	2	3	4
i) Joint pain	1	2	3	4
j) Sciatica	1	2	3	4
k) Post Laminectomy Pain Syndrome	1	2	3	4

26.

How effective do you believe a Physiotherapist is in treating the following:	**HI**	**I**	**E**	**HE**
a) Acute lower back pain	1	2	3	4
b) Chronic lower back pain	1	2	3	4
c) Disc herniation	1	2	3	4
d) Headaches / Migraines	1	2	3	4
e) Neck pain	1	2	3	4
f) Whiplash	1	2	3	4
g) Sports Injuries involving sprain or strain of muscles, tendons or ligaments	1	2	3	4
h) Arthritis	1	2	3	4
i) Joint pain	1	2	3	4
j) Sciatica	1	2	3	4
k) Post Laminectomy Pain Syndrome	1	2	3	4

27. Are there any other comments you would like to make regarding chiropractic as a profession?
_____
_____

Thank you for your co-operation in completing this questionnaire

APPENDIX C: ANSWERS TO THE OPEN QUESTION

- ‘Don’t have contact or information on the profession of Chiropractics. Maybe your body must advertise or give more information to us as medical practitioners’

- Question 25: ‘I have no idea’ (Effectiveness of Chiropractic to treat listed conditions)

- ‘I have now idea how Chiropractors and physiotherapists compare or differ’

- ‘Am particularly impressed with some Chiropractic treatment of colic in babies! Often best treatment available.’

- ‘It is unfortunate that the older, sometimes less well trained Chiropractors (or not up to date with current treatments) give chiropractors in general a bad name’

- ‘Unfortunately I don’t know enough about the training or application of Chiropractic’

- ‘We know too little about Chiropractic’

- ‘I am of the opinion that the more you manipulate joint, the easier they slip out again!’

- ‘Very important and effective part of handling and treatment of mainly spinal problems’

- ‘They have a valid place and need to continue practicing’

- ‘These comment: Treatment is difficult to assess as I don’t refer to Chiropractors and I very rarely get referrals from Chiropractors’

- ‘I must mention the addition of medication, NSAIDs, also medication if joint or rheumatoid arthritis is present’

- ‘Not enough knowledge of their training’

- ‘More information on what they do’

- ‘Don’t know of any Chiropractors in my area. I don’t know how safe they work. I do believe there is a place for them.’

- ‘We are not adequately trained in understanding the note of, as well as the spectrum of diseases managed by the Chiropractor. What would encourage me to refer to a Chiropractor, rather than a physiotherapist?’

- ‘I am not sure what exactly Chiropractic treatment involves’

- ‘GP has very little knowledge of your profession and qualifications’

- ‘If a Chiropractor recognizes a potential patient and treats him accordingly – no problem. Important is what is best for a specific patient and that he gets the proper treatment and more communication between referrals (follow-up)’

- ‘Support them’

- ‘The medical profession needs to know more about the practice and scope of Chiropractics’

- ‘I have seen successful treatment by Chiropractors, but also disasters! Chiropractors are too aggressive in their treatment.’

- ‘I did not have sufficient contact with Chiropractors to answer question 25’ (Effectiveness of Chiropractic compared to Physiotherapy)