The assessment of the knowledge and perception of personal trainers within Durban with respect to chiropractic.

A dissertation submitted in partial compliance with the requirements for a Masters Degree in Technology, in the Department of Chiropractic at the Durban Institute of Technology

By

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I, Michelle Felicity Kew, do hereby declare that my work is my own, both in conception and execution.

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Dedication

To my parents, Jocelyn and Edward Kew, for giving me the means to enter this worthy profession of Chiropractic.

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Glossary

Attitudes: For the purpose of this research, attitudes refer to a way of thinking, which governs one's behavior towards something. (Oxford Advanced Learner's Dictionary 1997)

Perceptions: For the purpose of this research, perceptions refer to the way in which things are seen, understood to be like, and interpreted as. (Oxford Advanced Learner's Dictionary 1997)

Chiropractic: The World Federation of Chiropractic (2001) defines the chiropractic profession as: "a health care profession concerned with the diagnosis, treatment, and prevention of disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health". This is in congruence with the definition as available from the Chiropractic Association of South Africa (http://www.chiropractic.co.za).

Personal trainer: A Personal Fitness Trainer designs comprehensive exercise programs for an individual client based on that person's health history, capabilities and fitness objectives. The Personal Fitness Trainer helps an individual client achieve these goals through an easy-to-follow multidisciplinary learning process that is done in an empathetic and dynamic way. (http://www.ideafit.com/prptfact.asp)

Construct validity: This measures how accurately answers to questions in a scale reflect theoretical predictions of a particular construct. (Bernard, 2000)

Face validity: This is determined by an agreement between researchers and those with a vested interest in the questionnaire, that on "the face of it" the tool seems valid (Bernard, 2000)

Client: In reference of chiropractic, this term refers to a patient.

Abstract

If the professions of chiropractic and personal training are to work together for the total well-being of the client, then it has to be assessed whether or not a milieu of co-operation exists, and if it does not, possible reasons for the lack thereof.

It was the purpose of this study to determine the current knowledge and perceptions of personal trainers (PTs) with respect to the chiropractic profession in Durban. This study therefore established a knowledge base to facilitate greater understanding and co-operation between PTs and chiropractors regarding the referral of clients, who may benefit from a combined treatment program from the PT and chiropractor.

The estimated population size for all PTs within Durban is 105. Of this, a sample size of 83 PTs was established based on 19 gyms that allowed for the research to proceed. The questionnaire was adapted from other perception-based questionnaires using a focus group (n=9), which established the face validity of the questionnaire used in this study. Eighty-three questionnaires were personally given to either the fitness managers or PTs directly who practice within these Durban gyms. Each PT was given an initial dummy letter of information and a consent form, to limit any bias, as well as a questionnaire, and the true letter of information and consent form afterward – revealing the true/specific nature of the research. Of the 66 questionnaires that were completed, three PTs did not meet the age requirement of the inclusion criteria. This gave a response rate of 63, which gave a sample response rate of 75.9% (63 /83) and a total population response rate of 60% (63 /105).

The statistical package used to enter and analyse the data was SPSS version 11.5 (SPSS Inc. Chicago, Ill, USA). The study was analysed using descriptive and analytical analysis. A p value of <0.05 was considered as statistically significant.

Of the 63 respondents, 81% were White and 61.9 % males. The mean age of the PTs was 32.25 years. The average length of time working as a PT was 5.3 years, and 50.8% of

participants were from private gyms (n=32). On average participants worked 36 hours per week (range 3 to 84 hours). The majority of PTs had a National Diploma or certificate in fitness though ETA (57.1%) and five participants (8%) had a sports science degree. Twenty one percent (n=13) of PTs had specialized further in personal training.

Most PTs would rather see a GP for a musculoskeletal condition (98%) than a physiotherapist (89%), chiropractor (79%) or a biokineticist (70%) and GPs were also preferred for the treatment of non-musculoskeletal (non-ms) conditions. Conditions where PTs preferred the treatment of chiropractic was general low back pain, neck pain, “slipped disc” and whiplash.

In terms of PT referral preferences and demographics, age in years, years as a PT and having no other qualification other than in personal training, were all statistically significant.

- Of the 20–29 year age group, 82% preferred chiropractic for the treatment of a “slipped disc” and 45.5% preferred chiropractic for postural abnormalities. Of the 30–39 year age group, 25% preferred chiropractic for the treatment of headaches.
- With regards to years as a PT, 90% of the one-year-or-less group chose chiropractic for “slipped disc”, 47% for postural abnormalities and 42% for shoulder pain. In the 1-5 year group, 22% chose chiropractic for headaches and 22% chose chiropractic for migraines.
- Thirty-one percent of PTs having no other qualification besides personal training chose chiropractic for osteoporosis.

The vast majority of PTs (96.7%) suggest to their clients they see someone for further examination/treatment. Physiotherapists were most commonly referred to (75%), followed by dieticians, biokineticists and chiropractors. Female PTs were more likely to refer clients to chiropractors than were male PTs. Those with 1-5 years of experience as a PT referred mainly to chiropractors while those with >5 years experience referred mainly to physiotherapists and pharmacists.

Most respondents knew of chiropractors working in their area (69.5%). This was significantly associated with referrals to a chiropractor. Seventy-eight percent of those who knew of chiropractors working in their area also referred to chiropractors, while 33% of those who did not know of chiropractors in their area referred clients. As many as 84.7% of PTs said they would consider referring to a chiropractor and mostly for cases of back and neck pain. This was in contrast to 70% of PTs who had never had a referral from another health care worker. Of the 30% who had such referrals (usually verbally (32%) the most common practitioner to refer to a PT was the GP (30%), followed by physiotherapists (21%), biokineticists (13%) and chiropractors (11%).

Most PTs (79%) who suggested that their clients see another practitioner provided contact details of the practitioner (45/57), of whom 85% received feedback from the practitioner (39/46). PTs were more likely to refer to biokineticists, physiotherapists, homeopaths, and psychologists from whom they themselves had received referrals.

The majority knew that chiropractors studied anatomy (89%), and that the Durban Institute of Technology (DIT) offered chiropractic. Only 28.5% of PTs responded correctly to the chiropractic qualification being a masters degree.

As a result of the foregoing results, conclusions drawn indicated that the mean knowledge score was 46.3%. Thus overall knowledge of chiropractic was low. This was however modified if the PT had been treated by a chiropractor before (55.6%), as it increased their knowledge score significantly. In congruence with this the most common attitude towards chiropractic was that it had a valuable role in the health care system (47.6%).

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

One normally assumes that what one perceives is what is actually taking place, but in actual fact, one's perception is only a personal view on the things around a person which is derived from the person's own experiences, expectations and beliefs (Kehoe, 2002). Thus perception is defined as the process by which people select, organize, and interpret information to form a meaningful picture of the world. Often one is forced to examine the reasons for one's perceptions only when one finds their perception of the same event differing from that of others (Chaffe, 1997).

In this context chiropractors tend to be regarded by the public as specialists within a narrow range of clinical practice related to musculoskeletal disorders (principally low back pain) (Jamison, 1995); with most public and other potential consumers (in the USA) viewing chiropractors principally as back specialists (Gaumer, et.al. 2002).

As a result of the above a review of the literature reveals a number of studies exploring the relationship between chiropractic, the public, and other health care professions (Rubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005). In this respect Langworthy and Birkelid's (2001) study concluded that with increasing emphasis on multidisciplinary health care, greater understanding and better communication is needed in order for the patient to obtain optimum benefits. Furthermore it has been established that a paucity in the knowledge of the public in general has been translated into non-utilization (Sanchez, 1991). With this in mind, it seems that the more unclear the respondents' understanding of the professions' scope of treatment, the more likely they are not to identify a condition as being one that can be treated by chiropractic (Sanchez, 1991). In support of the above conclusions a study performed in the Netherlands by Brussee et al. (2001) found that a statistically significant relationship existed between the level of knowledge of chiropractic and the frequency of referral of patients by general practitioners (GPs). In the UK, it was found that many GPs were more

comfortable in referring to physiotherapists because they felt they had a better understanding of the treatment involved (Breen, et al., 2000).

In the South African context a study suggested that physiotherapists seem to have more favor with regards to musculoskeletal conditions than chiropractors do. One of the reasons suggested was that GPs may be more aware of the scope of physiotherapy practice than that of chiropractic (Louw, 2005). This study suggested that GPs who communicate with or refer patients to chiropractors tend to have a higher degree of knowledge about chiropractic (Louw, 2005).

This rationale could therefore, and in principle, be applicable to any other health care provider or related auxiliary services provider, which is supported by Van As (2005) who concluded that further surveys should be repeated to get other non-medical or lay persons' perceptions and knowledge of chiropractic in South Africa.

Although personal training is a non-medical profession, it is one of the fastest growing segments of the health and fitness industry and is used by people from all walks of life (http://www.naturalhealers.com/qa/personaltraining.shtm and Miller and Berry, 2000) and could thus be regarded as a related auxiliary services provider within the health care context. As an auxiliary services provider the PT plays an important role as a first contact for many of their clients with respect to musculoskeletal ailments and therefore acts as a portal of entry into the health care system for their respective clients. This portal of entry role and the advice given is however based on the personal trainers' (PT) perceptions of various health care disciplines, which may affect the manner in which they advise, assist, train or refer their clients. This is especially important when one notes that clients heed the advice of their PT; and therefore that the PTs perceptions of the health care industry will directly or indirectly influence the perceptions of the client.

Therefore, the purpose of the study is to develop an understanding of the perceived knowledge of chiropractic in Durban amongst PTs. It stands to reason that the best prevention strategy would exist in a milieu of cooperation between the two professions.

However as no studies have assessed PTs' knowledge and perception of chiropractic in South Africa, we cannot assume that this milieu exists.

In addition it cannot be assumed that the studies conducted internationally are applicable to the South African context, as it cannot be assumed that the local status quo reflects that of North America and Europe, as the multidisciplinary setting in South Africa is not as inclusive as of that of Europe and North America (Collins, 2005 and Bäsler et al., 2006).

1.2 The problem statement

To analyze the knowledge and perceptions of PTs towards the chiropractic profession in Durban.

1.3 Research Objectives

1.3.1 To establish the level of knowledge about chiropractic amongst PTs in Durban.

- Hypothesis 1

  A low level of knowledge exists about the chiropractic profession amongst PTs in Durban.

1.3.2 To determine the perceptions about chiropractic amongst PTs in Durban.

- Hypothesis 2

  A negative perception exists about the chiropractic profession amongst PTs in Durban.

1.3.3 To determine the relationship between the demographic factors of PTs and their knowledge and perceptions of chiropractic.

- Hypothesis 3

  A negative relationship exists between the PTs demographic factors and their perception and knowledge of chiropractic.

1.4 Rationale for this study

- Personal Training is one of the fastest growing segments of the health and fitness industry and clients heed the advice given them by their PTs, hence the trainer's personal perception of chiropractic will influence the client's perception of the profession.
- However the perception of chiropractic amongst PTs in Durban has not been researched and therefore the positive or negative effect on clients regarding the perception of the profession can only be assumed.
- To allow for education of PTs about the scope of chiropractic in South Africa should the research reveal that there is a lack of knowledge about chiropractic.
- Future collaboration in terms of PTs with respect to chiropractic in South Africa could be built. Thus, avenues can be explored in order to improve how the relationship between these two professions can be enhanced, explored and improved upon.

1.5 Delimitations

It is assumed that the respondents to this study will have answered the questionnaire openly and honestly therefore allowing the research to be the best approximation of the knowledge and perception held by the PTs in the sample.

This type of recruitment for observation may not fully represent the population group and may lead to error in results. It is inevitable that any sampling process, no matter how carefully carried out, will always result in a sample that is less than perfectly representative of the population (Dyer, 1997).

Conclusion:

With the introduction of the research question in Chapter One, Chapter Two follows discussing the related literature. With Chapter Three analysing the materials and methods used in obtaining the information required in order to meet the aims and objectives of the study are analysed. The achieved results are then presented and discussed in Chapter Four, with Chapter Five presenting the recommendations and conclusions to the study.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

A PT performs the role of educator, motivator and coach (http://www.naturalhealers.com/qa/personaltraining.shtml), in advising, assisting and/or training their clients (Miller and Berry, 2000). Therefore the role model that the PT portrays is important since clients heed the advice of their PT. Laurent and Weidner (2001) found that the professional interaction that the trainer has with the client is a critical factor in learning and therefore the successful outcome of the trainer - client interaction.

That having been said, there is a certain level of responsibility PTs must assume for their clients. PTs must ensure that clients receive the appropriate care and required supervision as they pursue their individual fitness goals. Liability rests on fitness professionals, as they are directly responsible for the safety, health, and wellbeing of their clients (http://www.afpafitness.com?NBFEtimeline.htm).

One of the scopes of practice of personal fitness trainers according to the Manitoba Fitness Council in the U.S.A. is to refer clients whose needs fall outside of the scope of practice of the PT to the appropriate health care provider. They are not certified to diagnose or work independently with clients who require a medically supervised exercise program (http://www.manitobafitnesscouncil.ca/personal_trainer/scope.html).

The role of the PT is given as follows by http://www.ideafit.com/prptfact.asp and is supported by literature that indicates the role of the PT to be similar to that of the athletic trainer (Miller and Berry, 2000), which in the United States of America is:

- To develop and maintain a level of overall fitness of their client.
- To increasingly provide a variety of other services, including post-Rehabilitation Training, Sports Conditioning, Special Medical Needs, Weight Management and Special Client Niches such as pre-natal women and older persons.
- Assess the mental status of a person (Agolia, 2003).

Therefore becoming a PT requires learning about personal health, sports nutrition, injury prevention, and managing stress and lifestyle changes in order to guide the client in his/her workouts, utilizing flexibility and weight training and aerobics. In addition to this the PT will also check body fat and heart rate levels as well as perform fitness tests in order to monitor the client's progress (http://www.naturalhealers.com/qa/personaltraining.shtml and Miller and Berry, 2000).

Novak (2005) indicates that the PT also has an important role in musculoskeletal health care, where she indicates that the PT should monitor a client's posture, muscle imbalances as well as their effects on the respiratory, digestive, and circulatory systems and the muscular-skeletal systems. In this manner the PT is therefore responsible for not only the musculoskeletal health care of the patient but also of the total care of a person (http://www.naturalhealers.com/qa/personaltraining.shtml).

In keeping with the above the PT should be able to detect a client's health care problems and refer the client as appropriate in order that the client is accurately diagnosed and can be effectively addressed before tertiary medical or surgical interventions are sought.

With this in mind the role of the PT is valuable to the health care system, and thus chiropractic, as PTs will be advising clients on various health care disciplines. PTs thus form a valuable link with the public on informing them about chiropractic. Therefore if the personal PTs do not know much about chiropractic or perceive it in a negative or positive light, it will influence the multidisciplinary health settings within which their clients find themselves.

Perception is defined as the process by which people select, organize, and interpret information to form a meaningful picture of the world (Chaffe, 1997). Perception is often not based on one's experience or education, but on what is sensed from one's surroundings. One's reality is often based on this perception. The way the environment is perceived by a person is determined by the individual's experiences, expectations and beliefs and not necessarily on what is actually taking place (Kehoe, 2002). Therefore one normally assumes

that what is perceived is what is actually taking place. Yet only when conflict arises between people regarding the same event, is one forced to examine the manner in which external stimuli are filtered and hence modify one's perceptions to events in the world around them (Chaffe, 1997).

There are possible differences in the way in which PTs view the chiropractic profession. These differences in perceptions may arise due to multiple factors. Within the context of the PT, the following factors should be considered:

- PTs training/education
- Their knowledge of Chiropractic
- Their experience within their field and of the profession
- Their age
- Socioeconomic standing
- Consumer preference/demand
- Chiropractors self-imposed barriers.

1. <u>PTs Training/Education:</u>

The PTs who train through ETA, which in this study was the majority of the PTs making up 57.1% of the total participants, have recommended fieldwork hours that they need to do for each of their modules. In the one particular module, 'Wellness and Lifestyle', it says the following: "Spend time with lifestyle consultants, PTs and coaches. Do some research on Allied Health Care practitioners; naturopaths, homeopaths, chiropractors (as examples) in your area and make contact with them." It can therefore be said that they are made aware of chiropractic within their studies and it is recommended that if they need to, that they refer to such people (Franklin, 2006).

<u>2. Knowledge of Chiropractic:</u>

Van As (2005) found something to be lacking in what Student Guidance Councilors (SCG's)

know about chiropractic and about how chiropractic has been reported to them by members of the profession. PTs, also being a sector of the general public, may be found lacking in the same areas. Gaps in public knowledge have translated into non-utilization (Sanchez, 1991). Therefore it stands to reason that the more unclear the respondents' understanding of the profession's scope of treatment, the more likely they are not to identify a condition as one that can be treated by chiropractic (Sanchez, 1991). A study performed in the Netherlands by Brussee et al. (2001) found that a statistically significant relationship existed between the level of knowledge of chiropractic and the frequency of referral of patients by GPs. Van As (2005) found a trend of higher knowledge amongst SCG's being associated with perceptions that are more positive. Whether this is analogous for PTs will have to be determined.

2. PTs personal and professional experience:

The fact is that of all the complementary and alternative medical (CAM) therapies, chiropractic is the most used (Sherman, et al. 2004); with more than half the participants in the study having tried chiropractic. It was also found that many patients with back pain specifically, would be willing to try specific CAM therapies, especially if they thought them to be very useful. As a result an increasing number of Americans each year are seeking chiropractic care for their back problems (Eisenberg, et al. 1998). Therefore it would seem that people with high expectations of the usefulness of chiropractic also have a high knowledge of chiropractic, based principally on practical experience with the profession.

This can be seen where many GPs are more comfortable referring to physiotherapists because they feel they have a better understanding and possibly experience of the treatment involved (Breen, et al. 2000). Even though chiropractic is a popular health care option in many countries, organised medicine remains sceptical of this health profession (Jamison, 1994). PTs may have a similar basis as to who they refer to based on what they know of the profession.

3. Age:

Since the inception of chiropractic over a century ago, other highly influential groups, most importantly medicine and sociology have questioned various tenets of the profession at length (Wardwell, 1994 (a)). Allopathic medicine, in particular has viewed chiropractic with deep suspicion and concern (Curtis and Bove, 1992). Medical practitioners were forbidden to have anything to do with this "false system of teaching" (Hupkes, 1990). Chiropractic was condemned, particularly because it lacked the scientific evidence to substantiate its claims (Sanchez, 1991). Over approximately the last 30 years, however, chiropractic has become more accepted, and as a result, all aspects of the profession are under continuous evaluation (Wardwell, 1994 (b)). According to Coulter (1992), chiropractic has gained widespread social acceptance, and it is viewed as an alternative form of health care, or in some cases as a specialty.

Haldeman (2002) refers to the chiropractic profession as having now come to a crossroads between alternative and mainstream medicine. Although the biomedical paradigm has not fully accepted chiropractic as a mainstream form of health care, the next decade should determine whether chiropractic maintains the trappings of an alternative health care profession or whether it becomes fully integrated into all health care systems.

PTs may have a negative perception of the chiropractic profession due to the propaganda of highly influential groups to discredit and destroy chiropractic (CASA, 2004) and that there was no scientific evidence to substantiate the claims made by the chiropractic profession in the past (Brantingham and Snyder, 1999). This has however changed, as much chiropractic-related research is published in more multidisciplinary/mainstream publications (Langworthy and Smink, 2000) and the reading of such journals may be one way of increasing the awareness of chiropractic amongst PTs. However, the perceptions may still exist due to the scientific publications (Wardwell, 1994; Langworthy and Smink, 2000) not being read by the public at large in South Africa, misinformation or misinterpretation of the information or limited understanding of the same information (Rubens, 1996, Hunter, 2004, Louw, 2005, Van As, 2005).

Another reason why different generations may differ in their perceptions of Chiropractic may be due to the previous legal barriers within the profession.

In South Africa, in 1971, a bill was enacted that closed the register to chiropractors and chiropractic learners, effectively ending any growth that there could have been in the profession in South Africa (Brantingham and Snyder, 1999). Chiropractic in South Africa was a dying profession since the inception of Act 76 of 1971, better known as the Chiropractors Act (Hupkes, 1990). There was little new blood (Till, 1997) after that date and the profession remained in danger of "withering on the vine" (Brantingham and Snyder, 1999), with the total practitioner numbers dropping from about 176 in 1971 to about 100 when the registers were eventually reopened in 1982 (Till, 1997). In 1982, the Associated Health Service Professions Act No. 63 of 1982 was promulgated (Brantingham and Snyder, 1999; Hupkes, 1990). The 1982 Act established the Allied Health Professions Council of South Africa (AHPCSA, 2005), formerly known as the South African Associated Health Services Professions Board (Brantingham and Snyder, 1999), a statutory body that wrote chiropractic into law, and with whom all chiropractors must register (CASA, 2005). New legislation, the Allied Health Professions Bill, is presently in parliament for consideration and will probably replace Act No. 63 (Van As, 2005).

PTs may not be aware of the 1982 legislation that opened the registration for licensure of new chiropractors and the establishment of an educational programme in South Africa (Brantingham and Snyder, 1999); therefore their knowledge and perception of chiropractic will be limited as they choose not to remain updated or stay abreast of a field in health care that is seen to be underdeveloped or lacking developmental progress.

In congruence to this, most (54% - 71%) osteopaths, manual therapists and physiotherapists were unaware that chiropractic does not have statutory recognition in The Netherlands (Langworthy and Smink, 2000). Similarly the physiotherapists in South Africa indicated that they would like to know more about chiropractic with respect to (Hunter, 2004):

- the chiropractor's scope of practice,
- the treatment protocols used by chiropractors and

- the details of the chiropractic syllabus and the course outline;

which indicates that the physiotherapists are not knowledgeable about the enacted roles and responsibilities of a chiropractor, as these three questions could simply be answered with reference to the acts that govern chiropractic.

As a result of this paucity of knowledge and the conflicting legal status of chiropractic worldwide (WHO, 2006), the PTs may be confused about the roles and responsibilities allocated to individual chiropractors. However we are unable to assume this as their understanding and knowledge has never been assessed.

5. Socio-economic circumstances:

An understanding of this factor is important as the socioeconomic circumstances surrounding health care in South Africa could influence PTs knowledge and perceptions of chiropractic. In South Africa, a crisis in the health care delivery system has resulted from confounding factors, which include but are not limited to: a shortage of resources; the high cost of health care; a lack of inter-professional cooperation and the under-utilization of more cost effective treatment (Hupkes, 1990).

In addition to this, South Africa's health system consists of a large public sector and a smaller but fast-growing private sector. Health care varies from the most basic primary health care, offered free by the state, to highly specialized technological health services available in the private sector for those who can afford it (Van As, 2005). Thus, there is a polarization of the population in respect of their access to either side of the health care scale. The perception of the individual within that population will no doubt be biased or skewed in terms of the experiences associated with their point of entry into the health care system.

In respect of this scale, chiropractic would seem to be positioned as follows.

- Even though chiropractic is covered by medical aid schemes, most chiropractors in South Africa work in the private sector (CASA, 2005), which caters for middle- and high-income earners who tend to be members of medical schemes (18% of the population) (Van As, 2005). There are currently about 200 Medical Aid Societies, most of which (about 98%) cover chiropractic care in part or in whole. If PTs do not fall

within this 18% of the population on medical aid, due to affordability, they could possibly not be able to afford a chiropractic treatment/consultation either. If they have not been to a chiropractor before, they have less of a chance according to Louw (2005) of knowing about chiropractic.

- However, high levels of poverty (71% in rural areas and 50% overall) and unemployment (at least 38%) make it difficult for most people to belong to a medical aid scheme or pay for health services in South Africa (Van As, 2005).
- In addition, chiropractic health care is included in Workman's Compensation under the Compensation for Occupational Injuries and Diseases Act (Act no. 30 of 1993) (www.chiro, 2005). This means that all injured–on–duty employees may consult a chiropractor directly without any referral and have all expenses for treatment including x-rays, reimbursed by Workers Compensation (CASA, 2005)

Therefore, it would be reasonable to conclude that since most chiropractors are in private practice in South Africa, chiropractic care is unaffordable to the majority of the population (which could include a large proportion of PTs).

6. Consumer preference/demand:

Complementary medicine has been defined as that which works alongside and together with orthodox medicine (Langworthy and Birkelid, 2001). Patient use of and demand for complementary practitioners including chiropractors, have continued to increase over the last decade or so. Many patients are drawn towards complementary medicine because of its focus on holistic care, together with patient responsibility for health and well-being (Verhoef and Page, 1996).

Of all the complementary and alternative medical (CAM) therapies, chiropractic is the most used (Sherman, et al. 2004), with more than half the participants in this (Sherman, et al. 2004), study having tried chiropractic. It was also found that many patients with back pain specifically, would be willing to try specific CAM therapies, especially if they thought them to be very useful. As a result an increasing number of Americans each year are seeking chiropractic care for their back problems (Eisenberg et al., 1998). Therefore it would seem

that people with high expectations of the usefulness of chiropractic also have a high knowledge of chiropractic. (Louw, 2005)

On the contrary, it is estimated that in South Africa, only 1% of the black population and only 10% of the white population, have any notion of what chiropractic is (Van As, 2005). In this respect Louw (2005) said that GPs felt that less than 15% of their patients and less than 15% of the South African population regularly saw chiropractors.

Govender (2005), a Durban PT, stated that South Africans as a population are becoming more health-conscious and as a result more people are going to gym (http://www.homecomingrevolution.co.za/html/article_economic.php?article_id=136). People from all walks of life, from athletes to senior citizens, are using PTs to help them learn how to exercise, lose weight and adopt a healthy lifestyle (http://www.naturalhealers.com/qa/personaltraining.shtml and Miller and Berry, 2000).
The average age of persons using a PT is 41 years of age. In addition PTs report that 74% of their clients are women and 26% are men which are spread in terms of the following demographics (http://www.ideafit.com/prptfact.asp):

- healthy adults (81%);
- unhealthy adults (19%)
    - those with special medical needs such as arthritis, diabetes, obesity (50%);
    - physically challenged (19%); and,
    - with women constituting (20%);
        - as a result of the majority representing women either pre/postnatal (23%);
    - of the remaining 11%,
        - amateur athletes (25%);
        - professional athletes (6%) constitute the largest proportions of injuries seeking medical care.

Thus people who seek the expertise of the PT form a varied proportion of the general population.

7. Chiropractor's self-imposed barriers:

Not all chiropractors think of themselves as actual or potential primary contact practitioners (PCPs) as directed within the scope of practice of the Allied Health Professions Act 63 of 1982 (AHPCSA, 2005). Some obviously prefer to limit the scope of their practices to neuromusculoskeletal (NMS) conditions (Gaumer, et.al. 2002).

To ascertain the individual chiropractor's view is not possible as the actual data on how practicing chiropractors view themselves are limited (Gaumer, et.al. 2002). From an American perspective, Hawk and Dusio (1995) looked at a survey of 492 US chiropractors on primary care and prevention-related issues. The one question put forward by Hawk and Dusio (1995), was whether the practitioner considered himself/herself as a primary care practitioner. Ninety percent of respondents said yes. However, the chiropractors' opinions on their position in the health care system and scope of practice were less clear. According to this survey (Hawk and Dusio, 1995)

- most respondents (63.3%) believed that chiropractors should be general primary care, portal-of-entry practitioner,
- 25.7% believed chiropractors should be portal-of-entry for musculoskeletal conditions but not for general primary care, and
- 4.1% believed chiropractors should be musculoskeletal specialists, not portal-of-entry practitioners.

Thus, it would seem that the scope of practice is a crucial issue (Carey, et al. 2005) for the chiropractic profession. It compounds the issues of competition for insurance coverage, patients, and research funding demands, if we cannot clearly define who we are and what we do (Hawk and Dusio, 1995). In this respect the chiropractic profession and its precise role in health care is still disputed (Jamison, 1995).

All these factors would imply that the access to information by the general public is limited by barriers that the chiropractors impose on themselves. Thus and in response to this, the World Federation of Chiropractic (WFC) (2003) conducted an international survey on the

Consultation on the Identity of the Chiropractic Profession, which included the perspectives of members of the public and the profession. The purpose of the survey was to understand the attitudes and perceptions towards the profession (WFC, 2005). Below are some of the findings, which are relevant to this study, taken from abstracts of previous relevant research cited in WFC report (2003).

- Most public perception of chiropractic (in Canada) is based on ignorance, bias and misinformation rather than fact. Chiropractic patients generally know little more about chiropractic than non- patients do. Generally, there is a lack of respect and trust, and this is true of younger as well as older persons (Kenneth Caplan and Associates, 1994).
- The public (in Canada), including patients, understands very little about chiropractic education, qualifications and scope of practice (Kenneth Caplan and Associates, 1994).
- There is a lack of public confidence in the profession that could be changed by "providing information about chiropractic training" (Criterion Research Corporation, 1999).
- There is a marked difference in how non-users, users and lapsed users (in Canada) view chiropractic. Non-users and users "generally have a positive image of chiropractic". However, non-users are uninformed about level of education and treatment procedure (Criterion Research Corporation, 1999). Sanchez (1991) had similar findings in New Jersey and reported that the more unclear non-users' understanding of the profession's scope of treatment, the more likely they are not to identify a condition as one that can be treated by chiropractic.
- The public (in Australia) felt that, in general, medical doctors (MD) and physical therapists (PT) were better trained and more effective than chiropractors. The one exception was for back pain, where MDs were seen as ineffective, but physical therapist and chiropractors as equally good (Straton, et al. 1990; Meade, et al. 1995; Skargren, et al. 1997; Baldwin, et al. 2001; Sherman, et al. 2004; Haas, et al. 2005).

- In New Zealand, the NZ Consumers' Institute (1997) found that consumers most commonly quoted chiropractors as being more knowledgeable about the spine than GPs and felt they helped where the GP/ physiotherapist could not. However, the need for repeated treatment from a chiropractor and cost of chiropractic care was considered a disadvantage.
- In the USA, Hurwitz et al. (1998) found that chiropractic patients tended to be between 30 and 50 years old, with nearly equal distribution of females and males. However, Research Dimensions Inc. (1994) found that rural chiropractic patients in USA in medically underserved areas are demographically different from the overall US chiropractic patient population. Such patients are much older, more likely to be married and more predominantly female.
- In Australia, Canada, Italy, the Netherlands, New Zealand, United Kingdom and USA, the most common reason for seeking chiropractic care was low back and neck pain followed by headache (WFC, 2003). According to Hurwitz et.al. (1998), less than 1% of patients were given diagnoses for non-musculoskeletal conditions such as asthma and otitis media.

Thus it would seem that the principle issue that crystallizes out of this picture would be related directly to information being available to users, non-users or lapsed users of chiropractic care.

Thus, the WFC sent out 29 094 e-mail invitations on 4 October 2004, inviting members to participate in the survey on the international consultation on the most appropriate public identity of the chiropractic profession. On 24 October 2004 when the survey closed, 3689 completes were obtained (WFC, 2005). Below is the executive summary of the consultation on the identity of the chiropractic profession:

There is consensus among chiropractors that it is important for a profession to have a clear public identity. That said, most agree that the chiropractic profession suffers from an unclear identity and position within health care today. When it comes to communicating with the public to promote the use of chiropractic services, just over one-half (54%) of chiropractors believe that the chiropractors' view of the profession and the public's view of the profession is equally as important to represent. There is thus a significant discrepancy in the way chiropractors believe the general public and medical doctors should perceive the profession and the way they think the profession is actually perceived. While the vast majority of chiropractors believe the profession should be considered primary health care with focused (55%) or broad (36%) scope, in actuality, most believe that both the general public and medical doctors alike, have no clear perception of the profession or perceive the profession as offering specialist care.

Similarly, while most chiropractors (88%) believe the profession and its services should be perceived as mainstream (or core to the health delivery system), there is agreement that the profession is not viewed this way by the public at large or by medical doctors, instead it is viewed as being complementary and alternative.

Most chiropractors (62%) strongly agree with the policy statement opposing the use of prescription drugs in the practice of chiropractic. In fact, positioning the profession as non-drug, non-surgical heath care is viewed as being integral to how the profession should be perceived by the general public. (WFC, 2005)

Thus if chiropractors wish to expand the scope of chiropractic practice, it is necessary to eliminate the confusion that exists within the chiropractic ranks first as a form of consolidation before moving ahead with amendments. Thus, chiropractic must develop clear boundaries around the number and extent of the conditions it claims to treat (Sanchez, 1991) and the responses to treatment, in order to facilitate an understanding of the precise role of chiropractic in health care which continues to be disputed. In this forum, PTs may have a lack of knowledge and negative perception of the profession as it exists today. The levels of

public (viz. PTs) knowledge may be reflecting the presence of unclear boundaries in the scope of practice within the profession itself (Sanchez, 1991).

It would seem that complimentary and alternative medicine (CAM) such as chiropractic, could provide a useful role in health and well being of the patient, espeically in co-operation with PTs or in the gym setting (Agolia, 2003).

In a similar respect the chiropractic profession is also a hands-on, practical therapy (Gatterman, 1995) that looks at holistic/preventative approaches to musculoskeletal complaints in their patients. This often includes the assessment of patients/clients lifestyles and the correction of incorrect ergonomics, training methods or lifestyle stressors (http://www.snowinst.com/complementary_medicine.htm, Chapman-Smith, 2000).

There are many characteristics between chiropractors and PTs that overlap, especially with respect to the musculoskeletal health of each one's patients/clients respectively (Seaman, 1999). Thus when professionals of similar sectors are attempting to work together and communicate, they should be knowledgeable about one another's principles, formation, attitudes, qualifications and basic skills and they should try to discover the differences between individuals and groups of professionals (Brussee, et al. 2001). With this context in mind, Agolia (2003) stated that it makes the client feel well taken care of if they can go from their physical therapist to a PT that is working alongside the therapist as both chiropractic and PTs are interested in patient/client well-being. It therefore stands to reason that the best prevention and patient/client treatment strategy would exist in a milieu of cooperation between the two professions.

Decades of scientific data demonstrating the benefits of balanced nutrition and regular exercise for the prevention of many chronic diseases (Pedersen and Saltin, 2006; Kujala, 2004; Wannamethee, et al. 2000) have caused tremendous growth in the fitness industry in a variety of ways. Possibly the largest source of growth in the fitness industry has been the use of PTs in health clubs and in private studios (http://www.afpafitness.com?NBFEtimeline.htm).

There is enough existing evidence that strength training, particularly when incorporated into a comprehensive fitness program, can offer substantial health benefits. Strength training is effective for developing musculoskeletal strength and is often prescribed for the prevention and rehabilitation of orthopedic injuries (Franklin, et al. 1991; Pollock, et al. 1994; Fletcher, et al. 1995). There are studies that suggest that strength training as part of a comprehensive fitness program, may reduce the risk of coronary heart disease (Goldberg, 1989; Hurley, et al. 1988), non-insulin diabetes (Miller, et al, 1984; Smutok, 1993), and certain types of cancer (Koffler, et al. 1992). Clinicians who understand the benefits of strength training and incorporate exercise prescription as part of their patient counseling further increase their effectiveness as prevention-orientated healthcare providers (Freigenbaum, 1997)

People with stress-related conditions routinely seek and obtain chiropractic care (Yunus, 1984). Research has been undertaken that has revealed the desire that chiropractic patients have for information about stress management strategies (Jamison, 2000). Chronic stress has been linked to clinical conditions ranging from musculoskeletal dysfunctions to visceral conditions (Yunus, 1984). The chiropractic treatment can be used as a wellness trigger by not merely addressing the physical complaint, but by also enhancing the patient's personal perception of successfully coping with his or her stress/disorder (Jamison, 1998). Perceived control is regarded as a significant factor in coping with stress (Fowers, 1994). Patients would benefit from advice on regular exercise as a stress management and health-promotion strategy (Jamison, 2000). Results of three separate studies substantiate the claim that aerobic exercise is associated with reductions in anxiety (Petruzzello, et al. 1991). A patient may feel more in control and cared for if they were referred to a PT for individual advise and encouragement on an exercise programme and stuck to it with continued encouragement along the way. This could start the patient off to a good exercise discipline that would compliment the physical treatment and aid in their total well-being (Kugler, 1994). Similar analogies are found in patients with depression (Kugler, 1994).

Chiropractors and PTs, although they have different training and level of knowledge or expertise, work within the same domains, just from different angles. Panjabi (1992) identifies

three subsystems that need to be functioning in order for the spine to be in good health. All muscles and tendons surrounding the spinal column constitute the active subsystem. The vertebrae, discs, and ligaments constitute the passive subsystem. The nerves and central nervous system comprise the neural subsystem, which determines the requirements for spinal stability by monitoring the various transducer signals, and directs the active subsystem to provide the needed stability. A dysfunction of a component of any one of the subsystems may lead to various outcomes. If one of the subsystems immediately and successfully compensates, it is conceptualized that it will result in normal function. If there is a long-term adaptation response of one or more of the subsystems, it is said that function will be normal, but with an altered spinal stabilising system. If there is an injury to one or more components of any subsystem, it will cause overall system dysfunction and hence pain. Although these subsystems are conceptually separate, they are functionally interdependent. Although Chiropractors address all these subsystems, a PT deals more closely with the active subsystem. This shows the importance of chiropractors and PTs working together to produce the maximum benefits for the overall health of the client and to decrease the occurrences of injuries and to speed up full and complete recovery.

On a similar note, the high prevalence of low back pain is increasingly being attributed to atrophy of the multifidi and transversus abdominis muscles (Hodges, 1999). It has been determined that there is rapid wasting of the multifidi following acute low back pain (Hides, et al. 1994) and that the multifidus muscle does not recover spontaneously following remission of low back pain (Hides, et al. 1996). Research studies have found that specific exercises focussed on these muscles can be effective at retraining and strengthening these muscles (Richardson, 1995; Hagins, 1999). Even though the patient may appear to be pain-free, without stabilisation exercise they may actually be vulnerable to future episodes of low back pain (Stanford, 2002). With this in mind it must be taken into consideration that chiropractic practitioners often do not have the time to incorporate exercises into their treatment. Also, the patient often needs encouragement post-treatment on continuing their exercises. It would stand to reason that the patient would benefit by being referred to a PT who can take the time to monitor and motivate them. With the chiropractor and PT working in communication with one another, the best outcome for the patient could be obtained.

There is evidence of this milieu existing between chiropractors and PTs within the U.S.A. There has been positive feedback from patients having benefited from the dual care and it has revealed good communication and interaction between the two professions (http://www.worldhealthclub.com/index.asp?tag=advise_board). This is evidenced by Collins (2006) who shares the same general goals for his client (that being helping people achieve healthier and active lives) as the PT he works synergistically with in order to achieve optimal clinical outcomes for their clients. He (Collins, 2006) says that most of his clients have neuromusculoskeletal complaints and although most get better with his care he has come to see the value of adding exercise to their health care regimen, as this not only enhances their general health but helps prevent recurrence of their pain. Thus introducing an exercise program gradually and monitoring what the patient does not only increases compliance, but also results in improved clinical outcomes.

Lucius (2006) educates all patients on how to achieve optimum health through manipulation, massage therapy, diet, exercise, and lifestyle improvements. A patient of Lucius (2006) had been trying numerous treatments for his chronic back injury over the past ten years but had not gained any long-term success with any of them. Over time the inclusion of a PT together with being treated, Lucious (2006) noticed significant improvement in the patient's back pain. Thus it is evidenced that ongoing dialogue between a chiropractor and PT could be essential in brining about long-term relief of patients symptoms (http://www.worldhealthclub.com/index.asp?tag=advise_board).

This milieu of co-operation between health professions is depicted further in the literature by Burns, et al. (2004), where they discuss the importance of athletic trainers and dieticians working together for the best results in the patient in the context of the United States of America. In the same way, there could be benefits for patients if a similar cooperation existed between PTs and chiropractors.

Summary

From the foregoing literature, there is evidence substantiating the view that patients in South Africa could benefit from having the same holistic treatment approach. However as no studies have assessed PTs' knowledge and perception of chiropractic in South Africa, we cannot assume that this milieu exists. In addition a review of the literature that does exist, a number of studies exploring the relationship between chiropractic, the public, and other health care professions (Rubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005) reveals that there is either a lack of understanding regarding chiropractic or if there is an understanding, it is limited in terms of the understood scope of practice. Thus the current trends in the literature would mitigate against the development of an interactive milieu of cooperation between personal and chiropractors, based on the evidence suggesting limited or no understanding of chiropractic within the health care sector (Rubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005).

Therefore the purpose of this research is to assess the knowledge and perception of PTs within Durban with respect to chiropractic, in order to provide a starting point for integration of these two professions.

This would allow for supporting the conclusions reached by Langworthy and Birkelid (2001), which indicated that with increasing emphasis on multidisciplinary health care, greater understanding and better communication is needed in order for the patient to obtain optimum benefits.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

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

3.2 Study Design

A population-based epidemiological study on PTs perceptions and knowledge with respect to chiropractic in Durban was conducted at the gyms, both commercial and private, within Durban. This study was a perception survey (Wisker, 2001), quantitative in nature, and making use of a structured questionnaire (Appendix B) to collect data. A descriptive type design was used to collect the information. Descriptive surveys are simply used to establish the features of a particular group (Dyer, 1997) (i.e. the perception and knowledge of chiropractic). In general, questionnaires are a good source of information, provided that the questionnaire has been proven reliable and valid and that the respondents reply openly and honestly (Mouton, 1996).

3.3 Methodology

Survey research is a way of collecting information from a large and dispersed group of people (Dyer, 1997). For the purposes of this study, a knowledge and perception questionnaire was used to gather the relevant information. The questionnaire that was used to collect the primary data was based upon similar attitudinal questionnaires (Langworthy, 2001; Louw, 2005; Van As 2005).

3.4 Sampling procedure

No advertising was used. As there is no governing body under which PTs register (Dippenaar, 2005), the subjects were recruited through contacting the fitness managers in all the gyms within Durban. This is based on the assertion that surveys using advance notices had higher response rates than those that did not use advance notices (Russell, et al. 2004).

In order to comply with this assertion, the researcher phoned the fitness managers and e-mailed them where possible to give them adequate notice of the research, so that they knew exactly what the research was about, when the researcher anticipated attending their gym to contact their trainers. Therefore both managers and PTs knew when it would be and that it would require time to complete. In addition to this it was possible for the researcher to follow up on the non-respondents through the fitness managers in order to obtain a more representative sample response.

Participant sampling

a. Sample Size

This research was aimed at recruiting all PTs who were practising at that point when the questionnaires where distributed in gyms within Durban.

The number of potential respondents was obtained telephonically, first through contacting all the fitness managers of the gyms in Durban, who gave permission for the research to be completed at the gym for which they where responsible. In addition to this the fitness manager forwarded names and contact numbers of PTs in their employ, or who were renting space from them.

The sample was therefore based on a pre-research analysis that indicated that the population size is around 83 PTs, within those gyms that allowed for the research to proceed. This process however excluded five gyms whose fitness managers did not respond in any manner to communications initiated by the researcher and thus research could not be conducted at the facilities as no permission was granted by the fitness managers managing the gyms.

The population for all PTs is currently estimated at around 105 PTs, based on the average number of PTs per gym. This was calculated as follows:

83 PTs at 19 gyms = 4.4 PTs per gym
5 outstanding gyms x average of 4.4 = 22

Estimated total = 83 + 22 = 105 (N)

b. Allocation

All respondents were allocated to one group, with there being no subgroup allocations based on any of the demographic characteristics of the respondents.

c. Method

Total population (105) sampling was affected by the researcher (Mouton, 1996) through a process of self selection based on respondents returning the questionnaire / agreeing to participate in the study. Only 66 questionnaires where returned (Mouton, 1996).

With respect to the questionnaire, purposive sampling was employed in order to ensure that all questionnaires where completed in full for inclusion into the statistical analysis of the data obtained. Of the 66 returned questionnaires 3 were excluded from the study due to failure to meet the age requirement of the inclusion criteria. This indicated that there was a sample response rate of 75.9% (n=83) and a total population response rate of 60% (N=105).

d.Limitations

1. This type of recruitment for observation may not fully represent the population group and may lead to error in results. It is inevitable that any sampling process, no matter how carefully carried out, will always result in a sample that is less than perfectly representative of the population (Dyer, 1997).
2. This research will focus on PTs in Durban only.

3.5 Inclusion and Exclusion criteria

a. Inclusion criteria

- Only PTs who were presently practicing were considered for the study, in order to increase the sample homogeneity (Mouton, 1996).
- Only trainers working in gyms within Durban were considered, in order to increase the sample homogeneity (Mouton, 1996)
- The subjects must have given their informed consent.
- The participants had to be English literate. With translation of the questionnaire, problems affecting its validity occur. Even if words are translated accurately, the meaning of a phrase or combination of words may be unclear, as meaning is not only determined by words or phrases, but also in their interpretation by others (Scollen and Scollen, 1995). This is because when words are taken out of context they will lose their meaning (Baynham, 1995)

b. Exclusion criteria

- If the PT was not presently practicing as a PT.
- If the PT did not see any of his/her clients in a gym setting.
- Was not willing to sign true informed consent form (Appendix B2) after completing the questionnaire.
- The pilot study group was excluded from the main study so as not to bias any of the respondents concerning the study (Morgan, 1998).
- The focus group participants who were PTs were not included in the research study so as not to bias any of the respondents concerning the study (Morgan, 1998).

3.6 The Procedure

Once the questionnaire had been developed fully (up to and including the completion of the pilot study), it was personally given to either the fitness managers or to the PTs directly who practice in a gym within Durban.

The cover page of the questionnaire, consisted of an introduction containing the basic information about the research project in general, and information about the questionnaire (Appendix A2). The information included the title of the research, the purpose of the research, the nature of the sample, the average time to complete the questionnaire and reassure all respondents of the confidentiality of the information and anonymity of their responses.

The true purpose of this study was not explained to prospective participants until after the research questionnaire had been completed. The questionnaire initially had a dummy letter of information attached to it (Appendix A1) and a dummy consent form (Appendix B1) which did not give the purpose of the study as being an investigation of the knowledge and perception of PTs with respect to chiropractic specifically, but with respect to complementary and alternative health care. This was done so that participants would not fill out the questionnaire with chiropractic in mind, and as a result be more inclined to respond either more negatively or more positively to the first two questions. In the third question the chiropractic specific questions became evident. This was to ensure that the sample group was non-biased, thereby increasing validity and reliability of the results (Mouton, 1996).

Once the questionnaire was completed by the participant, the true purpose of the research was explained and the true letter of information (Appendix A2) and consent form (Appendix B2) was given. If the participant then decided not to be part of the research they could withdraw from the study and their questionnaire would have been destroyed in their presence, but no participant objected to their questionnaire being used once finding out the specific objective of the research. Participation in the study was entirely voluntary, with no coercion from the researcher

The subjects were requested to complete the final questionnaire (Appendix C).
They were asked to fill the questionnaire out straight away and give it back to the researcher, but when this was not possible, they were given one week in which to complete it. The researcher then collected the questionnaires at the end of the week.

3.7 Method of distribution

A list of registered gyms in Durban was obtained via the Natal manager of the Exercise Training Academy (ETA). Out of the 24 known/listed gyms, 19 showed interest in participating in the study.

From these sources, a sample size of 105 PTs was developed and out of this sample size, 83 responded, meeting the inclusion and exclusion criteria. All 83 respondents received questionnaires, which were distributed personally to the PTs either directly or via their fitness managers.

Each PT was given:

a. A dummy cover letter of explanation and introduction (Appendix A1).
b. A dummy consent form (Appendix B1).
c. The questionnaire (Appendix C).

Then on completion of the questionnaire:

d. The true cover letter of explanation and introduction (Appendix A2).
e. The true consent form (Appendix B2)

Giving the questionnaire directly to the PTs where possible and furthermore having them complete it in the presence of the researcher ensured maximum compliance from respondents. No names or any other form of identification was present on the questionnaires (and it was requested that the respondents not place any identifying data on the questionnaire) to maintain the anonymous nature of the questionnaires and confidentiality of the subjects. All returned questionnaires where separated from the informed consent forms in order to minimize researcher association between these forms. In addition to this the researcher had no

systematic filing of either the questionnaires or the informed consent forms in order to minimize association between the respondents and the responses given.

The questionnaires will be stored in the Chiropractic Day Clinic for a period of five years and then shredded.

3.8 Questionnaire background:

Langworthy developed and piloted a questionnaire and used it in studies in The Netherlands and Norway respectively (Langworthy and Smink, 2000; Langworthy and Birkelid, 2001). The researcher received permission from Langworthy (2001) to use her questionnaire and from Van As (2005) to use his version of the questionnaire and modify it accordingly (Appendix F2 and F1 respectively).

The questionnaire utilized by Langworthy and Smink (2000) was designed to elicit the opinions about chiropractic from physiotherapists, manual therapists and osteopaths in The Netherlands. The questionnaire was translated into Dutch and a small (n=10) pilot study undertaken to establish content and face validity (Langworthy and Smink, 2000).

The Langworthy and Birkelid (2001) study was conducted in Norway where the face and construct validity of the questionnaire were established (Langworthy and Birkelid, 2001). This simply means that Langworthy and Birkelid (2001) developed and piloted the questionnaire for content and face validity, thus it has been previously demonstrated that the questionnaire has usefulness to be used in this study. This process is vital in order to ensure that future research utilizing the particular tool is accurate (Bernard, 2000). The instrument was found to be unambiguous, and capture of the data was reliable as defined by Mouton (1996).

3.9 The Focus Group

In order to adapt the questionnaire to South Africa and ensure that the questionnaire met the minimum requirements as set out by Mouton (1996) and Bernard (2000), a focus group (n=9)

was then set up in order to establish the face validity of the adapted questionnaire. Face validity is determined by an agreement between researchers and those with a stake in the questionnaire, that on "the face of it" the tool seems valid (Bernard, 2000).

The group consisted of several participants:

1. Two PTs
2. Two Chiropractic Students having previously done a focus group and questionnaire.
3. Two clients of PTs.
4. Two Chiropractors.
5. One Statistician.
6. The researcher.

These participants were enlisted via word of mouth (Gibbs, 1997; Morgan, 1998), with nine respondents coming forward and expressing an interest in the focus group. The recommended number of people per focus group is usually six to ten (Macintosh, 1993), but some researchers have used up to fifteen people (Goss & Leinbach, 1996) or as few as four (Kitzinger, 1995 as cited in Gibbs, 1997). Further to the face validity (Bernard, 2000), the focus group's aim is to develop a questionnaire that limits potential misinterpretation by the respondents according to Scollen and Scollen (1995). Most importantly, it will ensure the questionnaire will work effectively in the South African context, with the face validity adapted to the South African context and the construct validity unchanged (Mouton 1996).

The focus group was selected with the following in mind: the more heterogenous the group, whether in terms of gender or class or in terms of professional and lay perspectives, the greater the chance for more diverse opinions and experiences to be revealed (Gibbs, 1997; Morgan, 1998). The differences between participants can make a considerable impact on their contributions (Gibbs, 1997; Morgan, 1998). In this study, this was achieved through the researcher's personal communication with various PTs, some of whom were then requested to be a part of the focus group.

Before commencing the focus group, each participant was required to read an information letter (Appendix D1), and sign an informed consent form (Appendix D2), confidentiality statement (Appendix D3), and a code of conduct statement (Appendix D3). Each participant was also given a copy of the questionnaire in advance so that they could read it prior to the focus group thus facilitating its process. At the focus group, comments were requested on how the questionnaire could be modified in order to accurately assess PTs perception and knowledge of chiropractic in Durban.

The questions were discussed in sequential order, following the procedure in *Moderating Focus Groups* by Morgan (1998). Following the discussion of each question, some questions were omitted, some questions were added and some minor changes were made to enhance the understanding of a few of the questions, as available in transcript (appendix D4). This established the face validity (Bernard, 2000) of the questionnaire, while still ensuring that the content of the questionnaire was not altered. If inconsistencies were found or changes proposed, a unanimous vote was required to institute change. A video of the focus group proceedings was made (Gibbs, 1997) and is available as evidence of the individuals involved and the content of the discussion.

3.10 The Pilot Study

Afterward a post-focus group questionnaire was developed and a pre-test evaluation (Appendix E1) was conducted on three PTs, giving a chance for any comment on the questionnaire. The only question that was analysed for change was question 3.5. The participants seemed unfamiliar with the institution of the University of Johannesburg. The institution had a name change 3 years ago, and participants of the pre-evaluation test did not recognize it as being the former Technikon Witwatersrand. Since this could possibly affect whether the participant associated this institution with Chiropractic studies, the former name was given in brackets along with the former name of the Durban Institute of Technology (Technikon Witwatersrand and Technikon Natal respectively) so as to maintain heterogeneity since the latter institution's name changed at roughly the same time. This yielded the version

used in this study. The final, corrected questionnaire was developed and printed for use in this study (Appendix C).

The questionnaire consisted of three sections consisting of the respondents' demographic details and personal data, their interaction within the multidisciplinary setting and their perceptions and level of knowledge of chiropractic's role in the health care system. The seven basic principles offered by Dyer (1997) were employed to organize the contents of the questionnaire to maximum advantage, which include simple, logically following questions that are unambiguous yet deliver maximum information about the construct in question.

3.11 Data Analysis

3.11.1 Statistical package used:

SPSS version 11.5 was used for data analysis (SPSS Inc., Chicago, Ill, USA). A p value of <0.05 was considered as statistically significant.

3.11.2 Scoring system:

Knowledge score was compiled using the questions which specifically addressed knowledge of chiropractic, i.e. questions 3.5, 3.6, 3.7(one mark per correct answer), 3.9, and 3.10 (two marks per correct answer). Half a mark was taken off for any incorrect answer given. The maximum score was 16. Scores were expressed as percentages out of 16.

3.11.3. Descriptive analysis:

Categorical variables were described and presented using frequency tables or bar charts. Percentages and counts were reported. Numerical variables were described using means, standard deviations and ranges, or medians and interquartile ranges if the data were skewed.

3.11.4. Analytical statistics:

Associations between categorical variables were examined using Pearson's chi square test or Fisher's exact test in the case of two by two tables. T-tests were used to compare means between two independent groups. Mann-Whitney tests were used to compare medians between two independent groups if the variable being compared was skewed.

CHAPTER FOUR: THE RESULTS AND DISCUSSION

4.1. Introduction

Results of the statistical analysis of the data are presented in this section. Firstly, a descriptive analysis is presented, followed by analytical analysis, which reports proportions and means, with 95% confidence intervals in order to show how the data were distributed in all study subjects as a whole.

4.1.1 Primary Data:

The data collected from the questionnaires/participant responses and the data obtained once the statistical analysis was complete.

4.1.2 Secondary Data:

The data in the literature, Internet, books, journals etc with which to compare the outcome of the results in the research study.

4.1.3 Abbreviations:

ANOVA - analysis of variance
Df - degrees of freedom
N – number
n - sample size
P value - the probability of your results being due to chance or random error and if the p value is very small one can conclude that the results are significant (Hicks, 2004).
SD - standard deviation
% - Percentage

BA HMS - Bachelor of Arts in Human movements Science
ETA - Exercise Training Academy

Fitco HCE – Undetermined Qualification
HFPA - Health and Fitness Performance Academy
IFD - International Fitness Diploma
IIFT - International Institute for Fitness Training
ISSA - International Sports Science Association
ND – National Diploma
YMCA- Undetermined Qualification

4.2. Response rate

Eighty-three questionnaires were given to PTs within Durban or to their supervising fitness manager for those PTs who could not be contacted directly. In most of the commercial gym settings the trainers were informed about the research via the fitness managers and this decreased the response rate proportionally in these instances, as there was no direct contact between the researcher and the PTs.

Sixty-six questionnaires were returned completed and of these, three questionnaires were excluded from the study due to failure to meet the age requirement of the inclusion criteria. Twenty questionnaires were not returned. This gave a response rate of 75.9% (63/83). Of the estimated 105 PTs known to be practicing within gym settings within Durban, only eighty-three showed interest in participating in the study. Thus, the overall response rate was 60% (63/105). This was higher than that of other surveys conducted on the chiropractic profession (Rubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005). This could have possibly been due to the small sample size taken only from the area of Durban, compared to the other surveys taken from within South Africa (Rubens, 1996; Hunter, 2004; Louw, 2005; Van As, 2005). Also, the researcher on 50% or more of the occasions had direct contact with the participants, and this potentially would have increased the response rate. Due to the smaller sample size, numerous telephonic calls and visits could personally be made to check up on and encourage participants who could not complete the questionnaire at the time, to complete it.

Russell, et al. (2004), analysed 62 surveys published between 1980 and 2000, where the number of contacts with the target population was identified as the strongest predictor of the response rate. “For every additional contact with the population, the response rate can increase by about 10%” (Russell, et al. 2004: 46). This could explain the high response rate achieved with our study.

Surveys that used advance notices had higher response rates than those that did not use advance notices (Russell, et al. 2004). In this study e-mails, where possible, and telephonic calls were made to each and every gym six to eight weeks beforehand informing them of the nature of the research and of their possible support in the study. One to two weeks before conducting the survey, the interested participants were contacted again to make specific times to suit them on which the survey could be commenced. According to the study by Russell, et al. (2004), if an advance notice was sent to the sample group, followed by the questionnaire, the response rate would have been higher and that follow-up sending of additional questionnaires would have increased the response rate even further. This seemed to hold true for this particular study. A telephonic reminder was another option used in previous studies to remind non-responders (Brussee, et al., 2001). This was a possible additional cause for the high response rate.

According to Russell, et al. (2004), the key to obtaining good response rates is sound methodology including the use of personalized questionnaires and letters, advance notices, follow-up contact and the sending of additional questionnaires to non-respondents.

4.3. Descriptive statistics

4.3.1 Demographics

Demographics

Gender

The sample consisted of 61.9 % (n=39) males and 38.1% (n=24) females

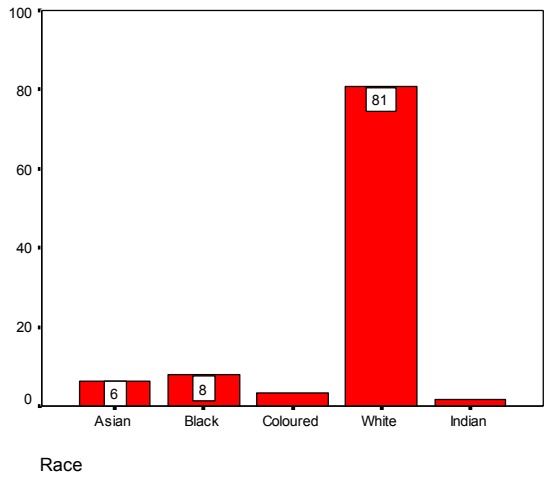
In a study by Pate, et al. (2005), physical activity was shown to be on the decline in the U.S.A. amongst adolescents, but more so amongst girls. This could lead to fewer girls looking at exercise related occupations such as personal training, although there is no literature substantiating that a similar trend exists amongst adolescent girls in South Africa. Therefore this can only be a speculation about the greater number of male participants in this study.

Age

Mean age was 32.25 years (standard deviation 9.7 years). Ages ranged from 21 to 58 years.

Racial distribution

Figure 1: Racial distribution of sample participants (n=63)



The majority of participants were White (81%, n=51), there were five Blacks (8%), four Asians (6.3%), two Coloureds (3%) and one Indian (1.5%). Racial distribution of the sample is shown in Figure 1. For subsequent analysis in view of the small numbers from non-White population groups, racial groups were combined into two groups: White and Other races.

In a study in the U.S.A. by Kandula and Lauderdale (2005) done on Asian Americans, it was found that increasing education and income was associated with increasing levels of recommended leisure-time physical activity (LTPA). This lends support to the theory that LTPA may be considered a commodity requiring income and free time. Increased levels of education and income were also associated with decreasing recommended non leisure-time physical activity (NLTPA) and decreasing occupational activity. This was accounted for by the greater likelihood of this group of people to use labor saving technology or to have sedentary occupations. In this study, more education was strongly associated with less physical inactivity. Also, in another study done on Latinos in the U.S.A. (Hubert et al. 2005), an increased body mass index and a decreased level of physical activity was associated with lower income and education. In the same way within the South African population, the proportional disparities in education and income between the different races could account

for disparities of LTPA such as going to gym and utilizing a PT. This could account for fewer blacks being PTs than whites.

As Maslow's Hierarchy of needs depicts, there are five basic levels of needs. The person does not feel the second need until the demands of the first have been satisfied, nor the third until the second has been satisfied, and so on. Therefore the first basic need of food and shelter has to be met before the next level can be obtained (Simons, et al. 1987). Self-actualization is the fifth and final need. Personal training can be placed under this final need, or under the fourth need for esteem. Since the majority of the South African population is just trying to meet their needs for food, shelter and safety, these final steps may not have been reached yet, hence personal training may not be a career of choice to many South Africans who find themselves in a position of lower socio-economic standing, as a result of incomplete education and therefore also a lower income. This is further complicated by the association between physical activity and degree of urbanization as evident and robust in the South of the U.S.A (Martin, et al. 2005). Physical activity levels were higher in urban areas than in rural areas; correspondingly, physical inactivity levels were higher in rural areas than in urban areas (http://www.uaps.org/journal/journal12v1/Urbanizationandinformal.htm, 2006), supporting the suggestion that Maslow's hierarchy of needs is an appropriate paradigm to apply to the population demographics in South Africa.

Different cultures support different lifestyles and hence they will differ in their approaches to food and activity (Rosin, 2005). Kandula and Lauderdale (2005) found an association with regards to Asian Americans on nativity and years in the United States and activity. It was found that those who had lived in the U.S.A longer and spoke English at home were also more likely to meet recommended LTPA. It seems that those who had taken more to the western culture seemed to do more leisure physical activity. This may be an explanation as to why fewer Indians and Blacks were PTs in this study, possibly due to their cultural activities not being the same as those of the majority of Whites who follow a more traditionally western culture of going to gym, therefore making it more likely that they would seek personal training over perhaps other cultures. Studies suggest that religion/spirituality

is a prominent component of black culture and that the inclusion of religion/spirituality as an active component of a weight loss program may enhance the benefits of the program (Fitzgibbon, 2005). With this in mind, it is possible that because gyms do not have this added spiritual component to them that this cultural group tends not to utilize this form of physical activity. Hence they would not be in the position to utilize PTs, and this could be another possible reason as to why fewer blacks are PTs.

Although it seems that African-American females have decreased levels of physical activity (Pate et al. 2005), research has shown the need for regular aerobic physical activity within this group of the American population (Bond, et al., 2005). It can only be postulated that the same holds true for the black population in South Africa. This is speculation, as further research would need to be undertaken to make any conclusive statement in this regard.

Efforts to address racial/ethnic disparities can be bolstered by studies of correlates of physical inactivity behaviors in disparate groups. Community programs that provide accessible facilities, transportation options, culturally sensitive activities, and a multilingual staff might encourage physical activity in certain racial/ethnic populations. Further investigation into attitudes toward and barriers to physical activity might enhance programs for promoting physical activity among racial/ethnic minority populations (Kruger, 2005).

4.3.2. Work environment and qualifications

Table 1: Participants' qualifications in personal training (n=61)

Qualification	Frequency	Percent
ND (National Diploma) in fitness ETA (Exercise Training Academy)	36	59.0
Diploma HFPA (Health and Fitness Training Academy)	5	8.2
Sports Science Degree	4	6.6
Certificate IIFT (International Institute of fitness Training)	2	3.3
Reebok Certificate	2	3.3
Holmes Place level 3	1	1.6
BA HMS (Bachelor of Arts in Human movements Science)	1	1.6
Honors Biokinetics	1	1.6
ND Exercise Science	1	1.6
ND Exercise Management	1	1.6
Certificate ISSA (International Sports Science Association)	1	1.6
IFD (International fitness Diploma)	1	1.6
YMCA Certificate	1	1.6
Fitco HCE Certificate	1	1.6
ND through ETA and diploma through HFPA	1	1.6
Diploma through ETA and Sports Science Degree	1	1.6
None	1	1.6
Total	61	100.0

As can be seen from Table 1 above, the average length of time working as a PT in the sample was 5.3 years (standard deviation 5.8 years), and ranged from a few months to 30 years. On average participants worked 36 hours per week (range 3 to 84 hours). Fifty point eight percent of participants were from private gyms (n=32), while 49.2% (n=31) were from commercial gyms. Twenty one percent (n=13) had specialized further in personal training. Many different qualifications in personal training were reported by participants. The majority had a National Diploma or certificate in fitness though ETA (57.1%). Five participants (8%) had a sports science degree.

Those having a qualification outside of their personal training qualification made up 49.2% (n=31). Of these, 80.6% (n=25) were not related to health care, 4 (12.9%) were sports related and 2 (6.5%) were related to complementary medicine.

The qualifications can be grouped into three groups:

1. higher degrees (sports science degrees, BA HMS, Honours biokinetics), which average a course duration of four years;
2. diplomas (ETA fitness diplomas, diplomas in exercise science and exercise management) which average a course duration of three years; and
3. the other qualifications which range from a one to two year course.

This is important since the type of qualification could affect how much the student was exposed to other treatment options within their studies and to their level of learning/ knowledge concerning health and fitness.

4.3.3 Referral Practices of conditions experienced by the PT

Question 2 was regarding what type of referral the PT would have recommended, with reference to whether the PT had had such a condition, or if not, who would he/she prefer should he/she have such a condition.

This question assessed mainly practices regarding health care and referral. Participants were asked to indicate which health care practitioner they would choose first for a number of conditions. Some respondents gave more than one choice per condition, and others did not indicate any of the listed practitioners for a given condition, thus the percentages in Figures 2 to 18 may not necessarily total 100%.

Conditions were summarized into two groups: musculoskeletal (ms) and non-musculoskeletal (non-ms) for further comparison of practitioners. It was clear from the results that certain practitioners were favored for musculoskeletal conditions and others for non-musculoskeletal conditions.

Figure 2: Percent choosing certain practitioners for musculoskeletal or non-musculoskeletal conditions

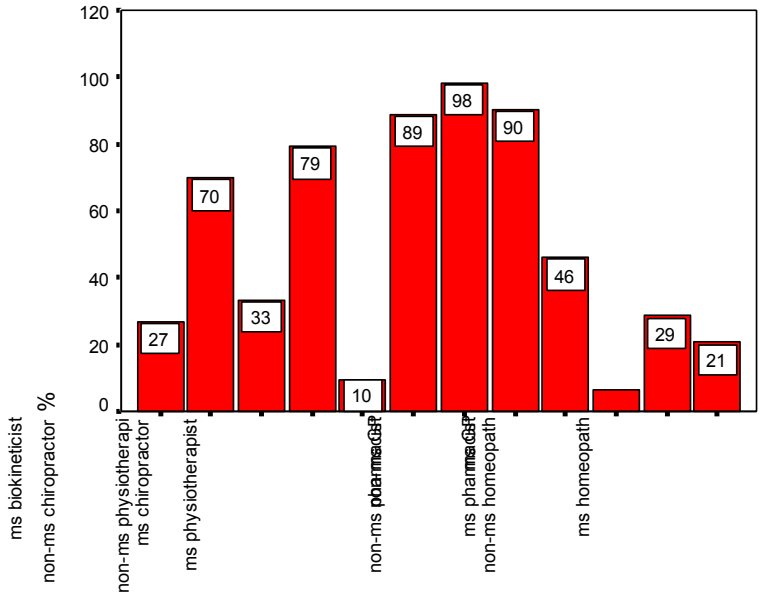


Figure 2 shows that biokineticists, chiropractors and physiotherapists were favored for ms conditions, GPs were favored for both types of conditions, and pharmacists and homeopaths were preferred for non-ms conditions. However, it is also clear that most PTs would rather see a GP for a ms condition (98%) than a physiotherapist (89%), chiropractor (79%) or a biokineticist (70%).

Due to the precise role of chiropractic in health care being under continual dispute (Jamison, 1995), it has largely been the impression of government, private industry policymakers, many health care professions, the general public, and some within the chiropractic profession itself that chiropractic practice is not primary care and should be utilized for the treatment of neuromusculoskeletal or musculoskeletal conditions only (Duenas, et.al. 2003).

Following this controversy, the WFC consultation of chiropractic identity (2005) was launched and findings indicate that most chiropractors (91%) think the profession should be

perceived by the general public as a form of primary health care with focused (55%) (treatment - ms) and broad (36%) scope (diagnostic - non-ms and ms). However, only four-in-ten (44%) believe this is how the profession is actually perceived by the general public (WFC, 2005). This indicates that the scope of practice is a crucial issue for the chiropractic profession, (Hawk and Dusio, 1995), as it determines both the perception and the perceived identity of the profession (WFC, 2005).

Therefore, it comes as no surprise that the level of PT (viz. public) knowledge reflects the presence of unclear boundaries in the scope of practice within the profession itself.
This is congruent with the view held by the majority of South African GPs, who felt that chiropractors were incompetent in the general medical management of patients (Louw, 2005), with the preventative and primary contact roles being seen as less important by the participating GPs (Louw, 2005). Thus the suggestion stands that chiropractic is limited to the focused scope (ms or treatment scope) of practice which is based on musculoskeletal interventions.

This perception could stem from the age old tradition where GPs are considered the gatekeepers of primary healthcare (Hupkes, 1990), with the requisite knowledge and expertise for diagnosis and treatment of all conditions (Grumbach, 1995). This concurs with a large proportion of Canadian GPs who accept chiropractic as a legitimate type of health care, mainly for musculoskeletal complaints (focused scope) (Curtis and Bove, 1992). Thus this would dictate that only 44% of the surveyed GPs actually referred patients to chiropractors (Verhoef and Page, 1996; Sanchez, 1991). In a study by Hunter (2004), 53% of physiotherapists said that chiropractic provides excellent treatment for some neuro-musculo-skeletal conditions. This would stand to reason, as the overlap between these professions is greater and there is greater understanding of patient referrals as well as increased commonality in terms of a focussed scope. Both the GPs and the physiotherapists (allopathic medicine) seem to support this assertion. The above could be as a result of GPs being comfortable referring to physiotherapists because they had a greater understanding of the treatment involved (Breen, et al. 2000). One of the reasons may be the fact that GPs are

aware of their scope of practice and are not sufficiently informed about chiropractic (Louw, 2005).

This is pertinently highlighted in Jamison's 1995 study, where significant medical opposition toward chiropractic referral for care of visceral conditions was shown. The only visceral condition that received support from Australian GPs as a referral option to chiropractors, was migraine. GPs who referred patients to chiropractors more frequently, were more in favor of considering chiropractic care appropriate for various musculoskeletal conditions (Jamison, 1995).

With respect to the general public this dichotomous picture also exists, as can be seen in the 61% of SGCs that thought chiropractors were very competent to diagnose and treat NMS disorders only (Van As 2005). In a study in New Zealand (NZ), the NZ Consumers' Institute (1997) found that consumers most commonly quoted chiropractors as being more knowledgeable about the spine than GPs. The public (in Australia) felt that, in general, GPs and physical therapists were better trained (broad scope) and more effective than chiropractors (focussed scope), the one exception being for back pain, where GPs were seen as ineffective, but physical therapists and chiropractors as equally good (Straton et al., 1990, Meade et al., 1995, Skargren et al., 1997, Baldwin et al., 2001, Sherman et al., 2004, Haas et al., 2005).

Nevertheless it must be considered that most public perception of chiropractic (in Canada) is based on ignorance, bias and misinformation rather than fact. Chiropractic patients generally know little more about chiropractic than non- patients do (Kenneth Caplan and Associates, 1994). Therefore it stands to reason that if the patient's primary source of information is the GP, as the health care gatekeeper, then the public (patient) perception would reflect that of the GP.

Thus if this is the approach GPs take to referring for musculoskeletal complaints, it stands to reason that PTs would do the same in terms of referring firstly to GPs, since the general

public heeds the advise or views taken by conventional mainstream medicine (Grumbach, 1995).

The effect of this transfer of information can be seen in the study by Langworthy and Birkelid (2001), were it was concluded that with increasing emphasis on multidisciplinary health care, greater understanding and better communication is needed in order for the patient to obtain optimum benefits. Therefore, it stands to reason that the various health care/fitness providers should have increased access to information from sources other than conventional mainstream medicine. This view is supported by results found in the Netherlands and Norway where chiropractors were perceived as primary health care professionals (Langworthy and Smink, 2000; Langworthy and Birkelid, 2001), where extensive education of both conventional mainstream medicine and the general public has lead to an increased understanding of chiropractic as a broad scope with respect to diagnostic procedures and a focused scope with respect to treatment.

The following figures (3 - 7) show the practitioners of choice for the non-musculoskeletal conditions.

Figure 3: Participants' choice of practitioners to treat arthritis

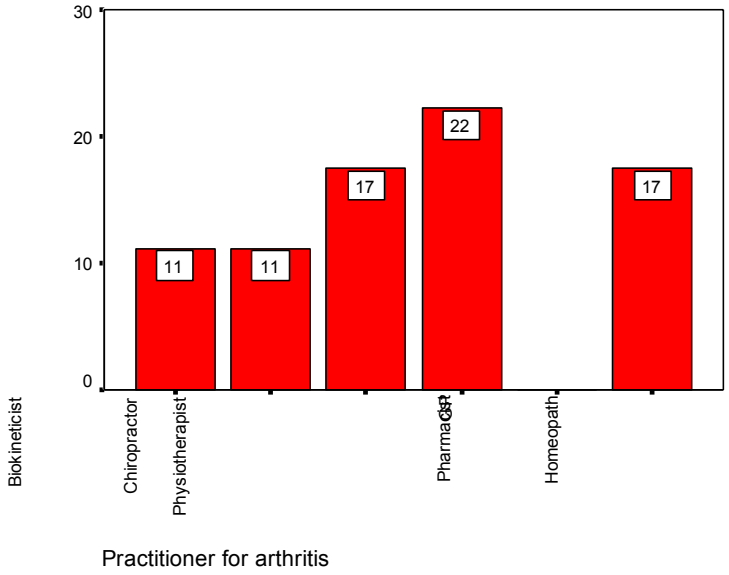
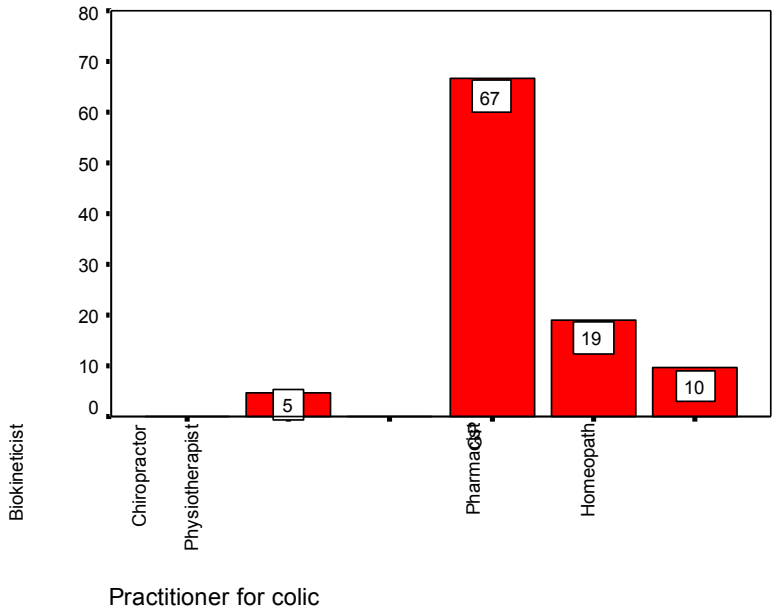


Figure 3 shows the responses for arthritis. It is clear that the practitioner favored for this condition was a GP, although not overwhelmingly (22%). None of the respondents chose a pharmacist for this condition. Similarly, SGCs also favored GPs for the treatment of arthritis (42%), although they favored chiropractic over physiotherapy (19% and 5% respectively), whereas PTs favored physiotherapy over chiropractic for the treatment of arthritis.

Figure 4: Participants' choice of practitioners to treat colic



For colic (Figure 4), again the GP was the most popular choice (67%). Only 5% mentioned a chiropractor as their first choice for treating colic. This was in keeping with SGCs of whom 44% chose GPs and also 5% chiropractic. This is interesting in the light of research showing the benefits of chiropractic in the treatment of colic (Nilsson, 1985., Klougart et al., 1989., Biedermann, 1992). This could possibly be due to the fact that the majority of PTs were male and therefore would be likely to know less about colic in infants.

Figure 5: Participants' choice of practitioners to treat migraine

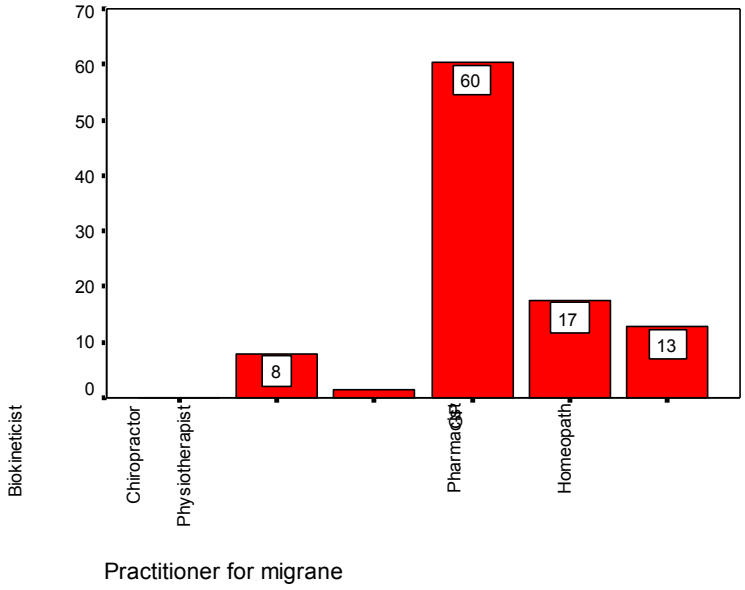
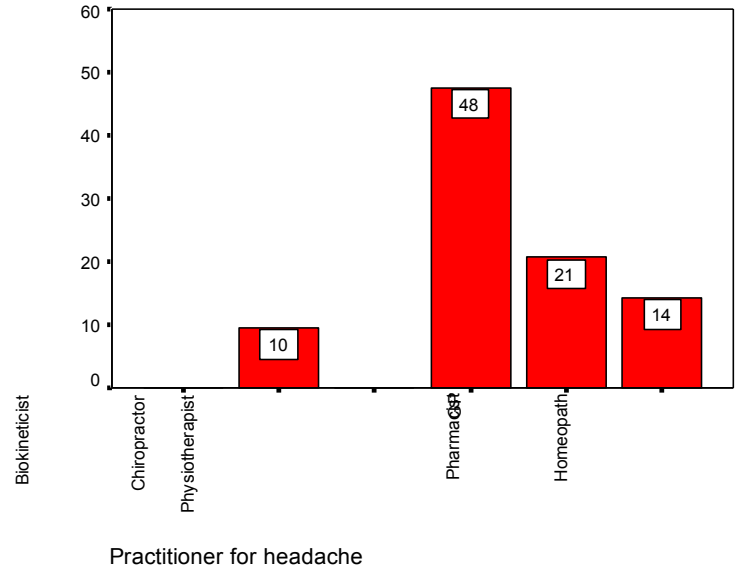


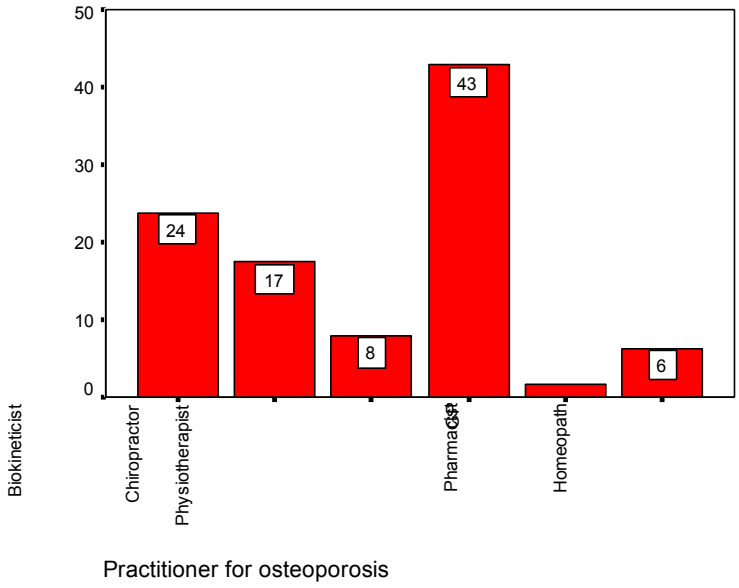
Figure 6: Participants' choice of practitioners to treat headaches



General practitioners were also preferred for treatment of migraines (Figure 5) and headaches (Figure 6). There was no significant difference for referral of treatment between migraines as opposed to headaches from other causes. In addition to this there was no differentiation between the "other headaches" which could have ranged from serious intracranial pathology to a tension type headache. Thus it would stand to reason that the PT would feel more comfortable with referrals to a GP as opposed to a chiropractor. This is thus

in contrast to Van As (2005) who found the same for SGCs with regards to migraines, but there was a difference with regards to tension-type headaches, where he found equal referrals to GPs and to Chiropractors. It is therefore suggested that future research has several questions devoted to headaches of different causes (causative agents) to determine the subtle differences between the possible referral options available. These results would then be comparable to Jamison (1995) where the only visceral condition that received support from Australian GPs as a referral option to chiropractors, was migraine (Jamison, 1995).

Figure 7: Participants' choice of practitioners to treat osteoporosis



GPs were preferred by most participants to treat osteoporosis (Figure 7). No comparative data are available in this respect, thus one can only infer from current literature that this referral is based on the need for supplementation as well as medicinal intervention, which is only available from the GP. In addition the increased severity of osteoporosis increases the relative risk of intervention provided by the chiropractor through procedures like manipulation (Bergmann, et al. 1993) and thus referral to the GP would be best.

The following figures (8 - 18) show the practitioners of choice for the treatment of the musculoskeletal conditions.

Figure 8: Participants' choice of practitioners to treat LBP in pregnancy

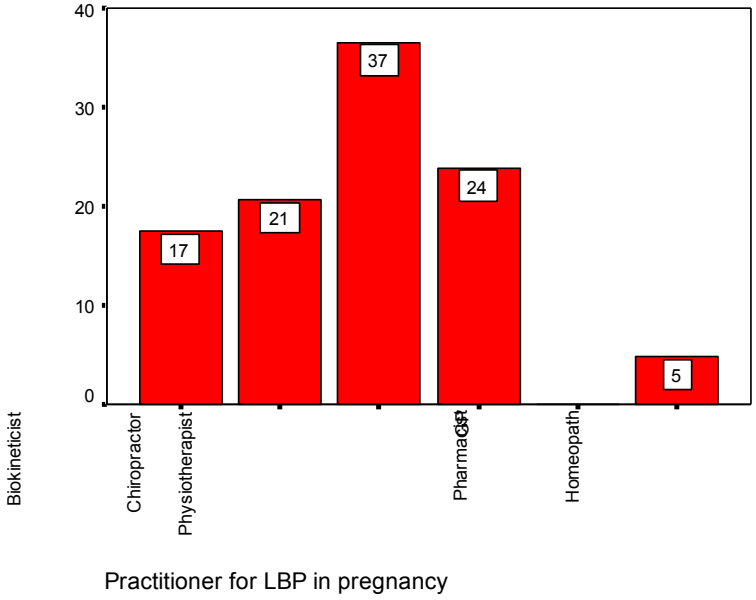
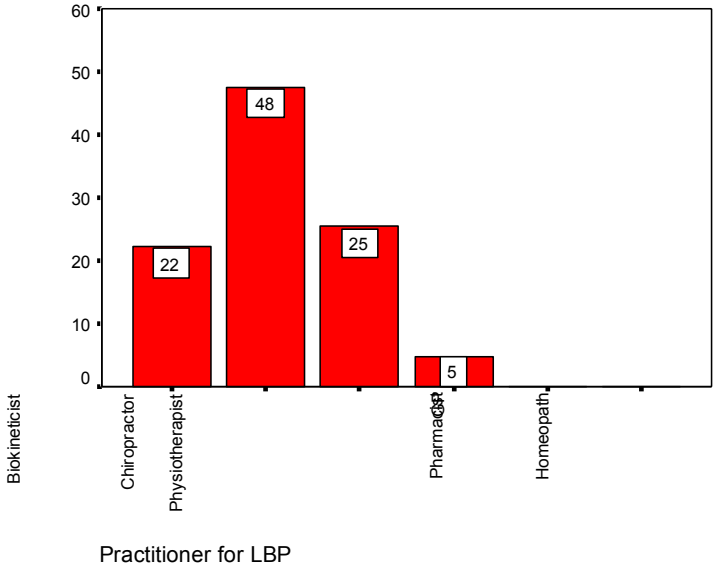


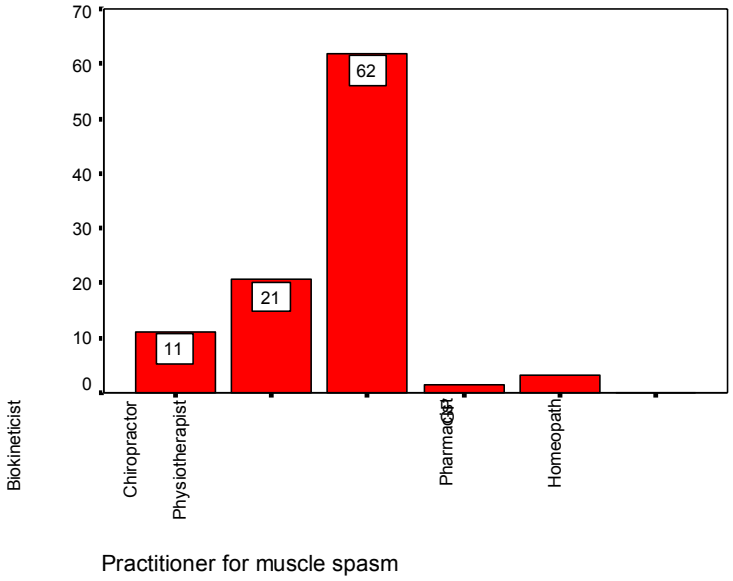
Figure 9: Participants' choice of practitioners to treat general LBP



Thirty-seven percent of participants chose a physiotherapist for treating low back pain in pregnancy, while 24% chose a GP and 21% a chiropractor (figure 8), but for general LBP a chiropractor was chosen by almost half of the participants (Figure 9). This was also true for SGCs who also favored chiropractic for general LBP (33%). A possible reason for the difference in first choice practitioner for LBP in pregnancy as opposed to that for general LBP could be as a result of the perception that manipulation is too forceful a procedure during pregnancy as opposed to for non-pregnant patients.

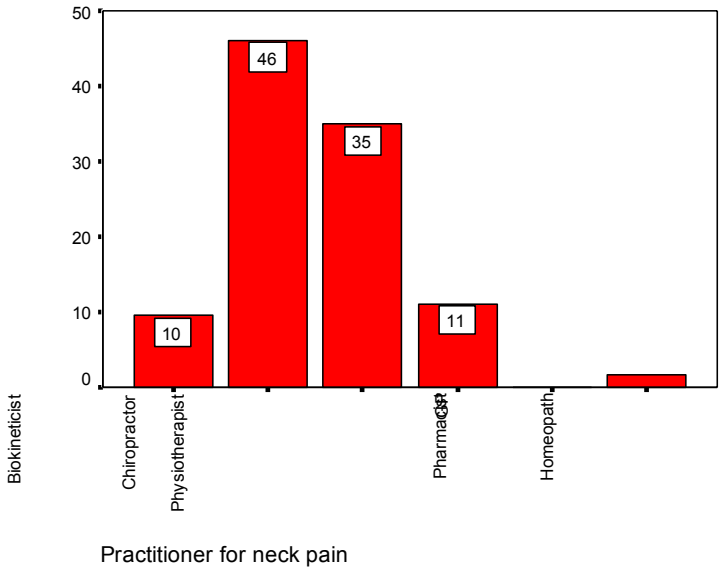
The public (in Australia) felt that, in general, GPs and physical therapists were better trained and more effective than chiropractors in the treatment of patients generally, with the one exception being back pain. Here the GPs were seen as ineffective, but physical therapists and chiropractors as equally good and both better than the GP (Straton et al., 1990, Meade et al., 1995, Skargren et al., 1997, Baldwin et al., 2001, Sherman et al., 2004, Haas et al., 2005). This concurs with a New Zealand study by the NZ Consumers' Institute (1997) who found that consumers most commonly quoted chiropractors as being more knowledgeable about the spine than GPs and felt they helped where the GP/physiotherapist could not.

Figure 10: Participants' choice of practitioners to treat muscle spasm



Participants preferred physiotherapists to treat muscle spasms (62%), followed by chiropractic at 21%, at a difference of 41% (Figure 10). Similarly, SGCs preferred physiotherapists for muscle spasm, followed by chiropractic, but at a difference of only 18%. It would seem from these results that PTs associate physiotherapy with muscle spasm more than what SGCs do, with the implications that chiropractors are not principally known for interventions related to the muscular system (e.g. stretching, massage and electrotherapy interventions). Chiropractic is better known for locomotor/joint effective treatments, such as the manipulation (WFC – Identity issue).

Figure 11: Participants' choice of practitioners to treat neck pain



The results in Figure 11 concur with the findings in Figure 10, as chiropractors were the practitioners of choice for treating neck pain (46%), a condition thought to be related to pathomechanics of the locomotor system (Bergmann, et al. 1993). Physiotherapists were chosen second with an 11% difference between them (Figure 11).

SGCs, on the contrary, chose physiotherapists above chiropractors with an 8% difference between the two. This difference could be due to the fact that PTs work in the health and wellness sector principally dealing with the locomotor system, as opposed to SGCs who are

in the education sector (and have a limited idea of pain causative structures, outside of the palpable musculature). Therefore, physiotherapists would be the first port of call for SGCs as opposed to PTs.

In concurrence with the PT referrals, the findings in Australia, Canada, Italy, The Netherlands, New Zealand, United Kingdom and USA indicate that the most common reason for seeking chiropractic care was low back and neck pain followed by headache (WFC, 2003). These referrals were based on assessments of referrals by health care providers to one another – where there is an inherent understanding of possible causative pathologies. Thus the inference indicates that the PTs have some knowledge of the local anatomical/locomotor structures on which they base their referrals. This is congruent with their education and training, placing them above the SGCs in terms of appropriate referral.

Figure 12: Participants' choice of practitioners to treat joint pain

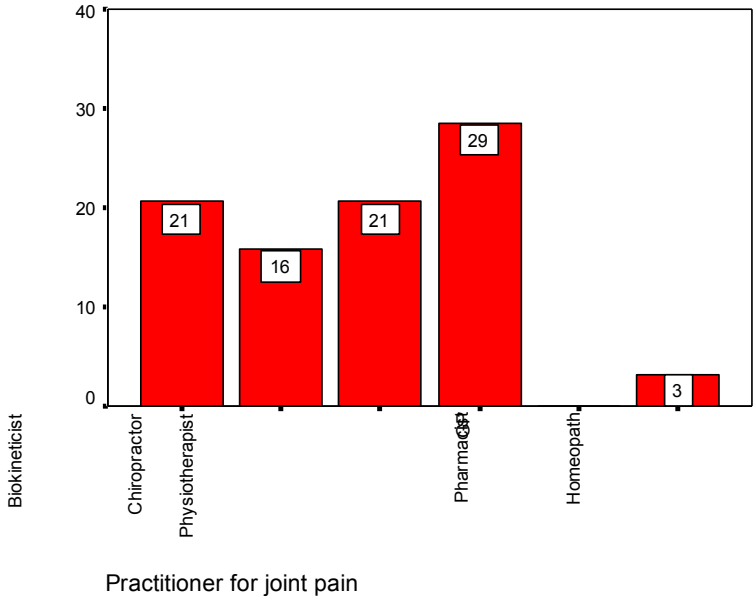


Figure 12 shows GPs (29%) were slightly more popular for treating joint pain than physiotherapists and biokineticists (both 21%). Chiropractic was only chosen fourth at 16%. This was surprising since SGCs chose chiropractic as the practitioner of choice for treating joint pain (Van As, 2005).

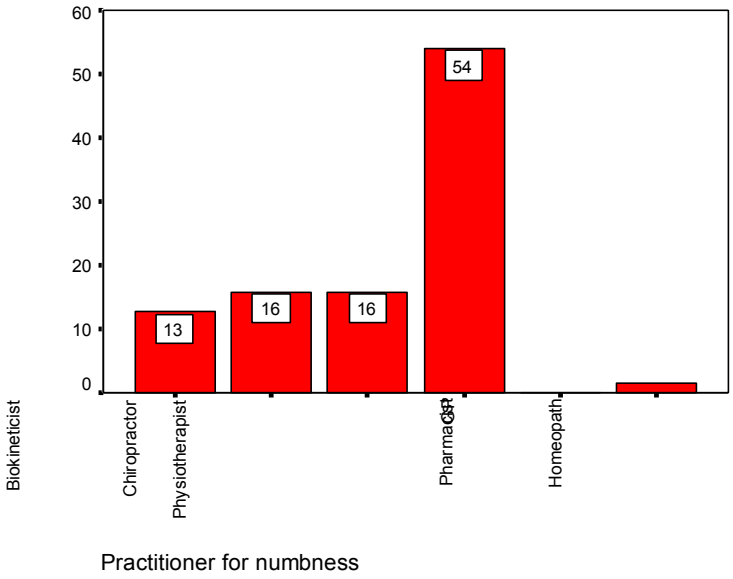
These results suggest the opposite is true of the suggestion put forward for figure 11. However, if the suggestion is qualified by either :

- the presence of severe joint line pain with or without instability or there is a suggestion of intra-articular trauma, it would be natural for the PT to require
    - Analgesia/surgical referral from the GP
    - Palliative pain control from the physiotherapist
    - Muscular rehabilitation from the biokineticist
- or the presence of systemic arthritides if the joint pain is symmetrical or related to multiple joints, in which case the PT would require further clinical testing that they associate with the GP as opposed to the chiropractor.

To compound this situation, the chiropractor who seems to be seen as the joint manipulator by the PTs would be seen as a possible contra-indication/aggravator to the presence of joint pain.

The above therefore indicates that the PTs' understanding of the chiropractor's scope of treatment is limited since they did not identify joint pain as a condition that could be treated by chiropractic (Sanchez, 1991). However this assertion would require further detailed study in order to confirm whether this is indeed the case.

Figure 13: Participants' choice of practitioners to treat numbness



By far the most popular practitioner to treat numbness was a GP (Figure 13). This is also interesting, since SGCs chose chiropractic treatment for numbness above the GP at a 6% difference (31% and GPs at 25%) as opposed to PTs who chose the GP over the chiropractor at a difference of 38%. In the study on SGCs (Van As, 2005), numbness was in the top three conditions, along with joint pain and LBP that chiropractic was primarily chosen to treat, yet in this study, only LBP concurred with these results. Although PTs and SGCs are both considered part of the general public, there is a difference in what these two professions consider the scope of chiropractic as being. This is interesting since PTs are a part of the health and wellness sector and yet seem to know less about the scope of chiropractic than SGCs who's primary focus is education.

A possible reason for this seeming dichotomy may arise from the fact that the lay person (SGC) may understand the role of the chiropractor to be that of :

- removing pressure on "pinched nerves", which would restore the normality of a numb area,
- "realigning bones" in order to "straighten the joints" for them to function optimally

Therefore the lay person would naturally attend the chiropractor's consultation for low back pain or numbness. On the contrary the more medically educated PT may understand the

cause of numbness and the presence of joint line pain as possible indicators of more sinister pathology, which does not simplistically respond to manipulation (e.g. the presence of an "osteophyte encroaching" on a nerve that would not be amenable to manipulation).

Figure 14: Participants' choice of practitioners to treat postural abnormalities

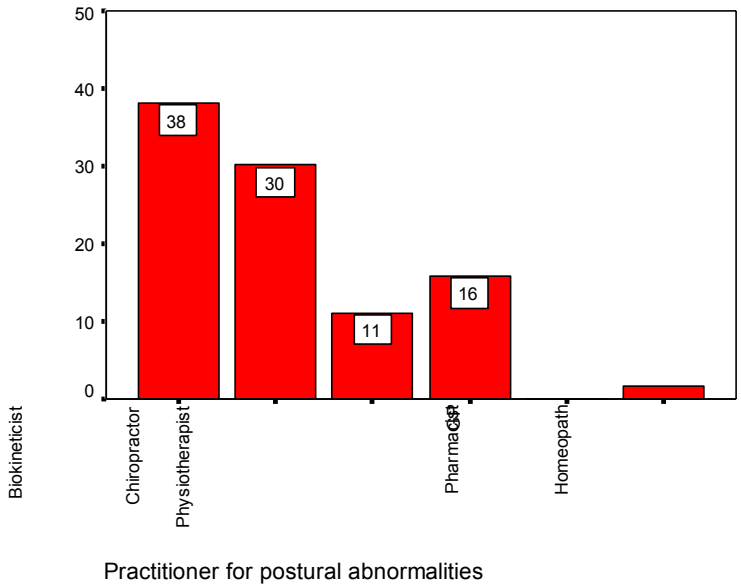


Figure 14 indicates biokineticists were favored as the practitioners of choice for postural abnormalities (38%), followed by chiropractors (30%). As a result of posture being understood as a function of muscular activity and balance (Panjabi, 1992), it stands to reason that the PT would employ the services of a rehabilitation specialist whose primary function is that of active muscular interventions or training. This is principally the role of the biokineticist (http://www.bossfitness.com/faq.asp). This relationship is further enhanced by the fact that many gyms have biokineticists on site assisting with active muscular rehabilitation and thus a working relationship already exists between the PTs and the biokineticists.

Figure15: Participants' choice of practitioners to treat shoulder pain

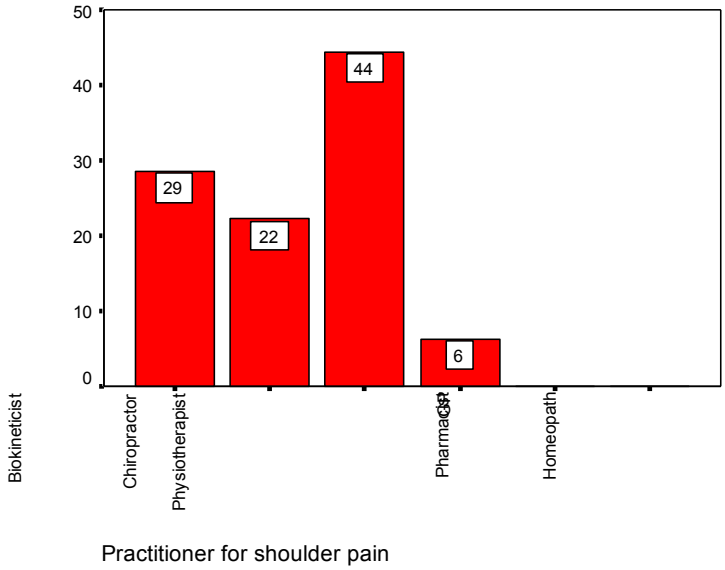


Figure 15 shows that for shoulder pain most participants chose a physiotherapist (44%).
It would seem from the above the assertions regarding PTs are re-inforced by these results, indicating that PTs' referrals imply,

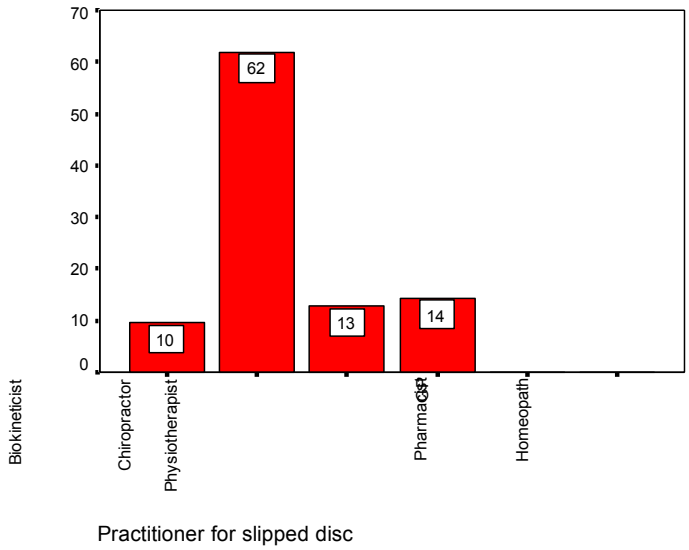
- shoulder pathology is related to a muscular condition/pathology related principally to either instability or muscle imbalance as opposed to
- joint pathology that is amenable to manipulative intervention.

Thus it would follow logically that the PT would affect the referrals seen in Figure 15.

This is nevertheless incongruent with SGCs who preferred chiropractic for the treatment of shoulder pain, as well as Louw's study (2005) in which 82% of South African GPs considered shoulder pain as an appropriate condition for chiropractors to treat.

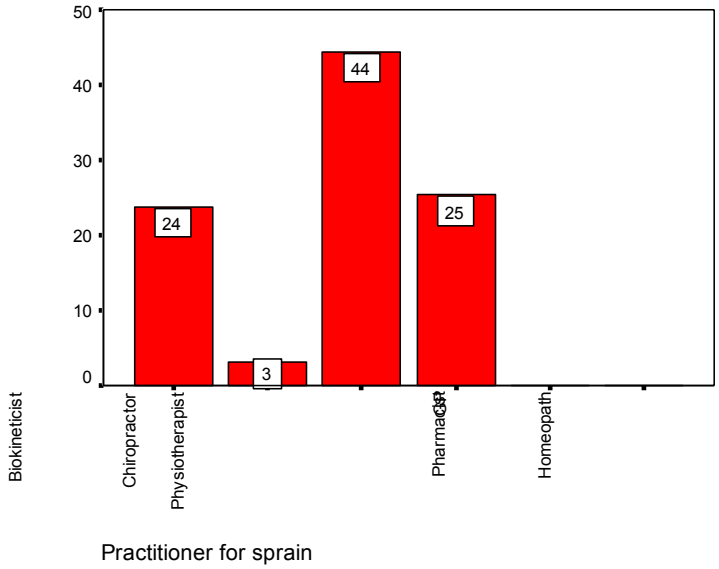
This inherent contradiction may be related to the fact that both the SGC and the GP have limited knowledge and/or experience in the musculoskeletal causes/pathology related to shoulder pain and thus see the chiropractor as the most appropriate musculoskeletal specialist.

Figure 16: Participants' choice of practitioners to treat slipped disc



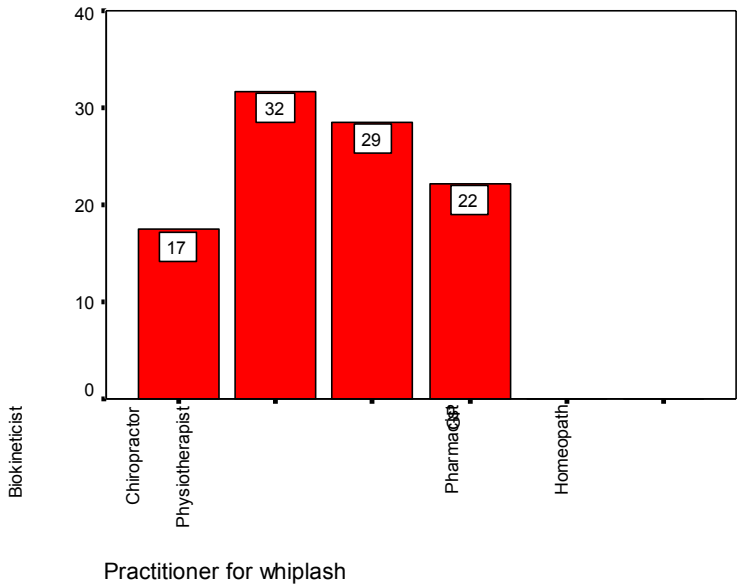
In Figure 16 chiropractors were shown to be by far the most popular choice (62%) for the treatment of a "slipped disc", and GPs at a distant second (14%), whereas this was almost exactly inverse to SGCs who preferred GPs over chiropractic at 51% and 15% respectively. This would make sense from a mechanical point of view (PT point of view), where the PT would understand that the degree of benefit outweighs the risks in terms of manipulative therapy (as altered mechanics may indeed relieve the patient's pain). Whereas from a lay perspective the application of manipulation may well be seen as the causative agent for the "slipped disc" or as an aggravating factor for the progression of the "slipped disc", which would thus necessitate a referral for traction or analgesic intervention, only available through a GP.

Figure 17: Participants' choice of practitioners to treat sprains



The above Figure 17 indicates that physiotherapists were preferred to treat sprains (44%) followed by GPs and biokineticists, with chiropractic ranking forth at a marked difference of 3%. From a mechanical point of view sprains are associated with ligament tears and thus joint instability (Daniel, et al, 1990). Therefore from a PTs view point it would not make sense to have a chiropractor treat the patient, as manipulation is contra-indicated in an unstable joint. Referral to a physiotherapist for soft tissue intervention (massage, cross friction etc) as well as analgesic intervention from the GP would be seen as the best course of action by the PT.

Figure 18: Participants' choice of practitioners to treat whiplash



While Figure 18 shows 32% of PTs chose chiropractors to treat whiplash, followed by 29% who chose physiotherapists, similarly 88.9% of SA GPs would also consider chiropractic treatment for whiplash (Louw, 2005). This was contrary to Van As's study (2005) in which SGCs primarily chose GPs for the treatment of whiplash, followed by the physiotherapist and only then the chiropractor at 20%.

These outcomes further enhance the suggestion that PTs work from a mechanical/biomechanical perspective as compared to the GPs and SCG's in respect to referrals for conditions of the musculoskeletal system.

Conclusion:

Figure 18 therefore supports the assertion that, when asked whether there was a sufficient difference between the professions to separate chiropractic and physiotherapy, the response was overwhelmingly positive (76%) from the point of view of the physiotherapists when studied by Hunter (2004). This affirms the position taken by the PT whereby the chiropractor is seen as a biomechanical specialist, whereas the physiotherapist seems to be more of a palliative pain control agent along with the GPs role of analgesia in mild conditions or as a gateway for referral for more specialist care in more severe conditions.

The role that the PT ascribes to the chiropractic professional indicates that referral to chiropractors is not based on the primary contact physician status (AHPC 63 of 1982), but rather on the scope of treatment allowed within the profession of chiropractic and its effect on the outcomes for the patient. Furthermore it would seem that South African PTs do not ascribe any role outside of musculoskeletal/biomechanical conditions to the treatment scope of chiropractic, which is in contrast to the role that some chiropractors allocate to themselves as seen in a study by Jamison (1995) (Australia), where some chiropractors continue to envisage a role for chiropractic care in patients with visceral complaints. However it is congruent with the New Zealand Commission of Inquiry where it was agreed that chiropractic is a valuable branch of health care, but expressed reservation about the role and competence of chiropractors in the management of visceral conditions.

4.4 Analytical statistics

In the following tables it should be noted that only the significant factors will be discussed, unless the presence of an insignificant reading by virtue of its insignificance is significant.

4.4.1. Factors influencing choice of practitioner

a) **For non-musculoskeletal conditions**

Table 2: Factors influencing choice of practitioner for arthritis

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.412	33.3% of females and 7.7% of males chose homeopaths. This was consistent with the findings of Härtela and Volgera (2004) and MacLennan and Wilson (1996) who found in terms of gender that one of the significant characteristics in the generalized and internationally consistent demographic profile of homeopathic users was that they tended to be female.
	Chiropractor	0.236	
	Physiotherapist	0.509	
	GP	0.759	
	Pharmacist	-	
	Homeopath	0.015*	

Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.149	42.9% of the >=40 year age group chose homeopaths while 12.1% of the 20-29 year olds and only 6.3% of the 30-39 year group chose homeopaths. The older age group may consider chronic conditions like arthritis being more suitable to homeopathic treatment since this condition usually requires the use of long-term medication. Being older it is possible that they are more aware (due to their own personal experience gained over time) of the possible negative effects of medication when used over a prolonged period of time and thus may wish to refer clients to alternate routes. Another reason could be that also due to their own experience, either themselves or those within their interacting circles, that they feel allopathic treatment often offers little lasting effects for this recalcitrant condition, and thus may be willing to explore other avenues of treatment.
	Chiropractor	0.866	
	Physiotherapist	0.099	
	GP	0.098	
	Pharmacist	-	
	Homeopath	0.016*	
Race group (White) (Other)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacist for valid correlations to be drawn.
	Chiropractor	0.120	
	Physiotherapist	1.000	
	GP	0.117	
	Pharmacist	-	
	Homeopath	0.104	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.619	4.3% of the 1-5 year group chose GP while >30% of the other groups chose GP. This could be due to the fact that GPs are considered the gatekeepers of primary healthcare (Hupkes, 1990), with the requisite knowledge and expertise for diagnosis and treatment of all conditions (Grumbach, 1995), especially in PTs where they have limited experience within the medical fraternity, but sufficient numbers of patients that require referral.
	Chiropractor	0.235	
	Physiotherapist	0.377	
	GP	0.035*	
	Pharmacist	-	
	Homeopath	0.543	

Specialized (Yes or no)	Biokineticist	0.630	No significant values noted. Insufficient numbers of pharmacist for valid correlations to be drawn.
	Chiropractor	0.328	
	Physiotherapist	1.000	
	GP	0.264	
	Pharmacist	-	
	Homeopath	0.673	
Other qualifications (Yes or no)	Biokineticist	0.672	
	Chiropractor	0.247	
	Physiotherapist	1.000	
	GP	0.758	
	Pharmacist	-	
	Homeopath	0.474	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.650	
	Chiropractor	0.574	
	Physiotherapist	0.888	
	GP	0.605	
	Pharmacist	-	
	Homeopath	0.307	

* statistically significant at <0.05 level

Table 3: Factors influencing choice of practitioner for colic

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	-	50% of females and 77% of males chose GP for colic 25% of females and 0% of males chose homeopaths. This is consistent with the findings of Härtela and Volgera (2004) and MacLennan and Wilson (1996). Furthermore the referral by males to a GP could be influenced by the fact that males, generally do not deal with colic, and hence would go with the most generally accepted treatment for this condition (Grumbach, 1995).
(Male)	Chiropractor	0.281	
(Female)	Physiotherapist	-	
	GP	0.028*	
	Pharmacist	0.510	
	Homeopath	0.002*	
Age group	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist, physiotherapist or pharmacist for valid correlations to be drawn.
(20-29 years)	Chiropractor	0.637	
(30-39 years)	Physiotherapist	-	
(40 to 59 years)	GP	0.076	
	Pharmacist	-	
	Homeopath	0.228	
Race group	Biokineticist	-	
(White)	Chiropractor	1.000	
(Other)	Physiotherapist	-	
	GP	1.000	
	Pharmacist	0.684	
	Homeopath	0.585	
Years as a PT	Biokineticist	-	
(<=1 year)	Chiropractor	0.420	
(1-5 years)	Physiotherapist	-	
(> 5 years)	GP	0.141	
	Pharmacist	0.118	
	Homeopath	0.980	

Specialized (Yes or no)	Biokineticist	-	Of the PTs 46% of the specialized group (i.e. further training with respect to PT) compared to 12% of non specialized participants chose pharmacists. This implies that those with further training either had greater exposure to the clinical management of certain conditions (implying knowledge of OTC medications) or generic application of OTC medication in the PT setting. Alternatively it could imply that the PT felt that he/she could act as a referral source to the pharmacist as a result of the specialized training received although this is not a core function of the PT.
	Chiropractor	1.000	
	Physiotherapist	-	
	GP	0.318	
	Pharmacist	0.013*	
	Homeopath	0.574	
Other qualifications (Yes or no)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist and physiotherapist for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	-	
	GP	0.782	
	Pharmacist	0.509	
	Homeopath	1.000	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	-	
	Chiropractor	0.817	
	Physiotherapist	-	
	GP	0.906	
	Pharmacist	0.593	
	Homeopath	0.918	

* statistically significant at <0.05 level

Table 4: Factors influencing choice of practitioner for headaches

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist and physiotherapist for valid correlations to be drawn.
	Chiropractor	0.190	
	Physiotherapist	-	
	GP	0.299	
	Pharmacist	0.750	
	Homeopath	0.073	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	-	25% of the 30-39 year group chose chiropractors while only 6% of the 20-29 year group and 0% of the 40 -59 year group chose chiropractors. It would seem from this and other significant relationships between age and nominated conditions (tables 11, 13 and15) that the following analogy is appropriate : The younger PTs tend to limit referrals to practitioners that specialise within the neuromusculoskeletal ambit, in keeping with the suggestion that the PTs are based in a mechanical based paradigm (refer to section 4.3.3.to the discussion under figure 11 with regards to neck pain). This trend is followed through the 30-39 year age group where stressors are seen as a major contributor to derangement of the neuromusculoskeletal system. It therefore seems that these two age groups are less concerned with serious non-neuromusculoskeletal conditions, however the older PTs (40-59 years of age) would seem to refer to the gatekeeper of medicine in order to affect effective referral and/or treatment from the offices of the GP, irrespective of the condition under review (Grumbach, 1995).
	Chiropractor	0.041*	
	Physiotherapist	-	
	GP	0.641	
	Pharmacist	0.726	
	Homeopath	0.485	

Race group (White) (Other)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist and physiotherapist for valid correlations to be drawn.
	Chiropractor	0.585	
	Physiotherapist	-	
	GP	0.525	
	Pharmacist	0.700	
	Homeopath	0.187	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	-	22% of the 1-5 year group chose chiropractors while 0% of the <=1 year group and 5% of the >5 year group chose chiropractors. These results re-enforce the suggestion made earlier in this chapter (In Table 2 under 'years as a PT'), where it would seem that the newly qualified PTs may lack referrals and thus show limited interaction with other health care providers, where the intermediate group seems to base referrals more predominantly on neuromusculoskeletal/locomotor mechanics and the more experienced group using the GP as the portal of entry and unspecialized point of referral as necessary to ensure effective and efficient care for the patient.
	Chiropractor	0.038*	
	Physiotherapist	-	
	GP	0.187	
	Pharmacist	0.975	
	Homeopath	0.316	
Specialized (Yes or no)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist and physiotherapist for valid correlations to be drawn.
	Chiropractor	0.597	
	Physiotherapist	-	
	GP	1.000	
	Pharmacist	1.000	
	Homeopath	0.670	
Other qualifications (Yes or no)	Biokineticist	-	
	Chiropractor	0.188	
	Physiotherapist	-	
	GP	1.000	
	Pharmacist	1.000	
	Homeopath	0.257	

Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist and physiotherapist for valid correlations to be drawn.
	Chiropractor	0.514	
	Physiotherapist	-	
	GP	0.258	
	Pharmacist	0.695	
	Homeopath	0.262	

* statistically significant at <0.05 level

Table 5: Factors influencing choice of practitioner for migraines

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	-	25% of females and 5% of males chose homeopaths. This supports what was discussed in Tables 2 and 3.
	Chiropractor	0.065	
	Physiotherapist	1.000	
	GP	0.111	
	Pharmacist	0.509	
	Homeopath	0.045*	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist for valid correlations to be drawn.
	Chiropractor	0.423	
	Physiotherapist	0.630	
	GP	0.852	
	Pharmacist	0.938	
	Homeopath	0.124	
Race group (White) (Other)	Biokineticist	-	
	Chiropractor	0.573	
	Physiotherapist	1.000	
	GP	0.334	
	Pharmacist	0.674	
	Homeopath	0.334	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	-	22% of the 1-5 year group chose chiropractors while 0% of the other age groups chose chiropractors. This is in keeping with comments in the previous table (Table 4) with respects to years as a PT.
	Chiropractor	0.009*	
	Physiotherapist	0.362	
	GP	0.342	
	Pharmacist	0.772	
	Homeopath	0.136	

Specialized (Yes or no)	Biokineticist	-	No significant values noted. Insufficient numbers of biokineticist for valid correlations to be drawn.
	Chiropractor	0.574	
	Physiotherapist	0.210	
	GP	0.750	
	Pharmacist	1.000	
	Homeopath	0.630	
Other qualifications (Yes or no)	Biokineticist	-	
	Chiropractor	0.346	
	Physiotherapist	1.000	
	GP	0.188	
	Pharmacist	0.732	
	Homeopath	0.104	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	-	25% of sports related qualifications chose physiotherapist while 0% of other types of qualifications chose physiotherapist. This could be due to the fact that physiotherapy has been the mainstay intervention with regards to the majority of sports codes, and hence PTs having done sports related courses would be more likely to associate with this profession, in addition to which the interaction with sports physiotherapists may have been initiated through the completion of the sports qualification.
	Chiropractor	0.194	
	Physiotherapist	0.003*	
	GP	0.071	
	Pharmacist	0.576	
	Homeopath	0.073	

* statistically significant at <0.05 level

Table 6: Factors influencing choice of practitioner for osteoporosis

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.766	62.5% of females and 31% of males chose GP. Osteoporosis generally affects more women than men (Stopeck, 2005) and hence it would be self-evident that women would know more about the generally accepted/correct treatment for this condition and refer to the most appropriate portal which is that of the GP.
	Chiropractor	0.181	
	Physiotherapist	0.641	
	GP	0.019*	
	Pharmacist	1.000	
	Homeopath	0.632	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.160	No significant values noted.
	Chiropractor	0.307	
	Physiotherapist	0.357	
	GP	0.085	
	Pharmacist	0.225	
	Homeopath	0.276	
Race group (White) (Other)	Biokineticist	1.000	49% of Whites and 17% of other race groups chose GP. The White population is most affected by osteoporosis (Snelling, et al. 2001) and hence it would be reasonable to assume that they would know more about the treatment for this condition than perhaps the other races would because it affects them more.
	Chiropractor	1.000	
	Physiotherapist	0.197	
	GP	0.239	
	Pharmacist	0.042*	
	Homeopath	1.000	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.654	No significant values noted.
	Chiropractor	0.159	
	Physiotherapist	0.722	
	GP	0.774	
	Pharmacist	0.413	
	Homeopath	0.395	
Specialized (Yes or no)	Biokineticist	1.000	
	Chiropractor	1.000	
	Physiotherapist	0.280	
	GP	0.760	
	Pharmacist	0.210	
	Homeopath	1.000	

Other qualifications (Yes or no)	Biokineticist	0.763	31% of those without other qualifications and 6.5% of those with other qualifications chose chiropractors. This may be due to those without other qualifications being less exposed to further and critical thinking with respect to patient presentation, than those without further qualifications. This makes it appropriate that those with further training are able to critically analyze and refer the patient as necessary by thinking outside of the neuromusculoskeletal/locomotor/mechanical processes of those PTs that are not exposed to further training.
	Chiropractor	0.020*	
	Physiotherapist	1.000	
	GP	0.129	
	Pharmacist	0.483	
	Homeopath	0.492	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.793	No significant values noted.
	Chiropractor	0.320	
	Physiotherapist	0.199	
	GP	0.237	
	Pharmacist	0.780	
	Homeopath	0.408	

* statistically significant at <0.05 level

b) For musculoskeletal conditions

Table 7: Factors influencing choice of practitioner for LBP in pregnancy

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.181	12.5% of females and 0% of males chose homeopaths. This concurs with what was said in Table 2,3 and 5 with regard to gender, keeping in mind that only females experience pregnancy and hence males generally do not deal with pregnancy and would therefore go with the most generally accepted treatment for this condition (Grumbach, 1995).
	Chiropractor	0.337	
	Physiotherapist	0.285	
	GP	0.545	
	Pharmacist	-	
	Homeopath	0.051*	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.099	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	0.130	
	Physiotherapist	0.411	
	GP	0.124	
	Pharmacist	-	
	Homeopath	0.790	
Race group (White) (Other)	Biokineticist	0.425	
	Chiropractor	0.700	
	Physiotherapist	0.183	
	GP	0.137	
	Pharmacist	-	
	Homeopath	1.000	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.157	
	Chiropractor	0.092	
	Physiotherapist	0.743	
	GP	0.930	
	Pharmacist	0.772	
	Homeopath	0.990	

Specialized (Yes or no)	Biokineticist	0.685	62% of specialized and 29% of non-specialized participants chose physiotherapists. This re-enforces what was discussed in Table 5 with regard to the type of other qualification the PT possesses in which those having specialized further in personal training are likened to those having sports related qualifications.
	Chiropractor	0.267	
	Physiotherapist	0.048*	
	GP	0.159	
	Pharmacist	-	
	Homeopath	0.513	
Other qualifications (Yes or no)	Biokineticist	0.100	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	0.527	
	Physiotherapist	0.287	
	GP	1.000	
	Pharmacist	-	
	Homeopath	0.238	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.128	
	Chiropractor	0.255	
	Physiotherapist	0.185	
	GP	0.446	
	Pharmacist	-	
	Homeopath	0.219	

* statistically significant at <0.05 level

Table 8: Factors influencing choice of practitioner for general LBP

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.124	12.5% of females and 0% of males chose GP. LBP being musculoskeletal in nature seems to change the referral pattern with regard to the females referring to a GP. Males to a greater extent are more mechanically minded than females (Lee, et al. 2005) and hence would be more likely to consider LBP as a musculoskeletal/mechanical condition that would benefit from treatment by professions more specialized in this regard.
	Chiropractor	1.000	
	Physiotherapist	0.248	
	GP	0.051*	
	Pharmacist	-	
	Homeopath	-	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.361	No significant values noted. Insufficient numbers of pharmacists and homeopaths for valid correlations to be drawn.
	Chiropractor	0.093	
	Physiotherapist	0.716	
	GP	0.148	
	Pharmacist	-	
	Homeopath	-	
Race group (White) (Other)	Biokineticist	0.270	
	Chiropractor	1.000	
	Physiotherapist	1.000	
	GP	0.476	
	Pharmacist	-	
	Homeopath	-	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.007*	43.5% of the 1-5 year group chose biokineticist while 5.3% and 14.3 % of the <=1 year and >5 year groups respectively chose biokineticist. This concurs with what has been said previously in Tables 4 and 5 with regard to years as a PT.
	Chiropractor	0.075	
	Physiotherapist	0.079	
	GP	0.331	
	Pharmacist	-	
	Homeopath	-	

Specialized (Yes or no)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacists and homeopaths for valid correlations to be drawn.
	Chiropractor	0.756	
	Physiotherapist	0.725	
	GP	1.000	
	Pharmacist	-	
	Homeopath	-	
Other qualifications (Yes or no)	Biokineticist	1.000	
	Chiropractor	0.802	
	Physiotherapist	0.556	
	GP	0.606	
	Pharmacist	-	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.566	
	Chiropractor	0.703	
	Physiotherapist	0.783	
	GP	0.899	
	Pharmacist	-	
	Homeopath	-	

* statistically significant at <0.05 level

Table 9: Factors influencing choice of practitioner for muscle spasm

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	0.236	No significant values noted.
(Male)	Chiropractor	0.062	Insufficient numbers of homeopaths for valid
(Female)	Physiotherapist	0.424	correlations to be drawn.
	GP	0.381	
	Pharmacist	1.000	
	Homeopath	-	
Age group	Biokineticist	0.562	
(20-29 years)	Chiropractor	0.551	
(30-39 years)	Physiotherapist	0.788	
(40 to 59 years)	GP	0.169	
	Pharmacist	0.621	
	Homeopath	-	
Race group	Biokineticist	0.120	
(White)	Chiropractor	0.431	
(Other)	Physiotherapist	0.510	
	GP	1.000	
	Pharmacist	0.347	
	Homeopath	-	
Years as a PT	Biokineticist	0.003*	32% of the <=1 year group chose biokineticist while
(<=1 year)	Chiropractor	0.231	4% and 0 % of the 1-5 year and >5 year groups
(1-5 years)	Physiotherapist	0.074	respectively chose biokineticist.
(> 5 years)	GP	0.362	
	Pharmacist	0.166	It would seem that the newly qualified PTs see muscle
	Homeopath	-	spasm as a function of imbalance between muscle groups, thus referral to a biokineticist would be warranted. Those PTs who have been in practice for longer however do not see this as essential for referral, but as part of the process of training and thus find less need to refer for muscle spasm.

Specialized (Yes or no)	Biokineticist	0.328	92% of specialized and 55% of non-specialized respondents chose physiotherapist. Discussion as of that in Table 7 with regard to specialization.
	Chiropractor	0.4431	
	Physiotherapist	0.021*	
	GP	1.000	
	Pharmacist	1.000	
	Homeopath	-	
Other qualifications (Yes or no)	Biokineticist	0.049*	21% of those without other qualifications chose biokineticists while 3% of those with other qualifications chose biokineticists. This is supported by the discussion earlier in this table with regards to years as a PT.
	Chiropractor	0.509	
	Physiotherapist	0.285	
	GP	0.483	
	Pharmacist	1.000	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.211	No significant values noted. Insufficient numbers of homeopaths for valid correlations to be drawn.
	Chiropractor	0.682	
	Physiotherapist	0.483	
	GP	0.780	
	Pharmacist	0.970	
	Homeopath	-	

* statistically significant at <0.05 level

Table 10: Factors influencing choice of practitioner for neck pain

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	0.666	No significant values noted.
(Male)	Chiropractor	0.795	Insufficient numbers of pharmacists for valid
(Female)	Physiotherapist	1.000	correlations to be drawn.
	GP	0.699	
	Pharmacist	-	
	Homeopath	1.000	
Age group	Biokineticist	0.168	
(20-29 years)	Chiropractor	0.297	
(30-39 years)	Physiotherapist	0.938	
(40 to 59 years)	GP	0.379	
	Pharmacist	-	
	Homeopath	0.630	
Race group	Biokineticist	1.000	
(White)	Chiropractor	0.122	
(Other)	Physiotherapist	1.000	
	GP	0.120	
	Pharmacist	-	
	Homeopath	0.190	
Years as a PT	Biokineticist	0.980	
(<=1 year)	Chiropractor	0.140	
(1-5 years)	Physiotherapist	0.194	
(> 5 years)	GP	0.619	
	Pharmacist	-	
	Homeopath	0.308	
Specialized	Biokineticist	0.328	31% of specialized and 6% of non-specialized
(Yes or no)	Chiropractor	1.000	respondents chose GP.
	Physiotherapist	0.348	This is similar to the discussion in Table 3 with regard
	GP	0.030*	to specialization. Those specialized may know more
	Pharmacist	-	about other conditions outside of the musculoskeletal
	Homeopath	1.000	system that cause pain in the neck and may be more likely to consider a non-ms cause that they associate to the treatment of the GP (Grumbach, 1995).

Other qualifications (Yes or no)	Biokineticist	0.098	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	0.595	
	GP	1.000	
	Pharmacist	-	
	Homeopath	0.483	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.340	
	Chiropractor	0.376	
	Physiotherapist	0.583	
	GP	0.800	
	Pharmacist	-	
	Homeopath	0.780	

* statistically significant at <0.05 level

Table 11: Factors influencing choice of practitioner for joint pain

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.337	50% of females and 15% of males chose GP. This concurs with what was said in Table 7 with regard to gender preferences in the treatment of general LBP since both conditions are mechanical in nature.
	Chiropractor	1.000	
	Physiotherapist	0.750	
	GP	0.005*	
	Pharmacist	-	
	Homeopath	1.000	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.119	50% of 40-59 year age group chose GP, while 37.5% of the 30-39 year group and 15% of the 20-29 year group chose GP. This concurs with the discussion in table 11 with regards to age group.
	Chiropractor	0.789	
	Physiotherapist	0.367	
	GP	0.035*	
	Pharmacist	-	
	Homeopath	0.537	
Race group (White) (Other)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	0.700	
	GP	0.482	
	Pharmacist	-	
	Homeopath	1.000	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.541	
	Chiropractor	0.171	
	Physiotherapist	0.328	
	GP	0.063	
	Pharmacist	-	
	Homeopath	0.638	
Specialized (Yes or no)	Biokineticist	0.717	
	Chiropractor	0.673	
	Physiotherapist	1.000	
	GP	0.171	
	Pharmacist	-	
	Homeopath	1.000	

Other qualifications (Yes or no)	Biokineticist	0.204	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	0.474	
	Physiotherapist	1.000	
	GP	0.405	
	Pharmacist	-	
	Homeopath	0.483	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.457	
	Chiropractor	0.307	
	Physiotherapist	0.879	
	GP	0.289	
	Pharmacist	-	
	Homeopath	0.780	

* statistically significant at <0.05 level

Table 12: Factors influencing choice of practitioner for numbness

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	0.141	No significant values noted.
(Male)	Chiropractor	0.485	Insufficient numbers of pharmacists for valid
(Female)	Physiotherapist	0.729	correlations to be drawn.
	GP	0.128	
	Pharmacist	-	
	Homeopath	1.000	
Age group	Biokineticist	0.752	
(20-29 years)	Chiropractor	0.863	
(30-39 years)	Physiotherapist	0.680	
(40 to 59 years)	GP	0.677	
	Pharmacist	-	
	Homeopath	0.630	
Race group	Biokineticist	0.641	
(White)	Chiropractor	0.186	
(Other)	Physiotherapist	0.386	
	GP	0.521	
	Pharmacist	-	
	Homeopath	0.190	
Years as a PT	Biokineticist	0.404	No significant values noted.
(<=1 year)	Chiropractor	0.242	Insufficient numbers of pharmacists for valid
(1-5 years)	Physiotherapist	0.862	correlations to be drawn.
(> 5 years)	GP	0.360	
	Pharmacist	-	
	Homeopath	0.308	
Specialized	Biokineticist	0.031*	31% of specialized and 8% of non-specialized
(Yes or no)	Chiropractor	1.000	respondents chose biokineticists.
	Physiotherapist	0.673	
	GP	1.000	Those who have specialized further in PT may relate
	Pharmacist	-	numbness to a condition that may be improved if
	Homeopath	1.000	muscle balance is addressed and the strength of the dynamic versus the static stabilizers are corrected.

Other qualifications (Yes or no)	Biokineticist	0.465	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	0.708	
	Physiotherapist	0.178	
	GP	0.194	
	Pharmacist	-	
	Homeopath	0.483	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.719	
	Chiropractor	0.345	
	Physiotherapist	0.431	
	GP	0.441	
	Pharmacist	-	
	Homeopath	0.780	

* statistically significant at <0.05 level

Table 13: Factors influencing choice of practitioner for postural abnormalities

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.601	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	0.412	
	GP	0.485	
	Pharmacist	-	
	Homeopath	0.381	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.864	45.5% of the 20-29 year group chose chiropractor while 12.5% and 14.3% of the other groups chose chiropractors. 43% of 40-59 year olds chose GP while 9% and 6% of the other age groups chose GP. This re-enforces the discussion in Tables 4 and 11 with regard to the younger PTs being more mechanically minded/orientated and the older age group seeming to affect effective referral and/treatment from the offices of the GP.
	Chiropractor	0.021*	
	Physiotherapist	0.066	
	GP	0.007*	
	Pharmacist	-	
	Homeopath	0.630	

Race group (White) (Other)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	0.329	
	GP	0.386	
	Pharmacist	-	
	Homeopath	1.000	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.780	47% of those with <=1 year experience, 35% of 1-5 year group and 9.5% of >5 year group chose chiropractor. 0% of those with <=1 year experience, 9% of 1-5 year group and 38% of >5 year group chose GP. This is supported in Table 4, where the younger PTs seem to refer from a more mechanical based paradigm, while the older PTs seem to approach referrals from the medical portal of entry.
	Chiropractor	0.028*	
	Physiotherapist	0.619	
	GP	0.002*	
	Pharmacist	-	
	Homeopath	0.308	
Specialized (Yes or no)	Biokineticist	0.525	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	1.000	
	GP	1.000	
	Pharmacist	-	
	Homeopath	1.000	
Other qualifications (Yes or no)	Biokineticist	0.184	
	Chiropractor	1.000	
	Physiotherapist	0.426	
	GP	0.148	
	Pharmacist	-	
	Homeopath	1.000	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.430	No significant values noted. Insufficient numbers of pharmacists for valid correlations to be drawn.
	Chiropractor	0.161	
	Physiotherapist	0.214	
	GP	0.118	
	Pharmacist	-	
	Homeopath	0.700	

* statistically significant at <0.05 level

Table 14: Factors influencing choice of practitioner for shoulder pain

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.392	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.124	
	Physiotherapist	0.411	
	GP	0.150	
	Pharmacist	-	
	Homeopath	-	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.606	
	Chiropractor	0.164	
	Physiotherapist	0.377	
	GP	0.276	
	Pharmacist	-	
	Homeopath	-	
Race group (White) (Other)	Biokineticist	0.299	
	Chiropractor	0.270	
	Physiotherapist	0.199	
	GP	0.161	
	Pharmacist	-	
	Homeopath	-	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.958	42% of those with <=1 year experience, 22% of 1-5 year group and 5% of >5 year group chose chiropractor. This is in agreement with the findings in the above table (Table 13) with regard to the discussion under years as a PT.
	Chiropractor	0.018*	
	Physiotherapist	0.077	
	GP	0.760	
	Pharmacist	-	
	Homeopath	-	

Specialized (Yes or no)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.717	
	Physiotherapist	0.541	
	GP	0.571	
	Pharmacist	-	
	Homeopath	-	
Other qualifications (Yes or no)	Biokineticist	0.262	
	Chiropractor	0.750	
	Physiotherapist	0.312	
	GP	0.346	
	Pharmacist	-	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.532	
	Chiropractor	0.723	
	Physiotherapist	0.767	
	GP	0.719	
	Pharmacist	-	
	Homeopath	-	

* statistically significant at <0.05 level

Table 15: Factors influencing choice of practitioner for slipped disc

Factor	Practitioner	p value	Explanation
Gender (Male) (Female)	Biokineticist	0.666	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.182	
	Physiotherapist	0.241	
	GP	0.283	
	Pharmacist	-	
	Homeopath	-	
Age group (20-29 years) (30-39 years) (40 to 59 years)	Biokineticist	0.002*	82% of the 20-29 year group chose chiropractors while 31% and 50% of the other groups chose chiropractors. This concurs with table 4 where the younger PTs are more focused on mechanical/locomotor conditions. 31% of 30-39 year olds, 7% of 40-59 year olds chose a biokineticist, 0% of 20 - 29 year olds. This is in keeping with discussions previously in table 4 regarding the younger PTs as being more focused on muscular/locomotor conditions. 36% of 40-59 year olds chose GP while 6% and 12.5% of the other age groups chose GP. This is in keeping with the discussion in table 4 with regards to the older PTs referring to traditional medicine.
	Chiropractor	0.002*	
	Physiotherapist	0.227	
	GP	0.029*	
	Pharmacist	-	
	Homeopath	-	
Race group (White) (Other)	Biokineticist	0.585	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	1.000	
	Physiotherapist	1.000	
	GP	1.000	
	Pharmacist	-	
	Homeopath	-	
Years as a PT (<=1 year) (1-5 years) (> 5 years)	Biokineticist	0.161	90% of those with <=1 year experience, 52% of 1-5 year group and 48% of >5 year group chose chiropractor This concurs with the discussions in Tables 4,5,13 and 14 with regard to years as a PT.
	Chiropractor	0.012*	
	Physiotherapist	0.105	
	GP	0.241	
	Pharmacist	-	
	Homeopath	-	

Specialized (Yes or no)	Biokineticist	0.100	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.541	
	Physiotherapist	0.347	
	GP	0.670	
	Pharmacist	-	
	Homeopath	-	
Other qualifications (Yes or no)	Biokineticist	0.417	
	Chiropractor	0.603	
	Physiotherapist	0.104	
	GP	0.474	
	Pharmacist	-	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.743	
	Chiropractor	0.117	
	Physiotherapist	0.094	
	GP	0.371	
	Pharmacist	-	
	Homeopath	-	

* statistically significant at <0.05 level

Table 16: Factors influencing choice of practitioner for sprain

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	1.000	No significant values noted.
(Male)	Chiropractor	0.521	Insufficient numbers of pharmacists and homeopath
(Female)	Physiotherapist	0.789	for valid correlations to be drawn.
	GP	0.372	
	Pharmacist	-	
	Homeopath	-	
Age group	Biokineticist	0.329	
(20-29 years)	Chiropractor	0.391	
(30-39 years)	Physiotherapist	0.066	
(40 to 59 years)	GP	0.554	
	Pharmacist	-	
	Homeopath	-	
Race group	Biokineticist	0.137	
(White)	Chiropractor	1.000	
(Other)	Physiotherapist	0.523	
	GP	1.000	
	Pharmacist	-	
	Homeopath	-	
Years as a PT	Biokineticist	0.073	
(<=1 year)	Chiropractor	0.588	
(1-5 years)	Physiotherapist	0.135	
(> 5 years)	GP	0.683	
	Pharmacist	-	
	Homeopath	-	
Specialized	Biokineticist	0.713	
(Yes or no)	Chiropractor	1.000	
	Physiotherapist	0.220	
	GP	0.484	
	Pharmacist	-	
	Homeopath	-	

Other qualifications (Yes or no)	Biokineticist	1.000	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.229	
	Physiotherapist	0.800	
	GP	0.774	
	Pharmacist	-	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.500	
	Chiropractor	0.530	
	Physiotherapist	0.416	
	GP	0.335	
	Pharmacist	-	
	Homeopath	-	

* statistically significant at <0.05 level

Table 17: Factors influencing choice of practitioner for whiplash

Factor	Practitioner	p value	Explanation
Gender	Biokineticist	0.307	No significant values noted.
(Male)	Chiropractor	0.787	Insufficient numbers of pharmacists and homeopath
(Female)	Physiotherapist	0.573	for valid correlations to be drawn.
	GP	0.538	
	Pharmacist	-	
	Homeopath	-	
Age group	Biokineticist	0.432	
(20-29 years)	Chiropractor	0.935	
(30-39 years)	Physiotherapist	0.561	
(40 to 59 years)	GP	0.585	
	Pharmacist	-	
	Homeopath	-	
Race group	Biokineticist	0.674	
(White)	Chiropractor	0.737	
(Other)	Physiotherapist	0.482	
	GP	0.117	
	Pharmacist	-	
	Homeopath	-	
Years as a PT	Biokineticist	0.120	
(<=1 year)	Chiropractor	0.827	
(1-5 years)	Physiotherapist	0.086	
(> 5 years)	GP	0.421	
	Pharmacist	-	
	Homeopath	-	
Specialized	Biokineticist	0.685	
(Yes or no)	Chiropractor	1.000	
	Physiotherapist	0.739	
	GP	0.466	
	Pharmacist	-	
	Homeopath	-	

Other qualifications (Yes or no)	Biokineticist	1.000	38% of participants without and 10% of those with other qualifications chose GP. This may be due to those without other qualifications being less exposed to further and critical thinking with respect to patient presentation, than those without further qualifications. This makes it appropriate that those with further training are able to critically analyze and refer the patient as necessary by thinking outside of the neuromusculoskeletal/locomotor/mechanical processes of those PTs that are not exposed to further training (as in Table 6).
	Chiropractor	0.164	
	Physiotherapist	0.164	
	GP	0.014*	
	Pharmacist	-	
	Homeopath	-	
Type of other qualification (Sports related) (Complementary medicine) (Not medical) (None)	Biokineticist	0.491	No significant values noted. Insufficient numbers of pharmacists and homeopath for valid correlations to be drawn.
	Chiropractor	0.096	
	Physiotherapist	0.218	
	GP	0.303	
	Pharmacist	-	
	Homeopath	-	

* statistically significant at <0.05 level

Summary :

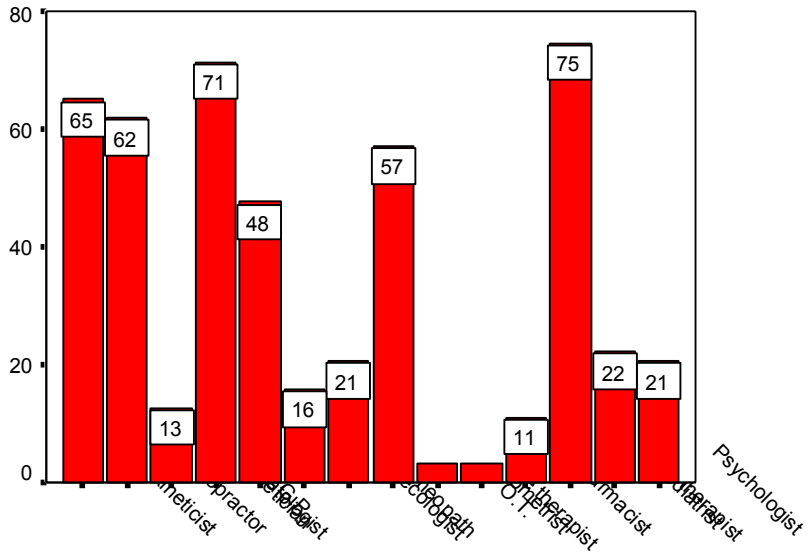
The results in these tables reinforce what was stated before (in section 4.3.3. in the discussion under Figure 11 with regard to neck pain) in that the PTs work in the health and wellness sector principally deals with the locomotor system and that their primary focus is generally that of the body's mechanics in respect of the locomotor system.

4.5. Referral practices

4.5.1. Referral to other practitioners

The PTs were asked whether they ever suggested to clients that they see someone for further examination or treatment (Question 2.4. of the questionnaire). In total 96.7% (59/61) of the PTs responded positively. The specific practitioners to whom they refer are shown in Figure 19.

Figure 19: Specific health care practitioners to whom participants who had referred clients



Referal to

Physiotherapists were most commonly referred to (75%), followed by dieticians, biokineticists and chiropractors. This supports the assertions made thus far in the discussion of the results as the majority of the referral recipients are those related to the fields in which the neuromusculoskeletal system is affected. The only exception to this norm would be that of the dietician. Further inferences with regard to the dietician referrals are limited as the dietician's role as a preferred

provider in terms of referrals was not assed with respect to the section in which specific conditions where assessed. Thus it is recommended in future research of this nature that dieticians are reflected in the condition specific referral grid.

Table 18: Association between gender and referral to certain practitioners

The relationship between gender and referral pattern was explored further in Table 20.

Practitioner	p value	Explanation
Biokineticist	1.000	79% of females and 51% of males referred to a chiropractor. 29% of females and 7% of males referred to a gynecologist. 42% of females and 8% of males referred to a homeopath. Female PTs were more likely to refer clients to chiropractors, gynecologists and homeopaths than were male PTs. The other practitioners had similar referrals from males and females. An interesting finding in terms of gender is that one of the significant characteristics in the generalized and internationally consistent demographic profile of homeopathic users was that they tended to be female (Härtela et al, 2004, MacLennan and Wilson, 1996).
Chiropractor	0.034*	
Dermatologist	0.241	
Dietician	0.152	
Physiotherapist	0.248	
GP	0.075	
Gynecologist	0.034*	
Homeopath	0.003*	
Massage therapist	0.298	
Optometrist	0.141	
Occupational Therapist (OT)	1.000	
Pharmacist	1.000	
Podiatrist	0.759	
Psychologist	0.214	

* statistically significant at 0.05 level

Table 19: Association between age group and referral to certain practitioners

Practitioner	p value	Explanation
Biokineticist	0.317	87.5% of the 30-39 year old group, 57% of the 40-59 year olds and 42% of the 20-29 year olds referred to massage therapists 14% of the 40-59 year old group referred to OT's while none of the other age groups did. Age was associated with referral to massage therapists (p=0.011). The 30-39 year old age group tended to refer more to massage therapists than did the other age groups. This may be related to the association that this group has with decreased ability of the client to recover from increased physical stresses and resultant muscular stiffness as the body is less able to cope with the demands place on it with increasing age. Thus PTs project their own physiological short comings onto that which they perceive the client is experiencing. In addition, the oldest (40-59) age group was the only one who referred to OT's. This however does not imply that these referrals where to the only referrals affected by this age group, but may delineate that this groups of PTs is exposed to a higher incidence of clients that require rehabilitation post injury or through surgery. In which case the OT would be the preferred provider. This assertion however is unsubstantiated and would require further investigation in order to be validated.
Chiropractor	0.458	
Dermatologist	0.667	
Dietician	0.176	
Physiotherapist	0.387	
GP	0.637	
Gynecologist	0.680	
Homeopath	0.264	
Massage therapist	0.011*	
Optometrist	0.391	
OT	0.027*	
Pharmacist	0.302	
Podiatrist	0.585	
Psychologist	0.514	

* statistically significant at 0.05 level

Table 20: Association between years experience and referral to certain practitioners

Practitioner	p value	Explanation
Biokineticist	0.250	83% of those working for 1-5 years, 57% of those working >5 years and 42% of those <=1 year referred to chiropractors. 78% of those working for 1-5 years, 90.5% of those working >5 years and 53% of those <=1 year referred to physiotherapists. 39% of those working for 1-5 years, 14% of those working >5 years and 5% of those <=1 year referred to homeopaths. 30% of those working for 1-5 years, 29% of those working >5 years and 0% of those <=1 year referred to psychologists. 9% of those working for 1-5 years, 24% of those working >5 years and 0% of those <=1 year referred to pharmacists. Therefore in order of preference the 1-5 year age group refers to chiropractors, physiotherapists, homeopaths, psychologists and
Chiropractor	0.023*	
Dermatologist	0.242	
Dietician	0.625	
Physiotherapist	0.020*	
GP	0.237	
Gynecologist	0.308	
Homeopath	0.018*	
Massage therapist	0.587	
Optometrist	0.166	
OT	0.127	
Pharmacist	0.051*	
Podiatrist	0.103	

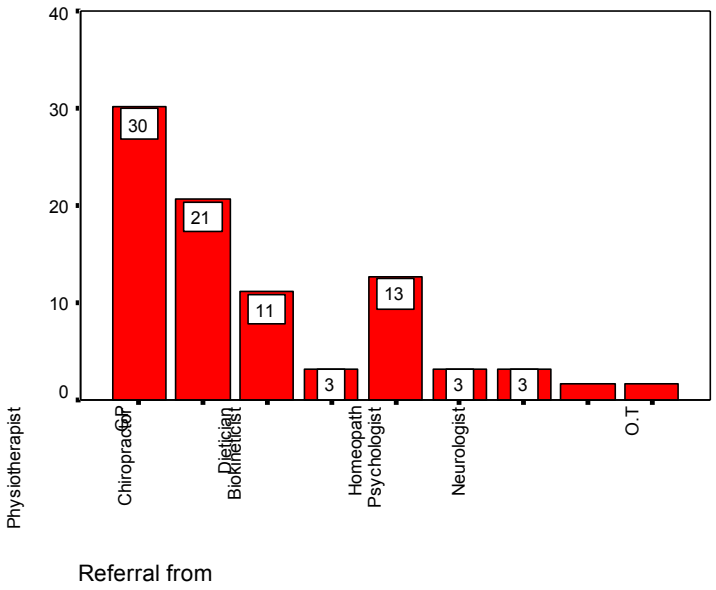
Psychologist	0.029*	pharmacists. This underscores the suggestions made earlier (under section 4.3.3. and 4.4.1) with respect to PTs working predominantly from a paradigm of mechanical approaches to the client. Thus it would stand to reason that the client be referred to a chiropractor or physiotherapist. With most of the PTs being male (61.9 %) that above assertion would hold true as males cognitively work from a mechanical approach to a greater extent than females (Lee, et al. 2005). Nevertheless the relatively high proportion of females 38.1% would be seen to be responsible for the referral to homeopaths (Härtela et al, 2004, MacLennan and Wilson, 1996). The referral to psychologists is a new development in this study and little information is available at this point to support the 30% referral rate indicated, therefore it is suggested that further research be completed to elucidate reasons for this phenomenon. The remaining 9% referral to pharmacists is not vastly different between the age groups and tends towards a commonality with the other age groups, as can be seen for all other providers to which referrals are made. With the limited sample it is therefore difficult to categorically state that there is a significant difference in the referral rates as these could be influenced by greater numbers of PTs in future studies.

* statistically significant at 0.05 level

4.5.2. Referral from other practitioners

Seventy percent of the PTs had never had a referral from another health care worker (n=44). Of the 30% who had, the following practitioners referred to PTs.

Figure 23: Specific health care practitioners from whom participants had received clients



The most common practitioner to refer to a PT was the GP (30%), followed by physiotherapists (21%), biokineticists (13%) and chiropractors (11%). This is shown in Figure 23. This is in stark contrast to the 96.7% of PTs who suggested that clients go to other practitioners for further examination/treatment. With 79 % of PTs providing contact details of the practitioner to whom the client is being referred (45/57). Even in the face of this high referral rate PTs only received feedback from the health care practitioner for 85% of the clients for whom they provided contact details (39/46).

This seems to indicate that there is a lack of inclusion of the PT into the more formal health care sector, even though it is recognized that personal fitness and/or participation in sport/activity is one of the most commonly recommended

remedies for many conditions experienced by patients seen by these health care practitioners within the formal health care sector (Miller, et al., 1984; Freigenbaum and Pollock, 1997; Koffler, et al.; Smutock, et al., 1993).

Figure 24: Form of referral from health care practitioners

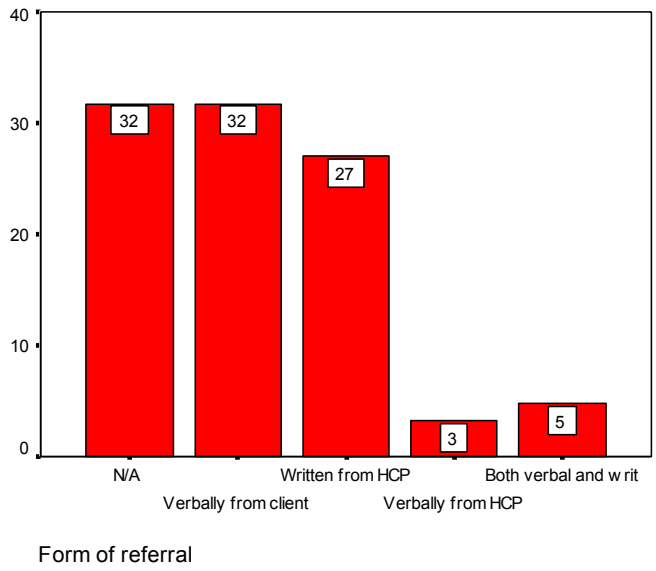


Figure 24 shows that the form in which PTs received referrals was predominantly in verbal communications (32%), followed by written referrals from the health care practitioner (27%). This reinforces the perception of the lack of communication structures between the PTs and formal health care sector.

4.5.3. Relationships between referrals to and from certain practitioners

Relationships were found to exist between practitioners from whom PTs had received referrals and to whom PTs referred their clients. This was true for biokineticists, physiotherapists, homeopaths, and psychologists.

Table 21: Relationships between referrals to and from certain practitioners

Practitioner to and from	p value	Explanation
Biokineticist	0.042*	100% of those who had had referrals from biokineticists referred to biokineticists, while 60% of those who had never had referrals from biokineticists referred to biokineticists.
Chiropractor	0.236	
Dietician	1.000	
Physiotherapist	0.027*	100% of those who had had referrals from physiotherapists referred to physiotherapists, while 68% of those who had never had referrals from physios referred to physiotherapists.
GP	0.784	
Homeopath	0.040*	100% of those who had had referrals from homeopaths referred to homeopaths, while 18% of those who had never had referrals from homeopaths referred to homeopaths
Psychologist	0.040*	100% of those who had had referrals from psychologists referred to psychologists, while 18% of those who had never had referrals from psychologists referred to psychologists

Based on the results above it would seem that the professions of biokinetics, physiotherapy, homeopathy and psychology have the greatest dichotomies with respect to referral to and from the PT, with there being more consistent referrals between the chiropractor, dietician, GP and PT.

4.5.4. Relationships between referrals from practitioners and choice of practitioner to treat certain conditions

Scores were generated for the number of times a participant chose a certain practitioner for all conditions mentioned in Question 2.1 of the questionnaire (the musculoskeletal and non-musculoskeletal conditions). These scores were compared non-parametrically between two groups using a Mann-Whitney test.

Table 22: Relationship between receiving referrals from practitioners and choosing those practitioners to treat certain conditions

Practitioner	p value	Explanation
Biokineticist	0.033*	Those who received referrals from biokineticists were more likely to choose a biokineticist themselves for certain conditions.
Chiropractor	0.214	
Physiotherapist	0.009*	Those who received referrals from physiotherapists were more likely to choose a physiotherapists themselves for certain conditions.
GP	0.827	
Homeopath	0.057	

The above results indicate that the PTs chose particular conditions in respect of the referral patterns (received and sent), where musculoskeletal conditions where principally the conditions of referral between the physiotherapist and biokineticist and the PT. This lopsidedness would have resulted in the increased difference between reported musculoskeletal and non-musculoskeletal conditions referred, with the result that the p value given would have become increasingly significant.

On the converse it would seem that there is a tendency with regard to homeopathic referrals to be non-musculoskeletal in dimension, thus allowing for an approximation to significance. (An increase in the number of PTs in the study

may have resulted in a significant reading. This is however speculation and only further research could accept or refute this statement).

Based on the above discussion it would seem that both GPs and chiropractors have fairly evenly matched referrals of patients between themselves and the PTs, with respect to the patient's condition whether the origin is musculoskeletal or non-musculoskeletal.

4.6. Knowledge of chiropractic

Knowledge was assessed through certain questions in the questionnaire. The individual responses to these questions are shown below. These responses were used to generate a knowledge score for each participant.

4.6.1. Knowledge of the chiropractic course

Table 23: Responses to question on knowledge of institutions where chiropractic could be studied

Institute		Count	%
DIT	yes	45	71.4%
	no	18	28.6%
Stellenbosch	yes	27	42.9%
	no	36	57.1%
U.C.T.	yes	31	49.2%
	no	32	50.8%
University of Johannesberg (UJ)	yes	25	39.7%
	no	38	60.3%
Nelson Mandela Medical school (NMMS)	yes	19	30.2%
	no	44	69.8%
R.A.U.	yes	22	34.9%
	no	41	65.1%

Table 23 shows that while the majority of respondents knew that the DIT offered chiropractic, 60.3%, 69.8% and 65.1% indicated that UJ, NMMS and R.A.U did not offer the chiropractic programme. Almost half the respondents erroneously answered yes to UCT and only 40% knew that the University of Johannesburg was also an institution that offered chiropractic.

Possible reasons for these results include:

- The majority of participants were from Durban and hence would have had a greater chance of coming into contact with the DIT and knowing about the chiropractic course delivered at that site, as opposed to knowing that the UJ also runs the course.
- UCT was possibly chosen due to its association with many medically related fields. However this is not likely as other medically associated institutions like NMMS did not have the same association present)

A confounding factor within higher education is the fact that the landscape in respect of higher education and training facilities has changed over the last few years as a result of the merger of institutions. Thus it is possible that the PTs had an idea that there were two training programmes in respect of chiropractic but where unable to identify them from the list of partly known and partly unknown institutional names.

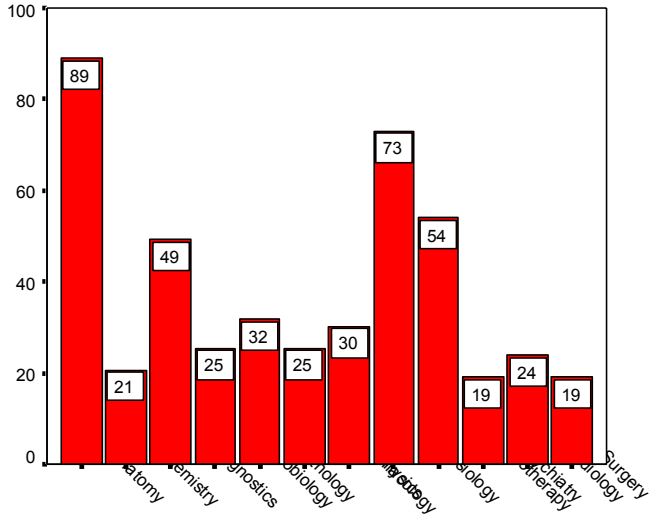
Table 24: Responses to knowledge question on qualification of chiropractors

	Frequency	Percent
Masters	18	36.7
Bachelors	16	32.7
Higher diploma	8	16.3
Other	3	6.1
Double bachelors	2	4.1
Diploma	2	4.1
Total	49	100.0

While the most frequent response to the question on qualification (Table 24) of chiropractors was the correct response (Masters, 36.7%), more than half of the respondents (63.3%) responded incorrectly. However it must be noted that the responses received constituted only 78% of the total sample, therefore implying that 22% of the sample did not in any way respond to the question. It cannot be assumed that a non-response constituted ignorance on the part of the respondent; however it does indicate that a large proportion (45/63) had little idea of the qualification required for registration as a chiropractor.

Similar studies have found the same lack of knowledge (Van As, 2005; Rubens, 1996) where the majority of SGCs and neurologists, neurosurgeons and orthopedic surgeons were not well enough informed about the chiropractic course in SA in order to reliably identify the correct qualification. This was analogous to the findings of the WFC consultation of identity of chiropractic where it was concluded that there is a limited public awareness regarding the education of chiropractors (WFC, 2005).

Figure 22: Percentage of "yes" responses to subjects studied in the chiropractic



The majority of PTs knew that chiropractors studied

- Anatomy (89%),
- Physiology (73%), and
- Diagnostics (49%) as indicated by their high ratings.

However not many knew that pathology (32%), physics (30%), pharmacology (25%), microbiology (25%), radiology (24%), chemistry (21%) and psychiatry (19%) where part of the qualification.

In addition to this 54% of respondents thought physiotherapy was a component of the chiropractic course (Figure 22). This result is however interpreted with caution as the understanding as to what physiotherapy means could be misconstrued as:

- the profession of physiotherapy, in which case the PT does not understand the difference between the professions;
- the modalities which are commonly used by physiotherapists, which case the PT is not entirely clear on the distinction between the two professions;

- the principles of soft tissue/muscle treatment as are also used by physiotherapists, in which case the PT may have an understanding of the scope of practice of chiropractic independent of the profession of physiotherapy.

The last option discussed above seems least likely since 19% percent thought surgery was studied as part of the curriculum. This shows the lack of knowledge of the chiropractic profession in SA as the non-drug, non-surgical mandate of chiropractic is viewed as being the cornerstone to the profession's identity (WFC, 2005 and CASA, 2004).

4.6.2. Knowledge of chiropractic profession

Table 25: Responses to knowledge questions on chiropractic

Correct responses to the two questions shown below in Table 25 counted for two points each since they were considered to be important questions. The majority of respondents got these questions correct.

		Count	Column %
Chiropractic care covered by medical aid	Yes	47	79.7%
	No	10	16.9%
	don't know	2	3.4%
Organizational professional body	Yes	51	91.1%
	No	4	7.1%
	don't know	1	1.8%

Mean knowledge score was 46.3% (SD 16.8%), with a range of 12.5 to 96.9%. Thus overall knowledge of chiropractic was low. This was in keeping with the results from Kenneth Caplan and Associates (1994) which found that the Canadian public, including patients, understands very little about chiropractic education, qualifications and scope of practice, and with Van As's (2005) study

where almost half the SGCs who responded to the questionnaire were not well informed about the legal status of the profession in SA.

These results send a clear signal that something may be missing in the PTs knowledge about chiropractic and about how chiropractic has been reported to them. Chiropractic would be wise to improve public awareness by expounding upon what conditions it can treat, as gaps in the public knowledge have translated into non-utilization (Sanchez, 1991). It follows that the more unclear the respondents' understanding of the professions' scope of treatment, the more likely they are not to identify a condition as one that can be treated by chiropractic (Sanchez, 1991).

4.6.3. Factors affecting or associated with knowledge score

Table 26: T-test comparison of mean knowledge score between those treated and not treated by a chiropractor

	Ever been treated by a chiropractor	N	Mean	Std. Deviation	Std. Error Mean	p value
knowledge score percent	yes	36	50.608	17.3079	2.8847	0.001
	no	27	33.796	19.1472	3.6849	

Having been treated by a chiropractor increased the knowledge score significantly (p=0.001) as shown in Table 26. This is in contrast to SGCs (Van As, 2005), as no significant association between having been previously treated by a chiropractor and knowledge score (p =0.100) was shown. Kenneth Caplan and Associates (1994) said that chiropractic patients generally know little more about chiropractic than non- patients do. This was not the case in this study where those PTs treated by a chiropractor significantly had higher knowledge scores.

A trend that those who had not been treated by a chiropractor had a more negative perception whilst those who had been treated by a chiropractor had a positive perception arose from the study by Van As (2005). Thus the implication is that this trend in perception could also be applicable to PTs.

Table 27: T-test comparison of mean knowledge score between racial groups

	Race group	N	Mean	Std. Deviation	Std. Error Mean	P value
Knowledge score percent	White	51	47.488	18.8022	2.6328	<0.001
	Other	12	26.042	14.2480	4.1131	

Race group also influenced knowledge significantly ($p<0.001$), with Whites having higher scores than other racial groups.

The reasons for the above could be related to one or more of the following factors.

- Lack of exposure to a form of treatment developed outside of the cultural context of the vast majority of South Africans, with the Black population being the least exposed.
- This lack of exposure is further limited by access to a limited number of practitioners in South Africa (0.1%) (www.chiropractic.co.za, 2006 and www.statssa.gov.za/, 2006) of the population. In addition to which the majority of practitioners are based in private practice (www.chiropractic.co.za, 2006) which has greater limitations on accessibility as compared to public health care institutions such as hospitals or clinics.
- Furthermore outside of the above, patient expectations for treatment and care will dictate care seeking behavior. With the trend that the majority of

South Africans expect a medicinal intervention (tablets, injection or something of the like), it becomes problematic when the health care profession does not provide such treatment as it is seen to be ineffective in dealing with the ailment presenting (Mouton, 1996).

Table 28: T-test comparison of mean knowledge score between those who referred to chiropractors and those who did not

	Refer to Chiropractor	N	Mean	Std. Deviation	Std. Error Mean	P value
knowledge score percent	yes	39	49.119	19.3164	3.0931	0.003
	no	24	34.115	17.2625	3.5237	

In congruence with the suggestion above, regarding the positive or negative perception of the chiropractic profession by PTs, there was also an association between those PTs referring to a chiropractor and their knowledge score. Those who referred had higher mean knowledge scores than those who did not refer. However, this could be reverse causality because it is probably the high knowledge score that lead to the referral and not the other way around.

This is in keeping with a study conducted in the Netherlands by Brussee, et al. (2001) who found that a statistically significant relationship exists between the level of knowledge about chiropractic and the frequency of referral of patients. Similarly, in Canada, if was found that people who did not use chiropractic treatment were uninformed about the level of education and treatment procedures within or of the profession (Criterion Research Corporation, 1999).

On the converse, there is a marked difference in how non-users, users and lapsed users (in Canada) view chiropractic. Non-users and users “generally have a positive image of chiropractic”. However, non-users are uninformed about level

of education and treatment procedures (Criterion Research Corporation, 1999). Sanchez (1991) had similar findings in New Jersey and reported that the more unclear non-users' understanding of the profession's scope of treatment, the more likely they are not to identify a condition as one that can be treated by chiropractic.

Table 29: Responses to question on how participants had gained their knowledge of chiropractic

PTs were asked from where they had gained their knowledge of chiropractic. The responses are shown in the table below. Some participants gave more than one response, thus the percentages do not total 100%.

	Count	%
Was treated by a chiropractor	35	55.6%
Friends/colleagues	24	38.1%
Learnt about it in studies	17	27.0%
Read about it in newspaper/magazines	11	17.5%
From clients who have been treated	8	12.7%
Through the media	8	12.7%
GP told me	7	11.1%
Chiropractor friends	1	1.6%
Family	1	1.6%
Not sure	1	1.6%
Self study	1	1.6%

The most common way PTs had gained their knowledge of the profession was by being treated by a chiropractor (55.6%). Through friends and/or colleagues and through their studies were the next most common ways PTs gained their knowledge on the profession.

In this respect GPs seemed to gain their knowledge of the profession in a similar manner, with almost 60% obtaining their information from patients who were treated by a chiropractor and more than 30% from being treated by a chiropractor themselves and thus experienced being a patient (Louw, 2005). In contrast, SGCs seemed to gain their knowledge primarily through reading (35%) and then from being treated by a chiropractor at 27% (opposed to 55.6% of PTs). Only 6% had heard about chiropractic from their GP (Van As, 2005).

This information is valuable as it guides chiropractors that are interested in educating other professionals (particularly PTs) about the chiropractic profession as well as the manner of ensuring information transfer. This is very important in improving and correcting any errant perceptions about the chiropractic profession, which may be affecting attitudes towards the profession and therefore limiting the optimal care that could be achieved for the betterment of the health of the patients that are mutually addressed by all health care professionals.

4.7. Attitudes towards chiropractic

Table 30: Participants' view of chiropractic

	Frequency	Percent
Valuable role in the health care system	30	47.6
Effective for some patients	13	20.6
Not informed enough to comment	9	14.3
Never heard of it	4	6.3
Does more harm than good	3	4.8
Effective for muscle, nerve and joint	2	3.2
Prefer over other physical therapies	2	3.2
Total	63	100.0

As shown above (Table 30), the most frequent view or attitude towards chiropractic was that it had a valuable role in the health care system (47.6%). This is stated even in the face of low knowledge scores and thus it must be considered that the perception of the PT is based principally on the experiences they have had personally or experiences that have been relayed to them by their clientele.

Thus of those that responded that chiropractic was effective for some patients, 20.6%, and 14.3 % felt they were not informed enough to comment. Surprisingly four participants had never heard of chiropractic. There were only three negative views (4.8%).

Table 31: Responses to the question on whether participants would ever suggest their clients see a chiropractor

	Frequency	Percent
Yes	50	84.7
No	8	13.6
Maybe	1	1.7
Total	59	100.0

Of the 59 respondents who answered the question on whether they would ever suggest that their client see a chiropractor, 84.7% responded “yes” (Table 31). The four who responded previously that they had never heard of chiropractic did not answer this question, as it would be impossible for them to form such a decision based on their inability to formulate the chiropractic profession’s boundaries.

This finding concurs with the findings with respect to received and sent referrals from the PT to the chiropractor and vice versa (Table 21), where there was little difference in the accepted and sent referrals indicated by a lack of a significant p value.

On the contrary this response disagrees with the findings that most public perception of chiropractic (in Canada) is based on ignorance, bias and misinformation rather than fact; where chiropractic patients generally know little more about chiropractic than non- patients do (Kenneth Caplan and Associates, 1994).

Figure 23: Percentage of positive responses to conditions for which participants would suggest their clients see a chiropractor (n=59)

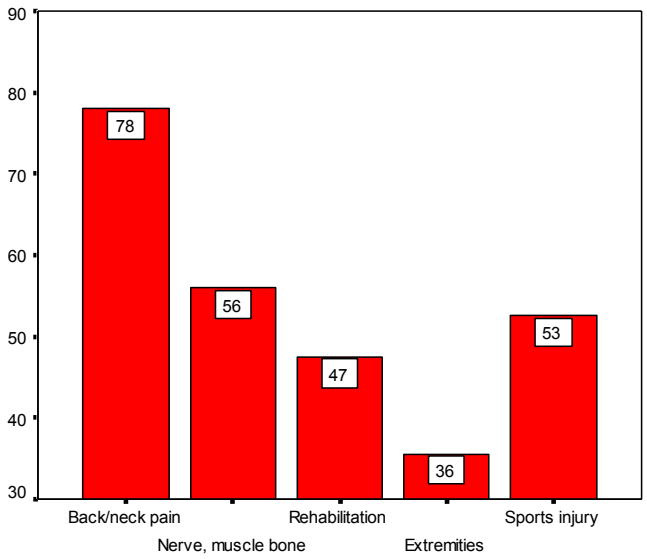


Figure 23 shows the conditions that they would suggest their clients see a chiropractor for. The most frequent response was back and neck pain, which concurs with the referral rates in respect of conditions sent to the chiropractor by the PT (Figure 9 and Table 8, and Figure 11 and Table 10 respectively).

Only 36% mentioned extremities, which concurs with the findings in Figure 15/Table 14.

This is in keeping with the results of Van As's study on SGCs perception of chiropractic in SA and to the findings of the WFC consultation of identity report (2005), where many believe that chiropractic health care is more commonly perceived by the general public to be for the management of neck and back pain (WFC, 2005).

These findings further support Staton et al. (1990) who found that the Australian public in general felt that GPs and physical therapists were better trained and more effective than chiropractors. The one exception was for back pain, where the GPs were seen as ineffective, but PT and chiropractors were seen as equally good. In New Zealand, the NZ Consumers' Institute (1997) found that consumers most commonly quoted chiropractors as being more knowledgeable about the spine than GPs and felt they helped where the GP/physiotherapist could not.

Thus it could be concluded that the most important roles for chiropractic, according to South African GPs, were those of referral and rehabilitation (Louw, 2005) and according to South African neurologists, neurosurgeons and orthopedic surgeons, those of supportive and rehabilitation (Rubens, 1996). This was contrary to the results in this study in which 47% of PTs considered chiropractic for rehabilitative treatment as opposed to 78% who would refer to chiropractic for back and neck pain treatment.

These results concerning the scope of Chiropractic practice reinforce the fact that there is a definite need for some kind of awareness drive on the part of the chiropractic profession to educate other professions as to what their profession is about.

4.7.1. Relationships between knowledge, practices and attitudes

Table 32: Comparison of mean knowledge score between attitude groups

	Response	N	Mean	Std. Deviation	Std. Error Mean	p value
Back/neck pain	yes	46	49.049	16.2295	2.3929	0.019*
	no	13	36.779	15.6850	4.3502	
Nerve, muscle or bone problems	yes	33	51.326	17.8841	3.1132	0.009*
	no	26	40.024	13.0210	2.5536	
Rehabilitation	yes	28	51.451	18.3302	3.4641	0.025*
	no	31	41.734	13.9882	2.5124	
Extremities	yes	21	51.190	17.7734	3.8785	0.100
	no	38	43.668	15.8095	2.5646	
Sports injury	yes	31	47.480	16.6227	2.9855	0.589
	no	28	45.089	17.1676	3.2444	

* statistically significant at 0.05 level

There was a significantly higher mean knowledge score in those PTs who indicated that they would suggest chiropractic treatment for clients for back and neck pain, nerve, muscle or bone problems, and rehabilitation, compared to those who indicated not. However, there was no significant difference between the knowledge scores of those who indicated “yes” or “no” for extremities and sports injuries. This does not however mean that the association is either good or bad, as the results are dependant on the total responses per section and thus the total number of respondents in the study. It is therefore suggested that these results are validated by means of a future analysis of the same sample group, but with a larger sample size (e.g. the whole of South Africa as opposed to Durban, which effectively only constitutes one metropolitan region within South Africa).

4.8. Conclusion

Only 30% of PTs received referrals from other health care workers; 11% of these were from chiropractors. An existing relationship existed between to whom PTs referred and from whom they received referrals with the relationship between chiropractors and PTs being consistent. PTs referred mostly to physiotherapists, with chiropractic ranking only fourth, and of those referrals to chiropractors, 79% were from females and 83% within the 1-5 years group of experience as a PT.

Mean knowledge score was low (46.3%) although those having been treated by a chiropractor and those having referred to a chiropractor before had significantly higher knowledge scores. Most PTs (55.6%) gained their knowledge through being treated by a chiropractor and 47.6% viewed chiropractic as having a valuable role in the health care system. Only three PTs had a negative view of chiropractic.

These results indicate that more interaction between the two professions would be valuable in increasing referrals between the two professions and in increasing what PTs know and perceive about chiropractic.

Discussion of the Hypotheses based on the conclusion

Therefore, with respect to the hypotheses made in Chapter One the following is applicable.

Hypothesis 1

- A low level of knowledge exists about the chiropractic profession amongst PTs in Durban.

- The Hypothesis one can be accepted based on evidence presented in the study.

Hypothesis 2

- A negative perception exists about the chiropractic profession amongst PTs in Durban.

- Hypothesis two must be rejected as this study did not significantly indicate that there is a negative perception amongst PTs in Durban, even though there was a low level of knowledge.

In support of the above acceptance and non acceptance of the hypotheses it is important to note that the internal constructs of the questionnaire used in this study were valid and reliable as determined by the focus group, as the constructs used to measure certain parameters (like back and neck pain) showed reliable and consistent trends irrespective of their position in the questionnaire or whether the responses required were negative or positive.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The knowledge and perceptions of chiropractic amongst PTs in Durban has been described in this study and has shed light on the limitations of such knowledge and perception. There is still a lack of awareness amongst PTs about the scope of practice within the chiropractic profession and there is a limited perception that chiropractors are back pain/neck (spinal) specialists. Chiropractic would be wise to improve public awareness by expounding upon what conditions it can treat, as gaps in public knowledge have translated into non-utilization. It follows that the more unclear the respondents' understanding of the professions' scope of treatment, the more likely they are to not identify a condition as one that can be treated by chiropractic. Although chiropractic is considered to be a viable means of treating certain disorders, there is still much confusion among PTs about the exact role of chiropractic in the health care system.

Nevertheless there is evidence to suggest that PTs knowledge of chiropractic improves if they have been treated by a chiropractor before, and this corresponds with the number of referrals between PTs and chiropractors.

This study provides useful information which could influence future referral and collaboration between PTs and chiropractors in the South African health care system and incidactes that although a milieu of co-operation exists, it can be enhabced by further communication and education of PTs regarding the role and function of a chiropractic practitioner.

5.2. Recommendations

1. The response rate was good, even though the sample size was small. Further studies should be done to assess the knowledge and perceptions of PTs in other regions within South Africa to give a better indication of the overall perceptions and knowledge of PTs nationally. The results from this study may not be representative of PTs countrywide. Factors such as geographical location and presence or absence of chiropractic training programmes would be two potential modifiers for a regional difference in the understanding of chiropractic.

2. In the survey certain questions were poorly answered possibly due to ambiguous or unclear explanations. In question 2.1 conditions were listed for which the PT had to indicate one practitioner they would see/refer to for the given condition. In some cases, more than one practitioner was marked. This could have been due to the fact that the PT felt certain practitioners were equally important in their roles, and could not be separated/excluded from the list. In addition mutlidiscplinary treatment may have been limited in the format in which the question was stated. PTs wishing to express a more holistic care for the client may have marked more then one provider, indicating that they should be assiting each other in the clients well-being.

   This would have have given an incorrect response to this question, since some PTs followed the instructions, while others appeared not to. This was the perception conveyed to the researcher in the manner in which the responses where noted.

3. In questions 3.9 and 3.10 of the questionnaire, it would have proven valuable to add in an extra option of ‘don’t know’ to the other ‘yes/no’ options (as in questin 3.8) to ascertain whether the PT knew if chiropractic

was covered by medical aid or had a profesional organizational body. The way in which these questions were stated may have led the PT to answer yes/no based on their ability to establish a response by virtue of accurate "guestimation" or a chance of probability (50:50). The accurate "guestiamtion" of a positive response could have been based on the fact that the researcher

a. came from an education insitution
b. was bound to PT understadning that the researcher was completeing her masters degree.

A negative response would have been more accurate with resepct to the PT actually not having any idea as to the response.

4. Another detracting aspect with resepct to the questionnaire was the fact that the blocks (for some questions (e.g. 2.1) were very close together, causing the PT possible visual confusion and possibly resulting in a block being erroneously marked. In a future study, revision of this question would be beneficial to gain the most accurate response.

5. Intervention programmemes to educate and increase awareness of chiropractic amongst PTs should take place. Talks on chiropractic could also be delivered to gyms and at various personal training institutes. More articles should be published in health and fitness magazines and newspapers, as these seem to be a common source of information to a wide variety of people. This would allow for improvement of the co-operative milieu between the professions. The success of such a programme should be measured through a similar means (as in this study) at a point several years after the educational drive has been completed.

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