CHIROPRACTIC PATIENTS IN SOUTH AFRICA:

A Demographic and Descriptive Profile

By

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DECLARATION

CHIROPRACTIC PATIENTS IN SOUTH AFRICA:
A Demographic and Descriptive Profile

A dissertation presented to the Faculty of Health, Durban University of Technology, in partial fulfilment of the requirements for the Masters Degree in Technology: Chiropractic.

By

Firdosh Mahomed

I, Firdosh Mahomed, do hereby declare that the following dissertation represents my own work, both in conception and execution.

Sign: _____ Date:_____

Approved for final submission

Supervisor: **Dr A Docrat (M.Tech: Chiropractic, CCFC (TN))**

Sign: _____ Date:_____

DEDICATION

This Master's thesis is not only a representation of my hard work over the years, but is a product of the culmination of the love, support, encouragement & motivation from my family.

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ABSTRACT

The purpose of this study was to establish a descriptive and diagnostic profile of the types of patients that present to private chiropractors in South Africa. This profile included patient demographics, particulars of the complaint history, the patient's knowledge of the chiropractic profession and the patient's diagnosis. Numerous studies that established a similar profile have been conducted in many other parts of the world, mainly in America and Europe. However, the diverse poulation of South Africa warrants the need for statistical and descriptive information pertaining specifically to the chiropractic patient base in South Africa.

Mail questionnaires were distributed to a random stratified sample of 89 chiropractors (i.e. 20% of the total number of registered chiropractors) in South Africa. Each participating chiropractor was given a practitioner questionnaire, along with 12 patient questionnaires, yielding a maximum of 1068 patient questionnaires. SPSS version 13.0 (SPSS Inc., Chicago, Illinios) was used to analyse the data. Descriptive analysis was undertaken for the majority of the analysis.

The average age of patients was 41.8 years; 62.8% of patients were female and 75.66% were White. Twenty three percent were liberal professionals; 36.54% earned between R10 000 and R29 000; 40.97% achieved a tertiary education and 81.9% were covered by Medical Aid. Eighteen percent were first-time patients; 25.6% presented with headache/neck pain; and 58% were chronic. Sixty percent had seen a general practitioner, while 16.4% had seen a physiotherapist, prior to the chiropractic consultation. The most frequently selected reason (53%) for visiting the chiropractor was "You previously responded well to chiropractic treatment and were satisfied with the treatment". Forty five percent were referred by relative/friend. Almost 60% of patients achieved a fair knowledge score. Cervical facet syndrome was the most common diagnosis (7.05%).

The mean age of practitioners was 34.2 years; 55% were female; whilst 90% were White. The only significant association ($p<0.001$) between practitioners and patients was race; patients tended to go to practitioners who were the same race as them.

The study conforms to the notion that many patients, after having had the standard forms of conservative treatment, present to chiropractors with complaints that have progressed to the chronic stage; and due to the chronicity of the complaints, these patients may have a worse prognosis. A possible reason for this could be the considerable lack of knowledge on the specific scope of chiropractic; even though the overall knowledge score was fair. The low referral rate from other health professionals, coupled with, the majority of patient complaints presenting within the chronic stage, has suggested that chiropractic is not an established profession in the South African healthcare system. However, the main limitation of the study was the low response rate (practitioner response rate of 22.47% and patient response rate of 18.63%). Therefore, the results cannot be assumed to be representative of the South African chiropractic patient population.

GLOSSARY

- **Demographic -** is a shorthand term for 'population characteristics', which are used primarily for statistical research. Demographics include race, age, income, educational attainment, home ownership, employment status, and even location (http://en.wikipedia.org/wiki/Demographics).

- **Descriptive -** involving or characterized by description; serving to describe (http://dictionary.reference.com/browse/descriptive).

- **Profile -** a set of characteristics or qualities that identify a type or category of person or object (http://dictionary.reference.com/browse/profile).

LIST OF APPENDICES

CHAPTER ONE

Introduction

1.1 Background to the Study

The “patient-centred care” approach is the core factor that distinguishes chiropractic as a unique form of alternative therapy, where the patient is regarded as a whole (Bolton, 2003). In the chiropractic profession, the patient is the main concern, and the restoration of health in the patient is the profession’s aim (Bolton, 2003).

In order for the chiropractic profession to constantly provide a “patient-centred care” approach, it is imperative that the profession understand the types of patients utilizing chiropractic care and their reasons for doing so. Many studies as such have been conducted in America and Europe (Gaumer & Gemmen, 2006; Coulter & Shekelle, 2005; Mootz et al. 2005; Hartvigsen et al. 2002; Suleman 2001; Rubinstein et al. 2000; Leboeuf-Yde et al. 1997 and Pedersen, 1994). However, little is known about the chiropractic patient profile in South Africa (SA).

A research study conducted by Drews (1995) was the last known study to produce statistics pertaining to the chiropractic patient population in SA. However, due to the changing population characteristics of the country, these statistics gained almost twelve years ago, are outdated.

This study concentrated on describing the demographic and descriptive profile of chiropractic patients in South Africa. The information collected was compared to various similar international studies (Gaumer & Gemmen (2006); Coulter & Shekelle (2005); Mootz et al. (2005); Hartvigsen et al. (2002); Suleman (2001); Rubinstein et al. (2000); Leboeuf-Yde et al. (1997) and Pedersen (1994)). All of these studies aimed to provide descriptive data on the chiropractic patients and their reasons for seeking chiropractic care.

The study conducted in the United States (Gaumer & Gemmen, 2006), found the majority of chiropractic patients to be female, with 37% of the sample aged between 35-50 years and predominantly of White ethnicity. The occurrence of neck complaints (27%) was found to be higher than lower back complaints (21%) (Gaumer & Gemmen, 2006).

A separate North American study (Coulter & Shekelle, 2005) showed that chiropractic patients were predominantly White, average age was 42 years, with a slight predominance of female patients. More than 70% of patients presented with musculoskeletal problems and 54% of patients presented within the chronic stage (Coulter & Shekelle, 2005).

Another study performed in Massachusetts and Arizona (Mootz et al. 2005), found that the mean age of patients was 45 years with 60% of patients being female. Eighty five percent of patients were self-referred and the most common complaints were back/neck symptoms, wellness care and headache. Eighteen percent of patients were receiving medical treatment concurrently (Mootz et al. 2005).

In Denmark, it was found that the majority of chiropractic patients were female, mean age was 42 years, with the commonest presenting complaint being low back pain (50%), followed by neck pain (15%), falling in the subacute or chronic categories (Hartvigsen et al. 2002).

The Canadian study (Suleman, 2001) found a majority of male patients, with an average age of 37.8 years. All patients presented with a neuromusculoskeletal complaint (Suleman, 2001).

A predominance of female patients, mainly with chronic (77%) spine-related complaints (86%), was found in the Netherlands study (Rubinstein et al. 2000).

The typical Swedish chiropractic patient was aged between 25-64 years and presented with low back pain and/or pain in the lower extremities (82%). About half of these patients presented within the acute stage (Leboeuf-Yde et al. 1997).

The European study (Pedersen, 1994) found a slight predominance of female patients, mean age was 40.8 years, with the majority of patients currently employed and who presented with musculoskeletal problems, almost 50% of these presented within the acute stage (Pedersen, 1994).

To construct an adequate and in-depth profile of the chiropractic patients of SA, the following broad categories were investigated: demographic information, a brief history of the patient's chief complaint, the patient's knowledge of the profession and the patient's

diagnosis. Basic practitioner demographics were included in this study to investigate if any trends/relationships between practitioner and patient demographics exist in SA.

1.2 Aims and Objectives of the Study

- To establish the profile of the typical patient presenting to private practice chiropractors in SA, in terms of the demographic data and the type and characteristics of the presenting complaint.
- To determine the knowledge levels of chiropractic patients on the scope of the chiropractic profession.
- To obtain the diagnosis of the patients presenting to private practice chiropractors in SA.
- To compare this primary data to existing data from similar international studies.

1.3 Rationale for the Study

By establishing the patient's demographic profile, types of complaints and the patient's knowledge on the scope of chiropractic, the profession will be better equipped in terms of:

- Promoting and marketing the profession in various sectors.
- Including other disenfranchised sectors.
- Determining the role of chiropractors in the South African health-care system.

By establishing the diagnoses of chiropractic patients in SA, the profession will be better equipped in terms of:

- Determining the most common conditions treated by chiropractors.
- Guiding further research on the common conditions.
- Empowering teaching institutions with this knowledge to adequately train the emerging chiropractors accordingly.
- Educating patients regarding the scope of chiropractic.

CHAPTER TWO

Literature Review

2.1 Introduction

Musculoskeletal disorders rank amongst the primary causes of activity limitation and short-term disability, whilst concurrently being the most prevalent cause of chronic conditions and long-term disability. The most costly types of health problems were found to be musculoskeletal disorders and injuries, which ranked second and third in economical studies (Suleman, 2001; Manga, 2000).

Complementary and alternative therapies (CAT) have been gaining popularity in recent times for the treatment and/or alleviation of musculoskeletal disorders (Cherkin et al. 2002; Menke, 2003). Chiropractic ranks highest in the utilization of CATs by patients (Menke 2003; Coulter et al. 2002).

In 1990, approximately one in three persons in the United States adult population used CAT providers (including chiropractic); and the number of visits made to CAT providers was found to be higher than those made to primary care medical doctors (Eisenberg et al. 1993). The frequency of use of CATs was greatest for back problems (36%), followed by anxiety (28%), headaches (27%) and chronic pain (26%) (Eisenberg et al. 1993). In 1997, chiropractic utilization had increased to 11% (Menke, 2003). In 1998, an estimated 12% of the US population had visited a chiropractor within the last 12 months (Gaumer & Gemmen, 2006). Approximately 33% of patients with back pain would eventually seek treatment from a chiropractor (Manga, 2000).

Contrary to the growing popularity of chiropractic, in traditionally first world countries, there is still relatively little known about the profession in many other parts of the world (Coulter & Shekelle, 2005; Coulter et al. 2002; Cherkin et al. 2002; Rubinstein et al. 2000), including South Africa. Most of the information available on the profession emanates from studies done in America and Europe (Leboeuf-Yde et al. 1997).

South Africa (SA) is a multiracial and multicultural country. In her article on chiropractic patients in Sweden, Leboeuf-Yde (1997) states that cultural and political differences may also have an effect on the patient-practitioner interaction in different countries,

which could result in practice-profile variation. A very important social epidemiological finding in SA is the unequal “distribution” of health and illness on the bases of race, socio-economic status or social class, gender and age (Popenoe, Cunningham & Boult, 1997:224). Thus, if the relationship between illness and these factors can be established, it would provide critical information in the formulation of public health programs (Popenoe, Cunningham & Boult, 1997:224).

A study conducted in United States, Canada and Australia (Hawk, Long & Boulanger, 2001), has depicted the limited range of conditions that chiropractors treat. The study found that nonmusculoskeletal complaints comprise only 10.3% overall of all the chief complaints recorded (Hawk, Long & Boulanger, 2001). In his article on the identity of chiropractic practice especially in Western Europe, Pedersen (1990) found that chiropractors often complain that the general public does not understand their scope of practice. This concurs with the findings by Coulter (2002), that patients predetermine what constitutes a ‘chiropractic type of problem’ due to their lack of understanding. Thus, many patients, after having had the standard forms of conservative treatment, present to chiropractors with chronic complaints, some of which fall out of their scope of practice (Rubinstein et al. 2000; Ernst & Pittler, 1999). Due to the chronicity of the complaints, these patients have a worse prognosis (Rubinstein et al. 2000).

Chiropractic should be a primary choice of healthcare for musculoskeletal disorders (Manga, 2000). However, chiropractic is considered as an option by many patients, only after allopathic treatment has failed to resolve the health problem (Manga, 2000). This may be due to patient ignorance or due to the increasing chronicity of the health problem which then compels patients to seek other alternative forms of healthcare, such as chiropractic. Hence, many patients present to chiropractors within the chronic stage. Therefore, by determining more information about chiropractic patients as a whole, it would aid the profession in educating the public and in marketing itself to make chiropractic accessible to all as a primary treatment for musculoskeletal disorders, thus limiting the chronicity of these disorders.

A study conducted in the United States (Gaumer & Gemmen, 2006), involved a nationwide telephone survey of randomly selected households including 400 adults who have used chiropractic services and 400 adults who have not. The data collected included demographics, self-assessed health status, health insurance, knowledge about

chiropractic, current approach to obtaining primary care and satisfaction with previous care received from chiropractors and medical doctors. Another section included in the study was the patient's willingness to consider the use of a CAT provider as a primary care provider. Amongst the 69% of prior chiropractic users who would/might be willing to have a CAT provider as a primary care provider, about 17.5% chose a chiropractor for this role as their first choice. This study also determined that prior users of chiropractic care were less satisfied with the general quality of health care services (Gaumer & Gemmen, 2006). (See tables 1 – 6 for results of this study).

A North American study (Coulter & Shekelle, 2005) provided descriptive data on chiropractors and their patients at 6 sites in North America (5 in the United States, 1 in Canada). The study used random sampling procedures for practitioners and systematic sampling for patients. The data collected included the practice and practitioner demographics. Patient information included demographics, history of chiropractic use, current health problem, details on the current visit, health insurance, previous care and health beliefs. Another section included in the questionnaire was the general health status of the chiropractic patients, the results of which was compared to two other patient groups; patients in the same age/gender group with no abnormalities and sciatica patients presenting to surgeons. Chiropractic patients had scores midway between the two groups, except for mental health status, which was worse than the sciatica group. Patient satisfaction was also investigated using a scale of 1 to 10, where 1 represented not confident at all about the treatment and 10 represented very confident. Forty two percent of patients had rated the treatment as a 10, whilst 78% had rated it as an 8 (Coulter & Shekelle, 2005). (See tables 1 – 5, 7 – 9 & 11 – 13 for results of this study).

Another study performed in Massachusetts and Arizona (Mootz et al. 2005), conducted telephone surveys of practitioners and then recruited them to collect data on 20 consecutive patient visits. A total of 104 practitioners in Arizona (response rate of 61%) and 101 in Massachusetts (response rate of 86%) participated. Data was collected, by questionnaires, from 1201 patient visits in Arizona and 1349 in Massachusetts. Data collection methods were modeled on the National Ambulatory Medical Care Survey (NAMCS), which included collection of data immediately after the patient visit. This minimized patient/practitioner recall errors. A limitation noted in this study was that no exclusion was made for the patient who was seen more than once within the

consecutive 20 patient visits. Thus data from the same patient could have been collected again (Mootz et al. 2005). (See tables 1 – 3, 5 – 7 & 9 – 13 for results of this study).

A Danish study, (Hartvigsen et al. 2002) comprised a survey questionnaire administered to all new patients that presented to chiropractic clinics within Denmark, during one randomly assigned week. A total of 176 chiropractic clinics (response rate of 88%) participated in this study, and 1897 patient questionnaires (response rate of 94%) were collected. Data collected included patient age/gender, location/duration/intensity of the pain, limitation of activities of daily living, absence from work, previous treatment and mode of referral. A limitation noted in this study was that the use of a pain drawing diagram and open-ended questions resulted in a fairly large percentage of confusing or misleading answers e.g. patients filled out the whole pain drawing diagram which made it impossible to determine the chief complaint (Hartvigsen et al. 2002). (See tables 1, 2 & 7 – 10 for results of this study).

A Canadian study (Suleman, 2001), investigated the utilization of chiropractic services in the low-income class, by retrospectively examining the demographics of chiropractic patients at the Calgary Urban Project Society (CUPS) Health Clinic. CUPS is a non-profit institution, which, amongst other things, provides a health clinic to the low-income class and the homeless. Chiropractors offer a voluntary service at this institute. Data was collected retrospectively on a total of 183 patients and 988 treatment sessions. The limitation of retrospective studies is that the patient files/forms used may not have all the information required for the study e.g. in this study, 66% of patients did not report on their occupation (Suleman, 2001). (See tables 1, 2, 4 & 7 for results of this study).

In a study conducted in the Netherlands (Rubinstein et al. 2000), a retrospective-type questionnaire was used on ten consecutive new patients per participating chiropractor. A total of 94 practitioners (response rate of 78%) participated and 833 patient questionnaires (response rate of 89%) were analyzed. Due to the high response rate achieved, the results produced from the study were regarded as representative of the chiropractic population. The patient questionnaire included demographic information, history of the chief complaint and treatment expectations. An important section regarding the number of working days lost due to the chief complaint was also included. Thirty eight percent of patients with a neuromusculoskeletal complaint were unable to

work at one time in their lives due to the chief complaint (Rubinstein et al. 2000). (See tables 1, 2, 4 & 7 - 10 for results of this study).

In a Swedish study (Leboeuf-Yde et al. 1997), each participating chiropractor interviewed ten consecutive patients (new patients or patients with new complaints) using a standardized questionnaire. Patients were then followed for a maximum of six repeat visits, where possible. Sixty six chiropractors had participated (response rate of 78%), and data was collected on 625 patients and 1858 consultations. Most participating patients returned for one or two visits. The beneficial aspect of this data collection method was that repeat patients were questioned about any possible side-effects experienced after the previous treatment. Eleven patients who presented with dizziness/vertigo had received manipulation of the cervical spine. However, no side-effects were reported later (Leboeuf-Yde et al. 1997). (See tables 1, 2, 6 – 8 & 11 for results of this study).

The European study (Pedersen, 1994) used a postal questionnaire involving all registered chiropractors in Europe. A total of 715 practitioners (response rate of 55.4%) participated in this study. Each practitioner completed a questionnaire on their sociodemographic factors, practice setting and their use of radiological and laboratory investigations. The practitioners also completed case forms for 15 consecutive new patients, which included sociodemographic factors of the patient and the presenting complaint. Additional information, on diagnosis, treatment and management procedures utilized, were collected by the practitioner for all repeat visits within a month after the initial consult. Hence, all information gathered was completed by the practitioner, at the time of the consult. This ruled out patient error, as well as practitioner recall errors. The number of patient data forms collected was 1014 (response rate of 28%) (Pedersen, 1994). (See tables 1, 2, 4 & 7 – 13 for results of this study).

After reviewing all of the related literature, this study investigated the chiropractic patient according to the following variables; demographic factors, complaint history, patient knowledge of the chiropractic profession and the patient diagnosis. This study also investigated the participating chiropractors according to the following variables; practitioner demographics, length of time in practice and geographical location of the practice.

2.2 Patient Profile

2.2.1 Demographic Factors

In this study, demographic factors of patients were investigated for two reasons. Primarily, this information provides the demographic profile of the types of patients who utilize chiropractic services and are thus aware of the chiropractic profession. Therefore, specific sectors of the public who do not fit this demographic profile can then be targeted and educated about the chiropractic profession and its benefits.

The demographic factors of patients included; gender, age, ethnicity, marital status, occupation, socioeconomic status, level of education and Medical Aid membership.

2.2.1.1 Gender

It has been shown that females experience an increased prevalence of many illnesses and utilize health services more often than males do, even with maternity care excluded from these statistics (Popenoe, Cunningham & Boult, 1997:226; Schaefer & Lamm, 1998:491). It has been suggested that females are more willing than males to identify signs of illness and to seek treatment for it (Popenoe, Cunningham & Boult, 1997:226; Schaefer & Lamm, 1998:492). Thus, by default, the illnesses of more females will be evident in the data examined by epidemiologists (Schaefer & Lamm, 1998:492). Factors that may contribute to an increased frequency of musculoskeletal conditions amongst females are anatomical differences, such as a wider pelvis, increased valgus angulation of the knee and increased foot pronation, as well as physiological differences, such as hormonal effects on connective tissues and decreased total muscle cross-sectional area (McClure, Adams & Dahm, 2005).

Other Studies	Results of Gender Demographics
Gaumer & Gemmen (2006)	65% female & 35% male (sample group that have visited a chiropractor) 56.5% female & 43.5% male (sample group that never visited a chiropractor)
Coulter & Shekelle (2005)	61% female, 38% male
Mootz et al. (2005)	58% female & 42% male (Arizona sample) 57% female & 43 % male (Massachusetts sample)
Hartvigsen et al. (2002)	51.5% female, 48.5% male
Suleman (2001)	33% female, 67% male
Rubinstein et al. (2000)	60% female, 40% male
Leboeuf-Yde et al. (1997)	an equal number of female and male patients in group sample
Pedersen (1994)	53.8% female, 46.2% male

Table 1 : Gender Ratios found in other studies

It is evident from Table 1 that female patients were found to be the majority of the patient sample in most other studies.

2.2.1.2 Age

Musculoskeletal disability is associated with increasing age (Suleman, 2001). The older age group in the United States utilize health services more often than the younger age group (Schaefer & Lamm, 1998:492). In the United States, the majority of the older age group experience at least one chronic illness (Schaefer & Lamm, 1998:492). Almost half of the older age group experience arthritis (Schaefer & Lamm, 1998:492). In contradiction, Manga (2000), states in his article, on the integration of chiropractic services into the health care system, that the elderly use chiropractic services less than the non-elderly group. This may be due to lack of knowledge of the chiropractic profession. In the younger age groups, occupational and lifestyle stresses may be the more causative factors of chronic pain experienced.

Other Studies	Results of Age Demographics
Gaumer & Gemmen (2006)	37% were aged between 35-50 (sample group that have visited a chiropractor). 27.5% were aged between 35-50 (sample group that never visited a chiropractor)
Coulter & Shekelle (2005)	average age was 42
Mootz et al. (2005)	mean age was 45
Hartvigsen et al. (2002)	average age was 42
Suleman (2001)	average age was 37.8
Rubinstein et al. (2000)	mean and median age was 41
Leboeuf-Yde et al. (1997)	between 25-64
Pedersen (1994)	mean age was 40.8

Table 2 : Age Ratios found in other studies

Table 2 highlights the average age of patients as being close to or just over 40 years old.

2.2.1.3 Ethnicity

Both racial and socioeconomic categories should be investigated when conducting statistical research (Popenoe, Cunningham & Boult, 1997:225). Ethnic minorities are less likely to utilize chiropractic services (Manga, 2000).

Other Studies	Results of Ethnicity Demographics
Gaumer & Gemmen (2006)	93.5 % White, 2.3% African American, 1.8% Hispanic, 0.8% Asian & 0.8% Other (sample group that have visited a chiropractor). 88.3 % White, 7.8% African American, 2.0% Hispanic, 0.5% Asian & 0.8% Other (sample group that never visited a chiropractor).
Coulter & Shekelle (2005)	82.5% White, 3.9% Black, 6.4% Hispanic & 7.1% Other.
Mootz et al. (2005)	93% White, 4% Native American, 2% African American, 11% Hispanic & 1% Asian/Pacific Islander (Arizona sample). 95% White, 3% African American, 5% Hispanic & 2% Asian/Pacific Islander (Massachusetts sample).

Table 3 : Ethnicity Ratios found in other studies

Table 3 depicts the majority of patients as being of White ethnicity.

2.2.1.4 Education, Occupation and Socioeconomic Status

The population of the lower class has shown to have an increased prevalence of illnesses (Schaefer & Lamm, 1998:489). Those categories of society that suffer the most musculoskeletal disability tend to be the lower income groups (Suleman, 2001). There are many reasons for this; limited access to health care by the lower class, poor education leading to lack of knowledge of preventative measures and increased occupational hazards of the working and lower class populations (Schaefer & Lamm, 1998:489). On the contrary though, the lower and middle class population groups were found to be low users of chiropractic, due to the high co-payments or user fees (Manga, 2000). (See Table 4).

Other Studies	Results of Level of Education	Results of Occupations/Professions
Gaumer & Gemmen (2006)	36% of patients were High School Graduates (sample group that have visited a chiropractor). 37% of patients were High School Graduates (sample group that never visited a chiropractor).	18.8% Retired, 8% Manufacturing, 8.5% Retail/Wholesale & 8.8% Healthcare (sample group that have visited a chiropractor). 26.3% Retired, 9.3% Manufacturing, 8.3% Retail/Wholesale & 7.8% Healthcare (sample group that never visited a chiropractor).
Coulter & Shekelle (2005)	46% of patients obtained a degree.	Not investigated
Suleman (2001)	Not investigated	14% Labourers, 4% Students, 3% Unemployed & 66% not reported.
Rubinstein et al. (2000)	37 % of patients completed secondary (vocational) training.	30% Skilled Labourers or Lower-Class Personnel, 23% Middle-Class Personnel, 10% Higher-Class Personnel & 18% Housewives.
Pedersen (1994)	Not investigated	44.5% Employed full-time, 14.1% Self-Employed, 11.6% Housewives, 7.5% Retired & 5.2% Students.

Table 4 : Results of Education Levels & Occupations/Professions found in other studies

Table 4 indicates that the majority of patients had been high school graduates or obtained a degree.

2.2.1.5 Medical Aid Membership

As an extension of socioeconomic status of the patients, information on whether the patient was part of a Medical Aid scheme, and whether their Medical Aid scheme covered chiropractic services, was requested. Most Medical Aids in South Africa do cover the costs of chiropractic care (Chiropractic Association of South Africa. 2006/2007). It has been shown that the co-payments for chiropractic care have been

increasing (Manga, 2000). Despite this, the utilization of chiropractic care has increased. This proves that the public opted for chiropractic care, irrespective of the co-payments required of them. Thus, if the co-payment rate decreases, a surge in chiropractic utilization by the public can be expected, especially for musculoskeletal complaints (Manga, 2000).

Other Studies	Results of Expected Sources of Payment/ Healthcare Insurance
Gaumer & Gemmen (2006)	30.5% Health Maintenance Organizations or Managed Care Plan & 5.5% No Health Insurance (sample group that have visited a chiropractor). 26.3% Health Maintenance Organizations or Managed Care Plan & 6.5% No Health Insurance (sample group that never visited a chiropractor).
Coulter & Shekelle (2005)	37% of US patients - the visits were not covered by any insurance. 5% of US patients – less than 50% of the cost was covered. 21% of US patients – coverage was greater than 50%, but not completely covered. 22% of US patients – insurance covered all the costs.
Mootz et al. (2005)	26% Private Insurance & 40% Self-pay (Arizona sample). 37% Private Insurance & 31% Self-pay (Massachusetts sample).

Table 5 : Results of Expected Sources of Payment/Healthcare Insurance found in other studies

Table 5 shows that many patients who had visited chiropractors had no health insurance or were not covered completely by their health insurance for chiropractic services.

2.2.2 Complaint History

In this study, the complaint history of the patients was investigated for several reasons. By determining the common complaints of patients, the chiropractic profession would be able to enhance patient education, direct researchers to concentrate on these problem areas and improve the education of chiropractic, if required (Bryant, Atkins & Bull, 2003). Another potential benefit of this knowledge was to determine whether any specific complaints were common amongst the South African chiropractic patient population individually.

Several factors related to the complaint history of first time and repeat patients were investigated. Patients were asked to provide information on their visit to the chiropractor, and whether this was their first/repeat visit to the chiropractor. Factors related to the main complaint, such as, anatomical location, duration and previous consultation of other health professionals for the main complaint, were included. Patients were also asked about the factors that influenced their current chiropractic visit. Method of referral of patients to the chiropractor was also included.

Factors related to the complaint history of repeat patients specifically, were included. These were; repeat sessions to this chiropractor for the same complaint and the time period over which these occurred, previous investigations that were conducted by the current chiropractor for the same complaint and other areas of the body that were treated by the current chiropractor previously.

2.2.2.1 Initial Visit to a Chiropractor Ever

This factor will allow for a distinction between the participants that were first-time patients to a chiropractor and those who were repeat patients. On this base, demographic profiles of the two groups can be constructed and differences analysed. (See Table 6).

Other Studies	Results of First-time/Repeat Visits
Gaumer & Gemmen (2006)	22.7% of the sample population had visited a chiropractor before, whilst 77.3% had not (United States)
Mootz et al. (2005)	81% of visits were by repeat patients (Arizona sample). 89% of visits were by repeat patients (Massachusetts sample).
Leboeuf-Yde et al. (1997)	51% were first-time patients presenting to chiropractors (Sweden)

Table 6 : Results of First-time/Repeat Visits found in other studies

It is apparent from Table 6 that the frequency of first-time and repeat patients very much differ in the studies conducted in different geographical areas.

2.2.2.2 Anatomical Location and Duration of the Main Complaint

Knowledge of the location of the main complaint of chiropractic patients will produce much needed statistics pertaining to chiropractic and its South African patient population. (See Table 7).

Other Studies	Results of the Location of the Main Complaint
Coulter & Shekelle (2005)	27% Neck/Cervical problems, 22% Low Back problems, 21% Back/Spine problems and 13% Extremities
Mootz et al. (2005)	41% Low Back Pain, 26% Neck/Face pain/injury, 9% Extremity, 6% Headache & 4% Wellness (Arizona sample) 44% Low Back Pain, 23% Neck/Face pain/injury, 4% Extremity, 5% Headache & 10% Wellness (Massachusetts sample)
Hartvigsen et al. (2002)	Almost half of all patients complained of low back pain
Suleman (2001)	All patients presented with a neuromusculoskeletal complaint
Rubinstein et al. (2000)	47% Low Back, 19% Neck, 7% Headache, 3% Thoracic, 3% Neck & Headache, 2% Lower Extremities, 1% Upper Extremities & 15% Multiple Areas of Complaint
Leboeuf-Yde et al. (1997)	56% Complaint Locally in the Spine (Back/Neck), 20% Local in the Spine & Radiating, 14% Several Areas of Complaint & 7% Only Peripherally Radiating Pain (incl. Headache) but not Locally in the Spine
Pedersen (1994)	51.8% Low Back-Leg, 28.5% Headaches/Neck-Arm, 7.3% Thoracic/Chest, 4.4% Lower Extremity & 3.8% Upper Extremity

Table 7 : Results of the Location of the Main Complaint found in other studies

Table 7 concurs that the majority of complaints were located in the lower back or head/neck areas.

The duration of the main complaint would represent the degree of awareness, amongst the public, of the chiropractic benefit for that particular complaint. (See Table 8).

Other Studies	Results of the Duration of the Main Complaint
Coulter & Shekelle (2005)	45% less than 3 weeks & 21% more than 6 months
Hartvigsen et al. (2002)	For more than half of the participants, duration was between 1 and 6 months
Rubinstein et al. (2000)	Greater than 77% of all neuromusculoskeletal complaints were over 3 months duration
Leboeuf-Yde et al. (1997)	For almost half of the participants, duration was less than 1 month
Pedersen (1994)	46.8% Acute (less than 4 weeks), 25.1% Sub-acute (4 weeks to 6 months) & 28.1% Chronic (more than 6 months)

Table 8 : Results of the Duration of the Main Complaint found in other studies

Table 8 reveals that most patients presented within the acute stage.

2.2.2.3 Previous Consultations with Other Health Professionals

Questions related to the first health professional consulted for the main complaint and each health professional consulted thereafter, prior to the chiropractic consultation, were included in the questionnaire. Knowledge of these factors will aid the profession in determining the relative level of chiropractic in the South African health-care system. The increased prevalence of CATs, propels their integration into the heath-care systems (Ernst & Pittler, 1999). (See Table 9).

Other Studies	Results of Previous Consultations with Other Health Professionals
Coulter & Shekelle (2005)	58% of patients consulted the chiropractor initially for the main complaint, 3% had prior surgery, 20% had medical care & 18% had physical therapy. The study concluded that chiropractors in North America have established themselves within the healthcare system.
Mootz et al. (2005)	17% (Arizona sample) & 18% (Massachusetts sample) of patients were receiving medical treatment for the same complaint.
Hartvigsen et al. (2002)	55% of patients consulted a chiropractor previously, 26% consulted a general practitioner (GP) and 14% consulted a physiotherapist. The study concluded that chiropractors in Denmark were fairly well integrated in their health-care system.
Rubinstein et al. (2000)	75% of patients had experienced prior conservative care for the main complaint. More than 87% had consulted a GP, 19% had consulted a neurologist, 11% had consulted an orthopaedist & 4% had consulted a neurosurgeon. The study concluded that chiropractors are not an established part of the referral system in the Netherlands.
Pedersen (1994)	70.9% of patients had received prior conservative treatment for the main complaint, before consulting the chiropractor.

Table 9 : Results of Previous Consultations with Other Health Professionals found in other studies

Table 9 indicates that most patients had received treatment from another health professional.

2.2.2.4 Factors that Influenced the Patient's Current Chiropractic Visit

This knowledge will give the profession some indication as to why the patient has chosen to visit the current chiropractor, other than the main complaint mentioned

previously. These factors pertain more to the reason responsible for the patient opting for chiropractic treatment. A list of reasons was included in the questionnaire, and these reasons pertained to first-time and repeat patients. The list included: the patient's prior consultations with other health professionals did not resolve the problem; the patient was disappointed with the results of the previous treatment by the other health professionals; the patient felt he/she had not consulted the right practitioner for their problem; the patient recently became knowledgeable of chiropractic; the patient heard of another patient's successful recovery with chiropractic treatment; and the patient previously responded well to chiropractic treatment and was satisfied with the treatment.

In the American study (Gaumer & Gemmen, 2006), 34.3% of patients, who had visited a chiropractor, were significantly disappointed with prior consults of other health professionals.

2.2.2.5 Mode of Referral

This information is vital in terms of determining the proportion of self-referrals, as compared to referrals by friends/relatives or by other health professionals. In the North American study (Coulter & Shekelle, 2005), it was found that 90% of patients would recommend chiropractic treatment to their friends and family. In SA, 46% of the participating GPs had referred patients to chiropractors (Louw, 2005).

Other Studies	Results of Mode of Referral
Mootz et al. (2005)	Approximately 85% of patients (Arizona & Massachusetts) were self-referred, approximately 6% were from medical referrals & approximately 4% were referred from other chiropractors.
Hartvigsen et al. (2002)	49% of referred patients were by GPs, 31% by friends/family & 7% by physiotherapist/reflexologist.
Rubinstein et al. (2000)	71% were referred by friends/family, 17% by GPs, 10% by physical therapist/homoeopath, 6% by advertising, 2% by specialist & 8% by self-initiative.
Pedersen (1994)	48.2% of patients were referred by friends/family, 18.3% by other patients, 12.3% by GPs & 12.5% by advertising.

Table 10 : Results of Mode of Referral found in other studies

It is evident from Table 10 that chiropractors in Denmark were fairly well integrated in their health-care system, as 49% of referred patients were referred by GPs (Hartvigsen et al. 2002).

2.2.2.6 Repeat Visits to the Same Chiropractor for the Main Complaint and the Time Period over which these occurred

This factor will give the profession an indication as to the number of patients, especially with chronic conditions, that follow-up on treatment from the same chiropractor and the time period over which these occur. Being knowledgeable of the follow-up rate, will allow the profession to take the necessary measures to improve it, if required. In the North American study (Coulter & Shekelle (2005), it was found that 93% of patients were sure that they would return for a repeat visit.

Other Studies	Results of Repeat Visits & the Time Period over which they Occurred
Coulter & Shekelle (2005)	Over a period of 30 days, 39% of patients had seen the chiropractor 2-5 times, 21% 6-10 times, 21% 1 time, and 17% had seen the chiropractor more than 11 times. 34% of patients had been seeing their chiropractor for 1-6 months, 26% for 7-24 months & 34% for more than 24 months.
Mootz et al. (2005)	80% of the patient visits concluded with a repeat session scheduled.
Leboeuf-Yde. et al. (1997)	2-3 repeat treatments were noted and this was attributed to the fact that Swedish chiropractic fees are higher and patients pay a large portion of the consultation fees themselves.
Pedersen (1994)	Within the first 30 days, the mean number of patient visits was 5.

Table 11 : Results of Repeat Visits & the Time Period over which they Occurred found in other studies

Table 11 reveals that most patients were compliant by attending follow-up sessions.

2.2.2.7 Previous Investigations Requested/Performed by the Same Chiropractor for the Main Complaint

This factor would be interesting to note if many chiropractors performed or requested investigations before a diagnosis was made. Several conditions treated by chiropractors require chiefly a clinical diagnosis and not a laboratory/radiological diagnosis.

Other Studies	Results of Previous Investigations Conducted by the Same Chiropractor for the Main Complaint
Coulter & Shekelle (2005)	6% of patients had X-rays taken.
Mootz et al. (2005)	17% (Arizona sample) & 6% (Massachusetts sample) of patient visits involved the use of X-rays, whilst less than 2% involved the use of special studies, including MRI.
Pedersen (1994)	X-rays were used on 35.9% of patients, whilst laboratory tests (mainly urine dipstick analysis) were used on 74.6% of patients.

Table 12 : Results of Previous Investigations Requested/Conducted by the Same Chiropractor for the Main Complaint found in other studies

Table 12 indicates that the most common investigations requested/conducted by the chiropractor were X-rays or urine dipstick tests.

2.2.2.8 Other Areas of the Body Treated by the Chiropractor Previously

This factor was investigated to ascertain whether many patients experience and seek treatment for many different areas of pain.

2.3. Patient's Knowledge of the Chiropractic Profession

Investigation into the patient's knowledge of the chiropractic profession will reveal the patient's understanding of the scope of the profession and the capability of its practitioners. The American study, (Gaumer & Gemmen, 2006), found a significant lack of knowledge of the scope of practice of chiropractors, which was more evident amongst the sample group that had never visited a chiropractor. Previous chiropractic patients view the chiropractor as a provider of appropriate advice for routine problems

and for staying healthy, capable of diagnosing conditions and referring to relevant specialists (Gaumer & Gemmen, 2006).

2.4 Patient Diagnosis

Knowledge of the common diagnoses of chiropractic patients will produce much needed statistics pertaining to chiropractic and its South African patient population.

2.5 Practitioner Profile

A brief questionnaire was provided to practitioners to attain a basic description of the chiropractors practicing in SA.

2.5.1 Demographic Factors

The demographic factors of the practitioners investigated were gender, age and race.

Other Studies	Results of the Demographic Factors of the Participating Chiropractors
Coulter & Shekelle (2005)	83% of the participating chiropractors were male, mean age 40.6 years and 94% of White ethnicity.
Mootz et al. (2005)	81% (Arizona sample) & 70% (Massachusetts sample) of the participating chiropractors were male, mean age low-mid 40s and 95% (Arizona sample) & 99% (Massachusetts sample) of the sample were of White ethnicity.
Pedersen (1994)	Majority of the practitioner sample was male & the mean age of participating practitioners was 37.2.

Table 13 : Results of the Demographic Factors of the Participating Chiropractors found in other studies

Table 13 clearly describes the practitioner profile as male, of White ethnicity and close to 40 years old.

2.5.2 Length of time in practice

The study conducted in Arizona and Massachusetts (Mootz et al. 2005), reported a median of 11.7 years and 12.9 years in practice respectively. The North American study (Coulter & Shekelle, 2005), reported 40% of participating practitioners as being in active practice for 6-10 years; 34% for 11-15 years and 14% longer than 16 years.

2.5.3 Geographical location of the practice

This factor was included to determine any correlation between the geographical location of the practice and the types of patients it attracted. The categories given in this question were: central business district, residential area and rural area.

CHAPTER THREE

Methodology

3.1 Study Design

This study involved a demographic/epidemiological quantitative design utilising a questionnaire that was developed and validated by the researcher.

3.2 Research Tool

After a comprehensive search and review of the related literature and previous similar studies conducted in other parts of the world, the practitioner and patient questionnaires were developed by the researcher, with the aid of the research supervisor. This questionnaire was critiqued in a focus group, which included 2 chiropractors, 3 chiropractic patients, 1 chiropractic student, a statistician, the researcher and the research supervisor. Each focus group member was given; a letter of information (See Appendix F), an informed consent form (See Appendix G), a letter of confidentiality (See Appendix H), a code of conduct (See Appendix I) and an evaluation sheet (See Appendix J).

The focus group members were then given the questionnaire, and were requested to constructively critique the questionnaire. A pilot study was conducted thereafter. Two chiropractors were requested to participate. Each received twelve patient questionnaires.

All comments, criticisms and suggestions received from the participants of the focus group and pilot study were considered before the questionnaire was refined and finalised.

The practitioner questionnaire (See Appendix A) comprised of 7 questions and focused on:

- basic practitioner demographics
- length of time in practice
- geographical location of the practice

The patient questionnaire (See Appendix B) consisted of 4 sections:

- Section 1 (9 questions) concentrated on the patient's demographics
- Section 2/3 (14 questions) focused on the patient's complaint history
- Section 4 (15 questions) tested the patient's knowledge on the scope of the chiropractic profession
- Section 5 was allowed for the patient's diagnosis to be furnished by the practitioner

3.3 Sampling Procedure

Of the 445 chiropractors registered with the Allied Health Professions Council of South Africa, it was found that 48 members were practicing in a foreign country. Therefore, 20% of a total of 397 chiropractors registered with the AHPCSA were sampled. Stratified sampling, according to the geographical distribution of chiropractors in South Africa, was employed in this study (See Table 14). The sample was proportional to the size of the population of registered chiropractors in each province. This allowed for a broad practitioner and patient sample.

PROVINCES OF SOUTH AFRICA	NUMBER OF REGISTERED CHIROPRACTORS	NUMBER OF SAMPLED CHIROPRACTORS
Gauteng	151	34
Kwa-zulu Natal	111	25
Western Cape	80	18
Eastern Cape	36	8
Mpumalanga	7	1
Limpopo	6	1
Free State	4	1
North West Province	2	1
Northern Cape	0	0
Total	**397**	**89**

Table 14 : Stratified Sampling of the Chiropractors in South Africa

Each participating chiropractor received the following by mail :

- a letter of information (See Appendix C) and a consent form (See Appendix G)
- a practitioner questionnaire (See Appendix A) focusing on basic practitioner demographics
- a letter of information for the receptionist (See Appendix D)
- a set of twelve patient questionnaires (See Appendix B), each with a letter of information (See Appendix E) and a consent form (See Appendix G) attached
- a self addressed stamped envelope

3.4 Randomization

Receptionists were requested to randomly sample twelve patients over twelve consecutive working days. The random sample was attained by employing a Microsoft Excel program, which was designed by the statistician. This program was e-mailed to the participating practitioners. The receptionist needed to enter the number of patient appointments, for that particular day, into the program. The program would then automatically generate a random number that was less than or equal to the number of patient appointments. This procedure needed to be employed daily over the consecutive twelve day period, to yield a randomly selected patient.

Exceptions to this rule were made under the following circumstances:

- if the selected patient was not willing to participate in the study
- if the selected patient did not fulfil the inclusion criteria
- if the selected patient did not arrive for the appointment

Under these circumstances, the next patient was requested to participate (i.e. the patient whose appointment was immediately after the selected patient). However, if the selected patient was the last patient appointment for that day, the first patient booked for the following day was requested to participate. Hence, in this situation, two questionnaires were administered on one day.

3.5 Inclusion/Exclusion Criteria

Inclusion criteria for the practitioners were as follows:

- the practitioner needed to be a registered member of the Allied Health Professions Council of South Africa
- the practitioner needed to be actively practicing chiropractic at the time
- the practitioner should not possess a qualification in medicine or any other alternative health therapy (e.g. homoeopathy, reflexology, aromatherapy), and the practitioner should not be practising a modality for which he/she was not registered

Inclusion criteria for the patients were as follows:

- the patient needed to be a South African citizen
- the patient needed to be literate in the English language as the questionnaires were printed in English
- the patient needed to be willing to disclose their diagnoses
- if the patient was a minor, a parent/guardian was required to complete the consent form & questionnaire, should they agree to participate

Exclusion criteria for the practitioners and patients were as follows:

- any practitioner or patient who did not meet the inclusion criteria were excluded

A time period of two months (from the date of postage) was granted to accommodate the practitioners to complete and return the questionnaires. However, a time extension was then granted after many of the participants could not accomodate the deadline.

3.6 Confidentiality

The questionnaires were received by a neutral party, who then separated the identifying consent forms from the questionnaires. A coding system was used for each of the questionnaires. No names were revealed in the publication of the results.

3.7 Statistical Methods

SPSS version 13.0 (SPSS Inc., Chicago, Illinios) was used to analyse the data. Descriptive analysis was undertaken for the majority of the analysis. Categorical variables were summarized using frequency tables and bar charts reporting percentages in each category. Quantitative variables were summarized using mean, standard deviation and range.

Comparisons between groups were achieved with Pearson's chi square tests in the case of categorical outcomes, t-tests or ANOVA for quantitative outcomes, or Kruskal-Wallis tests for non normally distributed outcomes. A p value of <0.05 was considered as statistically significant.

CHAPTER FOUR
Results

4.1 Response Rates

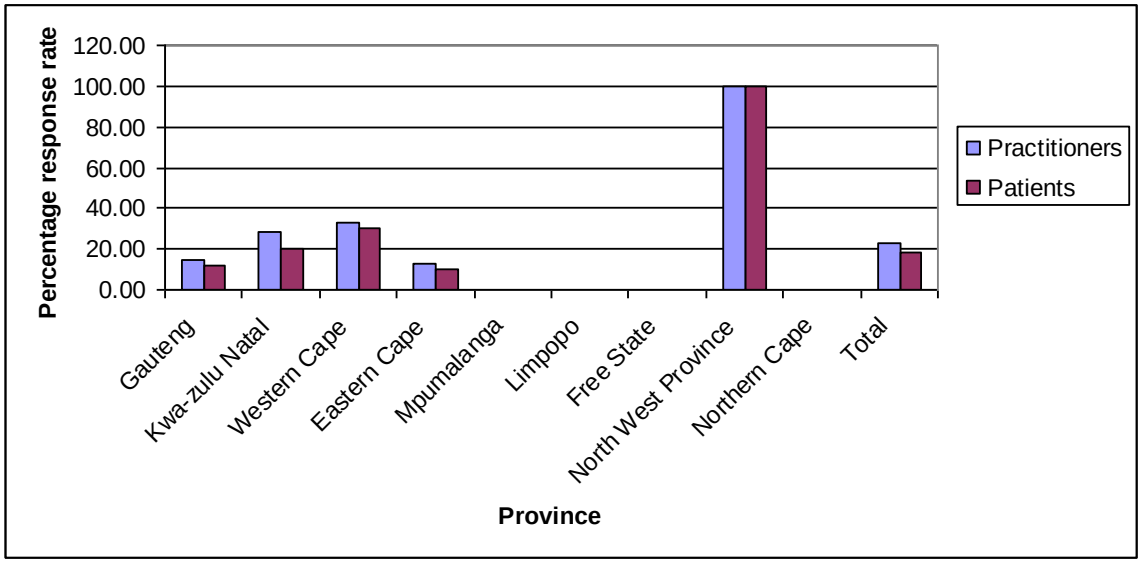

Figure 1 : Response Rates of Practitioners & Patients

Figure 1 depicts the response rates of practitioners and patients. The overall practitioner and patient response rate was 22.47% (n=20) and 18.63% (n=227) respectively. The province with the highest response rate was the North West Province (100% practitioner and patient response rate), followed by Western Cape (33.3% practitioner response and 30.56% patient response rate), Kwazulu Natal (28% practitioner response and 20.33% patient response rate), Gauteng (14.71% practitioner response and 12.25% patient response rate) and then Eastern Cape (12.5% practitioner response and 10.42% patient response rate). The lowest responses were from Mpumalanga, Limpopo and the Free State, where 0 responses were obtained.

4.2 Patient Demographic Profile

4.2.1 Age

On average, patients were 41.8 years old (standard deviation -14.5 years) with a range from 13 to 82 years.

4.2.2 Gender

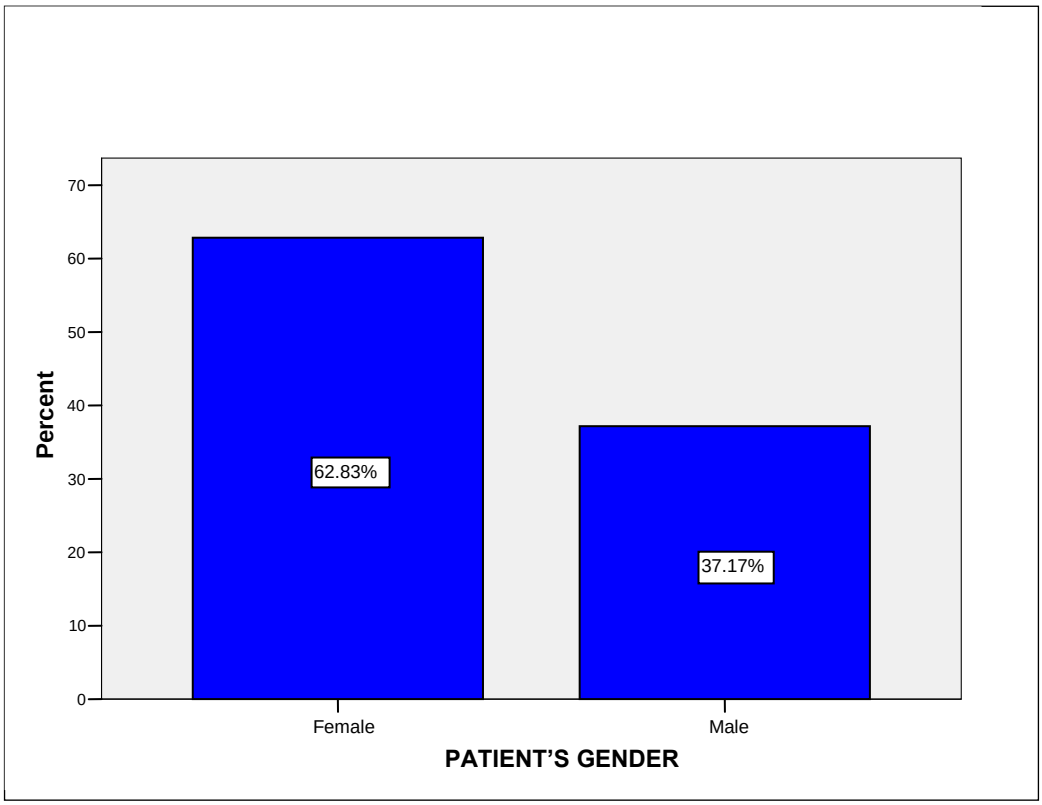

Figure 2 : Patient Gender Ratios

It is apparent from Figure 2 that the majority of patients were female (62.8%, n=142).

4.2.3 Ethnicity

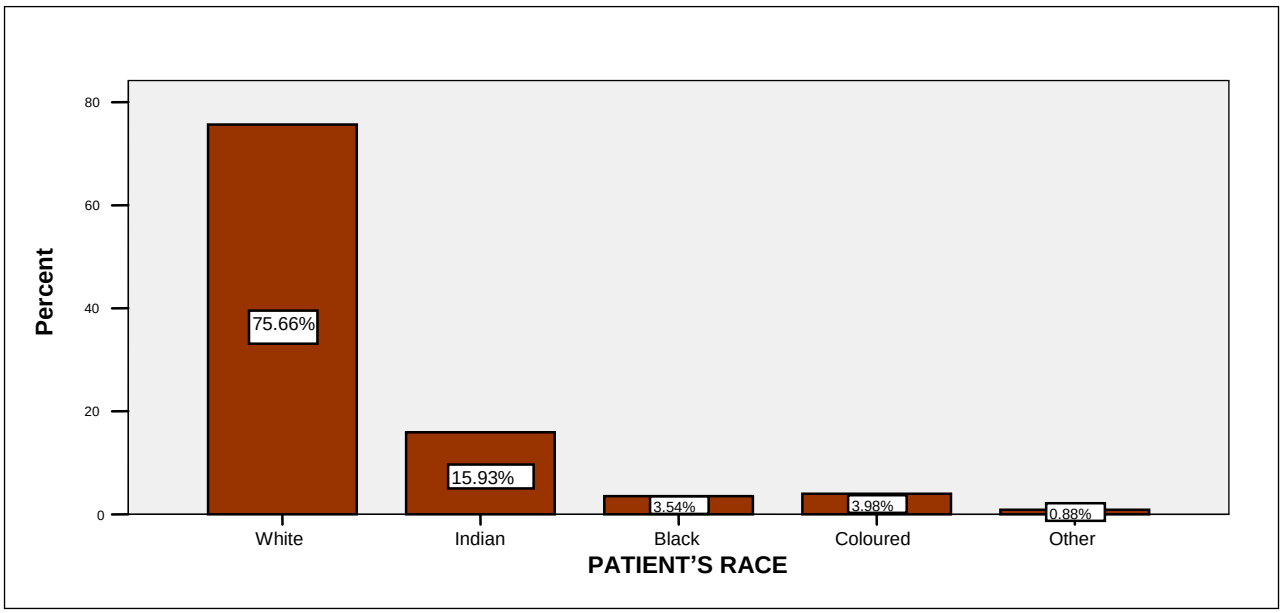

Figure 3 : Patient Ethnicity Ratios

Figure 3 reveals the ethnicity ratios of patients. There was a predominance of White patients (75.66%).

4.2.4 Marital Status

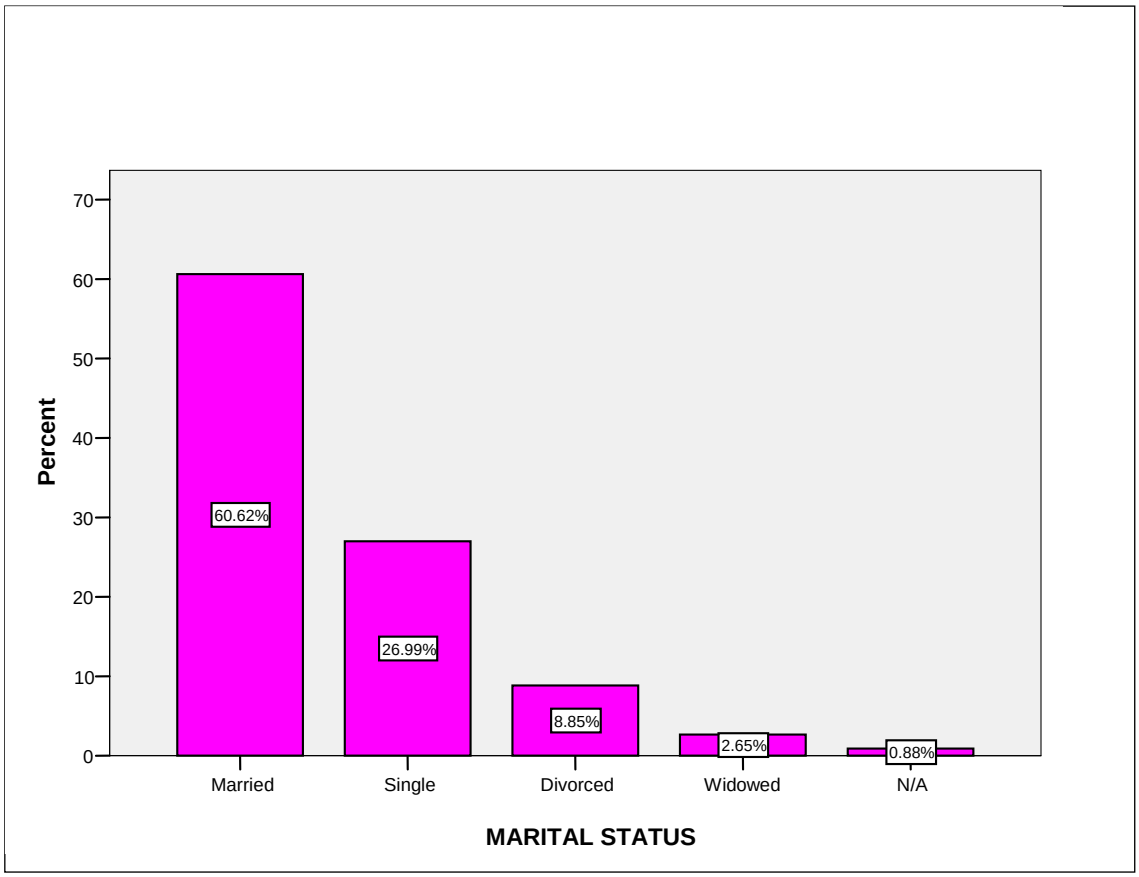

Figure 4 : Marital Status of Patients

It is evident from Figure 4 that a fairly large portion of the patient sample, 60.62%, was married, whilst 26.99% was single followed by 8.85% divorced and 2.65% widowed.

4.2.5 Occupation

Patients had reported a variety of occupations (See Figure 5).

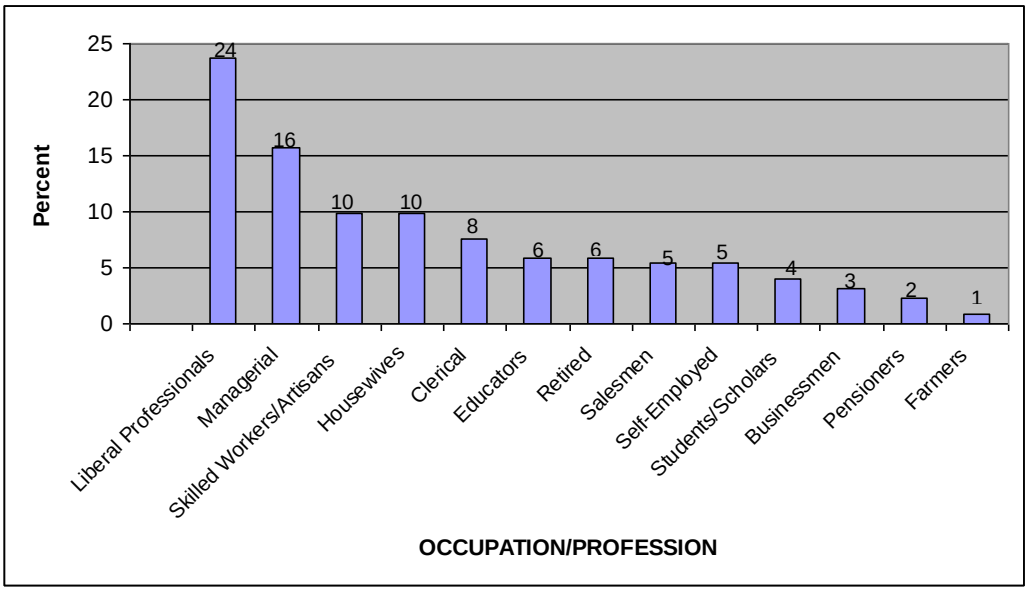

Figure 5 : Occupations/Professions of Patients

Figure 5 shows that the most common occupations reported were the liberal professions (24%), followed by the managerial professions (16%), skilled worker/artisan (10%) and housewife (10%).

4.2.6 Monthly Household Income

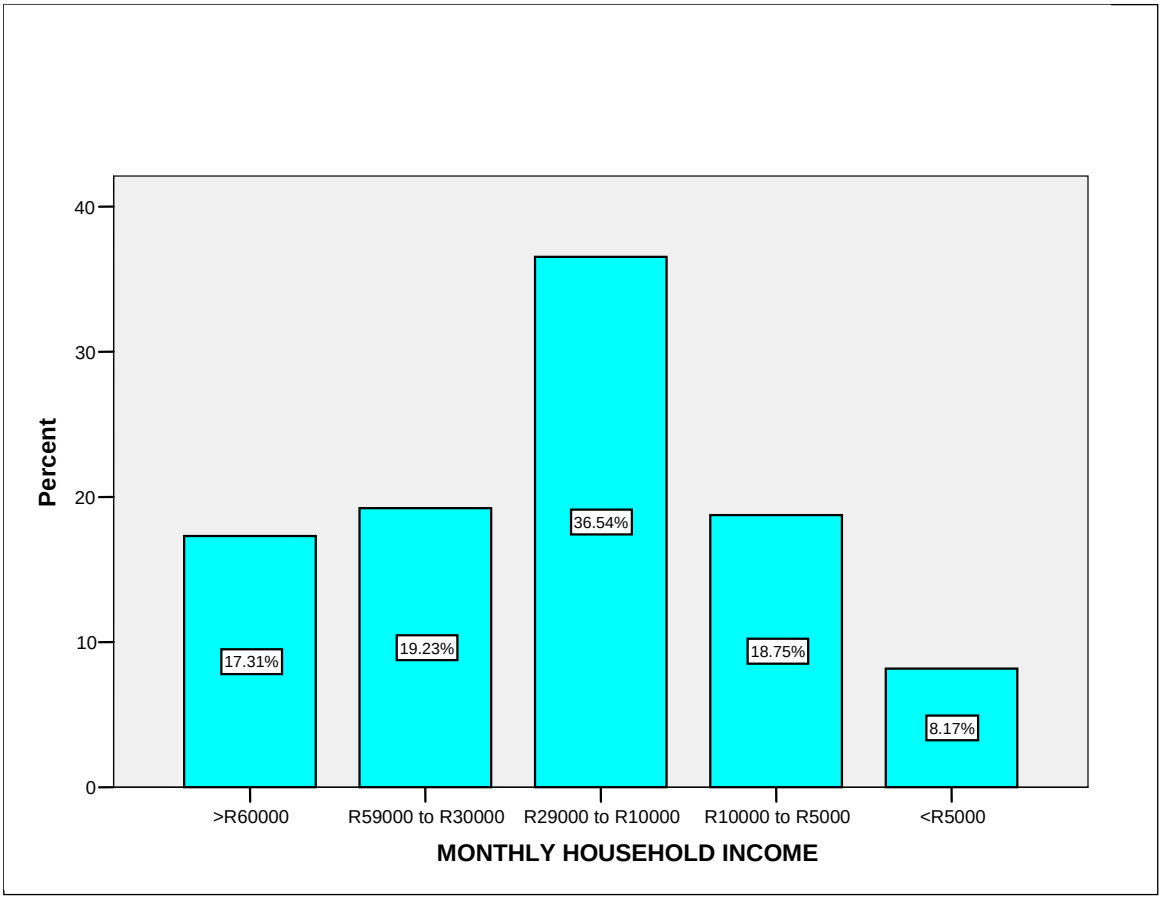

Figure 6 : Monthly Household Income of Patients

Figure 6 illustrates the monthly household income of patients. Income was fairly normally distributed. The majority of patients earned between R10 000 and R29 000 (36.54%).

4.2.7 Education Level

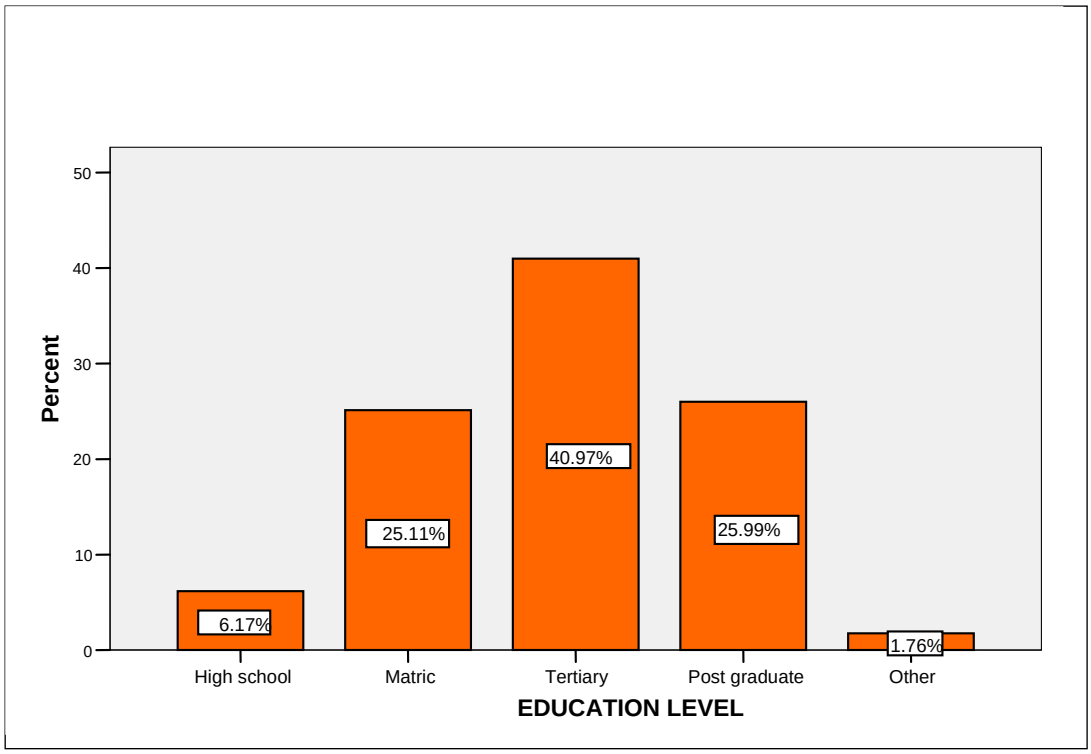

Figure 7 : Education Levels of Patients

Figure 7 represents the education level of patients, which was predominantly tertiary education (40.97%).

4.2.8 Medical Aid Membership

The vast majority of patients (81.9%, n=185) were covered by Medical Aid.

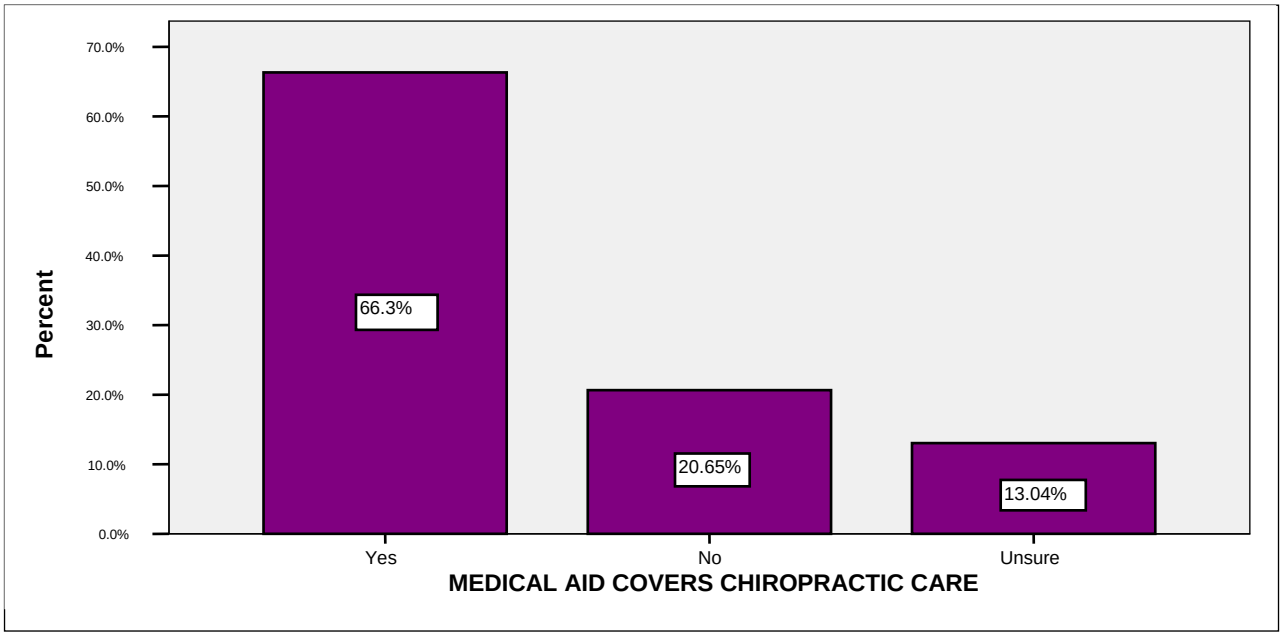

Figure 8 : Patient's Knowledge of their Medical Aid Coverage of Chiropractic Services

Figure 8 shows the percentages of Medical Aid patients and their knowledge of whether they were covered for chiropractic services. A fairly large amount of 66.3% of patients was sure that their Medical Aid covered chiropractic services.

4.3 First-time Patients Versus Repeat Patients

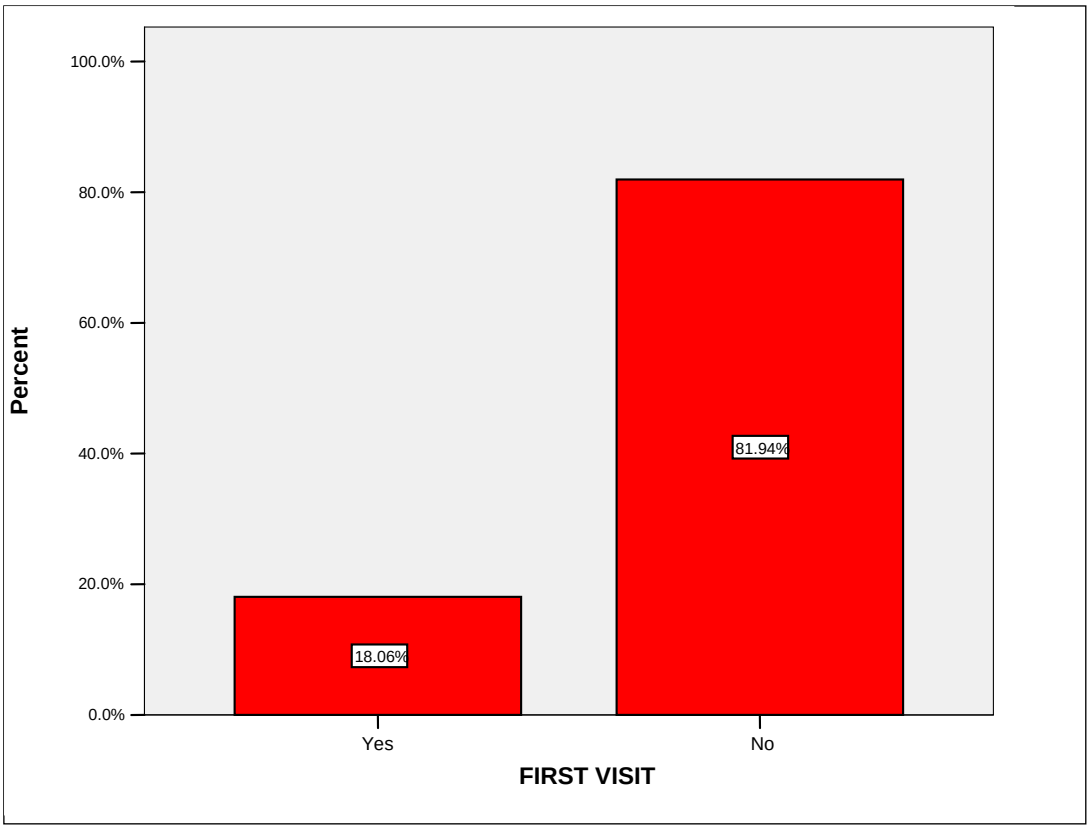

Figure 9 : First-time Patients vs. Repeat Patients

Figure 9 reveals that 18.1% (n=41) of patients were visiting the chiropractor for the first time, while 81.9% (n=186) of patients had seen a chiropractor previously. The only factor that differed between first-time and repeat patients was race ($p<0.001$) (See Table 15).

Patients		Race			Total
		White	Indian	Other	
First-time	Count	19	16	6	41
	Row %	46.3	39.0	14.6	100
Repeat	Count	152	20	13	185
	Row %	82.2	10.8	7.0	100
Total	Count	171	36	19	226
	Row %	75.7	15.9	8.4	100
Pearson's chi square 24.77, p<0.001					

Table 15 : Cross-tabulation of First-time Patients with Patient Ethnicity

It is evident from Table 15 that repeat patients were more likely to be White than first time patients (p<0.001). Other demographics, as well as having Medical Aid, did not differ between the groups.

4.4 Complaint Profile

4.4.1 Anatomical Location of the Main Complaint

The most common presenting complaint in patients was headache and neck pain (n=58 (25.6%), followed by low back pain (n=42, 18.5%) (See Figure 10).

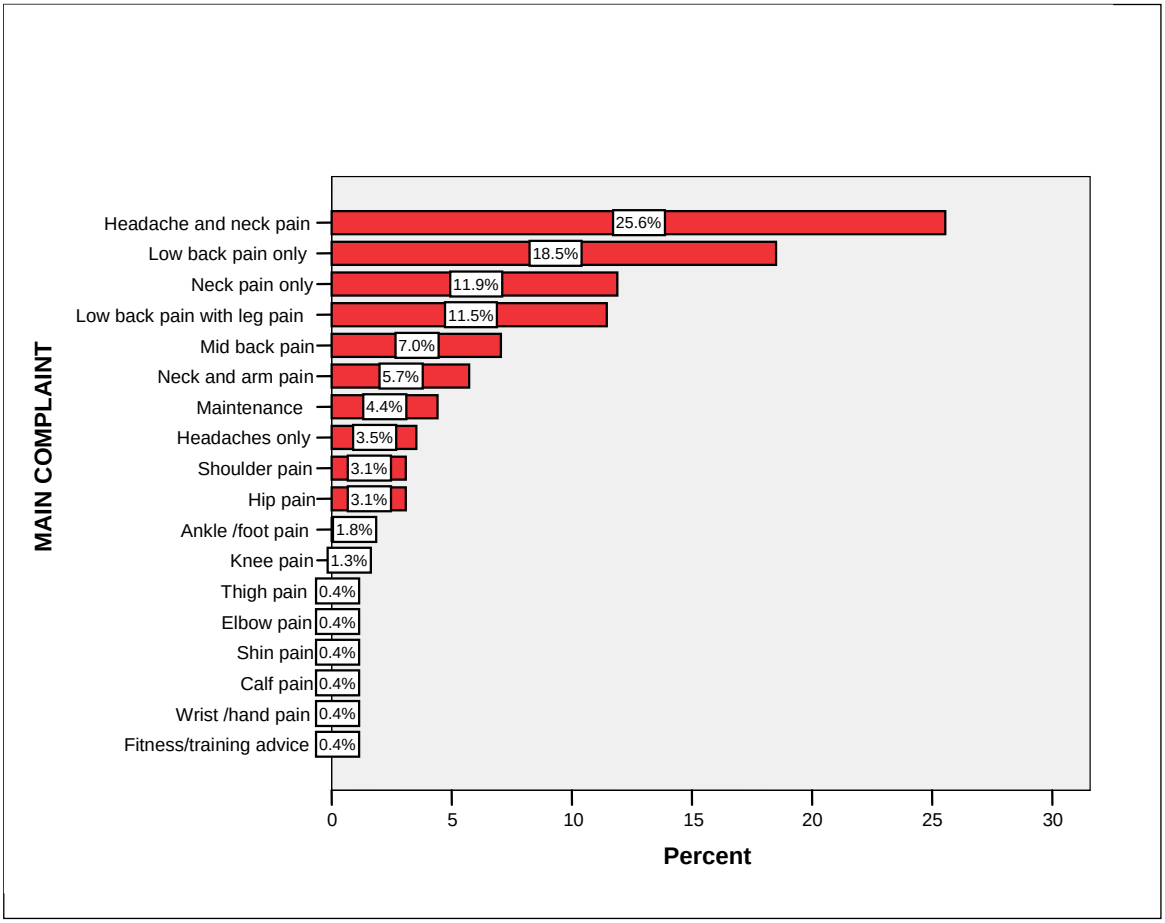

Figure 10 : Anatomical Location of the Main Complaint

Figure 10 depicts the frequency of the main complaint according to anatomical location. Extremity complaints comprise only 11.3% of the sample.

4.4.2 Duration of the Main Complaint

For this study, a complaint duration of less than 4 weeks was considered as acute, between 1-6 months was considered as subacute and more than 6 months was considered as chronic.

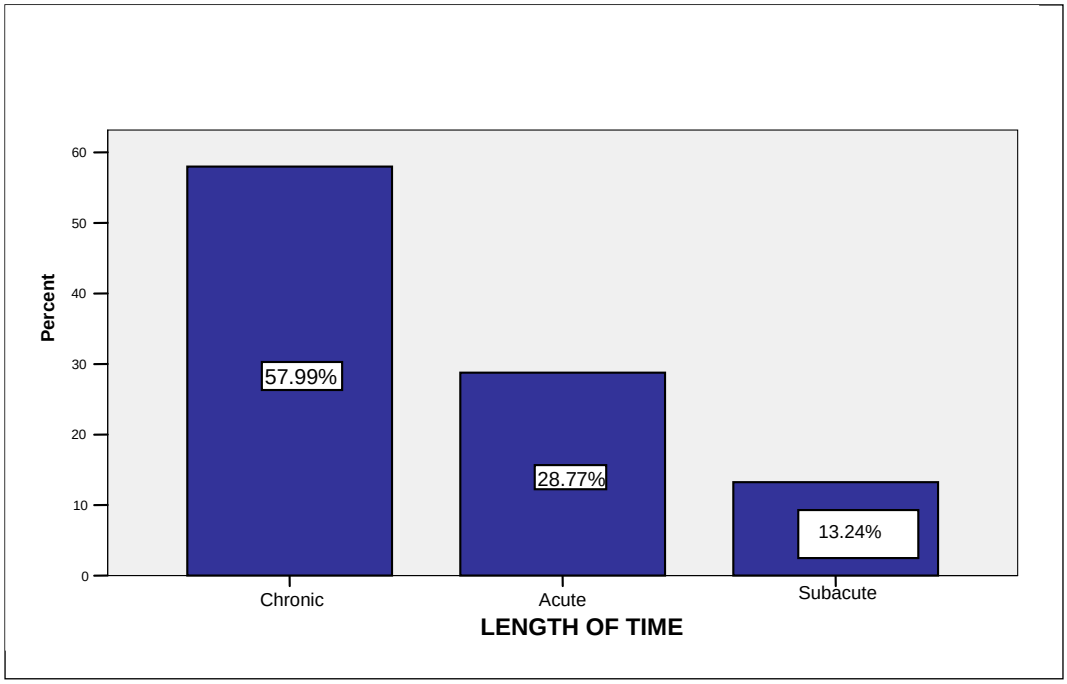

Figure 11 : Duration of the Main Complaint

Figure 11 illustrates the duration of the main complaint. The majority of complaints, 58% (n=127) were chronic, while 28.8% (n=63) were acute and 13.2% (n=29) were sub-acute.

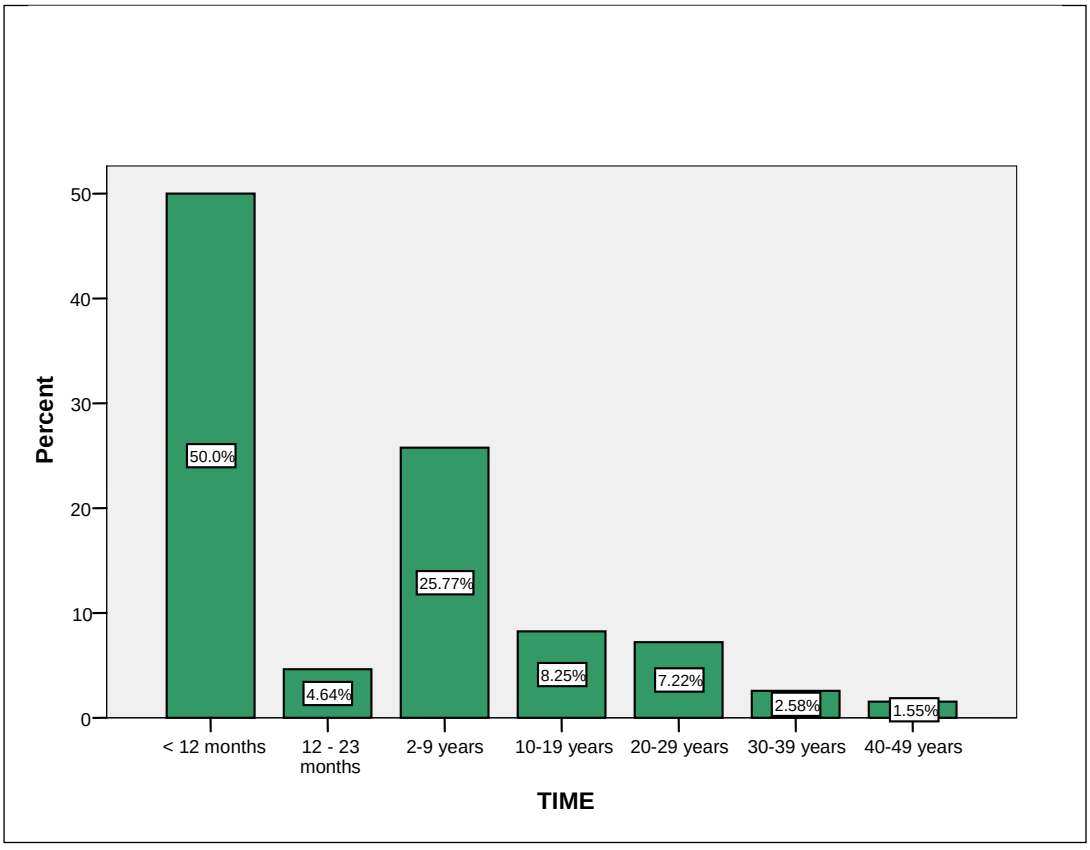

Figure 12 : Chronicity of the Main Complaint

Figure 12 shows the chronicity of the main complaint. Only 194 patients reported a quantitative value for the length of time they had had the complaint. Of these, 50% (n=97) had reported the complaint duration as less than a year.

4.5. Previous Consultations with Other Health Professionals

There were 62% (n=140) of patients who reported having consulted another health professional prior to their chiropractic consultation.

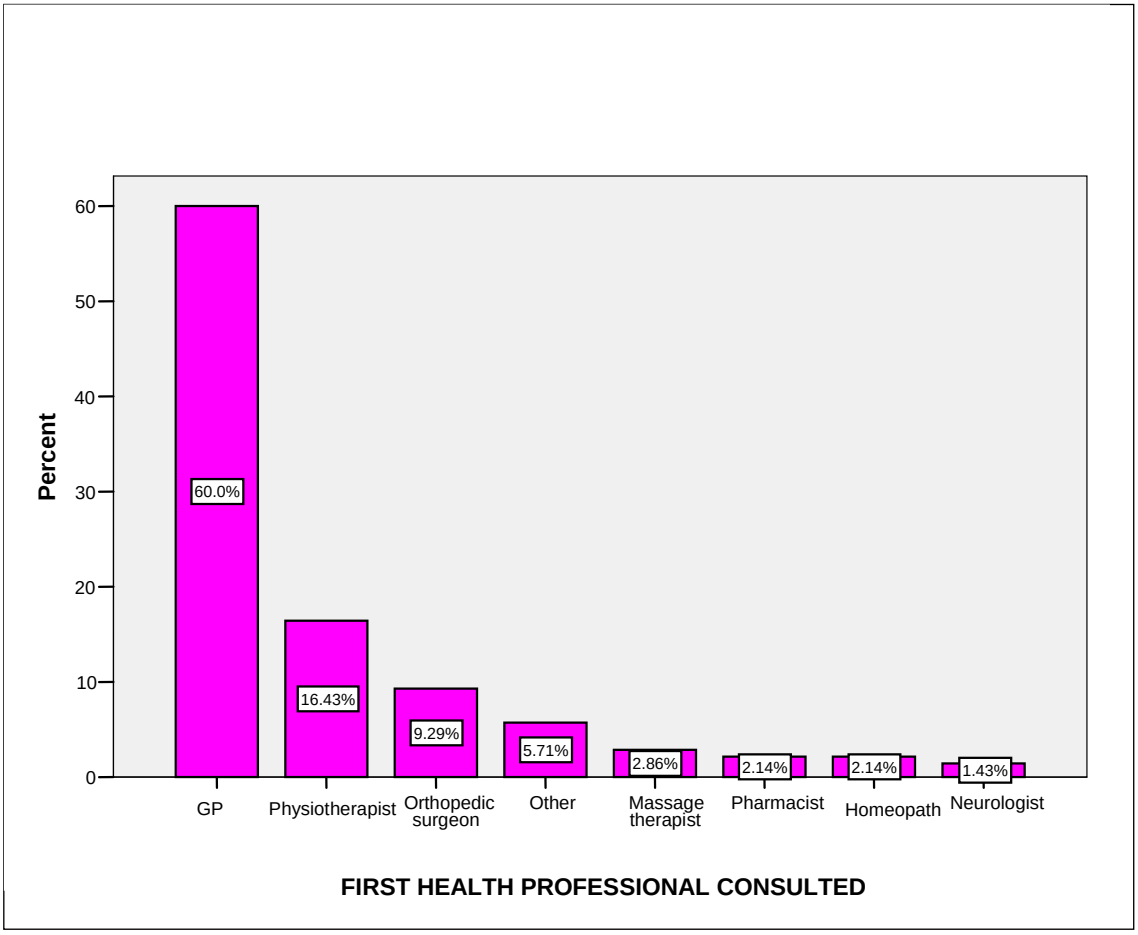

Figure 13 : First Health Professional Consulted for the Main Complaint Prior to the Chiropractic Consultation

It is apparent from Figure 13 that 60% (n=84) of patients had seen a GP, while 16.4% (n=23) had seen a physiotherapist.

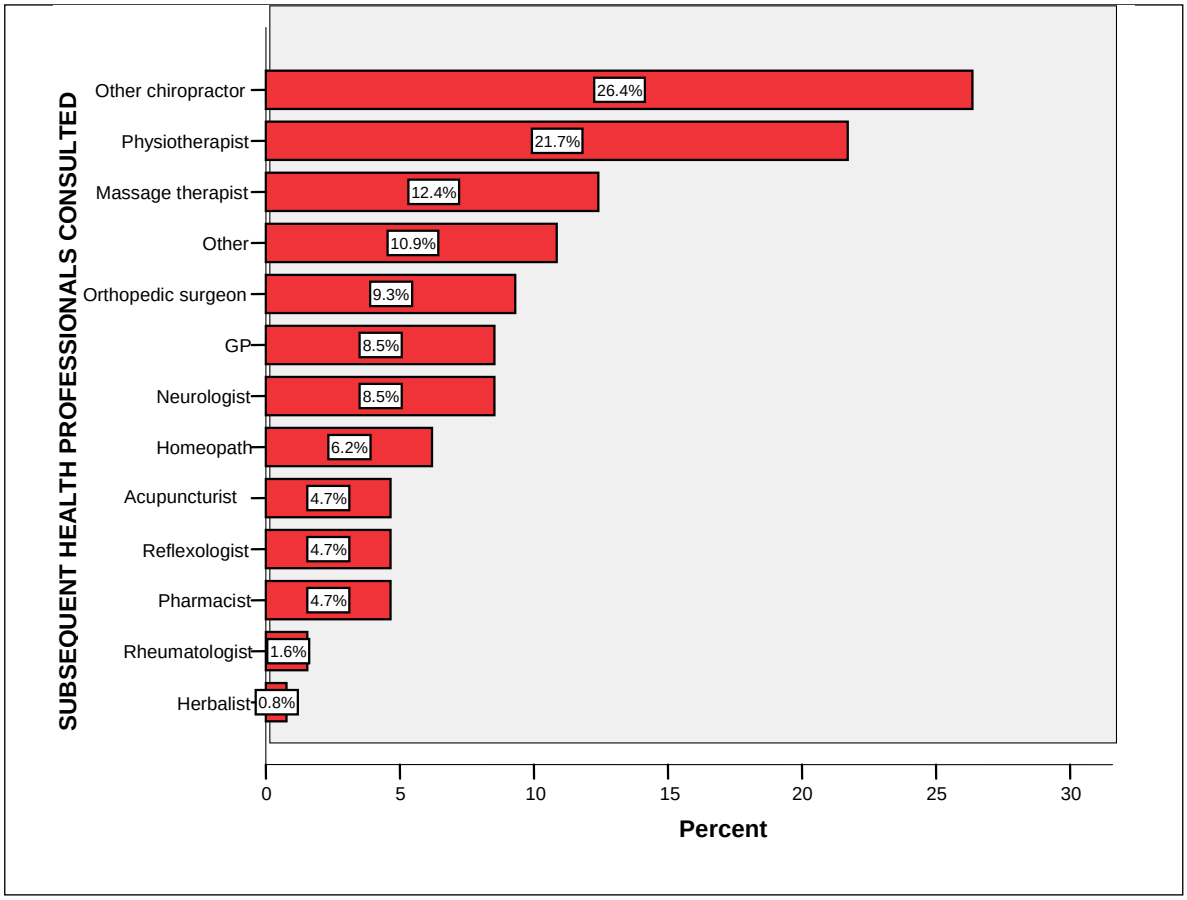

Figure 14 : Subsequent Health Professionals Consulted for the Main Complaint Prior to the Chiropractic Consultation

Figure 14 represents the frequency of subsequent health professionals consulted prior to the chiropractic consultation. Other chiropractors were highest with 26.4%, followed closely by physiotherapists at 21.7%. Many patients reported more than one subsequent practitioner consulted, thus the percentages do not add up to 100%.

4.6 Contributing Factors for Visiting the Chiropractor

The following table represents the key used in this section.

KEY	CONTRIBUTING FACTORS FOR VISITING THE CHIROPRACTOR
Factor A	Your prior consultations with other health professionals did not resolve the problem
Factor B	You were disappointed with the results of your previous treatment by the other health professionals
Factor C	You felt you had not consulted the right practitioner for the problem
Factor D	You recently became knowledgeable of chiropractic
Factor E	You heard of another patient's successful recovery with chiropractic treatment
Factor F	You previously responded well to chiropractic treatment and were satisfied with the treatment
Factor G	Not applicable

Table 16 : Key Used for Contributing Factors for Visiting the Chiropractor

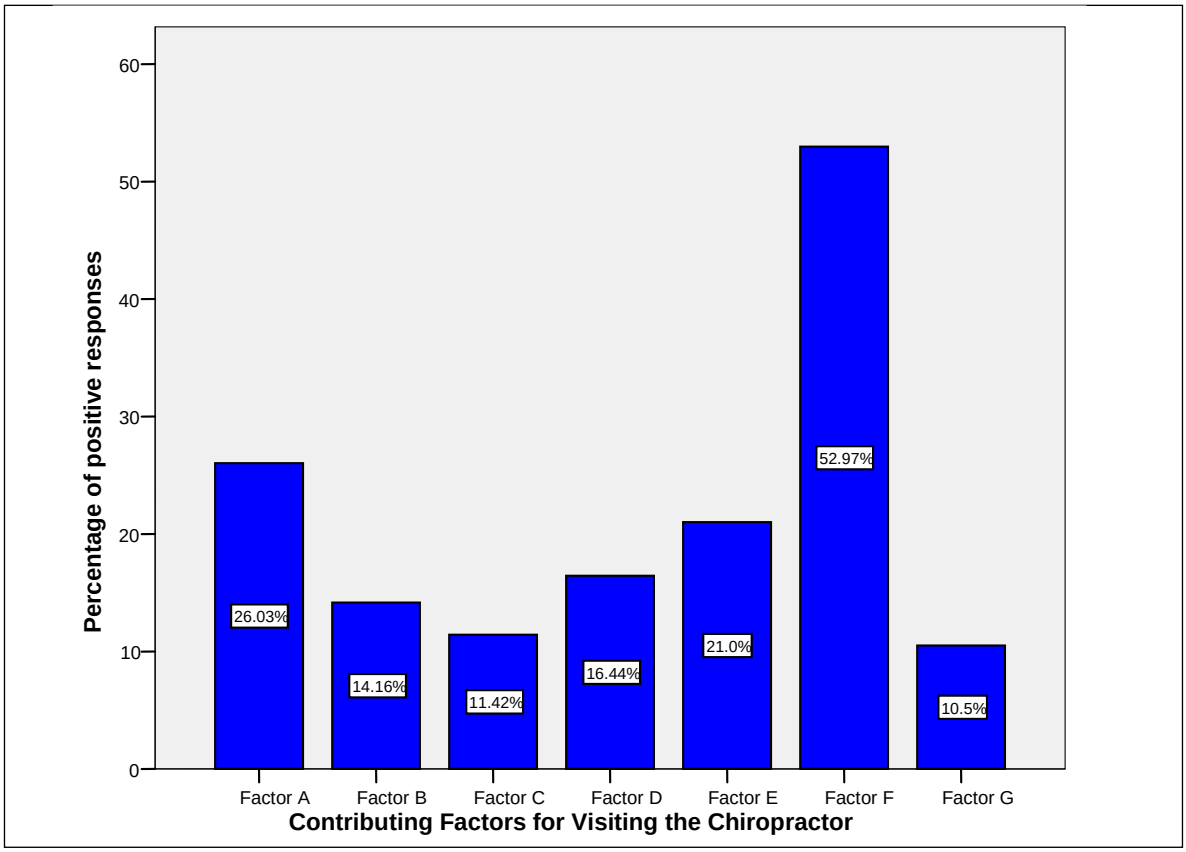

Figure 15 : Contributing Factors for Visiting the Chiropractor

The percentage of positive responses to the given reasons for visiting the chiropractor is shown in Figure 15. The most frequently selected reason was Factor F, which was selected by 53% (n=117) of patients, followed by Factor A, which was selected by 26.03% (n=58) of patients.

		FACTOR A		FACTOR B		FACTOR C		
Patients		No	Yes	No	Yes	No	Yes	Total
Consulted Another Health Professional	Count	82	55	107	30	111	26	137
	Row%	59.9	40.1	78.1	21.9	81	19	100
Did Not Consult Another Health Professional	Count	78	3	79	2	81	0	81
	Row%	96.3	3.7	97.5	2.5	100	0	100
Total	Count	160	58	186	32	192	26	218
	Row%	73.4	26.6	85.3	14.7	88.1	12	100
		Pearson's chi square = 34.62, p<0.001		Pearson's chi square = 15.34, p<0.001		Pearson's chi square = 17.45, p<0.001		

Table 17 : Cross-tabulation of Factors A, B & C with Patients who did/did not Consult Another Health Professional

Table 17 depicts the cross-tabulation of Factors A, B and C with those patients who had/had not consulted another health professional. There was a highly significant association (p<0.001) between having consulted another health professional for the

same complaint previously, and Factors A to C. Those patients who had consulted another health professional previously were more likely to respond positively to these factors.

		FACTOR D			FACTOR F		
Patients		No	Yes	Total	No	Yes	Total
First-time	Count	24	15	39	38	1	39
	Row%	61.5	38.5	100	97.4	2.6	100
Repeat	Count	159	21	180	65	116	181
	Row%	88.3	11.7	100	35.9	64.1	100
Total	Count	183	36	219	103	117	220
	Row%	83.6	16.4	100	46.8	53.2	100
		Pearson chi square 16.75, p<0.001			Pearson's chi square 48.77, p<0.001		

Table 18 : Cross-tabulation of Factors D & F with First-time/Repeat Patients

Cross-tabulation of Factors D and F with first-time and repeat patients are shown in Table 18. First-time patients were significantly more likely ($p<0.001$) to respond positively to Factor D than repeat patients. It is evident from Table 18 that 38.5% of first-time patients responded positively to this factor, while only 11.7% of repeat patients responded positively. Factor E was not associated significantly ($p=0.114$) with first-time patient visits, although positive responses were higher in first-time patients. Repeat patients were highly significantly ($p<0.001$) more likely to respond positively to Factor F (64%) than first-time patients (2.6%).

4.7 Mode of Referral

The most common source of referral to the chiropractor was by relative/friend (45%), whilst self-referral (25.7%), was the second highest source. Patients referred by GPs (n=12) comprised 5.3% and patients referred by physiotherapists (n=4) comprised only 1.8%. Coaches, herbalists and personal trainers did not refer patients at all (See Figure 16).

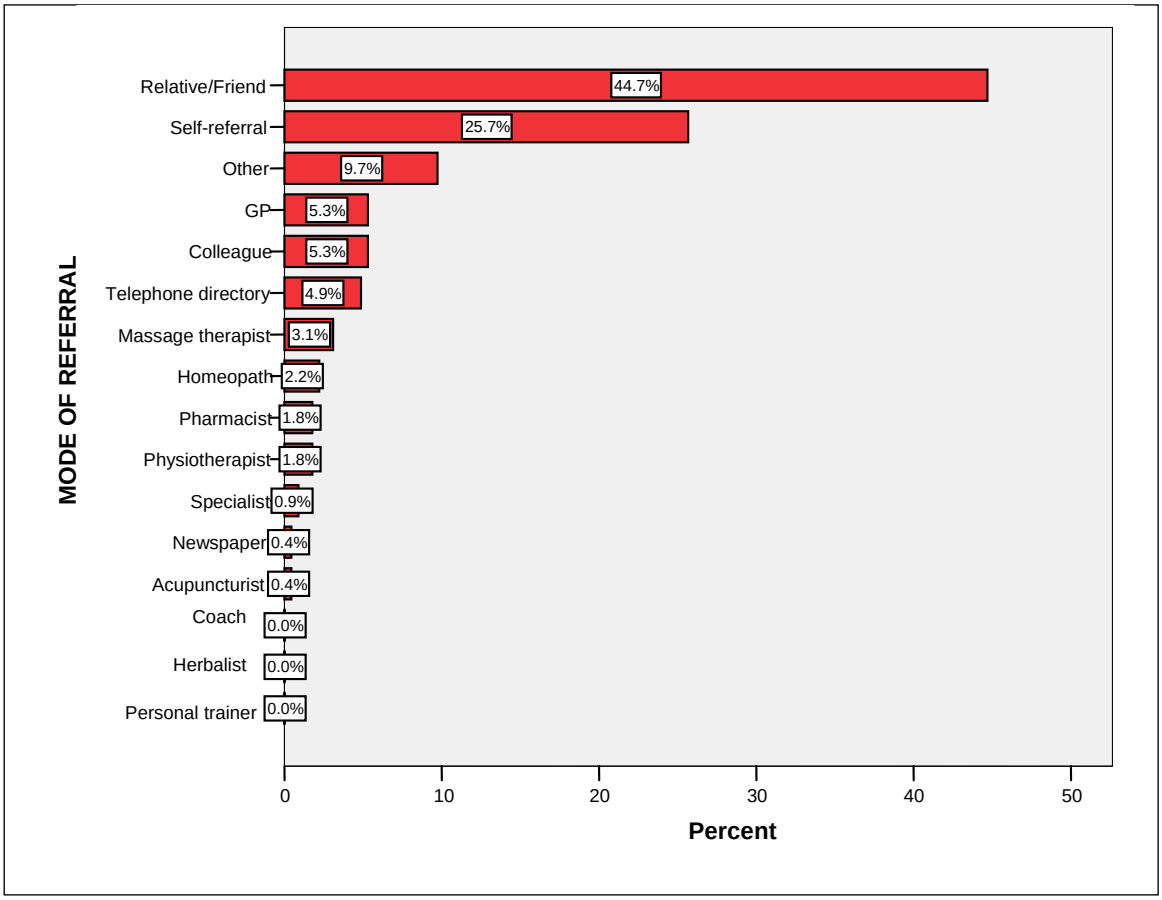

Figure 16 : Mode of Referral

4.8 Past Chiropractic Treatment

4.8.1 Number of Repeat Patients

More than 70% of the patients were treated previously by the current chiropractor (n=158, 70.9%). Out of the 158 patients who had been treated before, 142 (89.9%) were treated for the main complaint.

4.8.2 Number of Visits made to the Current Chiropractor

Of the 142 patients who had been treated for the main complaint by the same practitioner, 140 answered the question on the number of visits they had been for (See Figure 17).

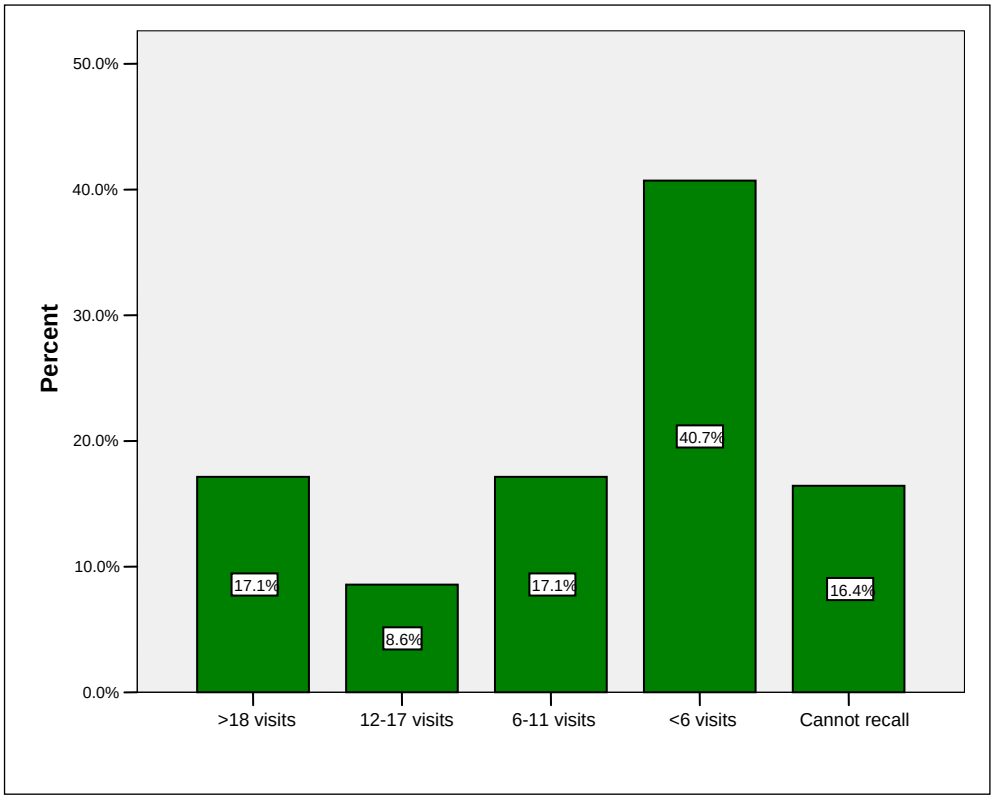

Figure 17 : Number of Visits to the Current Chiropractor

The number of visits to the current chiropractor for the main complaint is illustrated in Figure 17. There were 40.7% of patients who had been to the current chiropractor for less than 6 visits, 17.1% for more than 18 visits, and another 17.1% for 6-11 visits.

Duration of the Main Complaint		**Number of Visits**					
		>18 visits	12-17 visits	6-11 visits	<6 visits	Cannot recall	Total
Acute	Count	1	0	1	15	4	21
	Row%	4.8	0	4.8	71.4	19.0	100
Subacute	Count	0	0	2	6	1	9
	Row%	0	0	22.2	66.7	11.1	100
Chronic	Count	22	12	19	35	16	104
	Row%	21.2	11.5	18.3	33.7	15.4	100
Total	Count	23	12	22	56	21	134
	Row%	17.2	9.0	16.4	41.8	15.7	100
		Pearson's chi square = 17.66, p=0.024					

Table 19 : Cross-tabulation of the Duration of the Main Complaint with the Number of Visits made to the Current Chiropractor

Table 19 reveals that there was a significant association (p=0.024) between the duration of the main complaint and the number of visits made to the current chiropractor. However, due to the large number of zero values in the table, the chi square test is not completely valid, and no inferences can be made from the results of this test. However, examining the trends and percentages in the table one can see that acute and subacute conditions tended to have less than 6 visits, while chronic conditions were more likely to have a higher number of visits. There was no association (p=0.931 – data not shown) between having Medical Aid and the number of visits the patients had been for. None of the patient demographic variables were associated with number of visits either (i.e. gender (p=0.307), race (p=0.152) or age (p=0.535)).

The time period over which the visits occurred, was only available for 110 patients. Expressed in months, the median time was 11.5 months, with a range from 1 week to 20 years.

Number of visits	Median	Minimum	Maximum
> 18 visits	60.0000	11.00	240.00
12-17 visits	21.0000	7.00	48.00
6-11 visits	9.0000	1.00	96.00
< 6 visits	0.8750	0.25	120.00
Cannot recall	36.0000	0.50	240.00
Total	11.0000	0.25	240.00

Table 20 : Median Time Period of Number of Visits (n=109)
(time period expressed in months)

There was a highly significant (p<0.001) difference in median time period of treatment by number of visits. Table 20 shows the median time of treatment for each group of number of visits. The time of treatment decreased as the number of visits decreased.

Chronicity	Median	Minimum	Maximum
Acute	0.5000	0.25	120.00
Subacute	2.0000	0.25	60.00
Chronic	12.0000	0.25	240.00
Total	12.0000	0.25	240.00

Table 21 : Duration of Main Complaint by Time Period of Number of Visits
(time period expressed in months)

There was also a significant association (p=0.003) between the duration of the complaint and the time period of treatment. Table 21 shows the median time of treatment by duration of complaint. The treatment time increased as the duration of the complaint increased.

4.8.3 Use of Diagnostic Investigations by the Chiropractor

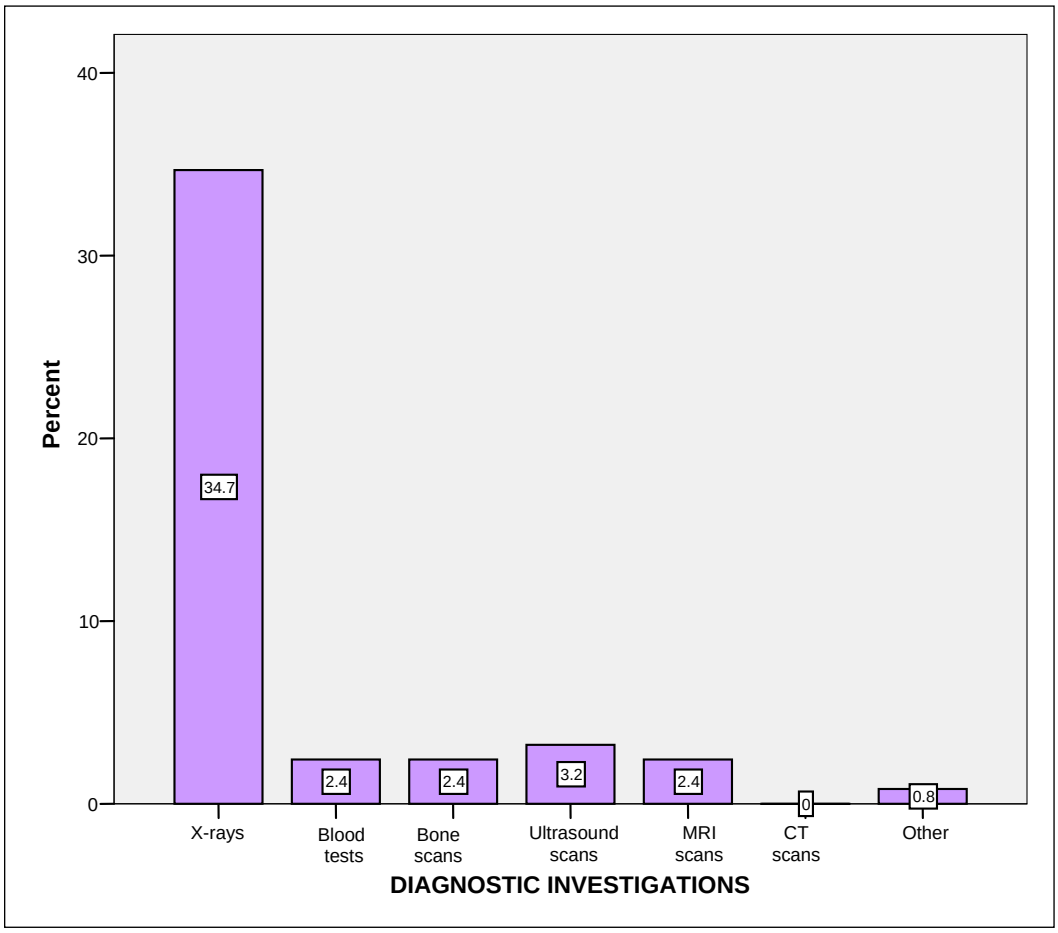

Figure 18 : Use of Diagnostic Investigations by the Chiropractor

Figure 18 depicts the use of diagnostic investigations by the chiropractor. X-rays were the most frequently used tests (n=43, 34.7%). The other tests were used very infrequently.

4.8.4 Other Areas of the Body Treated by the Chiropractor

Many patients were treated for other areas of their body by the same chiropractor (n=153, 67.4%) (See Figure 19).

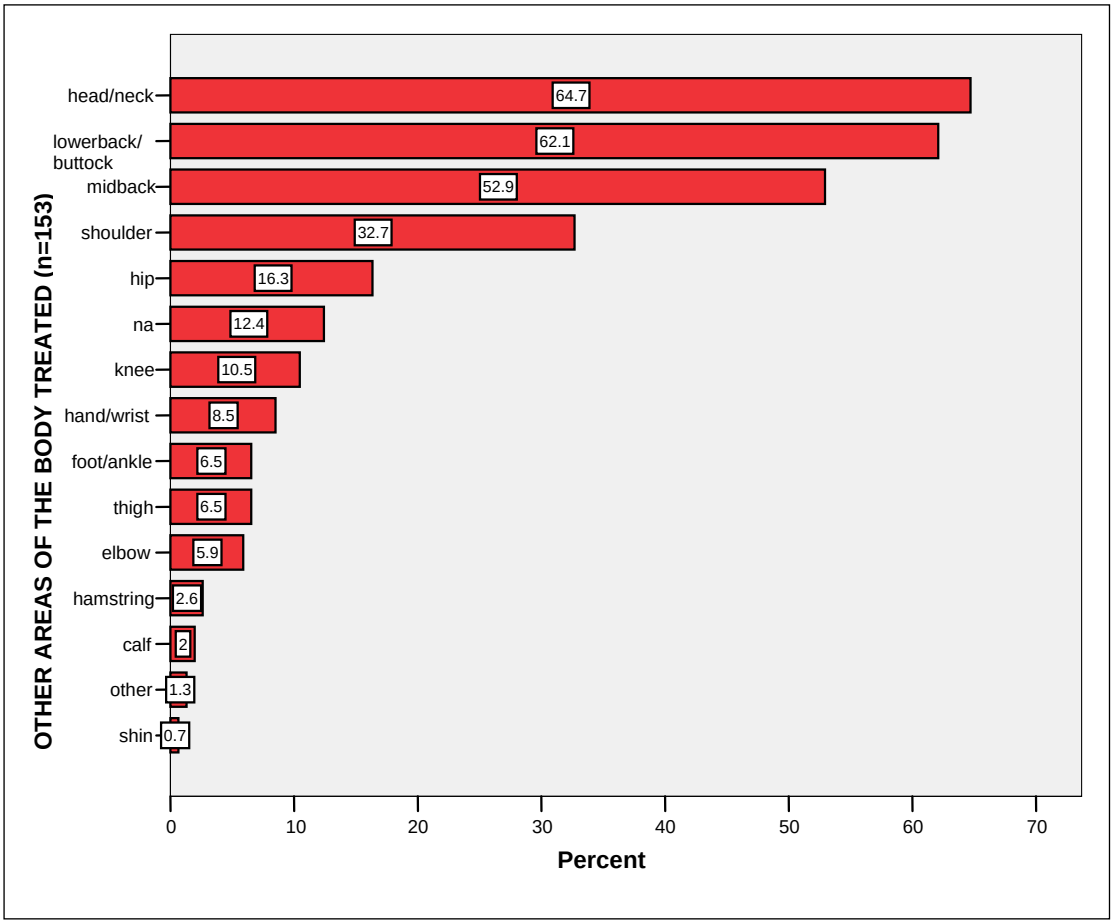

Figure 19 : Other Areas of the Body Treated by the Chiropractor

Figure 19 represents the other areas of the body that were treated by the chiropractor. The most common area of treatment was the head and neck (64.7%) followed closely by the lower back (62.1%).

4.9 Patient's Knowledge of the Chiropractic Profession

The following table represents the key used in this section:

KEY	SATATEMENTS TESTING THE PATIENT'S KNOWLEDGE
Statement 4.1	Chiropractic is an alternative health therapy.
Statement 4.2	Chiropractors are not specialists of the musculoskeletal system.
Statement 4.3	Chiropractic has a drug-free philosophy.
Statement 4.4	Chiropractors are not trained to perform a full medical examination.
Statement 4.5	Chiropractors are trained to read and evaluate x-rays.
Statement 4.6	Certain types of headaches can be treated by chiropractic.
Statement 4.7	Chiropractors can treat babies for colic.
Statement 4.8	Chiropractors can treat babies for spinal problems following birth trauma.
Statement 4.9	Chiropractors can treat for arthritic conditions.
Statement 4.10	Chiropractors cannot offer nutritional advice.
Statement 4.11	Chiropractors can offer fitness/training advice.
Statement 4.12	Chiropractors can perform post-operative/post fracture rehabilitation.
Statement 4.13	Chiropractors cannot treat and manage sports injuries.
Statement 4.14	Most Medical Aid societies cover chiropractic care.
Statement 4.15	Chiropractic care is not included under the Workmen's Compensation Act.

Table 22 : Key Used for Statements testing the Patient's Knowledge

Knowledge score was computed for each patient and expressed as a percentage out of the maximum score of 15. The mean knowledge score was 78.05% (standard deviation 16.62%) with a range from 20% to 100%. A score of 80% was arbitrarily chosen to represent a good level of knowledge. Ninety two patients (40.7%) achieved below this score and 134 (59.3%) achieved equal to or above this score.

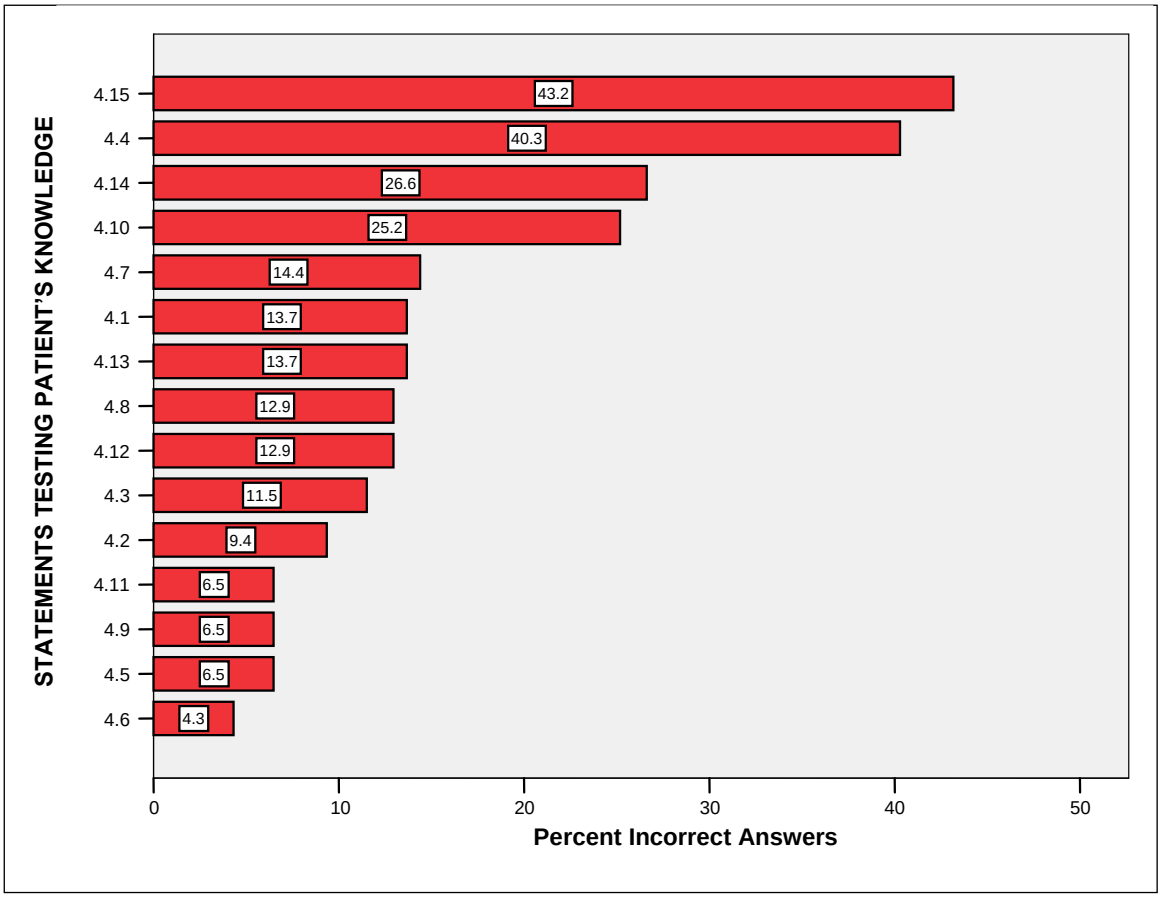

Figure 20 : Percentages of Incorrect Answers

The percentages of incorrect answers are apparent in Figure 20. Statement 4.15 was ranked as the statement with the highest incorrect responses (43.2% incorrect), followed by Statement 4.4 (40.3% incorrect). Statement 4.6 was ranked as the most correctly answered (4.3% incorrect), followed by Statement 4.5 (6.5% incorrect).

	Patients	N	Mean	Std. Deviation	Std. Error Mean	p value
Knowledge Percentage	First-time	41	76.91	18.625	2.909	0.628
	Repeat	185	78.31	16.189	1.190	

Table 23 : Comparison of Knowledge between First-time/Repeat Patients

Table 23 shows the comparative percentages of knowledge between first-time and repeat patients. There was no significant difference in knowledge score (p=0.628), although a very slight trend towards a higher score in repeat patients was noted.

	Education Levels	Sum of Squares	df	Mean Square	F	p value
Knowledge Percentage	Between Groups	3789.987	4	947.497	3.587	0.007
	Within Groups	58375.598	221	264.143		
	Total	62165.585	225			

Table 24 : ANOVA Test for Comparison of Mean Knowledge Score between/within Education Level Groups

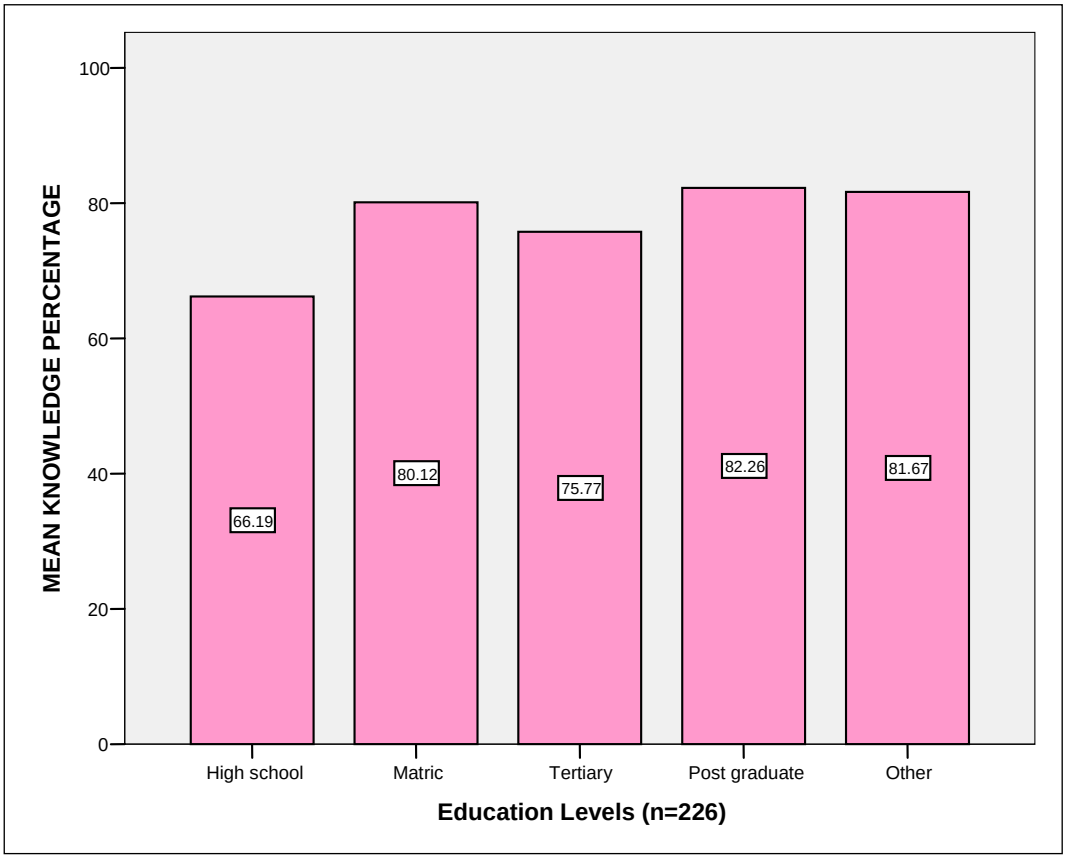

Figure 21 : Mean Knowledge Percentage amongst the different Education Levels

Table 24 and Figure 21 reveal that there was a significant difference (p=0.003) between the education levels in terms of mean knowledge score. Post hoc tests showed that the significant differences were between those with high school education and matric (p=0.045), and high school and post graduate (p=0.010). Those with high school education had the lowest level of knowledge.

No other demographics were significantly associated with knowledge (gender p=0.228, race p=0.284, age p=0.653, income p=0.418). Length of complaint duration was also not associated with knowledge level (p=0.145).

4.10 Diagnoses

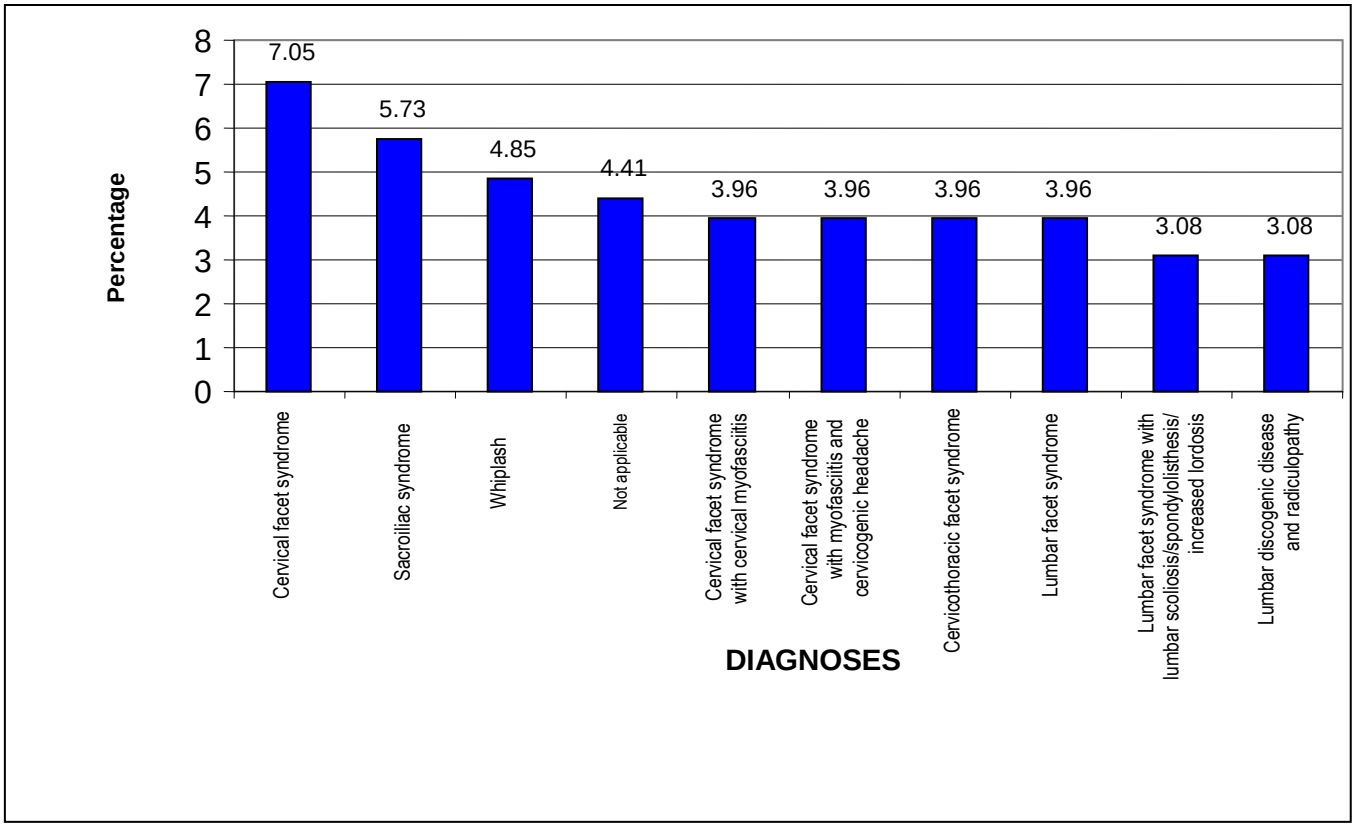

Figure 22 : 10 Most Frequent Diagnoses

Figure 22 illustrates the 10 most common diagnoses made by practitioners. Cervical facet syndrome was most common (7.05%), followed by sacroiliac syndrome (5.73%) and whiplash (4.85%). Lumbar facet syndrome was diagnosed in 3.96% of cases. The other diagnoses were very specific and many consisted of combinations of diagnoses (See Appendix K for a full list of the diagnoses).

4.11 Practitioner and Practice Profile

4.11.1 Practitioner Demographics

The mean age of practitioners was 34.2 years (standard deviation 9.6 years), with a range from 27 to 68 years.

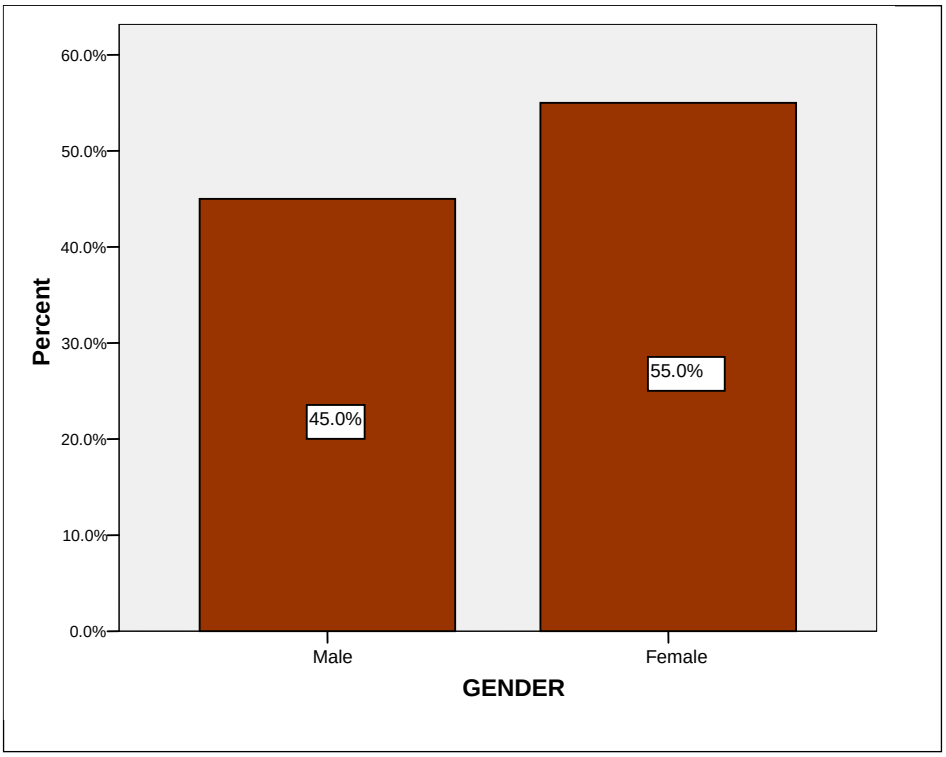

Figure 23 : Practitioner Gender Ratios

Figure 23 shows the practitioner's gender ratios. There was a higher percentage of females than males, with 55% (n=11) being female.

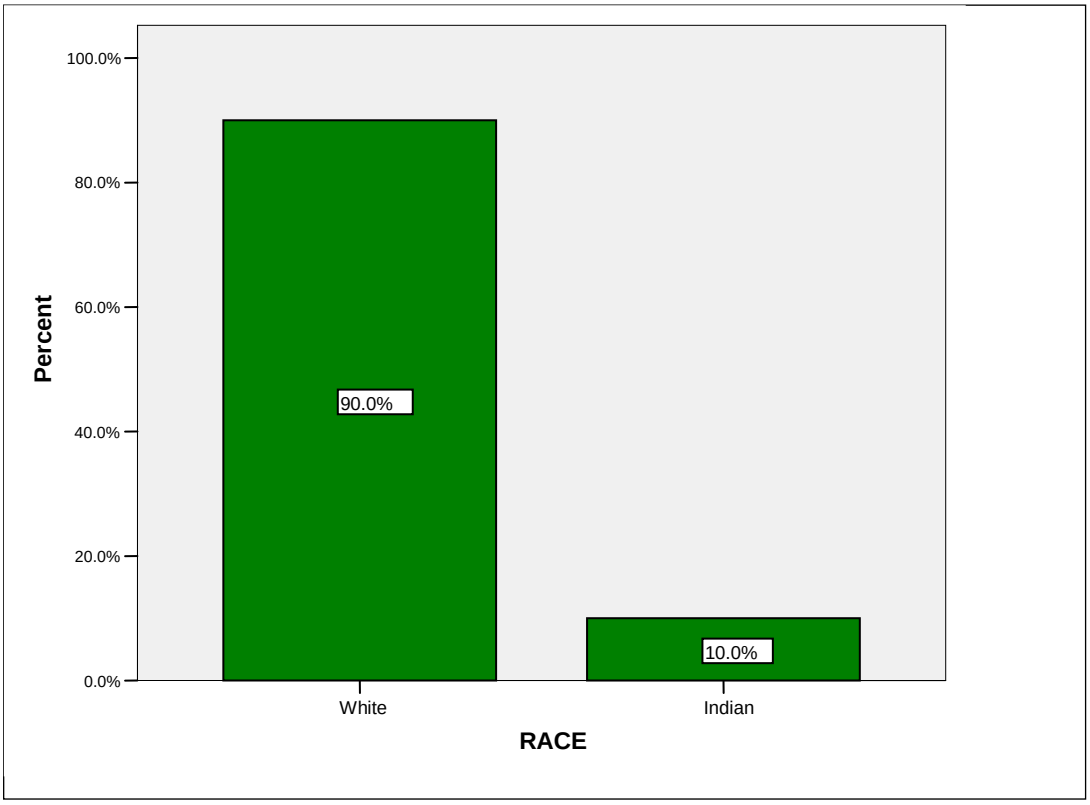

Figure 24 : Practitioner Ethnicity Ratios

It is evident from Figure 24 that the majority of the practitioner sample was White (n=18, 90%), with the remainder being Indian.

4.11.2 Length of Practice as a Chiropractor

On average, practitioners had been in practice for 7.4 years (standard deviation 6.3 years) with a range from 0.6 to 22 years.

4.11.3 Practice Location

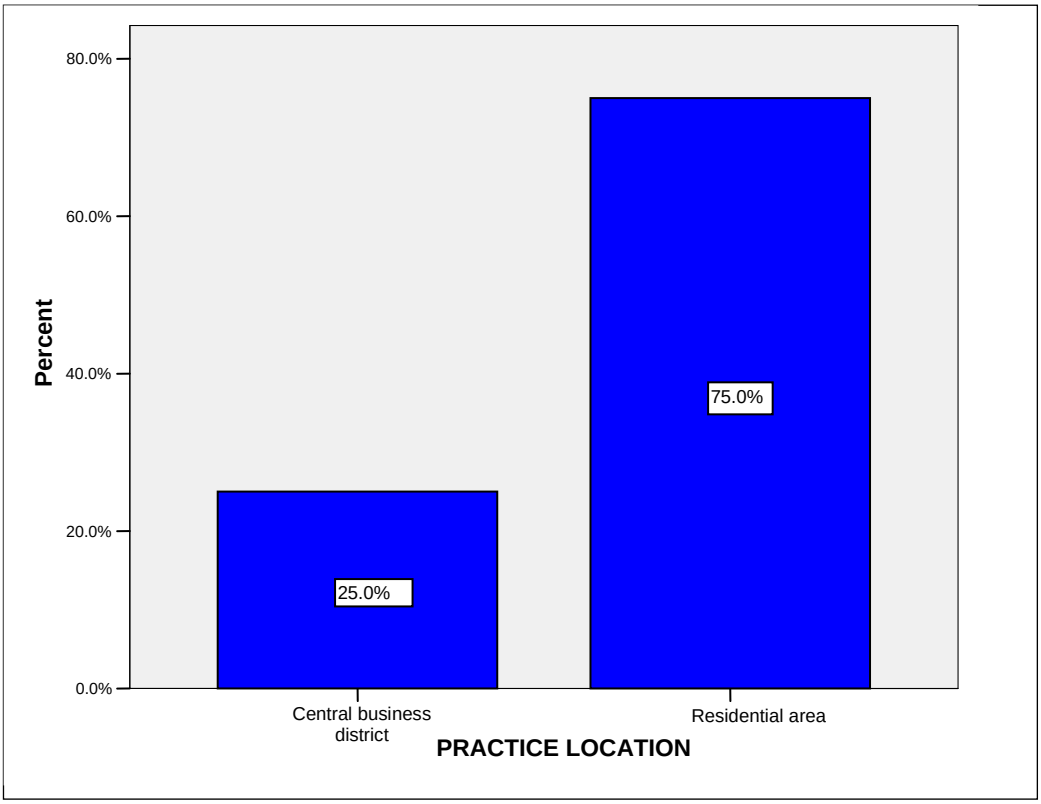

Figure 25 : Location of Practice

Figure 25 highlights the high frequency of chiropractors practising in a residential area (75%, n=15), with only 25% (n=5) in a central business district. There were no respondents from rural areas.

4.12 Relationships Found between Patients and Practitioners

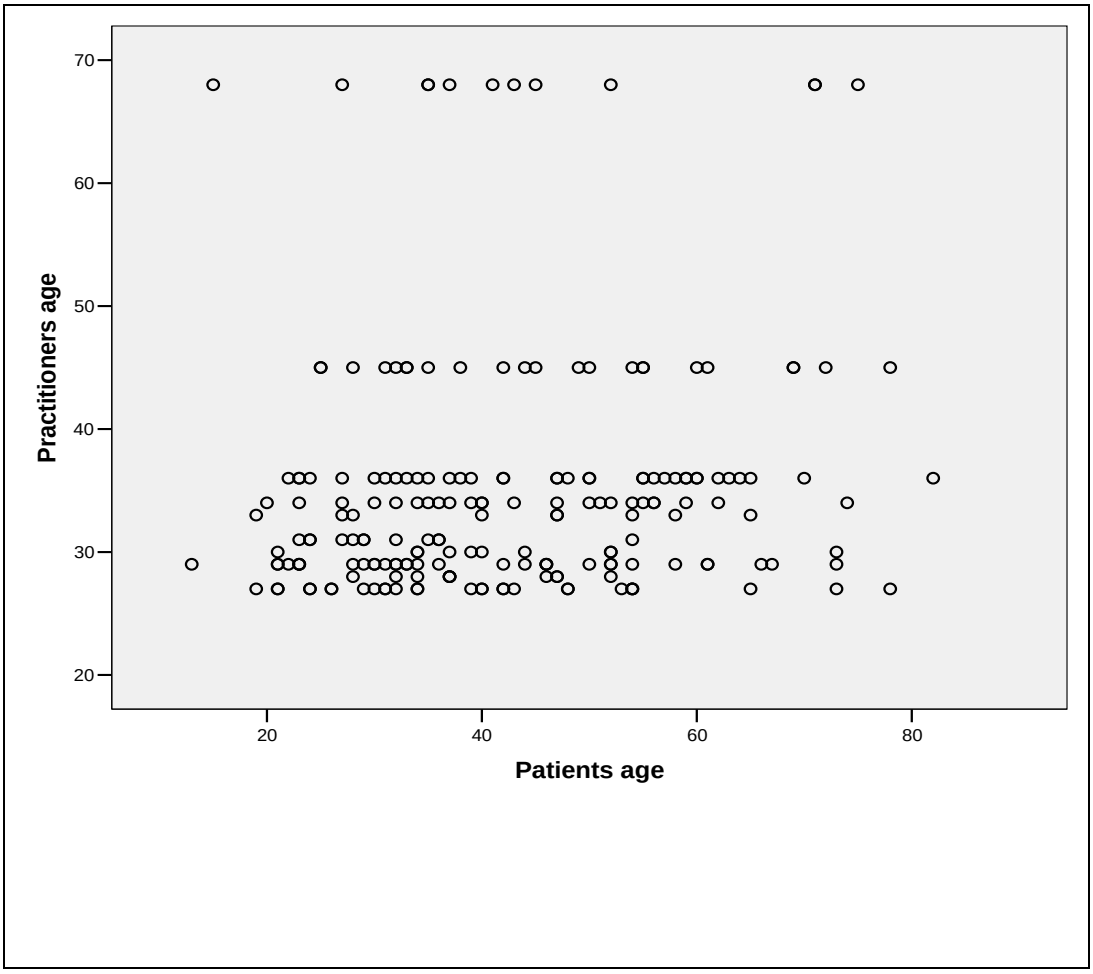

Figure 26 : Scatterplot of Patient & Practitioner Age

Figure 26 represents the relationship between the patient's and the practitioner's age. There was a very weak correlation between them (r=0.145, p=0.041). It is evident from Figure 26 that there was no relationship as such, for example, a practitioner of close to 70 years old, had patients of a wide age range (from below 20 years to 80 years).

		Patient's Gender		
Practitioner's Gender		Female	Male	Total
Male	Count	65	27	92
	Row%	70.7	29.3	100
Female	Count	64	42	106
	Row%	60.4	39.6	100
Total	Count	129	69	198
	Row%	65.2	34.8	100
		Pearson's chi square = 2.290, p=0.130		

Table 25 : Cross-tabulation of Patient & Practitioner Gender

Table 25 shows that there was no relationship between practitioner and patient gender (p=0.130). Male practitioners were slightly more likely to have female patients and vice versa, but the difference was very small.

		Patient's Race			
Practitioner's Race		White	Indian	Other	Total
White	Count	154	7	13	174
	Row%	88.5	4.0	7.5	100
Indian	Count	2	18	4	24
	Row%	8.3	75.0	16.7	100
Total	Count	156	25	17	198
	Row%	78.8	12.6	8.6	100
		Pearson's chi square = 103.4, p<0.001			

Table 26 : Cross-tabulation of Patient & Practitioner Race

Table 26 illustrates that there was a significant association between practitioner and patient race (p<0.001). Patients tended to go to practitioners who were the same race as them. 88.5% of White practitioner's patients were White, and 75% of Indian practitioner's patients were Indian.

4.13 Summary of the Key Results Found

Descriptive analysis of the data collected in this study has demonstrated that the most common South African chiropractic patient was: around 42 years old; female; White; married; was a liberal professional; earned between R10 000 and R29 000; with a tertiary education, and on a Medical Aid (See Table 27).

Patients were most likely to present with headache or neck pain. Chronic conditions with duration of less than a year were the most common. Most patients had seen a GP before visiting the chiropractor.

The most frequent reason for visiting the chiropractor was "You previously responded well to chiropractic treatment and were satisfied with the treatment". There was a highly significant association between having consulted another health professional for the same complaint previously, and the following factors: "Your prior consultations with other health professionals did not resolve the problem"; "You were disappointed with the

results of your previous treatment by the other health professionals"; and "You felt you had not consulted the right practitioner for the problem". First-time patients were significantly more likely to respond positively to the factor "You recently became knowledgeable of chiropractic". Repeat patients were highly significantly more likely to respond positively to the factor "You previously responded well to chiropractic treatment and were satisfied with the treatment".

Most patients were referred by a relative/friend. Patients were most likely to be repeat patients; and to have had less than 6 visits with the same chiropractor. Patients were likely to be treated for other areas of the body by the same chiropractor. The most frequently requested test by chiropractors was X-rays. Patients mostly had a very good knowledge of chiropractic. There were a huge variety of diagnoses provided, but the most common ones were cervical facet syndrome, followed by sacroiliac syndrome.

The mean age of practitioners was 34.2 years, with the majority being female and White. The average length of being in practice was 7.4 years, with the majority located in a residential area. There was a significant association between practitioner and patient race; patients tended to go to practitioners who were the same race as them.

CHAPTER FIVE
Discussion

5.1 Response Rates

The overall practitioner and patient response rates (22.47% and 18.63% respectively) were low. The province with the highest response rate was the North West Province. The lowest responses were from Mpumalanga, Limpopo and the Free State. The response rate was very low when compared to Mootz et al. (2005) with a response rate of 61% (Arizona sample) and 86% (Massachusetts sample); Hartvigsen et al. (2002) with a response rate of 94%; Rubinstein et al. (2000) and Leboeuf-Yde et al. (1997) with a response rate of 78% each. However, the response rate was considerably higher than Drews (1995), which had a 13% response rate from chiropractors.

5.2 Patient Demographic Profile

The average age of patients was 41.8 years old (standard deviation -14.5 years), with a range from 13 to 82 years. This correlated with previous studies; Coulter & Shekelle (2005) and Hartvigsen et al. (2002), both of which found the average age was 42; Rubinstein et al. (2000), which found the mean and median age was 41 and Pedersen (1994), which found the mean age was 40.8. This could be attributed to the fact that musculoskeletal disorders are associated with increasing age (Suleman, 2001).

The majority of the patient sample was female (62.8%). This concurred with previous studies; Gaumer & Gemmen (2006), 65% female; Coulter & Shekelle (2005), 61% female; and Rubinstein et al. (2000), 60% female. This finding could be as a result of the female gender being more predisposed to musculoskeletal disorders because of anatomical differences with the male gender (McClure, Adams & Dahm, 2005).

This study found a predominance of White patients (75.66%). This result was similar to other studies; Gaumer & Gemmen (2006), 93.5% White; Coulter & Shekelle (2005), 82.5% White; and Mootz et al. (2005), 93% (Arizona sample) and 95% White (Massachusetts sample). The results of this study are thus in accordance with the views of Manga (2000), who stated that the ethnic minorities were less likely to utilize chiropractic services.

The majority of the patient sample was married (60.62%). The most frequently reported occupations were the liberal professions at 24%, followed by managerial professions at

16%. Gaumer & Gemmen (2006) had found that 18.8% of the sample that had visited a chiropractor was retired. This was much higher than the 6% of retirees found in this study. Rubinstein et al. (2000) had found that 30% of patients were skilled labourers. This was considerably higher than the 10% of skilled workers/artisans found in this study. Ten percent of the patient sample were housewives; this was comparable to Pedersen (1994), who found 11.6% of the patient sample were housewives.

The level of education achieved was predominantly tertiary (40.97%). This was fairly consistent with results from Coulter & Shekelle (2005), who found that 46% of patients obtained a degree. A fairly large portion of the patient sample (36.54%) earned between R10 000 and R29 000.

The majority of patients (81.9%) were covered by Medical Aid. This differed from Coulter & Shekelle (2005), who found that 37% of patients did not have healthcare insurance; and Mootz et al. (2005), who found that 40% (Arizona sample) and 31% (Massachusetts sample) of patients did not have healthcare insurance.

In South Africa, the limited availability of all medical facilities at provincial/government hospitals compels the public to seek care from private facilities. However, this is more expensive; hence, patients resolve to obtain a healthcare insurance plan. Thus, this could account for the majority of patients in this study to be covered by Medical Aid. Interestingly, of the 81.9% of patients covered by Medical Aid, 20.65% were not covered for chiropractic services. Therefore, these patients opted for chiropractic, even though they would be paying for the treatment without any reimbursement from their Medical Aid scheme.

Only 18.1% of patients were visiting the chiropractor for the first time, while 81.9% of patients had seen a chiropractor previously. This finding concurs with Mootz et al. (2005); who found that 81% (Arizona sample) and 89% (Massachusetts sample) of patients were follow-up patients. The only significant factor that differed between first-time and repeat patients was ethnicity. Repeat patients were more likely to be White than first time patients ($p<0.001$)

5.3 Complaint Profile

The most common presenting complaint in patients was headache and neck pain (25.6%), followed by low back pain (18.5%). This was similar to results for Coulter & Shekelle (2005), who found 27% neck/cervical problems and 22% lower back problems. Although Mootz et al. (2005) and Pedersen (1994) found similar percentages for neck/cervical complaints, the lower back complaints were much greater, 41% and 51.8% respectively. The majority of complaints (58%) were chronic, while 28.8% were acute and 13.2% were sub-acute. This was contradictory to the literature, where Coulter & Shekelle (2005) and Pedersen (1994), found the majority of complaints presented within the acute stage.

5.4 Previous Consultations with Other Health Professionals & Mode of Referral

There were 62.2% of patients who had consulted another health professional prior to their chiropractic consultation. On initial consultation for the main complaint, 60% of patients had consulted a general practitioner (GP), while 16.4% had consulted a physiotherapist. On subsequent consultations, physiotherapists were consulted by 21.7% of patients and GPs by 8.5%.

Despite these high percentages, GPs and physiotherapists were an infrequent mode of referral. Only 5.3% of patients were referred by GPs and 1.8% by physiotherapists. This vastly differed with the results of Hartvigsen et al. (2002), where 49% of referred patients were referred by GPs. This is also contradictory to Louw (2005), who found that 46% of the participating GPs in South Africa had referred patients to chiropractors.

The low referral rate from physiotherapists could be due to two reasons; firstly the professional animosity between chiropractors and physiotherapists may still be common amongst the South African population. Secondly, according to Hunter (2004), 82% of South African physiotherapists are not knowledgeable about chiropractic and they would like to know more about the profession. Hence, ignorance of the chiropractic profession could be restricting physiotherapists from referring their patients.

The most common source of referral to the chiropractor was by relative/friend (44.7%), whilst self-referral (25.7%) was the second highest source. This differed from Rubinstein et al. (2000), who found that 71% of patients were referred by friends/family whilst 8% were self-referrals. Mootz et al. (2005), also found a predominance of self-

referrals (approximately 85% of patients in the Arizona and the Massachusetts sample). Chiropractors in South Africa are limited in terms of their advertising methods. Thus, many satisfied patients may be promoting the chiropractor by word of mouth with their personal successful recovery stories, to friends and family.

The low referral rate from other health professionals, coupled with, the majority of patient complaints presenting within the chronic stage, has indicated that chiropractic is not an established profession in the South African healthcare system. This is in accordance to Rubinstein et al. (2000), who also concluded that chiropractors were not an established part of the referral system in the Netherlands.

5.5 Contributing Factors for Visiting the Chiropractor

On the questionnaire, patients were given a variety of choices as their reason for presenting to the current practitioner. These reasons related more to their mental/emotional reason and not the physical complaint itself.

The most common reason (53%) was, “You previously responded well to chiropractic treatment and were satisfied with the treatment”. It was logical that this was the most common reason as 81.9% of the sample were repeat patients to a chiropractor. The second most common reason (26%) was “Your prior consultations with other health professionals did not resolve the problem”. There was a highly significant association ($p<0.001$) between this reason and patients who had consulted other health professionals (62.2%). The other factors that had a highly significant association ($p<0.001$) with these patients were, “You were disappointed with the results of your previous treatment by the other health professionals”, and, “You felt you had not consulted the right practitioner for the problem”.

First-time patients were considerably more likely ($p<0.001$) to select the reason, “You recently became knowledgeable of chiropractic”. First-time patients were also associated with the reason “You heard of another patient’s successful recovery with chiropractic treatment”, however, this was not too significant ($p=0.114$).

The results show that a major portion of the chiropractic patient population in South Africa (62.2%) consult other health professionals before consulting the chiropractor. Of these, 26.03% did not respond to the previous treatment, 14.16% were disappointed

with the treatment results and/or 11.42% had felt they had made the wrong choice of health professional. This totals to 51.61% of the patient sample who responded negatively to their previous treatment by other health professionals. These patients presented to chiropractors much later in the progression of their presenting disorder. This could account for the higher frequency (58%) of chronic patients found in this study.

These results conform to the views of Rubinstein et al. (2000) and Ernst & Pittler (1998) who stated that many patients, after having had the standard forms of conservative treatment, present to chiropractors with complaints that have progressed to the chronic stage; and due to the chronicity of the complaints, these patients may have a worse prognosis.

5.6 Past Chiropractic Treatment

Almost 71% of patients were treated by the chiropractor previously, and almost 90% were treated for the main complaint. The majority of patients (40.7%) had been to the chiropractor for their main complaint for less than 6 visits. These results are similar to Leboeuf-Yde et al. (1997) who found that 2-3 follow-up visits were common. The statistics show that acute and subacute conditions tended to have less than 6 visits ($p=0.024$), whilst chronic conditions were more likely to have a higher number of visits. Other statistically significant associations found, was that the time period over which these visits occurred increased, as the duration of the complaint increased ($p=0.003$).

X-rays were the most frequently (34.7%) used tests. This was similar to Pedersen (1994), who found that 36.9% of patients were x-rayed. Many patients (67.4%) were treated for other areas of their body by the same chiropractor. The most common area of treatment was the head and neck (64.7%) followed closely by the lower back (62.1%).

5.7 Patient's Knowledge of the Chiropractic Profession

The majority of patients (59.3%) achieved a knowledge score of 80% and above. There was no significant difference ($p=0.628$) in knowledge score between first-time and repeat patients. This finding differs from Gaumer & Gemmen (2006); who concluded that there was a significant lack of knowledge on the scope of chiropractic amongst previous chiropractic patients, as well as non-chiropractic patients.

The most incorrectly answered statement was “Chiropractic care is not included under the Workmen’s Compensation Act”. The most correctly answered statement was “Certain types of headaches can be treated by chiropractic” followed by “Chiropractors are trained to read and evaluate x-rays”.

There were four other important statements that many patients answered incorrectly: “Chiropractors are not trained to perform a full medical examination” (40.3% incorrect); “Chiropractors cannot offer nutritional advice” (25.2% incorrect); “Chiropractors can treat babies for colic” (14.4% incorrect) and “Chiropractors cannot treat and manage sports injuries” (13.7% incorrect). Although the majority of patient’s achieved a high knowledge score, the percentage of incorrect answers for these statements has indicated a considerable lack of knowledge on the scope of chiropractic and the capability of its practitioners.

This lack of knowledge may account for many patients (62.2%) seeking treatment from other health professionals prior to the chiropractic consult, and that 11.42% of those patients had felt that they had made the wrong choice of health professional.

Interestingly, the statement “Chiropractors can treat for arthritic conditions” was answered incorrectly by only 6.5% of patients. This may be due to the fact that the average age of patients found was 41.8 years.

5.8 Diagnoses

The most common (7.05%) was cervical facet syndrome, followed by sacroiliac syndrome (5.73%), whiplash (4.85%) and lumbar facet syndrome (3.96%). Many diagnoses were accompanied by associated myofasciitis. The other diagnoses were very specific and many consisted of combinations of diagnoses (See Appendix K for a full list of the diagnoses reported).

5.9 Practitioner and Practice Profile

The mean age of practitioners was 34.2 years. This was similar to Pedersen (1994), who found the mean age of practitioners was 37.2 years.

The majority of practitioners (55%) were female. This differed significantly from the previous studies which found a predominance of male practitioners; Coulter & Shekelle

(2005), 83% male; and Mootz et al. (2005), 81% (Arizona sample) and 70% male (Massachusetts sample).

The majority of practitioners (90%) were of White ethnicity. This concurred with results from Coulter & Shekelle (2005), 94% White and Mootz et al. (2005), 95% (Arizona sample) and 99% White (Massachusetts sample).

On average, practitioners had been in practice for 7.4 years. This was lower than Mootz et al. (2005), who reported a median of 11.7 years (Arizona sample) and 12.9 years (Massachusetts sample) in practice. However, the results were similar to Coulter & Shekelle (2005), who found 40% of participating practitioners were in active practice for 6-10 years.

The majority of practitioners (75%) practice in a residential area, with 25% in a central business district. There were no respondents from rural areas. This may be due to the limited number of chiropractors practising in rural areas; hence these chiropractors may be too busy to make time for research studies.

5.10 Relationships Found between Patients and Practitioners

There was a significant association ($p<0.001$) between practitioner and patient race. White patients tended to present to White practitioners and Indian patients to Indian practitioners.

5.11 Limitations of the Study

The overall practitioner response rate was low (22.47%). Due to this, a low patient response rate was achieved (18.63%). According to Russell et al. (2004), the mean response rate of chiropractors to mail surveys is 53%. With every additional contact made with the sample population, the response rate can increase by 10% (Russell et al. 2004). This study had 3 contacts, an initial telephone call to the practitioner requesting participation; subsequent to this, a confirmatory e-mail; and later, a reminder email. Despite this, a low response rate was still achieved.

Therefore the results cannot be assumed to be representative of the South African chiropractic practitioner and patient population. It is possible that chiropractors in South Africa are very busy treating patients and therefore do not have the time to participate in research studies. It is equally possible that many practitioners may not be interested in

participating in chiropractic research. However, it is mainly with research that the profession can further increase its knowledge and expand in capability.

The practitioner questionnaire was aimed to be short and easy to answer, to account for the practitioner's lack of time. However, this wasn't entirely possible with the patient questionnaire as an in-depth profile of the patient was required for this study. This may have deterred the practitioners from allowing their patients to answer the questionnaires, as this would have taken up some of their treatment time.

CHAPTER SIX
Conclusion & Recommendations

6.1 Conclusion

The demographic profile of the typical South African chiropractic patient was: around 42 years old; female; White; married; was a liberal professional; earned between R10 000 and R29 000; with a tertiary education, and on a Medical Aid.

The complaint profile was most commonly headaches or neck pain within the chronic stage. Most patients had consulted another health professional prior to the chiropractic consultation; this was a GP in most cases, followed by a physiotherapist.

The most frequent reason for visiting the chiropractor was due to a positive response and satisfaction from previous chiropractic treatment. Many patients that had consulted other health professionals had felt that those consultations/treatments did not resolve their problem; they were disappointed with the results of the previous treatment; and/or they felt that they had not consulted the right practitioner for the problem. First-time patients were significantly more likely to have recently become knowledgeable of chiropractic.

Most patients were referred by a relative/friend. Patients were most likely to be repeat patients; and to have had less than 6 visits with the same chiropractor. Patients were likely to be treated for other areas of the body by the same chiropractor, of which the head and neck was most common, followed closely by the lower back. The most frequently requested diagnostic investigation by chiropractors was X-rays.

Patients mostly had a very good knowledge of chiropractic; however had a lack of knowledge on the specific scope of chiropractic. There was a huge variety of diagnoses provided, but the most common ones were cervical facet syndrome, followed by sacroiliac syndrome.

The profile of the typical South African chiropractor was: around 34.2 years old, female, White, in practice for an average of 7.4 years, with the practice situated in a residential area.

The only significant association between practitioners and patients was race; patients tended to go to practitioners who were the same race as them.

The results of this study has suggested that the lack of patient knowledge of chiropractic has led patients to seek treatment from other health professionals. Many patients present to chiropractors after receiving the standard forms of conservative care. These patients did not respond to the previous treatment; felt disappointed with the negative results of their previous treatment; and/or felt that they had made the wrong choice of healthcare professional for their complaint. These patients present to chiropractors with their complaint already progressed to the chronic stage. Due to the chronicity of the complaint, these patients may have a worse prognosis.

The majority of the patients in this study consulted a general practitioner initially for their main complaint. The second most frequently consulted health professional were physiotherapists. However, only a small minority of patients were referred by these health professionals to chiropractors.

Hence, the results of this study has shown that chiropractic is not the primary choice of healthcare for patients with musculoskeletal disorders, in South Africa. Chiropractors are not an established part of the healthcare referral system in South Africa.

6.2 Recommendations

The response rate in this study was low. More contacts should be made with the participants to achieve a higher response rate. Questionnaires should be as concise as possible, yet one should be able to extrapolate as much information from the questionnaire as possible. Rules regarding the research procedure should be kept to a minimum, to avoid participant deterrence, as well as, participant error.

Intervention programmes, to educate the ethnic minorities and rural communities, of chiropractic, should be implemented. Other health professionals, mainly general practitioners and physiotherapists, need to be educated on the scope of chiropractic. There is a need for accurate and timeous referrals between health professionals, in order to minimise complaint chronicity and optimise patient recovery.

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		Frequency	Percent	Valid Percentage	Cumulative Percentage
AGE					
Valid	226				
Mean	41.81				
Median	40				
Std. Deviation	14.518				
Minimum	13				
Maximum	82				
Missing	1				
GENDER	*Female*	142	62.6	62.8	62.8
Valid	*Male*	84	37	37.2	100
	Total	226	99.6	100	
Missing	System	1	0.4		
RACE	*White*	171	75.3	75.7	75.7
	Indian	36	15.9	15.9	91.6
Valid	*Black*	8	3.5	3.5	95.1
	Coloured	9	4	4	99.1
	Other	2	0.9	0.9	100
	Total	226	99.6	100	
Missing	System	1	0.4		
MARITAL STATUS	*Single*	61	26.9	27	27
	Divorced	20	8.8	8.8	35.8
Valid	*Married*	137	60.4	60.6	96.5
	Widowed	6	2.6	2.7	99.1
	Not Applicable	2	0.9	0.9	100
	Total	226	99.6	100	
Missing	System	1	0.4		
OCCUPATION	*Liberal Professionals*	53	23.77	24.00	24.00
	Managerial	35	15.70	16.00	40.00
	Skilled Workers/Artisans	22	9.87	10.00	50.00
	Housewives	22	9.87	10.00	60.00
	Clerical	17	7.62	8.00	68.00
	Educators	13	5.83	6.00	74.00
Valid	*Retired*	13	5.83	6.00	80.00
	Salesmen	12	5.38	5.00	85.00
	Self-Employed	12	5.38	5.00	90.00
	Students/Scholars	9	4.04	4.00	94.00
	Businessmen	7	3.14	3.00	97.00
	Pensioners	5	2.24	2.00	99.00
	Farmers	2	0.90	1.00	100
	Unskilled Workers/Labourers	1	0.45	0.00	100
	Total	223	100	100.00	
Missing	System	4	1.76		
INCOME	*>R60000*	36	15.9	17.3	17.3
	R59000 to R30000	40	17.6	19.2	36.5
Valid	*R29000 to R10000*	76	33.5	36.5	73.1
	R10000 to R5000	39	17.2	18.8	91.8
	<R5000	17	7.5	8.2	100
	Total	208	91.6	100	
Missing	System	19	8.4		
EDUCATION LEVEL	*High school*	14	6.2	6.2	6.2
	Matriculated	57	25.1	25.1	31.3
Valid	*Tertiary*	93	41	41	72.2
	Post graduate	59	26	26	98.2
	Other	4	1.8	1.8	100
	Total	227	100	100	
MEDICAL AID	*Member*	185	81.5	81.9	81.9
Valid	*Non-Member*	41	18.1	18.1	100
	Total	226	99.6	100	
Missing	System	1	0.4		
MEDICAL AID COVERAGE OF CHIROPRACTIC	*Yes*	123	54.2	54.9	54.9
	No	45	19.8	20.1	75
	Unsure	25	11	11.2	86.2
Valid	*Not Applicable*	31	13.7	13.8	100
	Total	224	98.7	100	
Missing	System	3	1.3		

Table 27 : Summary of the Demographic Results of Patients

APPENDIX A

PRACTITIONER QUESTIONNAIRE

CODE

Dear Practitioner
Please answer all of the questions below.

1.1 Gender: Female ☐ Male ☐

1.2 Age: ☐

1.3 Race: (for statistical & research purposes only)

White ☐ Indian ☐
Black ☐ Coloured ☐
Other (please specify):_____

1.4 For how long (in years) have you been practicing as a chiropractor? ☐

1.5 In which province is your practice situated?

Eastern Cape ☐
Free State ☐
Gauteng ☐
Kwa-Zulu Natal ☐
Limpopo ☐
Mpumalanga ☐
Northern Cape ☐
North West Province ☐
Western Cape ☐

1.6 Please specify the name of the town/city in which your practice is located.

☐

1.7 Where is your practice located?

Central business district ☐
Residential area ☐
Rural area ☐

APPENDIX C **LETTER OF INFORMATION – PRACTITIONERS**

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

Title: Chiropractic Patients in South Africa: A demographic and descriptive profile
Name of researcher: Miss Firdosh Mahomed (072 9395 321 or 031-204 2512)
Name of supervisor: Dr A Docrat (M.Tech: Chiropractic, CCFC (TN) (031-204 2589)
Name of Institution: Durban University of Technology

Introduction:
Chiropractic has been gaining popularity for the treatment and/or alleviation of musculoskeletal disorders, however, there is still relatively little known about chiropractic in many parts of the world, including South Africa. Most of the information available on the profession emanates from studies done in America and Europe.

Purpose of this study:
The purpose of this study is to establish a demographic & descriptive profile of patients presenting to private chiropractors in South Africa. The descriptive profile includes the types of complaints & the common diagnoses. A questionnaire will be used to gain this information. With this information, the profession will be better equipped in terms of:

a) Promoting and marketing the profession in its correct sector
b) Determining the most common conditions treated by chiropractors
c) Guiding further research on the common conditions
d) Educating patients regarding the scope of chiropractic
e) Determining the role of chiropractors in the South African health-care system

Procedure:
You are kindly requested to complete the practitioner questionnaire to provide basic demographic information. You are then requested to administer 12 questionnaires to 12 patients (i.e. new or follow-up patients) presenting to your clinic. Thereafter, you are requested to complete the last section of each patient questionnaire (i.e. the diagnosis). The patient sampling procedure has been explained in your receptionist's letter. A time period of 2 months, from the date of postage of the questionnaires, will be allowed for you & your patients to complete & return the questionnaires.

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

Inclusion criteria for the practitioners are as follows:

- the practitioner needs to be a registered member of the Allied Health Professions Council of South Africa
- the practitioner needs to be actively practicing chiropractic at present
- the practitioner should not possess a qualification in medicine or any other alternative health therapy (e.g. homoeopathy, reflexology, aromatherapy), and the practitioner should not be practising a modality for which he/she is not registered

Practitioners, please note, if you do not meet all of the above inclusion criteria, kindly exclude yourself from this research.

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

Remuneration: None. Participation in this study is entirely voluntary.
Thank you for your most valuable participation in this survey and thereby, your immeasurable contribution to this research study.

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Miss F Mahomed **Dr A Docrat**

APPENDIX D **LETTER OF INFORMATION- RECEPTIONISTS**

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

Title: Chiropractic Patients in South Africa: A demographic and descriptive profile

Name of researcher: Miss Firdosh Mahomed (072 9395 321 or 031-204 2512)
Name of supervisor: Dr A Docrat (M.Tech: Chiropractic, CCFC (TN) (031-204 2589)
Name of Institution: Durban University of Technology

Procedure:
You are kindly requested to administer 12 questionnaires to 12 patients (i.e. new or follow-up patients) presenting to your clinic over a 12 day consecutive working period. A Microsoft Excel program will be e-mailed to you. This program can be easily installed onto your office computer and it will generate the sample for you. You are required to enter the number of patient appointments, for that particular day, into the program. The program will then generate a random number. This number corresponds with the order of patient appointments.

For example, if there are 15 patient appointments booked on a day, enter this number into the program. The program will generate a random number that is less than or equal to the total number of patients for that day. If number 8 was the selected number, the 8th patient for that day should be requested to participate. Since clinics receive walk-in patients daily, this sampling procedure is not entirely accurate as it is based on the total appointments booked for the day. Thus, it is suggested that the sample be performed in the morning using the known number of patient appointments for that day. Patients should ideally complete the questionnaire before the consultation with the chiropractor.

An exception will need to be made under the following circumstances:

- if the selected patient is not willing to participate in the study
- if the selected patient does not fulfil the inclusion criteria
- if the selected patient does not arrive for the appointment
- if the selected patient has participated in this study on a previous day

Under these circumstances, the next patient should be requested to participate (i.e. the patient whose appointment is immediately after the selected patient). However, if the selected patient was the last patient appointment for that day, the first patient booked for the following day should be requested to participate. Hence, in this situation, 2 questionnaires will need to be administered on one day.

If your clinic practices on the weekend, please include these days into the 12 day period. A time period of 2 months, from the date of postage of the questionnaires, will be allowed for you & your patients to complete & return the questionnaires.

Inclusion criteria for the patients are as follows:

- the patient needs to be a South African citizen
- the patient needs to be literate in the English language as the questionnaire will be printed in English
- the patient needs to be willing to disclose their diagnoses
- if the patient is a minor, a parent/guardian is required to complete the consent form & questionnaire, should they agree to participate

Please feel free to contact me if you have any queries.

Thank you for your most valuable participation in this survey and thereby, your immeasurable contribution to this research study.

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Miss F Mahomed **Dr A Docrat**

APPENDIX E **LETTER OF INFORMATION - PATIENTS**

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

Title: Chiropractic Patients in South Africa: A demographic and descriptive profile
Name of researcher: Miss Firdosh Mahomed (072 9395 321 or 031-204 2512)
Name of supervisor: Dr A Docrat (M.Tech: Chiropractic, CCFC (TN) (031-204 2589)
Name of Institution: Durban University of Technology

Introduction:
Chiropractic has been gaining popularity for the treatment and/or alleviation of musculoskeletal disorders, however, there is still relatively little known about chiropractic in many parts of the world, including South Africa. Most of the information available on the profession emanates from studies done in America and Europe.

Purpose of this study:
The purpose of this study is to establish a demographic & descriptive profile of patients presenting to private chiropractors in South Africa. The descriptive profile includes the types of complaints & the common diagnoses. A questionnaire will be used to gain this information. With this information, the profession will be better equipped in terms of:

a) Promoting and marketing the profession in its correct sector
b) Determining the most common conditions treated by chiropractors
c) Guiding further research on the common conditions
d) Educating patients regarding the scope of chiropractic
e) Determining the role of chiropractors in the South African health-care system

Procedure:
You are requested to complete sections 1/2/3/4 of the patient questionnaire. You are then requested to return the questionnaire to your chiropractor, who will complete section 5.

Please be assured that your personal details as well as the information, which you furnish, will be treated confidentially. No personal details appear on the questionnaire. Personal details do however appear on the consent form but this will be separated from the questionnaire by a neutral third party on its return, thus ensuring anonymity. However, if you do not wish to furnish your name and sign the consent form, you don't need to do so

Inclusion criteria for the patients are as follows:

- the patient needs to be a South African citizen
- the patient needs to be literate in the English language as the questionnaire will be printed in English
- the patient needs to be willing to disclose their diagnoses
- if the patient is a minor, a parent/guardian is required to complete the consent form & questionnaire, should they agree to participate

Patients, please note, if you do not meet all of the above inclusion criteria, kindly exclude yourself from this research.

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

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

Thank you for your most valuable participation in this survey and thereby, your immeasurable contribution to this research study.

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Miss F Mahomed **Dr A Docrat**

APPENDIX F

LETTER OF INFORMATION – FOCUS GROUP

Dear Participant

Welcome to my focus group meeting. Thank you for your interest.

Title: Chiropractic Patients in South Africa: A demographic & descriptive profile

Name of researcher: Firdosh Mahomed (072 9395 321 or 031-204 2512)
Name of supervisor: Dr A Docrat (031-204 2589)
Name of Institution: Durban University of Technology

Introduction:
Chiropractic has been gaining popularity for the treatment and/or alleviation of musculoskeletal disorders, however, there is still relatively little known about chiropractic in many parts of the world, including South Africa. Most of the information available on the profession emanates from studies done in America and Europe.

Purpose of this study:
The purpose of this study is to establish a demographic & descriptive profile of patients presenting to private chiropractors in South Africa. The descriptive profile includes the types of complaints & the common diagnoses. A questionnaire will be used to gain this information. With this information, the profession will be better equipped in terms of:

f) Promoting and marketing the profession in its correct sector
g) Determining the most common conditions treated by chiropractors
h) Guiding further research on the common conditions
i) Educating patients regarding the scope of chiropractic
j) Determining the role of chiropractors in the South African health-care system

Procedure:
A questionnaire has already been developed by the researcher. You are requested to constructively critique this questionnaire & to provide your opinions/views on each question.

Remuneration: None. Participation in this focus group is entirely voluntary.

Thank you for your most valuable participation in this focus group meeting and thereby, your immeasurable contribution to this research study.

APPENDIX G

INFORMED CONSENT FORM

(TO BE COMPLETED BY THE PARTICIPANTS OF THE FOCUS GROUP)

DATE: 07/08/06

TITLE OF RESEARCH PROJECT:

Chiropracitic Patients in South Africa : A demographic & descriptive profile

NAME OF SUPERVISOR:

Dr A Docrat (031-204 2589)

NAME OF RESEARCH STUDENT:

Firdosh Mahomed (072 9395 321/ 031-204 2205 (DUT)

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

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

Please Print in block letters:

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature:_____

Researcher's Name: _____ Signature:_____

Supervisor's Name: _____ Signature:_____

APPENDIX H

CONFIDENTIALITY STATEMENT – FOCUS GROUP DECLARATION

IMPORTANT NOTICE:

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

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaires will be coded and kept anonymous in the research process.
3. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.
4. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

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

Please Print in block letters:

Focus Group Member: _____ Signature:_____

Witness Name: _____ Signature: _____

Researchers Name: _____ Signature: _____

Supervisors Name: _____ Signature :_____

APPENDIX I

CODE OF CONDUCT

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

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

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

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

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

Member represents	Member's Name	Signature	Contact Details

APPENDIX J

Pre-test Evaluation

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

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

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

2.1 Yes
2.2 No

3. What is your opinion about the covering letter?

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

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

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

5. Do you think the questionnaire is too long?

5.1 Yes
5.2 No

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

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

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

Thank you for your most valuable time in helping me with my research project.

Please be reminded that the topics discussed above are strictly confidential.

APPENDIX K

DIAGNOSIS	Frequency	Percent
HEADACHES:		
Cluster headache	2	0.88
Migraine headache	3	1.32
Tension headache	3	1.32
Tension headaches and lumbar facet syndrome	4	1.76
Cervicogenic headache	5	2.2
CERVICAL SPINE & ASSOCIATED DISORDERS:		
Whiplash	11	4.85
Whiplash with cervical facet syndrome, myofasciitis and tension headache	3	1.32
Cervical facet syndrome	16	7.05
Cervical facet syndrome with cervical myofasciitis	9	3.96
Cervical facet syndrome with cervical and shoulder myofasciitis	2	0.88
Cervical facet syndrome with myofasciitis and cervicogenic headache	9	3.96
Cervical facet syndrome with myofasciitis and tension headache	4	1.76
Cervical facet syndrome with myofasciitis and unspecified headache	3	1.32
Cervical degenerative joint disease and spondylolisthesis	3	1.32
Cervical discogenic disease/radiculopathy and alordosis	5	2.2
THOCACIC SPINE & ASSOCIATED DISORDERS:		
Thoracic facet syndrome	6	2.64
Thoracic facet syndrome with thoracic myofasciitis	3	1.32
Thoracic scoliosis/kyphosis, discogenic disease and compression fracture	5	2.2
Thoracic kyphosis & lumbar lordosis	1	0.44
Rib subluxation syndrome with thoracic myofasciitis	1	0.44
CERCIOTHORACIC SPINE AND ASSOCIATED DISORDERS:		
Cervicothoracic facet syndrome	9	3.96
Cervicothoracic facet syndrome with myofasciitis	4	1.76
Cervicothoracic facet syndrome with myofasciitis and cervicogenic headaches	3	1.32
LUMBAR SPINE AND ASSOCIATED DISORDERS:		
Lumbar facet syndrome	9	3.96
Lumbar facet syndrome with lumbar myofasciitis	6	2.64
Lumbar facet syndrome, dysmennorhoea	1	0.44
Lumbar facet syndrome with lumbar scoliosis/spondylolisthesis/increased lordosis	7	3.08
Lumbar discogenic disease and radiculopathy	7	3.08
SACROILIAC JOINT AND ASSOCIATED DISORDERS:		
Sacroiliac dysfunction/sprain/instability	6	2.64
Sacroiliac syndrome	13	5.73
Sacroiliac syndrome with gluteal myofasciitis	7	3.08
Piriformis syndrome	1	0.44
LUMBOSACRAL SPINE AND ASSOCIATED DISORDERS:		
Lumbar facet and sacroiliac syndrome	4	1.76
Lumbar facet/sacroiliac syndrome with leg length inequality	4	1.76
Lumbosacral degeneration and spondylolisthesis	2	0.88
DISORDERS OF THE SHOULDER:		
Bicipital tendonitis/calcifications	2	0.88
Rotator cuff syndrome	1	0.44
Shoulder myofasciitis	1	0.44
Adhesive capsulitis	1	0.44
Supraspinatus grade 2 strain	1	0.44
Rotator cuff tendinosis	1	0.44
Acromioclavicular joint dysfunction	1	0.44
DISORDERS OF THE FOREARM/ELBOW:		
Forearm myofasciitis	1	0.44
Lateral epicondylitis/epicondylosis with insertional tenopathy and forearm myofasciitis	1	0.44

DISORDERS OF THE WRIST/HAND:		
Carpal tunnel syndrome	1	0.44
DISORDERS OF THE HIP:		
Mofasciitis	1	0.44
Degenerative joint disease of both hips	1	0.44
DISORDERS OF THE KNEE/LEG:		
Biomechanical knee pain due to sagittal block at foot level	1	0.44
Patellofemoral pain syndrome	1	0.44
Shin splints	1	0.44
Multidirectional instability of the knee with possible medial meniscus tear	1	0.44
Degenerative joint disease of both knees	1	0.44
Right peroneal muscle strain	1	0.44
DISORDERS OF THE ANKLE/FOOT:		
Plantar fasciitis	1	0.44
Inversion ankle sprain	1	0.44
Inversion and Eversion ankle sprain	1	0.44
GENERAL:		
General/multiple facet dysfunction	6	2.64
Myalgia-multiple sites	1	0.44
Degenerative joint disease of left hand, left knee, left elbow	1	0.44
Degenerative joint disease with osteoporosis	1	0.44
Patient is severely obese	1	0.44
Patient recovering from motor accident with head injuries	1	0.44
Core strengthening exercises for chronic low back pain	1	0.44
Not applicable	10	4.41
Unknown / missing	2	0.88
Total	**227**	**100**