A RETROSPECTIVE CROSS-SECTIONAL SURVEY OF CERVICAL CASES RECORDED AT THE DURBAN UNIVERSITY OF TECHNOLOGY (D.U.T) CHIROPRACTIC DAY CLINIC (1995-2005)

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By

Yomika Venketsamy

A dissertation submitted to the Faculty of Health Sciences, in partial compliance with the requirements for a
Master's Degree in Technology: Chiropractic at the
Durban University of Technology.

I, Yomika Venketsamy,
do hereby declare that this dissertation represents my own work
in both conception and execution, *except where specific assistance is sought and duly acknowledged*

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DEDICATION

I would like to dedicate this dissertation to:

Maha Sakthi, the Goddess of Strength and Courage, for bestowing upon me these qualities to pursue my dreams.

And

My parents, Dolly and Bazil, for all their love, support and encouragement throughout the years. I love you both.

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ABSTRACT

Aim: The purpose of this research was to conduct a descriptive study of cervical cases recorded at the Durban University of Technology Chiropractic Day Clinic from 1995 to 2005 as there is a paucity of information on the recorded cases of neck pain in South Africa.

Objectives:

1 To identify the demographics of patients with cervical spine complaints that visited the chiropractic teaching clinic.
2 To identify the commonly reported causes of neck pain, associated signs and symptoms e.g. headaches and arm pain, and diagnoses of neck pain at the clinic.
3 To identify the management most commonly used for patients with cervical spine problems at the initial consult in this teaching clinic setting.
4 To determine the prevalence of neck pain at the Durban University of Technology Chiropractic Day Clinic from 1995 to 2005.

Method: This research study was designed in the form of a retrospective cross-sectional quantitative clinical survey and data was obtained from 1,342 patient medical records that were present at the Chiropractic Day Clinic at the Durban University of Technology from 1995 to 2005. Descriptive statistics such as frequencies and percentages for categorical variables, and mean, standard deviation and range for quantitative variables were used to describe the sample in terms of demographics and other characteristics. Comparisons of these factors between the two successive five-year periods were made using Pearson's chi square tests for categorical variables, and independent t-tests for quantitative variables.

Results: There was a shift in demographics of patients that presented with neck pain to the D.U.T Chiropractic Day Clinic from 1996 to 2005. The mean age of patients with cervical complaints had increased over the years. Females presented with cervical complaints more than males over this period. There was an increase of retired and self-employed patients and a slight decrease in unemployed patients, scholars and students over the two five year periods. The most common cause of neck pain was unknown and neck pain and headaches were the most common complaints. Dizziness and

paresthesias were found to be common signs and symptoms with the most common diagnoses being cervical facet syndrome and myofascial pain syndrome. Treatment protocols primarily included soft tissue therapy and manipulation and the upper cervical spine was the most common area of neck pain management. X-rays were the primary investigative tools utilized. There was a significant increase in prevalence of cervical complaints from 1996 to 2005 at the chiropractic-teaching clinic.

Conclusion and Recommendations: Patients presenting to the D.U.T chiropractic-teaching clinic showed similarities to other patients attending chiropractic-teaching clinics even though this study focused on neck pain only. The South African population at this clinic was similar to most patients abroad that suffered with neck pain. It was recommended that future surveys be conducted in other chiropractic clinics in South Africa and in private practice and that ethnicity and paediatric files should be reported on.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Retrospective surveys done on thorough medical records are useful as a basis for investigations (Abramson and Abramson, 1999). Chiropractic-teaching clinics are educational facilities for final year students and interns (Bryant *et al.* 2003) where thorough medical records are kept as per the clinic protocol (Korporaal, 2007). The use of clinical records for epidemiological purposes is essential in community-oriented primary care (Abramson and Abramson, 1999).

Neck pain is the second most common condition seen in clinical practice after low back pain; hence many research studies have been done on this complaint (Ferrari and Russell, 2003). Few studies have been done, however, within a chiropractic-teaching clinic setting (Nyiendo and Olsen, 1988) especially on neck pain alone. The previous global studies on chiropractic-teaching clinics had focused on all areas of patient complaints (low back pain, upper back pain, neck pain and extremity pain). This study attempted to focus on the cervical spine only as there is a paucity of information on the recorded cases of neck pain in South Africa.

According to Ferrarri and Russell (2003) neck pain of unspecified duration was prevalent in at least 80% of the population. With regards to demographics, Cote *et al.* (2003) revealed that between 12% and 34% of adults experienced neck pain annually, while Fejer *et al.* (2006) found that women reported more neck pain than men. Hartvigsen *et al.* (2002) revealed that women consulted chiropractors more frequently than men. This may be a reason for the increased amount of women in neck pain studies. Cote *et al.* (2003) noted in their study that neck pain was “common among individuals of lower socio-economic status and those who carry out repetitive, static or physically demanding work.”

Chiropractic management for all cervical spine conditions includes pain control, manipulation and exercise. Methods of pain control used by chiropractors include

cryotherapy, heat therapy and electrotherapy (Penter nd). Traditional chiropractic care involves the whole patient, with the spine and nervous system function viewed as integral components (Giles and Singer, 1998).

The diverse population of both the public and private sector attending the D.U.T Chiropractic Day Clinic, the location of the teaching clinic between the CBD and residential areas, consultation fees and advertising of clinical research undertaken within this clinic may provide the potential for differences to exist regarding the epidemiology of neck pain, in comparison to the international chiropractic-teaching clinics.

The current study took place at the Chiropractic Day Clinic at the Durban University of Technology. Holt and Beck (2005) stated that patient presentation and chief complaints will change over time as the clinic becomes more established in the community, hence, cervical spine case records contained at the clinic for the period 13 January 1995 to 30 November 2005 were retrospectively analysed.

1.2 OBJECTIVES OF THIS STUDY

1.2.1 Objective 1:

To identify the demographics of patients with cervical spine complaints that visited the Chiropractic Day Clinic.

1.2.2 Objective 2:

To identify the commonly reported causes of neck pain, associated signs and symptoms e.g. headaches and arm pain, and diagnoses of neck pain at the clinic.

1.2.3 Objective 3:

To identify the management most commonly used for patients with cervical spine problems at the initial consult in this teaching clinic setting.

1.2.4 Objective 4:

To determine the prevalence of neck pain at the Durban University of Technology Chiropractic Day Clinic from 1995 to 2005.

1.3 HYPOTHESES

Pertaining to the above objectives, this study will include the following hypotheses:

- **Hypothesis 1**

The Null Hypothesis (H_o) states that there is no significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

The Alternate Hypothesis (H_a) states that there is a significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

- **Hypothesis 2**

The Null Hypothesis (H_o) states that there shall not be a lower prevalence of cervical complaints from 1995 to 1999 and a comparatively higher prevalence from 2000 to 2005.

The Alternate Hypothesis (H_a) states that there shall be a lower prevalence of cervical complaints from 1995 to 1999 and a comparatively higher prevalence from 2000 to 2005.

1.4 RATIONALE OF THE STUDY

The D.U.T Chiropractic Day Clinic is situated in a prime location between the CBD and residential areas of Durban and with easily available transport facilities is attended by culturally diverse individuals of both the public and private sector. The teaching clinic is

an academic institution where research in the form of clinical trials and surveys are carried out here. The advertised research and other programmes such as sports events and community service may also be the rationale behind the recruitment of many patients. As a result of these various factors, it cannot be assumed that the demographic profile, diagnosis and management of neck pain are the same as the current literature indicates for teaching clinics and other clinics overseas

There is a paucity of information within South Africa regarding demographics (age, gender, and occupation) and the prevalence of neck pain. These findings may provide a profile of the chiropractic patient presenting with neck pain. There remains insufficient data on the common cervical complaints treated by chiropractors and its associated conditions like headaches and arm pain. This research may provide information on the causes of neck pain, common cervical spine complaints, the associated factors and other complaints frequently occurring with neck pain at the D.U.T Chiropractic Day Clinic.

The management protocols followed by students within the Chiropractic Day Clinic may determine whether this is a primarily manipulative therapy clinic or if it is a combination of manipulation and modalities being used, depending on the condition that plays a part. Contra-indications, referrals out and special investigations shall also be noted as they may play an integral role in the overall management of a patient.

By identifying the typical patient that presents with neck pain, this would enable the profession to better focus research on neck pain sufferers, refine the tertiary standards of education by perhaps updating the chiropractic course syllabus, develop more appropriate marketing tools and provide a base from which comparisons can be made with other teaching clinics (Bryant *et al.* 2003) in South Africa and abroad. It was the purpose of this study to provide important information regarding the identity of South African neck pain sufferers and perhaps enhance the future management of these patients, which would be indispensable to the growing chiropractic profession.

1.5 LIMITATIONS TO THE STUDY

- This study was limited to patient records within the D.U.T Chiropractic Day Clinic.
- During this study it was not known if case records belonged to students' friends and family who helped with their "patient numbers" and were treated for neck pain.
- Race was excluded in the patient information sheet and was therefore excluded in the study
- Older medical records did not provide some information and were sometimes unreliable.

1.6 STATISTICAL ANALYSIS

SPSS version 13 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data. A two-tailed 0.05 level of significance was used. Prevalence and 95% confidence intervals (95%CI) per year, per 5 year period, and overall were calculated and compared using EpiCalc 2000 version 1.02 (Joe Gilman and Mark Myatt, 1998 Brixton Books). Descriptive statistics such as frequencies and percentages for categorical variables, and mean, standard deviation and range for quantitative variables were used to describe the sample in terms of demographics and other characteristics. Comparisons of these factors between the two successive five-year periods were made using Pearson's chi square tests for categorical variables, and independent t-tests for quantitative variables.

1.7 CONCLUSION

This chapter presented a preliminary literature review, with the argument supporting the aims and objectives of this study. The rationales, benefits and statistical analyses were also highlighted in order for you, the reader, to have a conceptual understanding of the study. Chapter Two follows, presenting a more detailed literature review, after which follows the methodology of the study in Chapter Three. Chapter Four then presents the results and Chapter Five, the discussion of the results as found after execution of the

discussed methodology, with Chapter Six summarizing the final achievements of the study and highlighting the areas of future research through recommendations stemming from the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will include a detailed literature review on retrospective studies, chiropractic-teaching clinics and neck pain.

2.2 RETROSPECTIVE SURVEYS

A survey is an investigation where information is systematically collected and the use of documentary sources creates an easy way of obtaining data about a study population as a whole and, about its individual members (Abramson and Abramson, 1999). Retrospective studies use existing data that have been recorded for reasons other than research and in health care the data source is medical records. The use of clinical records for epidemiological purposes is essential in community-oriented primary care (Abramson and Abramson, 1999). Mainland, as cited by Abramson and Abramson (1999), believed that the only records that hinted at further research are records made by meticulous physicians regarding their own patients. The D.U.T chiropractic students comply with clinic rules, as per the clinic manual, to keep thorough records of the patients that they treat (Korporaal, 2007). This ensured that the clinic records would be adequate for this particular type of research. Routine records that include reasonably well-recorded information of sound quality can be useful as a basis for investigations (Abramson and Abramson, 1999).

2.3 TEACHING CLINICS

Teaching clinics refers to agency's providing primary care for individuals as well as education for health professionals (Hoke *et al*. 2002). Chiropractic-teaching clinics are educational facilities for final year students and interns, where students gain experience by providing chiropractic services to the general public. The clinic is always under the supervision of qualified and registered chiropractors (Bryant *et al.* 2003). According to Waalen *et al*. (1994), chiropractic-teaching clinics are essential, as it reflects the clinical situation in which new graduates will find themselves practicing. The D.U.T Chiropractic Day Clinic provides a controlled supervised environment for chiropractic students in order for them to gain the necessary practical experience prior to qualification and it provides a service to the population of primarily the greater Durban area (Thoresen, 2006).

Teaching clinics often provide data sources for research (Walsh, 1992), and to date, there have been a handful of publications on chiropractic-teaching clinics (Bryant *et al.* 2003). Holt and Beck (2005) stated that there was a possibility that patient presentation

and chief complaints would change over time as the clinic becomes more established in the community. Furthermore, while most studies in teaching clinics reported on the spine and extremities, this study attempts to go one step further in isolating data, within this teaching clinic, concerning the cervical spine only. This descriptive study on cervical case records over the time period 1995 to 2005 will help one gain insight into the utilization of chiropractic services (Suleman, 2001).

2.4 NECK PAIN

Many studies on neck pain have been completed over the years, as it is generally the second most common complaint seen in clinical practice after low back pain (Ferrari and Russell, 2003). Neck pain is a clinical syndrome recognized by discomfort or pain around the neck area with an associated reduction of neck movement. This condition may present as a headache and pain is usually around the middle to lower part of the back of the neck. Pain may start simply after a nights rest or head movements and the source of pain is believed to be sprained ligaments, strained musculature and/or from fixated facet joints (Wiesel *et al.* 1992).

2.4.1 Causes of Neck Pain

The causes of neck pain ranges from biomechanical to organic pathology (Bland, 1994). Mechanical neck pain is produced when one has poor head and neck posture that causes a strain on the neck, facet joint fixation, cervical disc herniation and overuse of neck musculature. Degenerative changes as individuals age resulting in less neck mobility and thus making them more prone to injury may also be a cause of mechanical neck pain (Boodhoo, 2002). Biomechanical conditions, such as whiplash-associated disorder or any trauma, results in neck pain and other symptoms.

Systemic diseases affecting the cervical spine constitute non-mechanical neck pain. Rheumatologic, infectious and infiltrative diseases that destroy the cervical spine can also cause non-mechanical neck pain. Rheumatologic disease causes inflammation of

the joints of the neck thus inhibiting motion and producing pain. Infection of bone may produce localized or systemic symptoms. Meningeal infection and both benign and malignant neoplasms that may arise in the spine can cause severe neck pain (Wiesel *et al.* 1992). In addition, the neck may be the site of pain referred from pathology in local structures like the larynx, thyroid, trachea, or referred pain from the heart, pericardium and aorta (Mounce, 2002). As the teaching clinic chiropractic students have been trained in diagnostic procedures and are seen as training primary contact physicians (especially for musculoskeletal conditions) (Nyiendo and Olsen, 1988), organic conditions may be diagnosed on examination.

Etiological factors for neck pain include:

- Lifestyle related factors
- Psychosocial factors in private life
- Physical exposures
- Psychosocial factors in the workplace

Lifestyle related factors pertain to smoking, sports and exercise, traffic collisions and driving a vehicle. Psychosocial factors pertain to relationships and a significant correlation with neck pain. Physical exposures include one's neck posture, arm force and arm posture, posture during fixed sedentary work and workplace design (Hartvigsen, 2005). Psychosocial factors in the workplace pertain to job demands and control, social support and job satisfaction as causal factors for neck pain (Hartvigsen, 2005, Ferrari and Russel, 2003, Niemi *et al.* 1997).

Walsh (1992) found that one of the three chiropractic-teaching clinics in that study had a higher incidence of patients presenting with cervical spine complaints. At this particular teaching clinic the most common cause of neck pain was unknown (33.3%), followed by movement (13.3%). Motor vehicle accidents (MVA) accounted for 11.7%, the highest percentage compared to the other two clinics. Across all the clinics: nearly half of the chief complaints cause was unknown (44.9%) and trauma related causes such as MVA's and sport made up 28%.

Cote *et al*. (2003) found that individuals with a previous history of whiplash injury may be more likely to suffer with neck problems. Guez *et al*. (2002) results agree with this study as 5.2% of subjects had a history of trauma and neck pain. Ming *et al*. (2004) stated that the amount and extent of computer use has increased rapidly and so has neck and shoulder disorders. This is due to repetitive movements, forceful exertions and awkward positions in computer users.

A retrospective analysis on 355 patient files to evaluate clinical findings for uncomplicated mechanical neck pain at an Australian chiropractic-teaching clinic by Walsh (2000) revealed that males and females found the most common cause of their neck pain was unknown (61%). Males had twice the amount of neck pain caused by sport (18%) while females had (8.6%). Females had twice the amount of neck pain caused by trauma (17.5%) compared to males (9.4%).

2.4.2 Signs and Symptoms of Neck Pain

The most common features associated with neck pain are headaches, paresthesias and weakness in the upper limbs, dizziness and visual disturbances (Mounce, 2002). Associated symptoms in those with chronic neck pain include arm fatigue, headache, dizziness, generalized weakness, and tingling (Ferrari and Russell, 2003). Pathologies within the neck frequently cause referred pain to the scapular region, posterior shoulder area, occipital area and the chest area. Referred pain is usually vague, diffuse and poorly localized. Certain neck pathologies, for example, a nerve root entrapment, may cause radicular pain that is characterized by burning or shooting arm pain following a radicular distribution (Wiesel *et al.* 1992). Bland (1994) recognized the cervical spine as the “pathologic site for a large proportion of shoulder, elbow, hand and wrist disorders.”

2.4.3 Common diagnoses of neck pain made by Chiropractors

A retrospective outcome-based analysis performed on 512 case files by McMorland and Suter (2000) in Canada on the chiropractic management of mechanical neck and low back pain at a private chiropractic clinic, revealed that cervical joint sprain, strain and

headaches were the most common diagnoses of patients presenting with mechanical neck pain. The most common diagnoses reported in the retrospective review of files in an Australian college chiropractic-teaching clinic by Bryant *et al.* (2003) involved the facet joints as the primary tissue in lesion (47%), followed by muscle (39%). Ferrari and Russell (2003) claimed that 95% of patients receive benign diagnoses such as neck sprain, mechanical neck pain, muscular neck pain, myofascial pain syndrome and postural neck pain.

Conditions commonly presenting to chiropractors include: cervical facet syndrome and cervical facet dysfunction, cervical disc disease with radiculopathy, acute cervical disc herniation, thoracic outlet syndrome, myofasciitis, whiplash, and torticollis (Penter, nd). As the students at the D.U.T Chiropractic Day Clinic are trained in diagnostic and referral procedures (Nyiendo and Olsen, 1988), many other conditions can be picked up from the history taken from the patient. Conditions that may be picked up where patients are then referred include: cervical myelopathy, syringomyelia, tumours and infections of the cervical spine (Penter, nd).

2.4.4 Pre-existing medical conditions

Cote *et al*. (2003) looked at neck pain and general health and reported that subjects who reported cardiovascular or digestive problems that moderately or severely impacted on their health were more likely to have experienced disabling neck pain. The results were clinically relevant as it suggested that disabling neck pain was more common in those with poorer health. Hawk *et al*. (2001) determined the prevalence of non-musculoskeletal complaints of 7,527 patients in chiropractic practice in the United States, Canada and Australia. Non-musculoskeletal complaints accounted for 10.3% of complaints: colds and upper respiratory conditions (0.9%), cardiovascular conditions (0.4%) and gastro-intestinal conditions (1.1%) were most common. D'Astolfo and Humphreys (2006) did a retrospective chart review of musculoskeletal pain in a long-term care facility for the elderly in Canada. Patients that presented with depression and back pain (5.9%) had prevalent disorders like hypertension and diabetes. Fifty percent

(50%) of patients had 3-4 co-morbidities and 30% had 5-10 medical conditions that were unspecified.

2.5 PREVALENCE OF NECK PAIN

At any given time, approximately ten percent of the Canadian population reports having neck pain at least seven days per month, and neck pain of unspecified duration occurred in at least 80% of the population (Ferrarri and Russell, 2003). Cote *et al.* (2003) conducted a population-based cohort study of neck pain to determine the epidemiology of neck pain in Canada and it was revealed that the six-month prevalence of neck pain was 54.2%. The prevalence of neck pain was reported in a study of the population of Northern Sweden (Guez *et al.* 2002). Seventy two percent (72%) of the randomly selected persons within the total population had completed the questionnaire and 43% (of the 6,000 subjects) reported neck pain (Guez *et al.* 2002) revealing a lower prevalence in comparison with studies from Finland, Norway and Sweden where the lifetime prevalence of neck pain was 71% (Cote *et al.* 2003.).

A study in the United Kingdom done by Hill *et al.* (2002) aimed to determine the one-month period prevalence of neck pain in the general population by attempting a baseline cross-sectional survey of the 4,393 research participants and of these 1,359 adults reported neck pain resulting in a one-month period prevalence of 30.9% and at the one year follow up, 70.8% had neck pain in the past 12 months. In a critical review of 56 original papers published between 1980 and 2002 concerning neck pain by Fejer *et al.* (2006), an evident trend was that the prevalence of neck pain increases with a longer prevalence period. The longer one suffered with neck pain in a particular prevalence period (at a point in one's life, a week, a month, six months, a year and a lifetime), the more prevalent the neck pain becomes (Fejer *et al.* 2006). The prevalence of neck pain was ascertained in many population-based studies, however these studies had varying designs and types of prevalence making any sort of comparison arguable (Guez *et al*. 2002).

An American survey done by Sawyer and Ramlow (1984) on 390 patients receiving care in a chiropractic-teaching clinic revealed that 23.1% had a chief complaint of neck pain (the second most common complaint after low back pain) and 3.3% had a chief complaint of headaches. On the contrary a five-year study on demographics and clinical characteristics of chiropractic patients at the Canadian Chiropractic College indicated that the cervical spine was the most common site (32.4%) of primary complaint (Waalen *et al.* 1994); and for patients with a secondary complaint, the cervical region was again seen as the most frequent clinical category (32.2%).

Drews (1994) conducted an unpublished cross-sectional survey from February 1994 to the end of April 1994 to identify characteristics of chiropractic patients and their complaints at the chiropractic-teaching clinic at Natal Technikon (currently known as D.U.T) and private chiropractic practice within South Africa. One hundred and sixty two (162) new patients within the teaching clinic answered the questionnaire. The following proportion of patients that presented with neck pain can be summarized as follows:

- Neck pain – 16.7%
- Neck pain with arm pain – 16.1%
- Headache – 9.3%
- Headache with neck pain – 21.6%

Walsh and Jamison (1992) found that patients at an Australian chiropractic-teaching clinic were similar with regards to demographics, distribution of chief complaints (spinal or extremity) and the cause and duration of chief complaint to those in private practice. In view of the above, if the patients and patient characteristics at the Chiropractic Day Clinic might potentially differ little from those in private practices, it may be possible, according to Drews (1994), that information on neck pain from this teaching clinic, can be of greater value if conclusions may also be applied to the general patient population, especially since very little information is available in South Africa, whether in teaching clinics or in private practice. The patient satisfaction survey conducted by Thoresen (2006) at the D.U.T Chiropractic Day Clinic revealed that patients were mostly treated for head and neck complaints and low back followed closely.

A retrospective review by Bryant *et al*. (2003) on 1,018 patient files in an Australian chiropractic-teaching clinic found that the second most common region treated was the cervical spine (24%), with lumbar being the most common (40%). Another retrospective review of 1,004 files at a New Zealand chiropractic college clinic (Holt and Beck 2005) also found that cervical problems (16.8%) were the second common complaint after low back pain (38.1%). The chief presenting cervical complaints were:

- Cervical (no referral) – 13.4%
- Cervical (with referral) – 3.4%
- Headache/ migraine – 12.6%

Guez *et al.* (2002) concluded that discrepancies seem to exist regarding the prevalence of neck pain between authors. This may be attributed to the various settings under which those studies took place, the sample size used and/or the methods utilized in obtaining the data.

2.6 DEMOGRAPHICS AND NECK PAIN

2.6.1 Age

Cote *et al.* (2003) revealed that between 12% and 34% of adults experienced neck pain annually. A survey by Hill *et al.* (2002) on the prevalence and persistence of neck pain in the adult U.K population found that persistence of neck pain was significantly associated with ages 18-29 years (57%), 30-44 years (67%), 45-59 years (79%) and 60 years or over (73%). On the contrary, it has been said that while the frequency of neck pain in various populations is very high, women of working age have more frequent neck pain than older women (Guez *et al.* 2002).

Niemi *et al.* (1997) described the prevalence of neck and shoulder symptoms among 718 Finnish high school students. Twenty-one percent of the girls and 10% of the boys suffered with neck and shoulder symptoms. This study concluded that neck and shoulder symptoms are common among adolescents and that more research on

adolescents may result in preventative programs that may reduce the morbidity of neck pain in adulthood. A study on musculoskeletal discomfort in New Zealand where students aged between 11 and 14 filled out a questionnaire, discovered that the prevalence of neck pain for that age group was 36% (Legg *et al*. 2003). Whitfield, as cited by Legg *et al.* (2003), discussed a study done on the prevalence of neck pain in 140 New Zealand secondary school students aged between 13 and 18 and discovered that 44% of the students suffered with neck pain. Neck pain in these students was more prevalent than low back pain (35%). A record review on musculoskeletal pain in a long-term care facility revealed that chronic pain was prevalent in people over 65 years of age. The retrospective review of 140 medical charts revealed that six percent and two percent of patients between 51 and 101 years of age reported head pain and neck pain respectively (D' Astolfo and Humphreys, 2006). Guez *et al.* (2002) noted in their study and in similar studies that chronic neck pain is common in young people and thus not an exclusive symptom of aging. The study completed by Fejer *et al.* (2006) on the critical review of literature regarding neck pain commented on the fact that many studies differed on the definition of adult, adolescent and geriatric populations and that comparisons of the studies would be limited.

Bryant *et al.* (2003) attempted a study similar to this study whereby 1,018 new patient files were reviewed within an Australian chiropractic-teaching clinic. Seventy percent of patients that presented to the clinic were between 22 and 51 years of age with the main age as 36.6 years. The younger age group may be due to the high population of non-chiropractic students as the clinic is in close proximity to a university. A similar study by Holt and Beck (2005) was done on patients and patient complaints at a New Zealand chiropractic-teaching clinic where 1,004 new patient files were analysed. The age range of all patients was 0-85 years and the mean age was 32.3 years (Holt and Beck 2005). These two studies, however, were not specific for neck pain.

Nyiendo and Olsen (1988) deduced in a chiropractic-teaching clinic in Oregon that children had a much lower frequency of attendance for back and neck complaints, and that adults presented with neck pain nearly three times more frequently. This

corresponds with the South African study done by Drews (1994), where the greatest utilization of the chiropractic-teaching clinic at D.U.T for that year was by adults of the age group 20-39 years (32.1%). Individuals within the 10-19 year age group made up 14.2% of patients as the clinic was situated on a campus and was easily accessible to students and chiropractic and homeopathic students had access to free treatment (Drews, 1994).

2.6.2 Gender

In a survey completed in Northern Sweden it was revealed that 48% of women suffered with neck pain in comparison to 38% of men (Guez *et al.* 2002). Comparatively, Cote *et al.* (2003) in their population-based cohort studies of neck pain in Canada found that neck pain was more common in women (58.8%) than men (47.2%). A more recent prospective cohort study of adults in Saskatchewan found that women were more likely than men to develop neck pain (*Cote et al.* 2004). The findings on gender and neck pain differ, however, in some studies. In the study by Hill *et al.* (2002) on neck pain in the adult U.K population, there was no significant association between gender and neck pain.

Rubinstein *et al.* (2000) described chiropractic patients in the Netherlands and discovered that of the 765 subjects, the patient sample was predominantly female (60%). Hartvigsen *et al.* (2002) came to a similar conclusion when it was revealed that women consulted chiropractors more frequently than men. This may be a reason for the increased prevalence of women than men in studies on gender and neck pain. Unlike most studies, a retrospective demographic study on patient files by Suleman (2001) at a multidisciplinary community health clinic in Canada over a one-year period revealed that of the 183 individuals that were treated by a chiropractor, 33% were women and 67% were men. This gender bias in the use of chiropractic services was deemed as typical of the community health setting and when it came to the gender breakdown of the number of visits to the clinic, women sought care more frequently than men (Suleman, 2001).

An unpublished South African study by Drews (1994) concluded that females (52.5%) visited the chiropractic clinic of this current study more than males (46.9%). These percentages were similar to Thoresens (2006) patient survey at this clinic where females accounted for 53.5% of visitors to the clinic and males 46.5%. Holt and Beck (2005) had a similar finding at the New Zealand chiropractic clinic, with the ratio of female to male being females 51.9% and males 48.1%. This was unlike Bryant *et al*. (2003), who found the ratio of males to female patients at an Australian chiropractic-teaching clinic was 54% male to 46% female. However, the proportion of females and males with neck pain was not analysed in most of these studies. When Fejer *et al.* (2006) reviewed the literature on neck pain; a trend was evident that in 25 out of the 30 international studies (83%) evaluated, in terms of gender and neck pain prevalence, women reported more neck pain than men.

2.6.3 Occupation (Socio-economic Factor)

The growing interest in neck pain is linked to the rising disability burden and considerable compensation costs associated with work-related neck injuries. Neck pain was common among those who carry out repetitive, static or physically demanding work and also individuals of lower socio-economic status (Cote *et al.* 2003). With advances in technology, neck and shoulder pain related to computer use has become more common and has resulted in monotonous tasks that produce static and repetitive loads (Giles and Singer, 1998). Continuous computer work with awkward positions causing overloaded neck muscles causes this chronic condition (Ming *et al.* 2004).

Waalen *et al*. (1994) collected demographic and epidemiological data on 15,174 new patients at a Canadian Chiropractic College over a five-year period (1986-1990). Students comprised 26.2% of the sample, sedentary occupations (clerical, semi-professional, managerial, professional) 51.6%, retired 4.2%, unskilled 6.7%, homemakers 2,9% and unemployed 5.2%.

Walsh and Jamison's (1992) study showed that the chiropractic-teaching clinic in Australia had a higher percentage of non-manual workers, followed by light manual

workers, then those who are unemployed and lastly heavy manual workers. On the contrary, a descriptive study on chiropractic patients in the Netherlands revealed that of the 813 patients, most were skilled labourers (30%), middle class personnel (23%) and housewives (18%)(Rubinstein *et al.* 2000). However, both these studies were not specific for neck pain sufferers.

An Australian study by Walsh (1992) on work-related neck pain compared three chiropractic-teaching clinics and found that one of them located in an upper middle class area with a higher percentage of patients in non-manual employment had a higher incidence of cervical-related problems (44.8%) than low-back complaints (29.3%) and this could have reflected the fact that a greater proportion of patients with neck pain were involved in non-manual jobs. A local study completed by Dias and Schutte (2005) on work-related musculo-skeletal disorders in the South African Mining Industry found neck complaints to be the second most common complaint after extremity complaints in coal mine workers.

The socio-economic status of patients whose 1,018 files were reviewed in an Australian chiropractic-teaching clinic by Bryant *et al*. (2003) revealed that:

- White-collar workers (non-manual) represented 37% of the sample.
- Blue-collar workers (manual) represented 31% of the sample.
- Unemployed (homemakers, retired) represented 13% of the sample.
- Students represented 19% of the sample.

Drews (1994) study revealed that the largest percentage of clinic patients were students. There was an even distribution between domestic/housewives (10.5%), clerical (12.4%) and executives (13.6%) within the teaching clinic. Thoresen's (2006) 4-month survey at the clinic revealed the patients' employment status:

- Employed – 56.3%
- Unemployed – 14%
- Retired – 18.3%
- Student – 11.3%

However, this was not for patients with neck pain specifically. Boodhoo (2002) in an unpublished study indicated that certain occupational activities and psychosocial factors might play a role in the prevalence of neck pain. Hence, the question remains as to whether neck pain is more prevalent within a specific type of occupation, gender and age group especially in the context of a South African chiropractic-teaching clinic.

2.7 CHIROPRACTIC MANAGEMENT OF NECK PAIN

Many studies done have shown that patients often choose chiropractic as a first health care option rather than as a last alternative and patients deemed chiropractic treatment was effective in dealing with their health complaint (Sawyer and Ramlow, 1984).

The lesion treated by chiropractors is known as the subluxation. A subluxation occurs when a motion segment's alignment, movement integrity and/ or physiological function is altered. The chiropractic treatment of neck pain is primarily manipulation- only if it is safe. Manipulation is a manual procedure where a thrust is carefully directed to move a joint past its physiologic range of motion without exceeding its anatomical limit (Giles and Singer, 1998). The thrust is usually associated with an audible cracking sound (Bland, 1994). Manipulation is applied specifically to a single vertebra with high velocity, low magnitude thrust. Carefully performed, cervical spine manipulation is probably safer than complications from medical treatment for mechanical neck pain.

A descriptive analysis of chiropractic in North America (Coulter and Shekelle, 2005) revealed that the most common therapy was chiropractic adjustment. A wide variety of non-adjustive therapies were used: patient education (95%), exercise (92%), ice therapy (78%), massage (77%), electrical therapy (71%) and heat therapy (66%). Mootz *et al*. (2005) described chiropractic care in Arizona and Massachusetts and revealed that spinal adjustments were provided at almost 85% of visits. Active release soft-tissue therapy and ischemic compression were provided between 10% and 15% and electrical modalities were provided between 20% and 30% of visits in both states.

Chiropractic management for all cervical spine conditions includes pain control, manipulation and exercise. Methods of pain control used by chiropractors include cryotherapy, heat therapy and electrotherapy (Penter, nd). Traditional chiropractic care involves the whole patient, with the spine and nervous system function viewed as integral components (Giles and Singer, 1998). The results of the patient satisfaction survey by Thoresen (2006) indicated that patients attending the Chiropractic Day Clinic reported a high degree of satisfaction with chiropractic care. Eighty-two percent (82%) of participants in the study reported an average to complete improvement in their condition and had shown chiropractic to be an effective form of intervention.

2.7.1 Contra-indications to Chiropractic Management of Neck Pain

While manipulation is relatively safe within the lumbar spine, there are considerable risks, albeit uncommon ones, with regards to manipulation within the cervical spine (Bland, 1994). Headache, neck pain and dizziness are symptoms that are often used as indicators for spinal manipulative therapy, however, these same symptoms may contra-indicate manipulation.

Vertebral artery dissection is a common contra-indication to manipulation of the cervical spine, as it is believed that the patient may possibly experience a post-manipulative vertebrobasilar stroke (VBS) (Giles and Singer, 1998). The signs and symptoms a chiropractor should be aware of include:

- Dizziness/ vertigo/ giddiness/ light-headedness
- Drop attacks/ loss of consciousness
- Diplopia (or other visual symptoms)
- Dysarthria (speech difficulties)
- Dyshagia
- Ataxia of gait (walking difficulties/ in coordination of extremities/ falling to one side)
- Nausea (with possible vomiting)
- Numbness on one side of the face and/or body
- Nystagmus

The study by Walsh (2000) in an Australian chiropractic-teaching clinic to evaluate clinical findings for uncomplicated mechanical neck pain revealed that 1.8% of patients had a positive finding for tests for vertebrobasilar arterial insufficiency. " As practitioners better understand the pathology, warning signs in the review of systems and history, warning signs during and after treatment which indicate that treatment should be altered or ceased, and the need in some cases for the patient to be hospitalized, the incidence of these injuries should decrease" (Giles and Singer, 1998).

2.7.2 Location of management

The retrospective analysis of patient files by Walsh (2000) found that patients reported the location of uncomplicated mechanical neck pain frequently occurred in the lower cervical spine (34%) and the upper cervical spine (30.8%).

2.7.3 Referrals

With an intense diagnostic process (Nyiendo and Olsen, 1988), management of the cervical spine also includes looking out for serious disease indicating further testing or referrals to specialists. A South African study on the demographic and epidemiological factors affecting referral patterns between chiropractors and homeopaths in the greater Durban Metropolitan Area (Pillay, 2006) revealed the following:

- Majority of chiropractors (61%) occasionally referred patients to other chiropractors.
- Chiropractors (68%) mainly frequently/occasionally referred patients to homeopaths.
- Chiropractors rarely referred to physiotherapists.
- Chiropractors frequently refer to GP's more than homeopaths as patients are referred for primary care or for second opinions.

In comparison, Mootz *et al.* (2005) looked at the visit disposition of patients and specific instruction for medical referral only accounted for less than 3% in both Massachusetts and Arizona.

2.7.4 Investigations

The most common investigation utilized by chiropractors is x-rays. Waalen *et al*. (1994) reported that 34.4% of patients were x-rayed in a Canadian chiropractic-teaching clinic compared to 73% in private practice. The author suggested that the difference in the use of x-rays as a diagnostic tool might be accounted for the demographic disparities such as age; however, other factors unique to a teaching clinic environment may also play a role. Ward (2005) stated that laboratory tests might be ordered by chiropractors to provide insight into potential relevant health issues, which would impact on the care the patient, receives from a chiropractor. Tests commonly used in a chiropractic setting include chemistry panels, complete blood count, and urinalysis (Ward, 2005).

2.8 SUMMARY

The epidemiology of neck pain is very essential, as more knowledge about the extent of this condition would assist precise calculation of the need for medical services and resources (Guez, 2002). As very little information exists regarding the prevalence of neck pain within South Africa, this research may provide information on the prevalence, causes of neck pain, common cervical spine complaints, the associated factors and other complaints frequently occurring with neck pain and treatment protocols followed at the D.U.T Chiropractic Day Clinic. By identifying the typical patient that presents with neck pain, this would enable the profession to better focus research, refine the tertiary standards of education, develop more appropriate marketing tools and provide a base from which comparisons can be made with other teaching clinics (Bryant *et al.* 2003) in South Africa and abroad. This may perhaps enhance the future management of these patients, which would be indispensable to the growing chiropractic profession.

CHAPTER 3

MATERIALS AND METHODS

3.1 INTRODUCTION

This chapter will include a detailed description of the study design, the selection of patient files and data collection. The statistical procedures that were implemented in analysing the data have been included in this chapter.

3.2 STUDY DESIGN

This descriptive research study was designed in the form of a retrospective, cross-sectional quantitative, non-experimental, clinical survey. The purpose of a descriptive study is to describe a situation, e.g. the distribution of a disease in a population in

relation to age, gender, region etc. A cross-sectional study provides data about the situation that exists at a single time. Descriptive epidemiological surveys do not aim to find explanations, but their findings are represented by age, gender, region and other demographic variables (Abramson and Abramson, 1999). Data was obtained from the patient medical records that were present at the Chiropractic Day Clinic at the Durban University of Technology from 13 January 1995 to 30 November 2005. This time frame was selected as a computerized filing system was implemented in 1995 and files prior to 1995 were destroyed annually as per government legislation. The selected time frame included thousands of files thus enhancing the results of the study.

3.2.1 Sampling and Sample Allocation

In this descriptive study, random sampling was used. Within the time period from 13 January 1995 to 30 November 2005, a total of 24487 active and dormant patient records (N = 24 500) were filed at the D.U.T Chiropractic Day Clinic. A list of the 24487 file numbers underwent a computer-generated process of randomization (random simple sampling) whereby 30% of files were randomly extracted, hence 7 487 patient records underwent analysis (n = 7500). The 7 487 files constituted the representative sample of the total number of files within the clinic and all these files containing information regarding the cervical spine were subsequently analysed (Esterhuizen, 2006).

3.2.2 Inclusion and Exclusion Criteria

Inclusion Criteria

1) This study was limited to patients' records within the Chiropractic Day Clinic at the Durban University of Technology from 13 January 1995 to 30 November 2005.
2) All the Dormant and Active cervical spine case records with the appropriately filled paperwork were analysed.
3) Analyses were done on the case records with completed cervical spine paperwork (Appendices 4, 5, 6) at the initial consultation.

Exclusion Criteria

1) Patient files that revealed an initial consult indicating paperwork concerning the lumbar spine; thoracic spine, extremities and paediatric patients were excluded.
2) Any research data found in the medical records at the initial consult were noted (thus providing a control within the study) but not examined, as different types of research specified treatment protocols that would have skewed the results of this study.
3) Patient files that contained incomplete data regarding the cervical spine were excluded from the study in order to standardize all the relevant information analysed in this study.

3.2.3 Design of the Data Collection Tool

The Cervical Spine data collection sheet (Appendix 2) was designed and utilised by the present author. The questions in the Patient Information Sheet (Appendix 3), Case History (Appendix 4), the variables in the Physical Examination (Appendix 5), and Cervical Regional (Appendix 6) were incorporated into the data collection sheet. Other items were developed through discussions in the focus group consisting of: the research supervisor, clinicians, lecturers and the Day Clinic Assistant (who were all members of the Chiropractic Department), three chiropractic students, an intern and a statistician. Each member was supplied with an Informed Consent Form (Appendix 7), a Confidentiality Statement (Appendix 8), a Code of Conduct form (Appendix 9) and a Letter of Information (Appendix 10), which was completed.

During the focus group the initial cervical data collection sheet (Appendix 11) was analysed; and based on suggestions and recommendations made by the panel was altered and modified (such that the face validity and content validity was enhanced) to meet the aims and objectives of the study. Bernard, as cited by Pillay (2006), stated that focus groups provided validity by way of providing additional detail and context for a survey. Focus groups also complement surveys and are used to design questionnaires.

A pilot study was undertaken where random files were extracted and analysed to ensure that the data collection sheet was adequate.

The first section of the revised data collection sheet (Appendix 2) consisted of categories concerning age, gender, occupation, and the method of payment, in order to identify the demographics and general socio-economic status of the patients' whose cervical cases were reviewed.

The second section of the data collection sheet included categories on the general health of the patients whose cases were being reviewed, the presenting neck pain and its associated factors, the management protocols, and any new complaint the patient had (indicating that they had returned for chiropractic treatment and may have sought treatment for a different condition in a different area). This information was extracted from the cervical case records by the present author and transferred onto the data collection sheet (Appendix 2).

3.2.4 Data Collection

Data collection involved both primary data and secondary data.

3.2.4.1 The Primary Data

The primary data was obtained from Dormant and Active patient cervical case records. Dormant records were of patients that had not revisited the Chiropractic Day Clinic since their last consult five years previously. Active records belonged to patients who visit the clinic regularly.

3.2.4.1.1 Cervical Case Record Selection

Patients' case records that revealed that the cervical spine was analysed at the initial consult at the Chiropractic Day Clinic, were evaluated with focus on the following:

- Demographics
- Payment type of consultation fees
- Patient presentation and diagnoses

- Management protocols
- New complaint/s

3.2.4.2 The Secondary Data

This was obtained from various sources, which included journals, books, and the Internet.

3.2.5 Patient Confidentiality

Many steps were undertaken to maintain patient confidentiality throughout the process of the study. The Chiropractic Day Clinic Director provided written consent to the researcher to analyse the files. The researcher signed a Statement of Confidentiality (Appendix 1) that ensured patient confidentiality at all times. All file numbers of the patient records that represented this study were reduced to a coded form to ensure patient names and their respective file numbers were not utilised. To further maintain confidentiality, only the researcher, the research supervisor and Clinic Director had access to the patient files. During the data collection process, an independent blocker blocked out any names within the selected file before handing over the file to the researcher to resume data collection. Following the completion of the research, the spreadsheet containing the file numbers and the respective codes were destroyed so patients whose files represented this research would not be exposed. The data collection sheets were stored in the research archives and will be eventually destroyed after a period of five years.

3.2.6 Research Procedure

The statistician produced a list of a computer-generated random selection of the representative sample of 7,487 file numbers and their respective codes. An independent blocker checked the files, for cervical spine regionals (Appendix 6) completed at the initial consult. The patients' names on the files and it's paperwork were blocked off by the independent blocker, who then filled in the following on the Cervical Spine data collection sheet (Appendix 2):

- The file code

- The frequency of visits within a 4 week period
- The new complaint

Initially, the student was required to fill in the race group; however the patient information sheet did not have a section for patients to fill their race group in and one could not deduce a patients' ethnicity by analyzing their surnames. Due to this, the race group was omitted from this research. The researcher filled out the rest of the data collection sheet and then handed the file back to the independent blocker, who re-filed the case record. All information that was extracted was recorded on the data collection sheet under the following categories:

- File code
- Date of initial visit
- Age
- Gender
- Occupation
- Method of payment
- History of any pre-existing conditions
- History of any trauma to the cervical spine
- Blood pressure abnormality
- General examination abnormality
- Etiology of chief complaint
- Complaint
- Associated signs and symptoms
- Primary diagnosis
- Associated / secondary diagnosis
- Concomitant diagnosis
- Treatment modalities utilised
- Contra-indications to any treatment
- Location of management in the cervical spine
- Referrals to specialists
- Investigations

- Follow up consultations
- Frequency of consults within a 4 week period
- New complaint/s

Once the data was collected, it was transferred onto an electronic spreadsheet for analysis. This was done in order to meet each aim or purpose and test each hypothesis within this study.

3.3 STATISTICAL ANALYSIS

The statistical package SPSS version 13 (SPSS Inc, Chicago, Ilinois, USA) was used in the analysis of the data in this study.

3.3.1 Method of data analysis

Descriptive statistics such as frequencies and percentages for categorical variables, and mean, standard deviation and range for quantitative variables were used to describe the sample in terms of demographics and other characteristics. Comparisons of these factors between the two successive five-year periods were made using Pearson's chi square tests for categorical variables, and independent t-tests for quantitative variables.

3.3.2 Hypotheses

- **Hypothesis 1**

The Null Hypothesis (H_o) states that there is no significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

The Alternate Hypothesis (H_a) states that there is a significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

- **Hypothesis 2**

The Null Hypothesis (H_o) states that there shall not be a lower prevalence of cervical complaints from 1995 to 1999 and a comparatively higher prevalence from 2000 to 2005.

The Alternate Hypothesis (H_a) states that there shall be a lower prevalence of cervical complaints from 1995 to 1999 and a comparatively higher prevalence from 2000 to 2005.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

SPSS version 13 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data. A two-tailed 0.05 level of significance was used. Prevalence and 95% confidence intervals (95%CI) per year, per 5 year period, and overall were calculated and compared using EpiCalc 2000 version 1.02 (Joe Gilman and Mark Myatt, 1998 Brixton Books). Descriptive statistics such as frequencies and percentages for categorical variables, and mean, standard deviation and range for quantitative variables were used to describe the sample in terms of demographics and other characteristics. Comparisons of these factors between the two successive five-year periods were made using Pearson's chi square tests for categorical variables, and independent t-tests for quantitative variables.

4.2 THE RESULTS

4.2.1 THE PREVALENCE OF CERVICAL SPINE COMPLAINTS AT THE D.U.T CHIROPRACTIC DAY CLINIC BETWEEN 1995 AND 2005

A total of 7487 files from 1995 to 2005 were extracted randomly from the clinic's records. There were 1342 files, which met the criteria for cervical spine complaints during this time period.

The annual prevalences and 95% CI are shown in Table 1. The overall prevalence from 1995 to 2005 was 17.92% (95% CI 17.07% to 18.82%). In the 10-year period from 1996 to 2005, the prevalence was 18.66% (95% CI 17.77% to 19.59%). A statistically significant increase in prevalence between the first five years (1996 to 2000) and the second five years (2001-2005) was detected (p=0.0002) from 17.14% to 20.61%.

Table 1: Prevalence (95% CI) of cervical spine complaints at the D.U.T Chiropractic Day Clinic from 1995 to 2005

Year	Prevalence	95% CI
1995	3.99%	2.33% to 6.64%
1996	16.48%	14.12% to 19.13%
1997	19.83%	17.20% to 22.75%
1998	16.09%	13.70% to 18.79%
1999	15.60%	13.29% to 18.22%
2000	18.17%	15.16% to 21.61%
5 years (1996-2000)	17.14%	15.99% to 18.35%
2001	12.58%	10.52% to 14.97%
2002	18.48%	15.71% to 21.61%
2003	26.08%	22.19% to 30.37%
2004	29.35%	25.56% to

		33.44%
2005	23.46%	19.93% to 27.39%
5 years (2001-2005)	20.61%	19.21% to 22.08%
10 years (1996-2005)	18.66%	17.77% to 19.59%
Total (1995 – 2005)	17.92%	17.07% to 18.82%

4.2.2 DEMOGRAPHICS OF PATIENTS WITH CERVICAL SPINE COMPLAINTS BETWEEN 1996 AND 2005

Since the prevalence in 1995 (n=15) was much lower than in the other years, and the cases were only taken from a portion of the year, inclusion of these cases would bias the results. Thus it was decided to exclude the 1995 cases from this point forward and base the analysis on the 1327 cases from 1996 to 2005.

4.2.2.1 Age

Age of the sample ranged from 7 years to 92 years. The mean age was 36.89 years (SD 15.12 years). The age group distribution of the sample is shown in Table 2. The majority was young, in the 20-29 year age group (30.2%). There were 18 cervical case records in which age was omitted.

Table 2: Age group distribution in the sample (n=1309)

	Frequency	Percent
<10	4	.3
10-19	118	9.0
20-29	395	30.2
30-39	256	19.6
40-49	259	19.8
50-59	168	12.8
60-69	77	5.9

70-79	25	1.9
80-89	5	.4
90-99	2	.2
Total	1309	100.0

There was a highly significant change in mean age between the first and second five-year period (p=0.001), and the mean age increased from the first to the second five-year period. This is shown in Table 3.

Table 3: Comparison of mean age between two five-year periods

	5-Year period	N	Mean	Std. Deviation	Std. Error Mean	p value
AGE	1996 - 2000	673	35.58	14.506	0.559	0.001
	2001- 2005	636	38.28	15.606	0.619	

4.2.2.2 Gender

Table 4 shows that there was no difference in the gender distribution between the first five years and the second five years (p=0.865). Overall there were 40.4% males and 59.6% females in the sample, and this proportion did not change significantly over the years. There were four cervical case records in which gender was omitted.

Table 4: Comparison of gender distribution between two five-year periods (n=1323)

			GENDER		
			Male	Female	Total
5 Year period	1996 - 2000	Count	278	407	685
		Row %	40.6%	59.4%	100.0%
	2001- 2005	Count	256	382	638
		Row %	40.1%	59.9%	100.0%
Total		Count	534	789	1323
		Row %	40.4%	59.6%	100.0%

Pearson's chi square 0.29, p=0.865

4.2.2.3 Occupation

Nine hundred and seven (907) participants in the sample were employed. The other 420 were: students, scholars, self-employed, pensioners, or their occupation was not recorded. Of the 907 employed participants, only 300 (33.1%) were in occupations that were classified as active (eg. housewife, artisan, professional sports person etc.) while the majority had sedentary jobs, which mostly involved office work (607) (66.9%). Figure 1 shows this distribution in the sample as a whole. Including those who were not employed formally 31.7% (N/A in Figure 1), there were 22.6% in active occupations and 45.7% in sedentary occupations.

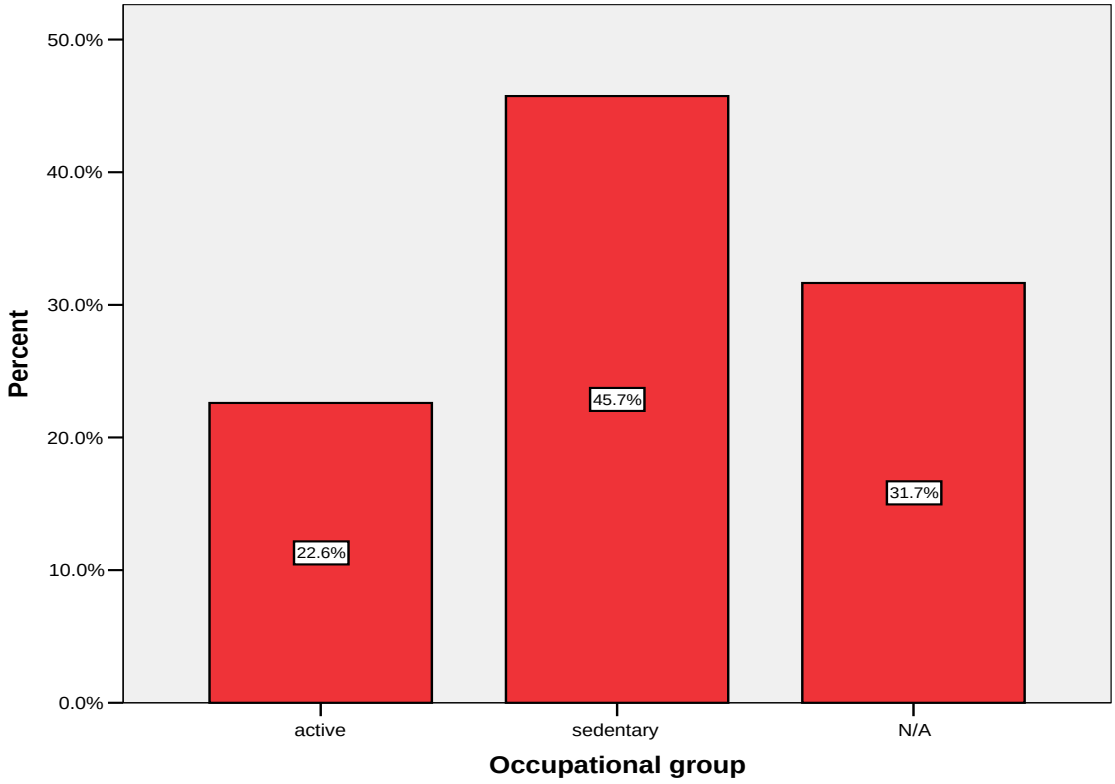

Figure 1: Type of occupation of sample (n=1327)

When the distribution of sedentary or active jobs was compared between the two five year periods, there was no significant difference (p=0.868). This is shown in Table 5. The proportions in each category were very similar between the two five year periods.

Table 5: Comparison of type of occupation over the two five-year periods

			Occupational group			
			active	sedentary	N/A	Total
5 Year period	1996 - 2000	Count	152	318	215	685
		Row %	22.2%	46.4%	31.4%	100.0%
	2001- 2005	Count	148	289	205	642
		Row %	23.1%	45.0%	31.9%	100.0%
Total		Count	300	607	420	1327
		Row %	22.6%	45.7%	31.7%	100.0%

Pearson's chi square 0.284, p=0.868

Over half the sample was employed (57.9%). There was also a high percentage of scholars or students (18.9%). The distribution for the sample is shown in Table 6.

Table 6: Distribution of employment in sample (n=1327)

	Frequency	Percent
Employed	768	57.9
Self employed	54	4.1

Scholar/student	251	18.9
Housewife	139	10.5
Unemployed	23	1.7
Retired/welfare	70	5.3
Unknown	22	1.7
Total	1327	100.0

There was a borderline non-significant difference in the distribution of employment over the two five year periods (p=0.067). The main difference was an increase of retired and self-employed patients from the first to the second five- year period, with a slight decrease in unemployed patients, scholars and students. This is shown in Table 7.

Table 7: Comparison of the distribution of employment over the two five year periods (n=1327)

5-year period		Employment							Total
		Employed	Self employed	Scholar/student	Housewife	Unemployed	Retired/welfare	Unknown	
1996 - 2000	n	394	26	137	76	16	25	11	685
	Row %	57.5%	3.8%	20.0%	11.1%	2.3%	3.6%	1.6%	100.0%
2001-2005	n	374	28	114	63	7	45	11	642
	Row %	58.3%	4.4%	17.8%	9.8%	1.1%	7.0%	1.7%	100.0%
Total	n	768	54	251	139	23	70	22	1327
	Row %	57.9%	4.1%	18.9%	10.5%	1.7%	5.3%	1.7%	100.0%

Pearson's chi square 11.773, p=0.067

4.2.2.4 Consultation Fees

The vast majority of patients paid full fee for their consultations (96%). This is shown in Table 8.

Table 8: Consultation fee in cervical spine patients

	Frequency	Percent
Unknown	2	.2
Paid in full	1274	96.0

Fee reduction	21	1.6
No charge	30	2.3
Total	1327	100.0

4.2.3 PRE-EXISTING MEDICAL CONDITIONS, HISTORY OF TRAUMA, AND GENERAL EXAMINATION ABNORMALITIES IN THE CASE RECORDS OF PATIENTS THAT PRESENTED WITH NECK PAIN

4.2.3.1 Pre-existing Medical Conditions

Four hundred and twelve cases (31%) had a pre-existing medical condition. The conditions are listed in Table 9 in order of frequency. Respiratory conditions such as asthma and bronchitis were the most common (24%). Cardiac conditions such as hypertension and high cholesterol were the second most frequent type (20.5%), while endocrine conditions (14.2%) such as hypothyroidism and diabetes were also prevalent.

Table 9: Pre –existing medical conditions (n=412)

	Count	Column N %
RESPIRATORY DISORDER	98	24.0%
CARDIAC DISORDER	84	20.5%
ENDOCRINE DISORDER	58	14.2%
ABDOMINAL DISORDER	55	13.4%
PSYCHOLOGICAL DISORDER	55	13.4%
NEUROLOGICAL DISORDER	48	11.7%
MUSCULO-SKELETAL DISORDER	31	7.6%
GENITO-URINARY DISORDER	27	6.6%
BLOOD DISORDERS	17	4.2%
OTHER DISORDERS	17	4.2%
DERMATOLOGICAL DISORDER	15	3.7%
ONCOLOGICAL DISORDER	10	2.4%
VASCULAR DISORDERS	6	1.5%

4.2.3.2 History Of Trauma

The 1327 case records revealed that 254 patients (19.1%) had a history of trauma at their initial consults at the clinic.

4.2.3.3 Blood Pressure Abnormalities

Chiropractic students checked the patients' blood pressure at the initial consult and 13.6% (n=180) of 1327 patients were recorded to have had blood pressure abnormalities. Of these, 117 (63.9%) had high blood pressure and 64 (35%) had low blood pressure.

4.2.3.4 Abnormalities on General Examination

One hundred and seventeen (117) case records (8.8%) reported abnormalities on general examination. These are listed in Table 10. Lymphadenopathy was the most common (2.1% overall and 23.9% of those with abnormalities).

Table 10: General examination abnormalities found (n=117)

	Frequency	Percent
LYMPHADENOPATHY	28	23.9
TENDER ABDOMEN	9	7.7
ABNORMAL URINALYSIS RESULT	5	4.3
PALLOR	5	4.3
DIMINISHED REFLEXES	3	2.6
ANKLE OEDEMA	3	2.6
POSITIVE WALLENBERGS	3	2.6
OVERWEIGHT	2	1.7
LYMPHADENOPATHY, TENDER ABDOMEN	2	1.7
ECZEMA	2	1.7
LYMPHADENOPATHY, FACIAL PALSY	1	.9
ABNORMAL GAIT, FOOT DROP	1	.9
DIMINISHED FOOT PULSE	1	.9
CATARACTS	1	.9
UMBILICAL HERNIA	1	.9
JAUNDICE	1	.9
WHEEZING	1	.9
DECREASED REFLEXES BILATERALLY	1	.9
POSITIVE ROMBERGS	1	.9
PATIENT HAS A SHORT LEG	1	.9
SPOONING OF FINGERNAILS	1	.9
VITILIGO	1	.9
SLE BUTTERFLY RASH?	1	.9
TRICUSPID VALVE DAMAGE	1	.9

SWOLLEN FINGERS, DECRESED SENSATION C6/C7 AREA	1	.9
RHEUMATOID NODULES	1	.9
TENDER ABDOMEN, DIMINISHED REFLEXES	1	.9
DECREASED SENSATION OVER C6 AREA	1	.9
BREAST LUMP, TENDER LIVER, LYMPHADENOPATHY	1	.9
VARICOSE VEINS, ANKLE OEDEMA, PITTING, PALLOR	1	.9
MYOTOME FINGER STRENGTH DECREASED	1	.9
DECREASED ARM STRENGTH	1	.9
VARICOSE VEINS	1	.9
ENLARGED LIVER	1	.9
VARICOSE VEINS, LYMPHADENOPATHY	1	.9
SHOULDER MYOTOMES PAINFUL	1	.9
OBESE	1	.9
LIVER TENDER, DIMINISHED REFLEXES	1	.9
DIMINISHED SENSATION AT UMBILICUS	1	.9
ANAEMIA	1	.9
DIMINISHED VIBRATION SENSE	1	.9
DIMINISHED STRENGTH ARMS	1	.9
ARTHRITIC CHANGES OF HANDS	1	.9
FOOT DROP	1	.9
WEAK ARM MYOTOMES, DIMINISHED REFLEXES	1	.9
LIPOMA?	1	.9
TENDER OVER SINUSES	1	.9
INGUINAL HERNIA, DECREASED SENSATION TOE	1	.9
SKIN RASH	1	.9
ANTALGIC GAIT	1	.9
INCREASED AORTIC DIAMETER	1	.9
TENDER THYROID	1	.9
TACHYCARDIA	1	.9
PITTING OEDEMA	1	.9
MOUTH ULCER	1	.9
EPIGASTRIC PAIN	1	.9
DERMATITIS	1	.9
THYROID SWELLING	1	.9
LYMPHADENOPATHY, WHEEZING	1	.9
LOSS OF WEIGHT	1	.9
PAIN WRIST MYOTOMES	1	.9
PSORIATIC LESIONS, NAIL PITTING	1	.9
WHEEZE, DECREASED VIBRATION SENSE	1	.9
WASTING OF A BICEP MUSCLE	1	.9
KERNIGS NECK STIFFNESS	1	.9
Total	117	100.0

4.2.4 THE COMMON ETIOLOGY, PRESENTING CONDITIONS, SIGNS, SYMPTOMS AND DIAGNOSIS

4.2.4.1 Causes of Main Complaint

Table 11 shows that in most cases the cause was unknown (61.8%), while the most common known cause was a fall or accident (eg. Whiplash from a MVA) (9.9%), followed by stress and depression (7.6%), and poor posture (5.6%). Sport only caused 4.6% of the cases.

Table 11: Cause of main complaint

	Frequency	Percent
Unknown	820	61.8
Fall / accident	131	9.9
Stress/ depression	101	7.6
Poor posture	74	5.6
Sport	61	4.6
Occupational ergonomics	47	3.5
Bending/ Lifting/ Carrying	43	3.2
Medical/Surgical	30	2.3
Driving	7	.5
Assault	4	.3
Air conditioner	3	.2
Poor adjustment	3	.2
Standing/ Walking	2	.2
Pregnancy and childbirth	1	.1
Total	1327	100

4.2.4.2 Main Complaint

The main presenting complaint of the 1327 cervical spine patients is shown in Table 12a. It is clear that neck pain was by far the most common complaint (91.2%). Neck pain was reported in conjunction with pain from other sites in many of the cases, which is the reason that the values in Table 12a add up to more than 1327. Table 12b shows

the combination of neck pain with pain from other sites. The most frequent combination was neck pain and headache (31.5% of the sample).

Table 12a: Main complaint in the sample (n=1327)

	Count	Column %
Neck pain	1210	91.18%
Headache	495	37.30%
Arm pain	155	11.69%
Jaw pain	15	1.13%
Chest pain	11	.83%
Other	151	11.38%

Table 12b: Main complaint in the sample showing combination of neck pain with other sites

	Count	%
Neck pain and headache	418	31.5%
Neck and arm pain	131	9.9%
Neck and jaw pain	13	1.0%
Neck and chest pain	9	.7%

4.2.4.3 Associated Signs and Symptoms

Associated signs and symptoms are shown in Figures 2 and 3. Only 60 patients (4.5%) presented with associated signs and 188 (14.2%) had associated symptoms. The most common associated sign was “other” (57%) which mostly consisted of anterior head carriage. The most common symptom was parasthesias (33%). Some patients reported more than one sign or symptom, which is why the totals in the figures do not add up to the number of patients with any signs and symptoms.

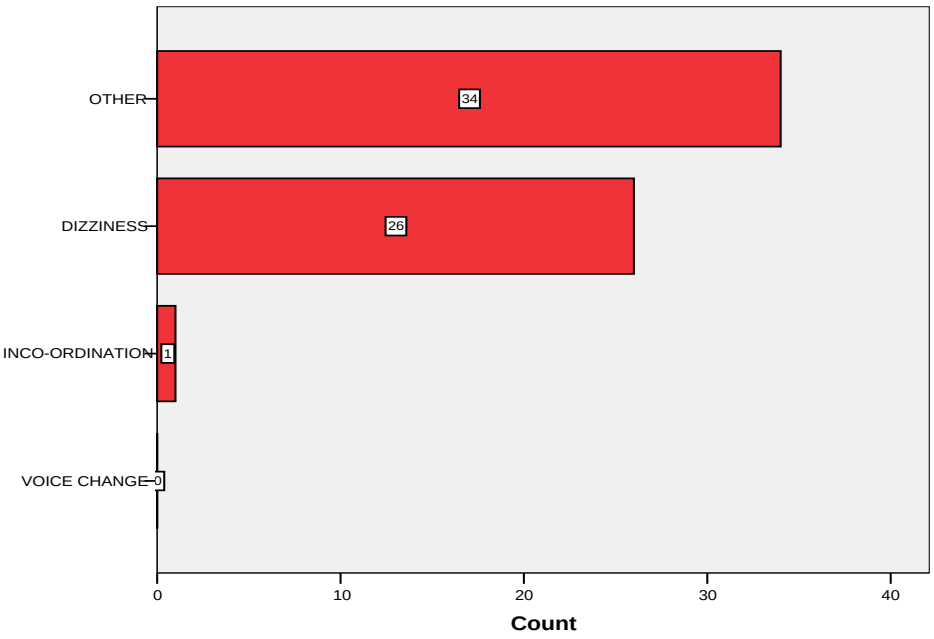

Figure 2: Associated signs of sample (n=60)

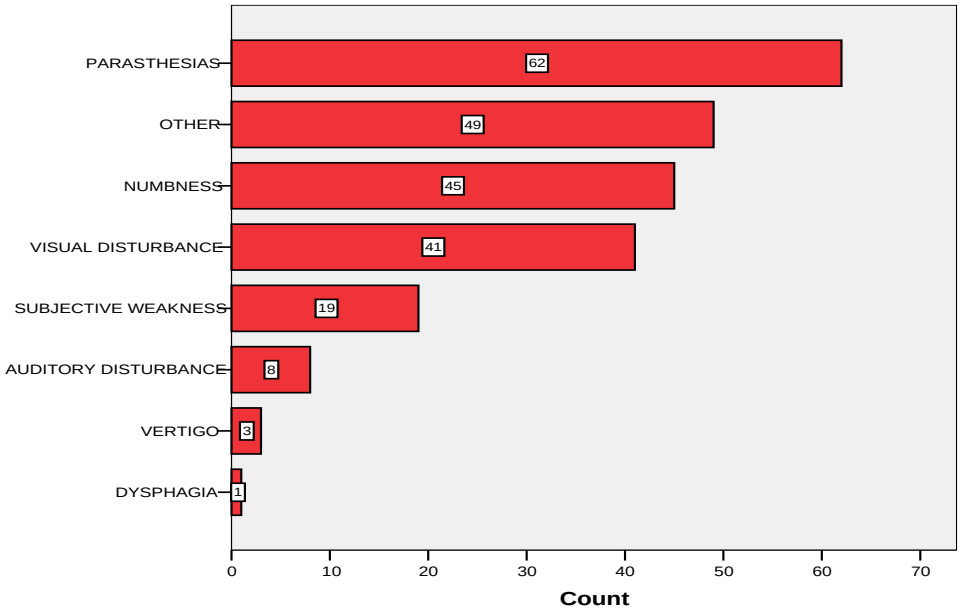

Figure 3: Associated symptoms of sample (n=188)

4.2.4.4 Diagnoses

While up to three different diagnoses were made for some patients, the main diagnosis is shown in Table 13. By far the most common diagnosis was cervical facet syndrome (67.4%). The next most frequent was myofascial pain syndrome (14.2%), followed by cervicogenic headache (3.5%). There were many once off “other” diagnoses listed in the table.

Table 13: Primary diagnosis of sample patients (n=1327)

	Frequency	Percent
CERVICAL FACET SYNDROME	895	67.4
MYOFASCIAL PAIN SYNDROME	188	14.2
CERVICOGENIC HEADACHE	46	3.5
NRE	28	2.1
CERVICAL JOINT DYSFUNCTION	27	2.0
TENSION HEADACHE	21	1.6
MIGRAINE HEADACHES	13	1.0
SPONDYLOSIS	9	.7
WHIPLASH	8	.6
CERVICAL FACET DYSFUNCTION	8	.6
TORTICOLLIS	6	.5
DJD	5	.4
THORACIC FACET SYNDROME	5	.4
THORACIC OUTLET SYNDROME	4	.3
NERVE ROOT ENTRAPMENT	3	.2
DISC BULGE	3	.2
TIETZES SYNDROME	2	.2
CERVICAL DISC BULGE	2	.2
MUSCLE STRAIN	2	.2
LATERAL CANAL STENOSIS	2	.2
ACCELERATION/DECELERATION INJURY	2	.2
RHEUMATOID ARTHRITIS	2	.2
BELLS PALSY	2	.2
INFRASPINATUS MYOFASCIITIS	1	.1
DISH SUSPECTED	1	.1
TRIGEMINAL NEURALGIA	1	.1
CUSHINGS SYNDROME	1	.1
BRACHIAL PLEXUS TEAR	1	.1
HYPERMOBILITY	1	.1
CERVICAL RADICULOPATHY	1	.1
PRONATOR TERES SYNDROME	1	.1

CERVICAL STENOSIS	1	.1
POST COLLISION TENDERNESS	1	.1
NEUROVASCULAR COMPLICATION	1	.1
NEUROPRAXIA	1	.1
STRESS FRACTURE	1	.1
CERVICAL ANKYLOSIS	1	.1
CERVICAL SPRAIN	1	.1
BRACHIAL NEURALGIA	1	.1
TRAPEZIUS STRAIN	1	.1
OSTEOPOROSIS	1	.1
CERVICAL SPONDYLOSIS	1	.1
TRIGEMINAL NERVE PALSY	1	.1
DIAGNOSIS PENDING	1	.1
CHERALGIA PARASTHETICA	1	.1
NO DIAGNOSIS PENDING PROPER EVALUATION	1	.1
POSSIBLE FRACTURE CSPINE	1	.1
PSORIATIC ARTHRITIS	1	.1
COSTOTRANSVERSE DYSFUNCTION	1	.1
TRAPEZIUS CONTUSION	1	.1
POST CVA CERVICAL FACET SYNDROME	1	.1
MENIERES DISEASE	1	.1
CERVICOTHORACIC SYNDROME	1	.1
SINUSITIS	1	.1
SI SYNDROME	1	.1
CERVICAL SPINE DYSFUNCTION	1	.1
TRAPEZIUS HYPERTONICITY	1	.1
INTERCOSTAL BRUISING	1	.1
SUBLUXATION C0/C1	1	.1
CERVICAL DISC HERNIATION	1	.1
HERNIA	1	.1
VBAI	1	.1
SUBOCCIPITAL NEURALGIA	1	.1
PAGETS DISEASE	1	.1
FIBROMYALGIA	1	.1
SUPRASPINATUS TENDONITIS	1	.1
TRAPEZIUS MYOFASCIITIS	1	.1
Total	1327	100.0

4.2.5 THE MANAGEMENT PROTOCOL USED AT THE FIRST CONSULT FOR PATIENTS WITH NECK PAIN AND CONTRA-INDICATIONS TO TREATMENT

4.2.5.1 Treatment Protocols

Treatment protocols used are shown in Figure 4. Often several combinations of treatments were used on a patient. The most common one was soft tissue therapy, which was used in 84.3% of the cases, followed by manipulation (74.7%).

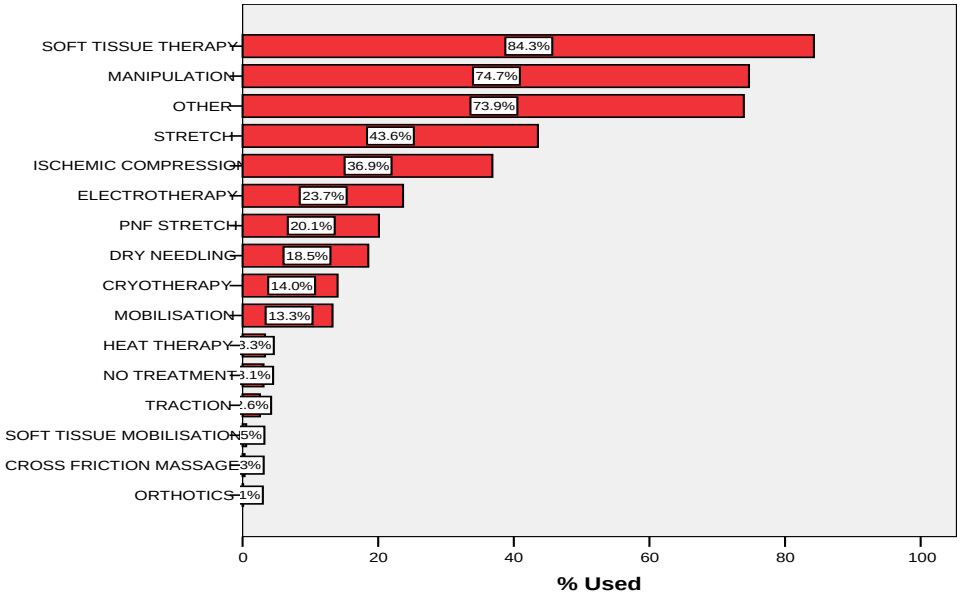

Figure 4: Percentage of times that each treatment was used

4.2.5.2 Contra-indications to Treatment

Eighty-three (83) contra-indications to treatment were reported (6.3%) in the case records and of these, 77 were to manipulation, five (5) were to all treatments and one (1) was to electrotherapy. The reasons for contra-indications are shown in Table 14.

Table 14: Reasons for contra-indication to treatment (n=83)

	Frequency	Percent
VIEW XRAYS FIRST	34	41.0
POSITIVE WALLENBERGS	13	15.7
HIGH BP	10	12.0
RHEUMATOID SUSPECTED	4	4.8
SPONDYLOSIS	2	2.4
NRE	2	2.4
POSTURAL HT	1	1.2
SERO-VE SPONDYLOARTHROPATHY	1	1.2
FURTHER INVESTIGATIONS	1	1.2
POSSIBLE CANCER	1	1.2
SEVERE PAIN	1	1.2
INVESTIGATE TOS	1	1.2
OSTEOPOROSIS	1	1.2
POSSIBLE NRE	1	1.2
PENDING HIV RESULTS	1	1.2
BLOCK VERTEBRA, C5 UNSTABLE	1	1.2
NEUROVASC COMPLICATIONS	1	1.2
METASTASES	1	1.2
PENDING PATIENT RESPONSE TO TREATMENT	1	1.2
LAMINECTOMY	1	1.2
PREVIOUS STROKE	1	1.2
DOPPLER TEST FIRST	1	1.2
HEART DISEASE	1	1.2
COULDN'T DO WALLENBERGS	1	1.2
Total	83	100.0

4.2.5.3 Location of Management

The area of location of management in the cervical spine is shown in Figure 5. The upper C (cervical) spine was managed in 54.1% of cases, while the middle C spine in 40.6% of cases. The lower C spine was managed in 35.3% and the first rib in 3.3% of cases.

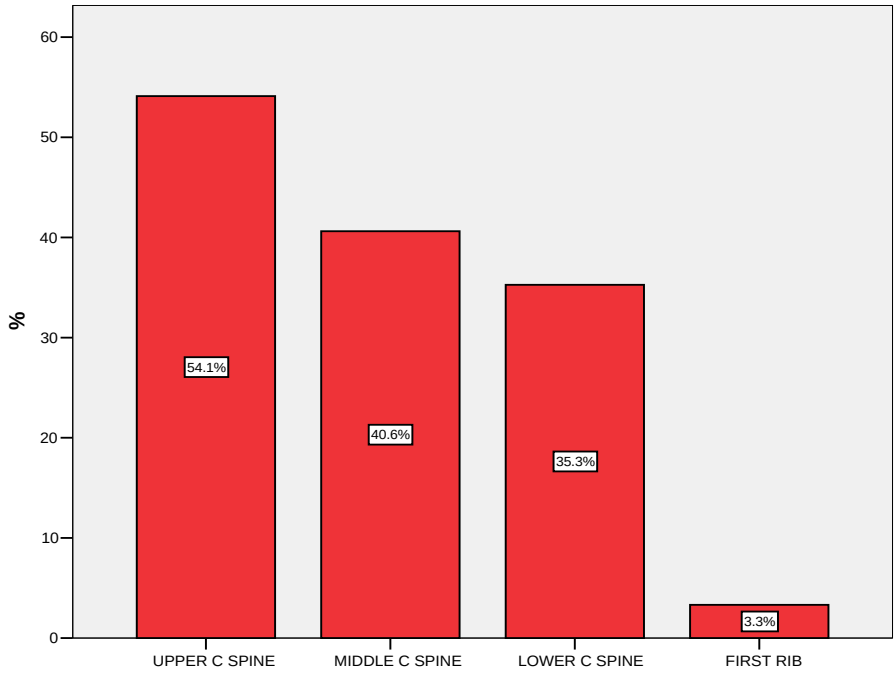

Figure 5: Location of management

4.2.5.4 Referrals

Twenty-eight patients (2.1%) were referred to other practitioners, mostly due to high blood pressure. The most common other practitioner for referral was:- GP (15, 53.6%), neurologist (6, 21.4%), optometrist (2, 7.1%), and rheumatologist (1), dermatologist (1), cardiologist (1), and endocrinologist (1).

4.2.5.5 Investigations

X-rays were the most common investigations (8.7%) that student chiropractors had referred patients for. The other investigations like blood tests (0.9%), MRI (0.1%), CT scan (0.1%) and Doppler (0.1%) were very infrequently used. BMD, Ultrasound and bone scans were investigative tools that were not used at all.

Table 15: Investigations in cervical spine patients

	Count	Column N %
X-RAYS	115	8.7%
BLOOD TESTS	12	.9%
MRI	1	.1%
CT SCAN	1	.1%
DOPPLER	1	.1%
UNKNOWN	0	.0%
BONE MINERAL DENSITY	0	.0%
ULTRASOUND	0	.0%
BONE SCAN	0	.0%

4.2.5.6 Follow-up Consultations

The case records of the 1327 cervical spine patients revealed that 1029 (77.5%) presented for follow-up visits. The number of follow-ups in a 4 weeks period is shown in Table 16. The median number of follow-ups in those who returned for treatment was 2, with an inter-quartile range from 1 to 4.

Table 16: Number of follow-up visits in a 4-week period

	Frequency	Percent
0	299	22.5
1	299	22.5
2	217	16.4
5	184	13.9
3	149	11.2
4	130	9.8
6	34	2.6
7	9	.7
9	3	.2
8	2	.2
10	1	.1
Total	1327	100.0

4.2.6 New Complaints

Case records showed that 209 patients had a new complaint (15.7%), of which the most common site was lumbar (45%), followed by cervical (13.9%). This is shown in Figure 6.

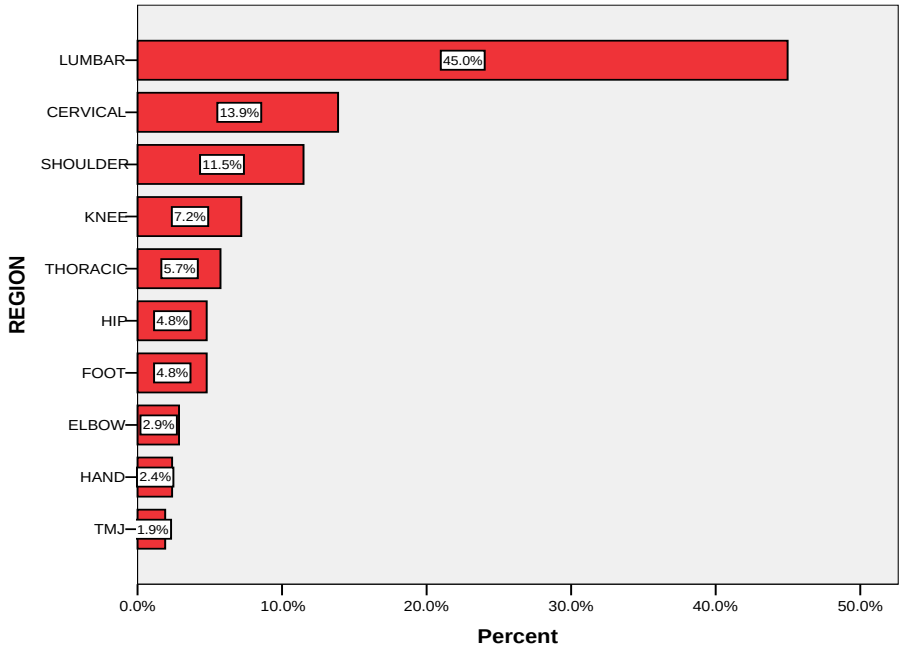

Figure 6: Region of new complaint (n=209)

CHAPTER 5

DISCUSSION

5.1 INTRODUCTION

This descriptive study examined cervical case records at the D.U.T Chiropractic Day Clinic over a 10-year period in order to provide information on South African patients that have presented with neck pain. Whilst most studies on teaching clinics commented on the cervical, thoracic, lumbar and extremity regions, this study went one step further in analyzing the cervical spine and neck pain only and in certain instances, compared the results of the first five years and last five years. This chapter discusses the results obtained through the statistical analysis of the data.

5.2 DISTRIBUTION OF CERVICAL CASE RECORDS

It was found that of the 7,500 files analysed in this study within the Chiropractic Day Clinic, 1,342 cervical case records met the research criteria. Since the case records were taken from a portion of the year in 1995, it was felt that results would be biased and so these case records were excluded from the study and the results were based on 1,327 cases from 1996 to 2005. This sample size was similar to two recent retrospective studies. Bryant *et al.* (2003) reviewed and collected data from 1,018 patient files at an Australian chiropractic-teaching clinic while Holt and Beck (2005) retrospectively analysed 1,004 patient files at a New Zealand chiropractic-teaching clinic. This study shared a similar standard in terms of methodology with the other two studies, so data was comparable.

5.3 INTERPRETATION OF DATA

5.3.1 THE PREVALANCE OF NECK PAIN AT THE D.U.T CHIROPRACTIC CLINIC

The data associated with the period prevalence of neck pain was presented in Chapter 4 under 4.2.1. From the 7,487 randomly extracted files, 1,342 cervical case records met the criteria of the study between 1995 and 2005.

The overall prevalence from 1995 to 2005 was 17.92%. In the 10-year period from 1996 to 2005, the prevalence was 18.66%. A statistically significant increase in prevalence between the first five years (1996 to 2000) and the second five years (2001-2005) was detected, from 17.14% to 20.61%.

While the overall prevalence of neck pain was slightly lower when compared to Sawyer and Ramlow's (1984) study (23.1%), it was comparable to Drews (1994) unpublished study at this teaching clinic where it was found that the prevalence of neck pain in the sample population was 16.7%. Waalen's (1994) study on the other hand, had a large prevalence of 32.4%. Bryant *et al.* (2003) had a 24% prevalence of neck pain while Holt and Beck (2005) had a finding similar to this current study; the prevalence of neck pain was 16.8%.This study reported a significant increase in the prevalence of neck pain between the first five years and second five years that concurred with the claims of Fejer *et al.* (2006) of the evident trend that the prevalence of neck pain increases with a longer prevalence period.

5.3.2 THE DEMOGRAPHICS OF PATIENTS WITH CERVICAL SPINE COMPLAINTS

Since the prevalence in 1995 was much lower than in the other years, and the cases were only taken from a portion of the year, the 1995 cases were excluded and the analysis was based on the 1,327 cases from 1996 to 2005 for the rest of the study.

5.3.2.1 Age

The data was presented under 4.2.2.1. The age of the sample ranged from 7 years to 92 years. The majority was young, in the 20-29 year age group (30.2%). The mean age was 36.89 years and increased from 35.58 years in the first five-year period to 38.28 in the second five-year period.

A study on musculoskeletal discomfort in New Zealand where students aged between 11 and 14 filled out a questionnaire, discovered that the prevalence of neck pain for that age group was 36% (Legg *et al*. 2003). This is a higher prevalence compared to this study where the prevalence for the age group 10-19 was only 9%. With regards to the older age groups, the prevalence of neck pain in this study was similar compared to the retrospective review of 140 medical charts that revealed that six percent and two percent of patients between 51 and 101 years of age reported head pain and neck pain respectively (D' Astolfo and Humphreys 2006). There was a slightly higher percentage in this current study in the age group 50-59 where 12% prevalence was reported.

Bryant *et al.* (2003) attempted a study similar to this study whereby 1,018 new patient files were reviewed within an Australian chiropractic-teaching clinic. Seventy percent of patients that presented to the clinic were between 22 and 51 years of age with the main age as 36.6 years. The younger age group may be due to the high population of non-chiropractic students as the clinic is in close proximity to a university. A similar study by Holt and Beck (2005) was done on patients and patient complaints at a New Zealand chiropractic-teaching clinic where 1,004 new patient files were analysed. The age range of all patients was 0-85 years and the mean age was 32.3 years (Holt and Beck 2005). The age range of Bryant *et al*. (2003) in the chiropractic-teaching clinic ranged from 1-88 years and the mean age was 36.6 years.

However both these chiropractic-teaching clinic studies were not specific for neck pain. This study had an age range of 7-92 years, as Paediatric files were not included in the study as the clinic paperwork was specific for paediatrics and the mean age was 36.89 years. While the two studies were not specific for age range regarding neck pain, the patients attending the clinics were similar in age to those presenting with neck pain to this teaching clinic and the mean age was more comparable to Bryant *et al.* (2003) while Holt and Beck (2005) had a slightly younger mean age.

The age group that presented mostly to this clinic with neck complaints was in the age group 20-29 (30.2%). Drews (1994) study had a similar finding at this clinic with the common age group being 20-39 (32.1%). This is similar again to Bryant *et al*. (2003) where the age distribution was biased to the 21-25 age group and Holt and Beck (2005) whose largest age group attending the clinic was 25-29 years. While all three studies again were not specific for neck pain, the frequency of the age groups may be due to the fact that the chiropractic-teaching clinics are in the proximity of universities. The D.U.T chiropractic-teaching clinic also provides free treatment to selected students in the university.

5.3.2.2 Gender

The data for gender was represented under 4.2.2.2 and revealed that overall 40.4% males and 59.6% females presented to the D.U.T chiropractic-teaching clinic with neck complaints from 1996-2005. There was no difference in the gender distribution between the first five years and the second five years

The percentages in this study were comparatively higher than the gender data in the study by Guez *et al.* (2002) where the Swedish survey revealed that only 48% of women and 38% of men suffered with neck pain. The study by Cote *et al.* (2003) had a more comparative finding where, 58.8% of women had neck pain; however a higher percentage (47.2%) of men presented with neck pain in comparison.

Rubinstein *et al*. (2000) also reported a high prevalence of neck pain among women in the Nertherlands, as the patient sample was predominantly female (60%). Suleman (2001) had a contrary finding at a multidisciplinary community health clinic in Canada where 67% of men attended for chiropractic treatment compared to 33% of women, however, when it came down to gender breakdown of the number of visits, women sought care more frequently than men. The treatment was not specific for neck pain.

Drews (1994) unpublished study concluded that 52.2% of females and 46.9% of males attended this chiropractic-teaching clinic. Thoresen (2006) had a similar finding at this

clinic, females 53.5% attended more than males 46.5%. The case records of this study revealed that females with neck pain attending the clinic made up a higher percentage (59.6%) and males with neck pain made up a much lower percentage (40.4%) in comparison.

Holt and Beck (2005) had a similar finding at the New Zealand chiropractic-teaching clinic, with the ratio of female to male being, females 51.9% and males 48.1%. However, the females were a lower percentage and males a much higher percentage when compared to this study. On the contrary, Bryant et al. (2003) found the ratio of male to female patients at an Australian chiropractic-teaching clinic was 54% male to 46% female. However, the proportion of females and males with neck pain was not analysed in these two studies.

The results of gender in this study are evident as it is in the literature, women present and suffer with neck pain more than men. This is an international finding as reviewed by Fejer *et al.* (2006).

5.3.2.3 Occupation

The data was represented under 4.2.2.3. The occupations recorded were initially divided into sedentary and non-sedentary/ active and over half the sample, 907 (68.3%) were reported to be in active or sedentary work and 420 (31.7%) were reported to be unemployed. Of the 907 recorded, 300 were in active occupations (e.g. housewife, artisan, professional sports person etc.) and 607 were mainly doing sedentary office work. Overall there were 22.6% in active occupations and 45.7% in sedentary occupations. The unemployed group made up 420 (31.7%) patients and consisted of students, scholars, self employed, pensioners, or their occupation was not recorded in their file. When it came down to distribution of employment, over half the sample was employed (57.9%). Scholars or students made up a high percentage (18.9%). Housewives made up 10.5% of the sample and 1.7% of the case records reported the occupation as unknown.

When the distribution of sedentary or active jobs was compared between the two five-year periods, the proportions in each category were very similar between the two five-year periods. There was a borderline non-significant difference in the distribution of employment over the two five year periods. The main difference was an increase of retired and self-employed patients from the first to the second five-year period, with a slight decrease in unemployed patients, scholars and students.

The percentage of those in sedentary occupations (45.7%) in this study was similar to Waalen *et al*. (1994) where sedentary occupations comprised 51.6% of the sample. This was also consistent with Walsh and Jamison's (1992) study where the chiropractic-teaching clinic had a higher percentage of non-manual workers. The amount of sedentary workers in this study was not, in comparison, as great as in Bryant *et al*. (2003) where non-manual workers represented 37% of the sample in the Australian chiropractic-teaching clinic. Most studies reported that a large percentage of patients ranging from 11% to 26.2% were students (Waalen 1994, Drews 1994, Bryant *et al.* 2003 and Thoresen 2006). Students represented 19% of patients in the study by Bryant *et al*. (2003), which was similar to the percentage of students in this chiropractic-teaching clinic (18.9%). Housewives made up 10.5% of this sample with neck pain, an exact percentage to Drews (1994) previous study in this teaching clinic. This finding was higher than that of Waalen *et al*. (1994) study (2.9%) and lower than Bryant *et al*. (2003) (13%). Rubinstein *et al*. (2000) had a higher proportion of housewives than all these studies (18%).

5.3.2.4 Consultation Fees

The data was represented under 4.2.2.4. The vast majority of patients (96%) paid the full fee on the first visit to the clinic. Only 1.6% of patients that presented with neck pain had a fee reduction and 2.3% were not charged for their visit. As this teaching clinic has low fee charges and over half the sample were employed this may account for the high percentage of patients paying the full fee. The reason for patients having a fee reduction is usually if they are pensioners or earned below a certain amount. Patients who were not charged for visits included: chiropractic students, their parents, clinic staff, and

lecturers at the chiropractic department, homeopathy students and selected staff at the university.

5.3.3 PRE-EXISTING MEDICAL CONDITIONS

The data was represented under 4.2.3.1. As the chiropractic students in this clinic are skilled in diagnostic procedures, history taking revealed these statistics. These conditions were taken into account before treatment was administered. Thirty one percent (31%) of the cervical case records revealed a pre-existing medical condition. Respiratory conditions such as asthma and bronchitis were the most common (24%). Cardiac conditions such as hypertension and high cholesterol were the second most frequent condition (20.5%), while endocrine conditions (14.2%) such as hypothyroidism and diabetes were also prevalent. Cote *et al*. (2003) looked at neck pain and general health and reported that subjects who reported cardiovascular or digestive problems that impacted on their health were more likely to have experienced disabling neck pain and results suggested that disabling neck pain was more common in those with poorer health. The findings on hypertension and diabetes were similar to D'Astolfo and Humphrey's (2006) study where patients that presented with depression and back pain had prevalent disorders like hypertension and diabetes. Blood pressure abnormalities were noted in this study and 63.9% of the 180 patients with blood pressure abnormalities had high blood pressure.

5.3.4 THE COMMON ETIOLOGY, PRESENTING CONDITIONS, SIGNS AND SYMPTOMS AND DIAGNOSIS

5.3.4.1 Causes of Main Complaint

The data was represented under 4.2.4.1. In most cases the cause of neck pain was reported as unknown (61.8%) in the case records, while the most common known cause was a fall or accident (eg. Whiplash from a MVA) (9.9%), followed by stress and depression (7.6%), and poor posture (5.6%). Sport only caused 4.6% of the cases.

Walsh (1992) found that one of the three chiropractic-teaching clinics had a higher incidence of cervical spine complaints and the most common cause of pain was unknown (33.3%). A retrospective analysis by Walsh (2000) revealed that males and females found the most common cause of their neck pain was also unknown (61%). In both these studies, results are similar to the most common cause of this study: unknown (61.8%). Cote *et al*. (2003) found that individuals with a previous history of whiplash injury may be more likely to suffer with neck problems and 19.1% of records in this study revealed a previous history of trauma. This study revealed that the most common known cause was a fall or accident (9.9%). This is a much lower percentage compared to the studies by Walsh (1992) and (2000) where MVA's made up 11.7% and 26.9% of the causes of neck pain respectively.

5.3.4.2 Main Complaint

The data was represented under 4.2.4.2. As this study focused on cervical spine complaints, it was expected that neck pain was the most common complaint (91.2%). Headache was the second most common complaint at 37.3%. Arm pain alone accounted for 11.69% of the sample. Four hundred and eighteen patients (418) patients reported headache in conjunction with neck pain (31.5%) and 131 patients reported neck pain in conjunction with arm pain (9.9%).

Drews (1994) identified characteristics of chiropractic patients and their complaints at the chiropractic-teaching clinic at Natal Technikon (currently D.U.T) and a proportion of patients presented with neck pain (16.7%), neck pain and arm pain (16.1%), headache (9.3%) and headache with neck pain (21.6%). This study had a higher proportion of patients presenting with neck pain and headaches (31.5%) and a lower proportion of patients presenting with neck pain and arm pain (9.9%) than Drews (1994) study. A retrospective review of 1,004 files at a New Zealand chiropractic college teaching clinic (Holt and Beck 2005) also found that the chief presenting cervical complaints were: cervical (no referral) (13.4%), cervical (with referral) (3.4%) and headache/ migraine (12.6%).

5.3.4.3 Associated Signs and Symptoms

The data was represented under 4.2.4.3. Only 60 patients (4.5%) presented with associated signs and 188 (14.2%) had associated symptoms. The most common associated sign was anterior head carriage and the second most common was dizziness (26%). The most common symptom was parasthesias (33%). As stated by Mounce (2002), dizziness and paresthesias are common symptoms of neck pain.

5.3.4.4 Diagnoses

The data was represented under 4.2.4.4. By far the most common diagnosis was cervical facet syndrome (67.4%). The next most frequent was myofascial pain syndrome (14.2%), followed by cervicogenic headache (3.5%). There were many once off “other” diagnoses.

These findings are similar to the retrospective analysis of 512 case files by McMorland and Suter (2000) in Canada where it was revealed that cervical joint sprain, strain and headaches were the most common diagnoses of patients presenting with mechanical neck pain. The retrospective review of files in an Australian college chiropractic-teaching clinic by Bryant *et al.* (2003) showed that diagnoses primarily involved the facet joints as the primary tissue in lesion (47%), followed by muscle (39%) and this is a similar conclusion within this current study.

5.3.5 THE MANAGEMENT PROTOCOL USED AT THE FIRST CONSULT FOR PATIENTS WITH NECK PAIN AND CONTRA-INDICATIONS TO TREATMENT

5.3.5.1 Treatment Protocols

The data was represented under 4.2.5.1. Often several combinations of treatments were used on a patient. The most common treatment was soft tissue therapy, which was used in 84.3% of the cases, followed by manipulation (74.7%). These findings were contrary to most studies. Coulter and Shekelle (2005) revealed that the most common therapy was chiropractic adjustment in North America. Mootz *et al*. (2005) revealed that spinal adjustments were provided at almost 85% of visits and soft-tissue therapy and

ischemic compression were provided between 33% and 43% in Arizona and Massachusetts respectively.

5.3.5.2 Contra-indications to Treatment

The data was represented under 4.2.5.2. Eighty-three (83) contra-indications to treatment were reported (6.3%) in the case records and of these, 77 were to manipulation, five (5) were to all treatments and one (1) was to electrotherapy. The three most common reasons for contra-indications to treatment were: to view patients x-rays before treatment (41%), positive Wallenberg's sign (15.7%) and high blood pressure (12%). Walsh (2000) evaluated clinical findings for uncomplicated mechanical neck pain and established that 1.8% of patients had a positive finding for tests for vertebrobasilar arterial insufficiency.

5.3.5.3 Location of Management

The data was represented under 4.2.5.3.The area of location of management in the cervical spine is shown in Figure 5. The upper C spine was managed in 54.1% of cases, while the middle C spine in 40.6% of cases. The lower C spine was managed in 35.3% and the first rib in 3.3% of cases. However, the study by Walsh (2000) reported that patients' mechanical neck pain frequently occurred in the lower cervical spine (34%) and the upper cervical spine (30.8%).

5.3.5.4 Referrals

The data was represented under 4.2.5.4. Twenty-eight patients (2.1%) were referred to other practitioners, mostly due to high blood pressure. The most common other practitioner for referral was: - GP (15, 53.6%), neurologist (6, 21.4%), optometrist (2, 7.1%), rheumatologist (1), dermatologist (1), cardiologist (1), and endocrinologist (1). Pillay (2006) had findings consistent with this study in that chiropractors frequently referred to GP's more than homeopaths. In comparison, Mootz *et al.* (2005) found medical referral only accounted for less than 3% in both Massachusetts and Arizona.

5.3.5.5 Investigations

The data was represented under 4.2.5.5. X-rays of the cervical spine were the most common investigations (8.7%) that student chiropractors had referred patients for. The other investigations like blood tests (0.9%), MRI (0.1%), CT scan (0.1%) and Doppler (0.1%) were very infrequently used. BMD, Ultrasound and bone scans were investigative tools that were not used at all. Waalen *et al*. (1994) reported that 34.4% of patients were x-rayed in a Canadian chiropractic-teaching clinic compared to 73% in private practice. The difference in frequency of use of x-rays may be due to the demographic disparities such as age; however, other factors unique to a teaching clinic environment may have also played a role and this may suggest a similar reason for minimal use of x-rays as recorded in the cervical case records analysed in this study.

5.3.5.6 Follow-up Consultations

The data was represented under 4.2.5.6. The case records of the 1327 cervical spine patients revealed that 1029 (77.5%) presented for follow up visits. The number of follow-ups in a 4-week period is shown in Table 16. The median number of follow-ups in those who returned for treatment was 2.

5.3.6 New Complaints

The data was represented under 4.2.6. Case records showed that 209 patients had a new complaint (15.7%), of which the most common site was lumbar (45%), followed by cervical (13.9%).

5.4 HYPOTHESES

- **Hypothesis 1**

The Null Hypothesis (H_o) states that there is no significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

The Alternate Hypothesis (H_a) states that there is a significant change in demographic profile of patients with neck pain in the first five years as compared to the second five years in the 10-year time period.

Age: The mean age of patients with cervical complaints was 36.89 years and increased from 35.58 years in the first five-year period to 38.28 in the second five-year period. The mean age had increased over the years providing evidence of a shift.

Gender: This study concluded that 40.4% males and 59.6% females presented to the D.U.T chiropractic-teaching clinic with neck complaints from 1996 -2005. There was no difference in the gender distribution between the first 5 years and the second 5 years.

Occupation: The distribution of sedentary or active jobs was compared between the two five-year periods and the proportions in each category were found to be very similar between the two five-year periods. There was a borderline non-significant difference in the distribution of employment over the two five-year periods. The major difference was an increase of retired (3.6%) and self-employed (3.8%) patients from 1996 to 2000 to the second five-year period (2001-2005) where retired patients comprised 7.0% and self-employed made up 4.4%. There was a slight decrease in unemployed patients (2.3% in first five-year period to 1.1% in second five-year period), and scholars and students (20% in first five years and 17.8% in second five years).

Two of the three demographic variables show evidence of a shift concluding that a shift in demographics has occurred from 1996 to 2005.

The null hypothesis is then rejected and the alternate hypothesis is accepted.

- **Hypothesis 2**

The Null Hypothesis (H_o) states that there shall not be a lower prevalence of cervical complaints from 1995 to 2000 and a comparatively higher prevalence from 2001 to 2005.

The Alternate Hypothesis (H_a) states that there shall be a lower prevalence of cervical complaints from 1995 to 2000 and a comparatively higher prevalence from 2001 to 2005.

The overall prevalence from 1995 to 2005 was 17.92%. In the 10-year period from 1996 to 2005, the prevalence was 18.66%. A statistically significant increase in prevalence between the first five years (1996 to 2000) and the second five years (2001-2005) was detected, from 17.14% to 20.61%.

The null hypothesis is then rejected and the alternate hypothesis is accepted.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSIONS

The current study took place at the Chiropractic Day Clinic at the Durban University of Technology with the main objective of describing the demographics and prevalence of neck pain sufferers, and the chiropractic care they received by analyzing patient files. This study provided a South African perspective of neck pain in a chiropractic-teaching clinic and produced the following conclusions:

- There was a shift in demographics of patients that presented with neck pain to the D.U.T Chiropractic Day Clinic from 1996 to 2005. The mean age of patients with cervical complaints had increased over the years. Females presented more than males over the 10-year period. There was an increase of retired and self-employed patients and a slight decrease in unemployed patients, scholars and students over the two five year periods.
- There was a significant increase in prevalence of cervical complaints from 1996 to 2005 at the chiropractic-teaching clinic.

- The most common cause of neck pain was unknown.
- Neck pain and headaches were the most common complaints.
- Dizziness and paresthesias were common signs and symptoms.
- The most common diagnoses were cervical facet syndrome and myofascial pain syndrome.
- Treatment protocols primarily included soft tissue therapy and manipulation with the upper cervical spine as the most common area of management.
- X-rays were the primary investigative tools utilized.

The information on patients presenting with cervical complaints in this South African chiropractic-teaching clinic is similar to the results of international studies on neck pain and studies done in chiropractic-teaching clinics abroad. Whilst many studies have been performed on neck pain elsewhere, this research is a stepping stone in the quest to define and describe the burden of neck pain within the South African chiropractic population in order to find the appropriate management protocols.

6.2 RECOMMENDATIONS

- The patients' ethnicity should be on the patient information sheet and recorded during research.
- Paediatric files should be included in the studies that follow so that a better age comparison in chiropractic-teaching clinics can be made.
- A similar retrospective study on neck pain should be done at the other chiropractic-teaching clinic in the University of Johannesburg to provide a comparison.
- A similar retrospective study on neck pain should be done in private chiropractic practice to provide a comparison.
- The data collection tool should be standardized in all studies in order to make a reliable comparison.

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APPENDIX 1

STATEMENT OF CONFIDENTIALITY

I, the Chiropractic student researcher, am bound by the rules of confidentiality in the Chiropractic Day Clinic and the guidelines of the South African Medical Research Council (2001).

The following Statements of the SAMRC guidelines are binding on myself as the principle researcher in the study titled:

A retrospective cross-sectional survey of cervical cases recorded at the Durban University of Technology Chiropractic Day Clinic (1995-2005).

- To seek consent in writing from the Chiropractic Day Clinic Director to access medical records within the clinic
- Limit access to those to whom it is essential for the provision of health care (the researcher, the supervisor and the Clinic Director).
- To code file numbers on data collection sheet to ensure patient anonymity.
- To destroy the spreadsheet containing the file numbers and respective codes after the completion of the study.
- To store information derived from medical records for research purposes securely within the archives and, as far as possible, ensure subjects involved are unidentifiable to third parties.

These guidelines will be followed by the Chiropractic student researcher at all times.

_____
Ms. Y. Venketsamy
(Chiropractic student researcher)

_____
Date

APPENDIX 4

DURBAN INSTITUTE OF TECHNOLOGY
CHIROPRACTIC DAY CLINIC
CASE HISTORY

Patient: _____ Date: _____

File #: _____ Age: _____
Sex __: _____ Occupation: _____
Intern: _____ Signature: _____

FOR CLINICIANS USE ONLY:
Initial visit
Clinician: Signature:

Case History:

Examination:

Previous:
Current:

X-Ray Studies:

Previous:
Current:

Clinical Path. lab:

Previous:
Current:

CASE STATUS:

PTT:	Signature:	Date:

CONDITIONAL:
Reason for Conditional:

Signature: Date:

Conditions met in Visit No:	Signed into PTT:	Date:

Case Summary signed off:	Date:

Intern's Case History:

1. **Source of History:**
2. **Chief Complaint: (patient's own words):**
3. **Present Illness:**

	Complaint 1	**Complaint 2**
Location		
Onset : Initial:		
Recent:		
Cause:		
Duration		
Frequency		
Pain (Character)		
Progression		
Aggravating Factors		
Relieving Factors		
Associated S & S		
Previous Occurrences		
Past Treatment		
Outcome:		

4. **Other Complaints:**
5. **Past Medical History:**

- General Health Status
- Childhood Illnesses
- Adult Illnesses
- Psychiatric Illnesses
- Accidents/Injuries
- Surgery
- Hospitalizations

6. Current health status and life-style:

- Allergies
- Immunizations
- Screening Tests incl. x-rays
- Environmental Hazards (Home, School, Work)
- Exercise and Leisure
- Sleep Patterns
- Diet
- Current Medication
  Analgesics/week:
- Tobacco
- Alcohol
- Social Drugs

7. Immediate Family Medical History:

- Age
- Health
- Cause of Death
- DM
- Heart Disease
- TB
- Stroke
- Kidney Disease
- CA
- Arthritis
- Anaemia
- Headaches

- Thyroid Disease
- Epilepsy
- Mental Illness
- Alcoholism
- Drug Addiction
- Other

8. Psychosocial history:

- Home Situation and daily life
- Important experiences
- Religious Beliefs

9. Review of Systems:

- General
- Skin
- Head
- Eyes
- Ears
- Nose/Sinuses
- Mouth/Throat
- Neck
- Breasts
- Respiratory
- Cardiac
- Gastro-intestinal
- Urinary
- Genital
- Vascular
- Musculoskeletal

- Neurologic
- Haematologic
- Endocrine
- Psychiatric

APPENDIX 5: PHYSICAL EXAMINATION: SENIOR

Patient Name : **File no :** **Date :**
Student : **Signature :**

VITALS:

Pulse rate:			Respiratory rate:	
Blood pressure:	R	L	Medication if hypertensive:	
Temperature:			Height:	
Weight:	Any recent change? Y / N		If Yes: How much gain/loss	Over what period

GENERAL EXAMINATION:

General Impression		
Skin		
Jaundice		
Pallor		
Clubbing		
Cyanosis (Central/Peripheral)		
Oedema		
Lymph nodes	Head and neck	
	Axillary	
	Epitrochlear	
	Inguinal	
Pulses		
Urinalysis		

SYSTEM SPECIFIC EXAMINATION:

CARDIOVASCULAR EXAMINATION

RESPIRATORY EXAMINATION

ABDOMINAL EXAMINATION

NEUROLOGICAL EXAMINATION

COMMENTS	
Clinician:	**Signature :**

APPENDIX 6

DURBAN INSTITUTE OF TECHNOLOGY
REGIONAL EXAMINATION - CERVICAL SPINE

Patient:..... File No:.....

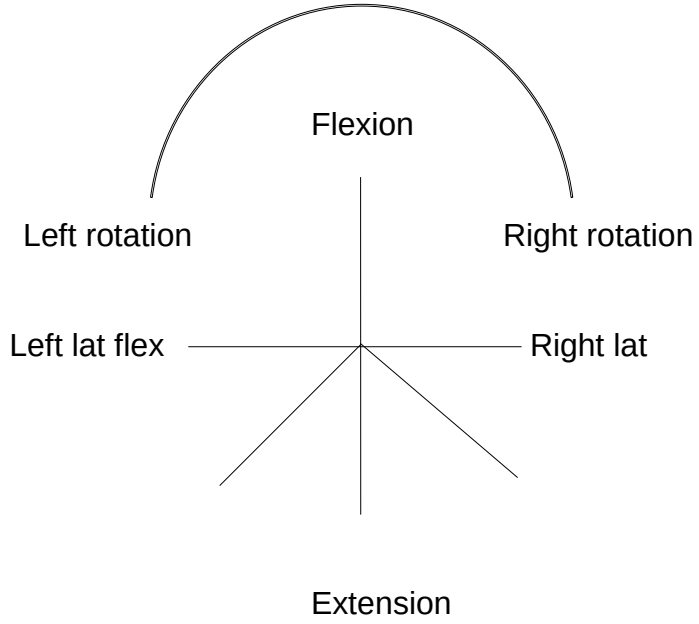
Date: ..... Student: .....

Clinician:..... Sign:.....

OBSERVATION:
Posture
Swellings
Scars, discolouration
Hair line
Body and soft tissue contours

Shoulder position
Left :
Right :
Shoulder dominance (hand):
Facial expression:

RANGE OF MOTION:
Extension (70º):
L/R Rotation (70º):
L/R Lat flex (45º):
flex
Flexion (45º):



PALPATION:
Lymph nodes
Thyroid Gland
Trachea

ORTHOPAEDIC EXAMINATION:

Tenderness		Right	Left
Trigger Points:	SCM		
	Scalenii		
	Post Cervicals		
	Trapezius		

	Lev scapular		

	Right	Left		Right	Left
Doorbell sign			Cervical compression		
Kemp's test			Lateral compression		
Cervical distraction			Adson's test		
Halstead's test			Costoclavicular test		
Hyper-abduction test			Eden's test		
Shoulder abduction test			Shoulder compression test		
Dizziness rotation test			Lhermitte's sign		
Brachial plexus test					

NEUROLOGICAL EXAMINATION:

Dermatones	**Left**	**Right**	**Myotomes**	**Left**	**Right**	**Reflexes**	**Left**	**Right**
C2			C1			C5		
C3			C2			C6		
C4			C3			C7		
C5			C4					
C6			C5					
C7			C6					
C8			C7					
T1			C8					
			T1					
Cerebellar tests:		Left		Right				
Disdiadochokinesis								

VASCULAR:	**Left**	**Right**		**Left**	**Right**
Blood pressure			Subclavian arts.		
Carotid arts.			Wallenberg's test		

MOTION PALPATION & JOINT PLAY:

Left: Motion Palpation:
Joint Play:

Right: Motion Palpation:
Joint Play:

Upper Thoracics:
Motion Palpation:
Joint Play:

BASIC EXAM: SHOULDER:

BASIC EXAM: THORACIC SPINE:

Case History:

ROM: Active:
Passive:
RIM:
Orthopaedic:
Neuro:
Vascular:
Observ/Palpation:

Case History:

ROM: Motion Palp:
Active:
Passive:
Orthopaedic:
Neuro:
Vascular:
Observ/Palpation:

APPENDIX 7

INFORMED CONSENT FORM

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

DATE:

TITLE OF RESEARCH PROJECT: A retrospective survey of patients presenting with cervical spine conditions to the Durban University of Technology Chiropractic Day Clinic (1995-2005).

NAME OF SUPERVISOR: Dr E. Lakhani (M.Tech Chiropractic, ICSSD) (031- 2042533)

NAME OF RESEARCH STUDENT:
Yomika Venketsamy (0722113936/ 031 204 2205 (D.U.T)

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 University of Technology.	Yes	No
8. Do you agree to voluntarily participate in this study	Yes	No
9. Who have you spoken to regarding this study?		

If you have answered 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: Please note for research purposed only
Please be assured that your personal particulars will remain anonymous

Participant: _____ **Signature:** _____

Witness Name: _____ **Signature:**_____

Researcher's Name: _____ **Signature:**_____

Supervisor's Name: _____ **Signature:**_____

APPENDIX 8

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 9

CODE OF CONDUCT

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

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

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

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

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

MEMBER REPRESENTS	MEMBER'S NAME	SIGNATURE	CONTACT DETAILS

APPENDIX 10

LETTER OF INFORMATION – FOCUS GROUP

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

The title of my research project is:

A retrospective survey of patients presenting with cervical spine conditions to the Durban University of Technology Chiropractic Day Clinic (1995-2005).

Background to the study:
Thousands of patients have walked through the doors of The Chiropractic Day Clinic since its establishment 10 years ago. While a few studies were performed abroad, there still remains a paucity of information surrounding patients attending chiropractic-teaching clinics in South Africa. The in-depth look into 10 years of patient's medical records regarding neck pain prevalence, patient demographics, causes of neck pain, common cervical conditions and associated complaints (arm pain etc.), treatment protocols, and referrals within the teaching clinic setting, may present D.U.T as an academic institution where students and chiropractors alike can ascertain essential information regarding the cervical spine and the large amount of files analysed within this teaching-clinic may provide a substantial pool of information.

Objective of the study:

The purpose of this research is to conduct a descriptive study of the patients that presented to and received treatment for conditions affecting the cervical spine at the Durban University of Technology Chiropractic Day Clinic from 1995 to 2005.

- To identify the demographics and clinical characteristics of patients with neck pain that visited the Durban University of Technology Chiropractic Day Clinic.
- To evaluate the most common presenting conditions of the cervical spine at the clinic.
- To identify the interventions and methods most commonly used to treat patients.
- To compare trends and analyse any patterns or changes that have occurred with regards to the chiropractic patient presenting with neck pain over the past decade at the Durban University of Technology Chiropractic Day Clinic.

Your participation in this study is much appreciated and you are assured that your comments and contributions to the discussion will be kept confidential. The results of the discussion will only be used for research purposes.
If you have any further questions please feel free to contact me.
Yomika Venketsamy (2042205 DUT)

APPENDIX 2 **C-SPINE TEMPLATE**

FILE CODE:	

DATE OF INITIAL VISIT:	

AGE:	

GENDER

MALE	1
FEMALE	2

OCCUPATION

UNKNOWN	0
SPECIFY:	1

CONSULTATION FEES

UNKNOWN	0
PAID IN FULL	1
FEE REDUCTION	2
NO CHARGE	3

HX PRE-EXISTING CONDITIONS

NO	0
YES	1
IF YES, SPECIFY:	

HX TRAUMA TO C/S	Y	N
	1	0

BLOOD PRESSURE	Y	N
ABN NOTED	1	0
	LOW	HIGH
IF YES,SPECIFY:	1	2

GENERAL EXAMINATION

	Y	N
ABN NOTED	1	0
IF YES,SPECIFY:		

ETIOLOGY OF CHIEF COMPLAINT

COMPLAINT	YES	NO
NECK PAIN	1	0
HEADACHE	1	0
ARM PAIN	1	0
JAW PAIN	1	0
CHEST PAIN	1	0
OTHER-SPECIFY:	1	0

ASSOC SIGNS	YES	NO
UNKNOWN	1	0
INCO-ORDINATION	1	0
DIZZINESS	1	0
VOICE CHANGE	1	0
OTHER	1	0
SPECIFY:		

ASSOC SYMPTOMS	YES	NO
PARASTHESIAS	1	0
NUMBNESS	1	0
SUBJECTIVE WEAKNESS	1	0

VERTIGO	1	0
VISUAL DISTURBANCE	1	0
AUDITORY DISTURBANCE	1	0
DYSPHAGIA	1	0
OTHER	1	0
SPECIFY:		

PRIMARY DIAGNOSIS

ASSOCIATED/ SECONDARY DIAGNOSIS

CONCOMMITANT DIAGNOSIS (INCL ORG, STRUCT, CONGEN)

TREATMENT MODALITIES

UNKNOWN	1	0
NO TREATMENT	1	0
ORTHOTICS	1	0
CROSS FRICTION MASSAGE	1	0
CRYOTHERAPY	1	0
DRY NEEDLING	1	0
ELECTROTHERAPY	1	0
TRACTION	1	0
HEAT THERAPY	1	0
MANIPULATION	1	0
MOBILISATION	1	0
SOFT TISSUE MOBILISATION	1	0
SOFT TISSUE THERAPY	1	0
OTHER	1	0
SPEC:		

CONTRA-INDICATIONS TO TREATMENT

NO	0
YES	1

IF YES, SPECIFY:
REASON FOR CONTRA-INDICATION

LOCATION OF MANAGEMENT

	YES	NO
UPPER C SPINE	1	0
MIDDLE C SPINE	1	0
LOWER C SPINE	1	0
FIRST RIB	1	0

REFERRALS

NO	0
YES	1
IF YES, REASON:	
SPECIFY SPECIALIST:	

INVESTIGATIONS

	YES	NO
UNKNOWN	1	0
BLOOD TESTS	1	0
X-RAYS	1	0
MRI	1	0
CT SCAN	1	0
ULTRASOUND	1	0
BONE MINERAL DENSITY	1	0
BONE SCAN	1	0
ECG	1	0
OTHER	1	0
SPEC:		

FOLLOW UP CONSULTATION

YES	NO
1	0

FREQUENCY OF CONSULTS (4 WEEKS)

NEW COMPLAINT	YES	NO
REGION:		

APPENDIX 11
C-SPINE TEMPLATE

COMPLAINT

	YES	NO
NECK PAIN	1	0
HEADACHE	1	0
ARM PAIN	1	0
JAW PAIN	1	0
CHEST PAIN	1	0

ASSOC SYMPTOMS

	NO	YES		
		R	L	BILAT
PINS+NEEDLES	0	1	2	3
NUMBNESS	0	1	2	3
TINGLING	0	1	2	3
LOWER LIMB SYMPTOMS	0	1	2	3
VERTIGO	0	1	2	3
VISUAL DISTURBANCE	0	1	2	3
AUDITORY DISTURBANCE	0	1	2	3
DYSPHAGIA	0	1	2	3
OTHER	0	1	2	3
SPECIFY				

ASSOC SIGNS

	YES	NO
UNKNOWN	1	0
DIFFICULTY WALKING	1	0
LOSS OF BALANCE	1	0
DIZZINESS	1	0
VOICE CHANGE	1	0
OTHER	1	0
SPECIFY		

VASCULAR TESTS

	UNKNOWN	HIGH	LOW	n
BP	1	2	3	4

SUBCLAVIAN ARTERY	
UNKNOWN	0
COMPETENT	1
INCOMPETENT	2

IF COMPETENT/ INCOMP	
R	1
L	2
B	3

CAROTID ARTERY	
UNKNOWN	0
COMPETENT	1
INCOMPETENT	2

IF COMPETENT/ INCOMP	
R	1
L	2
B	3

WALLENBERG TEST LEFT	
UKNOWN	0
POSITIVE	1
NEGATIVE	2
SYMPTOMS	

WALLENBERG TEST RIGHT	
UKNOWN	0
POSITIVE	1
NEGATIVE	2
SYMPTOMS	

CEREBELLAR TESTS

DISDIADOCHO-KINESIS LEFT			IF ABn or n	
	UNKNOWN	0	R	1
	Abn	1	L	2
	n	2	B	3

DISDIADOCHO-KINESIS RIGHT			IF ABn or n	
	UNKNOWN	0	R	1
	Abn	1	L	2
	n	2	B	3

POSITIVE ORTHO TESTS

	1 = POS	2 = NEG
	R	L
DOORBELL SIGN		
KEMPS		
CERVICAL DISTRACTION		
HALSTEADS TEST		
SHOULDER ABDUCTION		
DIZZINESS ROTATION		
BRACHIAL PLEXUS TEST		
HYPERABDUCTION TEST		
CERVICAL COMRESSION		
LATERAL COMPRESSION		
ADSONS TEST		
COSTOCLAVICULAR TEST		
EDENS TEST		
SHOULDER COMPRESSION		
LHERMITTES SIGN		
OTHER		

RESTRICTIONS

PA ROT		
AP ROT		
LAT FLEX		
FLEX		
EXT		
FIRST RIB		

KEY

UNKNOWN	0	
	R	L
C0	2	11
C1	3	12
C2	4	13
C3	5	14
C4	6	15
C5	7	16
C6	8	17
C7	9	18
FIRST RIB	10	19

MFTP'S

	YES	NO
UNKNOWN	1	0
GENERAL	1	0
LEV SCAP	1	0
POSTERIOR CERVICAL	1	0
SCALENUS	1	0
SCM	1	0
SUBSCAPULARIS	1	0
SUPRASPINATUS	1	0
INFRASPINATUS	1	0
TRAPEZIUS	1	0
RHOMBOID	1	0
OTHER	1	0
	1	0
	1	0
	1	0

DIAGNOSIS LIST

	YES	NO
UNKNOWN	1	0
NONE	1	0
CERVICAL FACET SYNDROME	1	0
GEN MYOFASCIITIS	1	0
CERV SPRAIN/STRAIN	1	0
CERV DISC DISORDER	1	0
CERV DYSFUNCTION	1	0
CERV MYELOPATHY	1	0
CERV RADICULOPATHY	1	0
CERVICOGENIC DORSALGIA	1	0
CERV INSTABILITY	1	0
TORTICOLLIS	1	0
WHIPLASH	1	0
CERV DJD/OA	1	0
CONCUSSION GRADE 1	1	0
CONCUSSION GRADE 2 NO WOUNI	1	0
CONCUSSION GRADE 3	1	0
CONCUSSION WITH WOUND	1	0
DISH	1	0
DYSTONIA	1	0
CERV # CLOSED	1	0
NRE	1	0
ARTHRITIS	1	0

	YES	NO
CLAUDICATION-INTERMITENT	1	0
CLAUDICATION-NEURO	1	0
CLAUDICATION-VASC	1	0
HEADACHE-CERVICOGENIC	1	0
HEADACHE-CLUSTER	1	0
HEADACHE-EPISODIC TENSION	1	0
MIGRAINE	1	0
TENSION	1	0
JOINT FIXATION-RIB	1	0
TOS-CERV RIB	1	0
TOS-COSTOCLAVICULAR	1	0
TOS-PEC MINOR	1	0
TOS-SCALENE ENTRAP	1	0
MENINGITIS	1	0
SYRINGOMYELIA	1	0
PERIPH NEUROPATHY	1	0
CERV OSTEOPHYTIC NRE	1	0
PSORIATIC ARTHRITIS	1	0
RA	1	0
RSD	1	0
SCOLIOSIS-FUNCTIONAL	1	0
SCOLIOSIS-IDIOPATHIC	1	0
SCOLIOSIS- STRUCTURAL	1	0
SPONDYLOLISIS	1	0
SPONDYLOSIS	1	0
STENOSIS-CENTRAL	1	0
STENOSIS-LATERAL	1	0
MUSCULAR STRAIN	1	0
TUMOR BONE MALIG PRIMARY	1	0
TUMOR BONE MALIG SECOND	1	0
TUMOR BONE BENIGN	1	0
TUMOR OTHER	1	0
OTHER	1	0

REFERRALS

NO	0
YES	1

SPECIFY SPECIALIST

TOTAL FOLLOW UPS

1-5 FOLLOW UPS	1
6-10 FOLLOW UPS	2
11 OR MORE FOLLOW UPS	3

INVESTIGATIONS

	YES	NO	
UNKNOWN	1	0	
BLOOD TESTS	1	0	
X-RAYS	1	0	
MRI	1	0	
CT SCAN	1	0	
ULTRASOUND	1	0	
BONE MINERAL DENSITY	1	0	
BONE SCAN	1	0	
ECG	1	0	
OTHER	1	0	SPEC:

TREATMENT MODALITIES

UNKNOWN	1	0	
NO TREATMENT	1	0	
BLOCKING	1	0	
CERVICAL COLLAR	1	0	
CROSS FRICTION MASSAGE	1	0	
CRYOTHERAPY	1	0	
DRY NEEDLING	1	0	
ELECTRO-DRY NEEDLING	1	0	
HEAT THERAPY	1	0	
INTERFERENTIAL THERAPY	1	0	
LASER	1	0	
LEANDER TRACTION	1	0	
LINEAR TRACTION	1	0	
MANIPULATION	1	0	
MOBILISATION	1	0	
MUSCLE ENERGY TECHNIQUE	1	0	
MYOFASCIAL RELEASE (RIP & GRIP)	1	0	
ORTHOTICS	1	0	
PNF STRETCHING	1	0	
PROPIOCEPTIVE EXERCISE	1	0	
SOFT TISSUE	1	0	
STRAPPING	1	0	
SWISS BALL EXERCISES	1	0	
TENS	1	0	
ULTRASOUND THERAPY	1	0	
WOBBLE BOARD	1	0	
OTHER	1	0	SPEC:

DURBAN UNIVERSITY of TECHNOLOGY

DURBAN UNIVERSITY OF TECHNOLOGY
CHIROPRACTIC DAY CLINIC

CONFIDENTIAL PATIENT INFORMATION

Date: .....

Male/ Female: .....

Surname: ..... Title: .....

First name: ..... Initials: .....

Birthdate: ..... I.D..number: .....

Occupation: ..... Marital status: .....

Medical aid: ..... M/A number: .....

Med doctor: ..... Last visit: .....

Chiropractor: ..... Last visit: .....

Postal address: ..... Residential address:

.....

.....

.....

.....

Tel - work: ..... Tel - home: .....

Cell number: .....

Employer: .....

Employer's address:

.....

.....

.....

NB: Please ensure that you supply your Medical Aid No for refund purposes

PTO