

**A RETROSPECTIVE CROSS-SECTIONAL SURVEY OF
LUMBO-SACRAL CASES RECORDED AT THE D.U.T
CHIROPRACTIC DAY CLINIC (1995-2005)**

By

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*I, Ravina Jaman,
do hereby declare that this dissertation represents my own work
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DEDICATION

This dissertation is dedicated to my dear parents,
Jaman Ramcherran (1939-2005) and
Leelamathie Ramcherran.

Thank you for your love, support and endless sacrifices.

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ABSTRACT

Low back pain (LBP) is a major health problem. Many people will experience an episode of low back pain during their life. Low back pain is said to exist in epidemic proportions in the western world and is on the increase. There is not much known about low back pain in the developing world because of limited data.

Chiropractic is widely used but good descriptive data on chiropractors and their patients is limited. There is little known about demographics, presenting complaints and clinical characteristics of chiropractic patients. There have been only a handful of publications that have dealt specifically with the characteristics of patients attending a chiropractic teaching clinic and the majority of these studies were conducted in the United States of America. A review of related literature seems to indicate that no investigations into patients with lumbo-sacral complaints attending a chiropractic teaching clinic has been previously conducted in South Africa.

Although low back pain has been the focus of much epidemiological research over the years, the magnitude of the problem in the South African chiropractic teaching clinic setting has not been investigated.

The Durban University of Technology Chiropractic Day Clinic, situated in Berea, Kwa-Zulu Natal, was first opened in April 1994. This teaching clinic was therefore suitable to evaluate the demographics and clinical trends of chiropractic patients treated with lumbo-sacral complaints.

In this study, patient files from 1995 to 2005 was analysed with regard to demographics and clinical trends. Thirty percent (30%) of a database of 24 487 (7487) active and dormant files were analysed for this study.

SPSS version 13 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data. There were 1296 files of the sample of 7487 that met the inclusion criteria for lumbo-sacral complaints during this time period. The prevalence in 1995 (n=16) was much lower than in the other years, and the cases were only taken from a portion of the year, therefore these cases were excluded, as inclusion would bias the results.

Regarding demographic shifts, there was no significant change in mean age, gender distribution and occupations over the years. The clinical data was analysed descriptively.

This study attempted to increase empirical data in South Africa with regards to the demographics, clinical characteristics and management protocols of patients seeking chiropractic care for lumbo-sacral complaints at a teaching clinic.

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DEFINITION OF TERMS

Demographics: Demographics are the physical characteristics of a population such as age, sex, marital status, family size, education, geographic location, and occupation (<http://www.learnthat.com/define/default.asp>).

Epidemiology: Epidemiology is the study of diseases occurring in different groups of people and why. Epidemiological information is used to plan and evaluate strategies to prevent illness and guide the management of patients in whom the disease has already developed (<http://www.bmj.com/epidem/index.html>).

Lumbo-sacral spine: The lumbo-sacral spine is made of the five lumbar vertebrae, the sacrum, and the coccyx (Kirkaldy-Willis, 1992).

Prevalence: Prevalence is the percentage of people in a defined population who have a specified disease or condition during a particular period of time (Waddell, 2004).

Teaching Clinics: A teaching clinic provides health care for ambulatory patients. Teaching clinics are operated by educational facilities and provide free or low-cost services to patients. Teaching clinics differ from standard health clinics in that treatment is performed by graduate students under the supervision of licensed health care providers. Teaching clinics serve the dual purpose of providing a setting for students in the health care profession to learn and practice skills, while simultaneously offering lower cost treatments to patients (http://en.wikipedia.org/wiki/Teaching_clinic).

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Low back pain is a common and persistent health problem (Skelton *et al.*, 1996). Low back pain exists in epidemic proportions in the western world and is increasing (Galukande *et al.*, 2005). Low back pain afflicts at least 80 percent of the population at some time during their lives (Manga *et al.*, 1993). At any point in time, up to 20% of adults report that they have symptoms of low back pain (Nyiendo *et al.*, 2000). The most common age for low back pain is between 25 and 55 years (Manga *et al.*, 1993). Low back pain is the most frequent cause of activity limitation in adults aged less than 45 years (Loney and Stratford, 1999).

There is still relatively little known about chiropractic in various countries where it is practiced although there is a growing popularity and acceptance of manual therapies in the treatment of neuromusculoskeletal (NMS) conditions (Rubinstein *et al.*, 2000). Teaching clinics are often used as a data source for research purposes (Walsh, 1992). While students provide a health care service to the general public, there remains a paucity of empirical data regarding the type of patient seeking care at a chiropractic college teaching clinic (Nyiendo and Haldeman, 1986). There have been only a handful of publications that have dealt with patient characteristics at teaching clinics and most of these have been conducted in the United States of America (Bryant *et al.*, 2003).

Drews (1994) conducted the first research involving a South African chiropractic teaching clinic patient database. The aim of that study was to compare patients treated at a teaching clinic with those treated in private practice. Subsequently, no research concerning lumbo-sacral complaints was conducted. The results of this kind of study would meaningfully describe the present diagnostic and therapeutic activities of the profession and also the prevalence and demography of patients with lumbo-sacral complaints treated at the clinic.

The Durban University of Technology Chiropractic Day Clinic is situated in Berea, Kwa-Zulu Natal. This teaching clinic first opened in April 1994. Since then, thousands of patients have attended the clinic in search of treatment.

The current study took place at The Durban University of Technology Chiropractic Day Clinic. The selected timeframe for this study was from January 1995 to December 2005. Thirty percent (7487) of a database of 24 487 files (active and dormant) were randomly selected for analysis. Only files that met the inclusion criteria were analysed. This study aimed to investigate the prevalence of lumbo-sacral complaints and to provide a database of demographics and clinical characteristics of patients with lumbo-sacral complaints that attended the Chiropractic Day Clinic at The Durban University of Technology from 1995 to 2005.

1.2 OBJECTIVES OF THIS STUDY

1.2.1 OBJECTIVES

OBJECTIVE 1: To identify demographics of patients with lumbo-sacral conditions that visited the Chiropractic Day Clinic.

OBJECTIVE 2: To determine the prevalence of lumbo-sacral conditions in patients that presented to the D.U.T Chiropractic Day Clinic.

OBJECTIVE 3: To identify the aetiology of lumbo-sacral complaints and common lumbo-sacral diagnoses and associated signs and symptoms.

OBJECTIVE 4: To determine the management protocol commonly used on the first consultation to treat patients with lumbo-sacral complaints and any contra-indications to treatment.

1.3 HYPOTHESIS

- There shall be a shift in the demographics of patients that presented with lumbo-sacral complaints to the D.U.T Chiropractic Day Clinic from 1995 to 2005.

In South Africa, an important social epidemiological finding was the unequal distribution of health and illness on the bases of race, socio-economic status or social class, gender and age (Popenoe *et al.*, 1997). This study also aims to investigate this finding.

1.4 RATIONALE FOR THE STUDY

Various studies have shown that nearly 80% of the population will experience low back pain at some time in their lives (Manga *et al.*, 1993). Low back pain is a common complaint for which the population will seek some kind of professional help (Koes *et al.*, 2001). It is therefore important for the chiropractic profession to identify the characteristics of patients attending teaching clinics.

Drews conducted a South African study in 1994 on demographic and epidemiological factors of private chiropractic practices and a chiropractic-teaching clinic (Drews, 1994). This study concluded that neck pain complaints and low back pain complaints were the most common. However only 162 new patients from February 1994 to April 1994 were analysed. The number of patients attending the D.U.T Chiropractic Clinic has increased since the last study was conducted.

This study aimed to provide a current descriptive analysis of patients with lumbo-sacral complaints at the D.U.T Chiropractic Clinic from 1995 to 2005, considering the limited information available on the epidemiology of low back pain in the developing world.

This study also aimed to compare the demographic variables from 1995 to 2005 because of the unequal distribution of health and illness on the bases of socio-economic status or social class, gender and age as found by Popenoe *et al.* in 1997. This study attempted to increase empirical data in South Africa with regards to the demographics, clinical characteristics and management protocols of patients seeking chiropractic care for lumbo-sacral complaints at a teaching clinic.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Low back pain (LBP) is a major health problem among populations in western industrialised countries (van Tulder *et al.*, 1997; Koes *et al.*, 2001; Henrotin *et al.*, 2006). It is found to be the most commonly encountered musculoskeletal condition in the primary care setting (Wong and Deyo, 2001). Many people will experience an episode of low back pain during their life (van Tulder *et al.*, 2002). Low back pain is sufficiently disabling and common during the productive middle years of adult life (Galukande *et al.*, 2006). The literature on the epidemiology of low back pain from high-income countries is accumulating, yet they comprise only 15% of the world population, while little is known about the epidemiology of low back pain in the rest of the world (Volinn, 1997).

Low back pain exists in epidemic proportions in the western world and is said to be on the increase. Not much is known about low back pain in the developing world because of limited data (Galukande, *et al.* 2005). According to Mulimba (1990) and Mijiyawa (1993) as cited by Docrat (1999), the problem of low back pain in Africa has received very little attention and data regarding the epidemiology of low back pain in Africa is usually flawed by selection bias. It appears that to date no epidemiological studies on low back pain have been conducted in South Africa other than that of van der Meulen (1997) and Docrat (1999). The current study was aimed specifically at the demographics and clinical trends of patients with lumbo-sacral conditions that attended the Durban University of Technology Chiropractic Day Clinic over the period of 1995 to 2005.

Despite the widespread use of chiropractic, good descriptive data on chiropractors and their patients is limited (Coulter and Shekelle, 2005). Teaching clinics have often served as a source of data for research (Walsh, 1992). Few studies have been reported which deal specifically with the patients attending a chiropractic teaching clinic (Nyiendo and Olsen, 1988). Since then, research has

been undertaken in an attempt to identify the epidemiological and demographic characteristics of a particular population of chiropractic patients treated at chiropractic college teaching clinics (Waalén *et al.*, 1994). There have been only a handful of publications that have dealt specifically with the characteristics of patients attending a chiropractic teaching clinic and most of these have been performed in the United States of America (Bryant *et al.*, 2003). A review of related literature seems to indicate that investigations into patients with lumbosacral complaints attending chiropractic teaching clinics have not been previously conducted in South Africa.

Although low back pain has been the focus of much epidemiological research over the years, the magnitude of the problem in the South African chiropractic teaching clinic setting has not yet been investigated.

2.2 PREVALENCE OF LOW BACK PAIN

Prevalence is the number of people in a defined population who have a specified disease or condition at a point in time. Prevalence is usually measured by surveying a particular population containing individuals with and without the condition of interest. Thus, prevalence equals the number of people with a health problem at a point in time divided by the total defined population alive at this point in time. *Point prevalence* is measured at a single point in time (the number of people reporting low back pain on the day of a survey). *Period prevalence* is a measure over a specified time period, usually 1 year (those people who report having had low back pain in the past 12 months) (Jekel *et al.*, 1996; Fletcher *et al.*, 1988; Gordis, 1996) as cited by Loney and Stratford (1999).

According to Anderson (1977) as cited by (Galukande *et al.*, 2005), low back pain (LBP) is defined as pain limited to the region between the lower margins of the twelfth rib and the gluteal folds. In a systematic review of literature on the prevalence of low back pain from 1966 to 1998 by Walker in 2000, it was found that the point prevalence ranged from 12% to 33%, one year prevalence ranged

from 22% to 65% and the lifetime prevalence of low back pain ranged from 11% to 84%.

In the studies deemed by Loney and Stratford (1999) to be methodologically superior, the low back pain point prevalence was estimated to be 5.6% in North America, 12% in Sweden, 13.7% in Denmark, 19% in the United Kingdom, 28.7% in Canada, and 33% in Belgium. In a review of world prevalence data it was suggested that prevalence was lower in developing countries than in developed countries, but did not determine whether differences reflect demographic or cultural factors (Volinn, 1997).

According to a statistical report done in South Africa, the South African adult's lifetime prevalence of low back pain is 70 to 80%. The study also found a point prevalence of 52.6% in adults, one-year prevalence of 50% and point prevalence of 14.7% in adolescents (Jordaan *et al.*, 2005).

In a study conducted by van der Meulen (1997) investigating the epidemiology of low back pain in a formal Black South African township, the lifetime incidence of low back pain was 57.6% and a prevalence of 53.1%. In a similar study conducted by Docrat (1999) comparing the epidemiology of low back pain in Indian and Coloured communities in South Africa, the lifetime incidence of low back pain was 78.2% in Indians and 76.6% in Coloureds and prevalence of 45% in Indians and 32.65 in Coloureds.

Sawyer and Ramlow (1984) examined the attitudes of patients receiving care at the Northwestern College chiropractic teaching clinic. Of the 390 respondents assessed, 153 (39.2%) reported low back pain as their chief complaint.

Nyiendo *et al.*, (1989) conducted a comparative study on patients and patient complaints at six chiropractic college teaching clinics. The percentage of low back problems varied from 31% to 41% in all clinics and more patients reported low back pain than any other single complaint.

Walsh (1992) carried out a study on 310 new patients treated at three chiropractic teaching clinics in Australia. In all teaching clinics the most prevalent problem was low back problems (33.2%).

Walsh and Jamison (1992) compared patients and patient complaints between private clinics and teaching clinics in Australia. The sampled consisted of 422 new patient files opened during 1990. Low back problems were the most common reported complaint, accounting for 43% of chief complaints in private clinics and 33.2% in the teaching clinic.

A demographic study of chiropractic patients treated at the Canadian Memorial Chiropractic College by Waalen *et al.*, (1994) reported that 24.4% of the 15 174 sample population had low back pain as their chief complaint.

A more recent study by Bryant *et al.*, (2003) evaluated the demographics and diagnostic profile of patients at a university chiropractic clinic in Australia. Of the 1018 files analysed, low back complaints accounted for 40% of all regions treated.

2.3 DEMOGRAPHICS

2.3.1 AGE

Age has proven to be an important factor in low back pain (Kirkaldy-Willis, 1992). Most backache presents in the early or middle years of adult life (Waddell, 2004). Low back pain is most common between the ages of 25 and 55 years (Manga *et al.*, 1993).

Sawyer and Ramlow (1984), in a survey concerning patients receiving care in a Chiropractic Teaching Clinic, found the mean age of all subjects was 36.6 years with the highest percentage of subjects (39.2%) being in the 21-30 year age group, followed by the 31-40 year group (22.3%).

Nyiendo *et al.*, (1989) conducted a study comparing patients and patient complaints at six Chiropractic College Teaching Clinics. The mean age of patients varied from 34 years to 43 years of age. The percentage of patients in the 40 or over group ranged from 30% to 53% among the six clinics.

In an Australian study of three chiropractic teaching clinics by Walsh (1992) regarding sociodemographic variables (age, gender and occupation), the mean age was 34.4 and ranged from 12 to 76 years. The largest age group represented at each clinic being the 20-39 year group, followed by the 40-59 year group.

A study by Walsh and Jamison (1992) aimed to compare patients and patient complaints between Chiropractic Teaching Clinics and Private Clinics. The study was carried out at three private clinics, each located close to the three chiropractic teaching clinics associated with the School of Chiropractic and Osteopathy and the Phillip Institute of Technology. In this study mean and median ages showed similar values in both private clinics and teaching clinics (33.6 – 34.4). A similar trend was observed at both teaching and private clinics were the largest group represented at each clinic was the 20-39 year group, followed by the 40-59 year group. However, a greater age range was noted in private clinics.

In a study undertaken in Canada by Waalen *et al.*, (1994) analysing demographic and clinical characteristics of patients treated at the Canadian Memorial Chiropractic College, it was found that the median age of patients was 28 years with a range from 1 to 93 years.

Nyiendo (1990) conducted a study comparing low back pain profiles of teaching clinic patients with patients attending private clinics. The average age of the 1865 new patients treated at the teaching clinic was 37.3 years.

A descriptive study conducted by Phillips *et al.* in 1992 aimed to contrast the profile of low back pain patients of field practicing chiropractors with those treated in the clinics of west coast chiropractic colleges. This study found that the chiropractic college sample had the largest distribution in the 20-29 age group (34%).

Bryant *et al.*, (2003) carried out a study concerning the demographic and diagnostic profile of patients presenting to a university chiropractic outpatient clinic in Australia. The age distribution was biased to the 21-25 year age group, attributed to the high population of students seeking treatment. The average age was 36.6 years with the youngest being 1 year of age and the eldest being 88 years.

Holt and Beck (2005) analysed 1004 new patient files at the New Zealand College of Chiropractic teaching clinic. The median age was 29.0 years and the age ranged from 0-85 years. When patients were categorised into groups, 25-29 age group was the largest followed by 20-24 age group.

2.3.2 GENDER

Low back pain is a common problem affecting both genders (Kirkaldy-Willis, 1992). Back trouble is the most common cause of chronic sickness in men and women under the age of 45 years (Waddell, 2004). Most large population surveys show a slightly higher prevalence of back pain in women (Waddell, 2004).

In a descriptive report of the case mix within Australian chiropractic practices by Ebrall (1993), it was found that of the total 2500 patient visits, 46% were male and 54% were female patients.

In a study by Sawyer and Ramlow (1984) focusing on patients receiving care at a chiropractic teaching clinic found that of the 390 respondents, 176 (45.1%) were males and 214 (54.9%) were females.

Walsh and Jamison (1992) conducted a study comparing patients at private chiropractic clinics with those at chiropractic teaching clinics in Australia. In the teaching clinics, there were more female new patients treated.

A study undertaken by Walsh (1992) aimed to compare demographic variables at three chiropractic teaching clinics. With regards to gender, there were slightly more females (52.6%) than males (47.4%) treated at these clinics. Waalen *et al.*, (1994) analysed 15 174 new patients that presented to the Canadian Memorial Chiropractic College over a five year period. The number of males (N = 7 657) and females (N = 7 517) was approximately equal.

A descriptive study conducted by Phillips *et al.*, in 1992 aimed to contrast the profile of low back pain patients treated by field practicing chiropractors with those in the clinics of west coast chiropractic colleges. With regard to gender, females comprised 55% of the teaching clinic sample as compared to 47% of the field chiropractor sample.

Bryant *et al.*, (2003) investigated the demographic and diagnostic profile of patients treated at the Macquarie University Department of Chiropractic Clinic and Research Centre in Australia. The ratio of male to female was 54% male to 46% female as opposed to studies in the United States, which showed a female predominance.

In a descriptive study of patients and patient complaints by Holt and Beck (2005) at the New Zealand College of Chiropractic Teaching Clinic, there were slightly more females (51.9%) than males (48.1%) in the random sample of 1004 files.

2.3.3 OCCUPATION

Low back pain is considered as occupational in the sense that it is common in adults of working age (Waddell, 2004). Each year thousands of American adults experience an episode of low back pain, of which 400 000 are attributable to an occupational injury (Frymoyer and Cats-Baril, 1987). It is commonly assumed that low back pain is caused by work, however the relationship between the physical demands of work and low back pain is complex and inconsistent (Waddell, 2004).

Workers in heavy manual jobs do report more low back symptoms, but most people in lighter jobs, or even those who are not working have similar symptoms (Waddell, 2004). Manual handling jobs involving lifting, lowering, pushing, pulling, carrying, and holding, and body movements with frequent bending, twisting, and sudden movements have a significant potential for producing low back pain (Lin *et al.*, 2005).

Nyiendo *et al.*, (1989) in their comparison of patients and patient complaints at six chiropractic teaching clinics, found that over 50% of the patients attending all clinics were employed. Among the patients employed, an average of 63% characterized their occupations as non-manual (clerical, student and professional).

Walsh (1992) divided occupation into four categories when investigating patients at three chiropractic teaching clinics in Australia. These were heavy manual (labourers, truck drivers), light manual (nurses, domestics, tradesmen and musicians), non-manual (clerical, sales and management positions) and unemployed (students and retirees). All clinics displayed a similar pattern, the largest group being non-manual, followed by light manual. Heavy manual was the smallest group represented.

Walsh and Jamison (1992), in a follow up study, compared occupation categories between the chiropractic teaching clinics and private clinics.

Occupation was divided into the same categories as Walsh (1992). In comparison to the teaching clinics, all private clinics showed a higher percentage of patients in the unemployed category as opposed to the higher percentage in the non-manual group in the teaching clinics.

In a study by Phillips *et al.*, (1992) describing the profile of low back patients of field chiropractors compared to those treated at teaching clinics, 72% of teaching clinic patients were employed and 83% of the field patients were employed. At the teaching clinic, 48% reported their job as being non-manual as well as 57% at the field chiropractor.

Bryant *et al.*, (2003) divided occupation into four categories. These were blue collar (consisting of those whose work consisted of manual labour), white collar (consisting of non-manual labour), students and unemployed (consisting of out-of-work patients, homemakers not in paid employment and retired people). White collar workers represented 37%, while blue collar workers represented 31% of the sample. Unemployed persons represented 13% of the sample and students accounted for 19% of the sample.

The reviewed literature displays a consensus that most patients treated at chiropractic teaching clinics have non-manual occupations.

2.4 PRESENTING CONDITION

2.4.1 AETIOLOGY

The study of aetiology, pathogenesis and pathophysiology of low back pain helps the physician and/ or the therapist to understand the nature of the process and to correlate it with the clinic picture (Kirkaldy-Willis, 1992). The knowledge thus gained makes an accurate and complete diagnosis possible and facilitates the formulation of a logical plan of treatment (Kirkaldy-Willis, 1992).

Epidemiological studies have shown that 98% of low back cases are musculoskeletal in aetiology, with only a fraction being due to system conditions or referred visceral pain (Wong and Deyo, 2001). Despite a large differential diagnosis for low back pain, the precise aetiology is rarely identified (Atlas and Deyo, 2001). Heavy lifting and injuries are risk factors for the development of back pain, however in most cases, no precipitating incident can be identified (Wong and Deyo, 2001).

van Tulder *et al.*, conducted a retrospective, descriptive study on 524 patients in the Netherlands with chronic low back pain in 1997. In this study 31% of participants were unable to identify the cause of their complaint and it was noted as unknown, however, 21% ascribed their pain to working conditions, 12% to stooping or lifting, 6% to a fall, 5% to postural failure, 3% to a sport or traffic accident and 22% to some other cause.

In a study of 500 British patients by Waddell (2004) concerning the cause of their low back pain, few patients could identify the cause of their present attack.

Walsh (1994) carried out a study of patients and patient complaints at three teaching clinics. Across all clinics, nearly half (44.9%) of the chief complaints were of unknown aetiology, with trauma related aetiologies (including motor vehicle accidents and sports injuries) making up 28% of all cases.

Walsh and Jamison (1994) conducted a study on patient comparison between private and teaching clinics. With regard to aetiology of the chief complaint, the largest numbers were of unknown aetiology, followed by non-traumatic movements (lifting and bending), while trauma related aetiologies (including motor vehicle accidents and sports injuries) contributed 30% of cases.

A descriptive study conducted by Phillips *et al.*, in 1992 aimed to contrast the profile of low back pain patients of field practicing chiropractors with those treated in the clinics of west coast chiropractic colleges. Among the patients

reporting low back pain as the main complaint, the aetiology was most often reported as work related in both teaching clinics (14%) and field chiropractors (25%). In teaching clinics 29% of cases were of unknown aetiology and 13% in the field chiropractor group.

2.4.2 SYMPTOMS AND SIGNS

According to Waddell (2004), patients with low back disorders present with four key symptoms

- a) back pain
- b) leg pain
- c) neurologic symptoms
- d) spinal deformity

More than 99% of low back problems present with back pain, as it is rare to see a low back problem with no back pain. Pain always tends to radiate distally and 70% of patients with back pain also have some pain down one or both legs (Waddell, 2004). Lumbar and sacro-iliac pain tends to be referred to the buttock and posterior leg (and sometimes to the lateral aspect of the leg) (Magee, 2002). Patients with neurological involvement typically have sciatica. Sciatica is defined as posterior hip or leg pain rather than back pain alone, radiating past the knee (Wong and Deyo, 2001).

Common signs of lumbo-sacral conditions include abnormal gait (antalgic gait, gluteus maximus gait, Trendelenburg's gait, quadriceps gait, and psoatic limp), scoliosis, excessive lordosis, lateral shift or list, step deformity and tufts of hair (Magee, 2002).

2.5 MANAGEMENT

2.5.1 CHIROPRACTIC MANAGEMENT

Spinal manual therapy can be effective in relieving musculoskeletal complaints, such as back pain (DeVocht, 2006). Forty percent of Americans seek chiropractic care for their low back pain instead of conventional medical treatment (Waddell, 1996). Chiropractors provide conservative management of neuromusculoskeletal disorders and related functional manifestations including, but not limited to, back pain, neck pain, and headaches (Waddell, 2004). Chiropractors are well trained and experienced in manipulative techniques (Giles and Singer, 1997) and utilize a variety of manual, mechanical, and electrical therapeutic modalities (Waddell, 2004).

Chiropractic management is commonly used in the treatment for low back pain (Axen *et al.*, 2002). Previous surveys have shown that almost all chiropractic patients receive spinal manipulation, often in conjunction with soft tissue therapy, advice and/ or exercise therapy. Spinal manipulation, however, is central for most chiropractors and is used to normalize movement and diminish pain (Axen *et al.*, 2002).

Verhoef and Papadopoulos (1999) undertook a survey of Canadian chiropractors' involvement in the treatment of patients under the age of 18 years. Regarding treatment, the top three modalities utilised were spinal manipulation (98.5%) followed by exercises/ stretching (63.2%) and soft tissue treatment (47%). Other forms of treatment consisted of ergonomic/ postural advice (40.5%) and nutritional advice (24.9%).

Mootz *et al.*, (2005), in their study on characteristics of chiropractic practitioners and patients in Massachusetts and Arizona, claimed that spinal adjustments were provided in 85% of visits. Treatments such as ischaemic compression and active release soft tissue techniques were both utilised at between 10% and 15%

of visits. Other modalities utilised included thermal modalities, electrical stimulation, manual traction, ultrasound, exercises and rehabilitation procedures.

Leboeuf-Yde et al. (1997) investigated chiropractic in Sweden. The aim of the study was to describe patients and treatment. Manipulation combined with other treatment methods such as massage and traction was provided at 99% of consultations.

Nyiendo and Olsen (1988) analyzing visit characteristics of children treated at teaching clinics. Spinal manipulation was utilized 100% by interns for musculoskeletal diagnoses. Soft tissue manipulation (22.8%) and trigger point therapy (16.5%) were also utilized in conjunction with spinal manipulation.

2.5.1.1 CONTRAINDICATIONS TO CHIROPRACTIC MANIPULATION

Spinal manual therapy performed by a registered chiropractor is safe (DeVocht, 2006). There is no clinical or case-control study that indicates or implies that chiropractic spinal manipulation is unsafe in the treatment of low back pain (DeVocht, 2006). The reported incidence of lumbar complications following spinal manipulative therapy is low.

The exact incidence and prevalence of complications during manipulative therapy are unknown (Giles and Singer, 1997).

According to Giles and Singer (1997), contraindications to lumbar spinal manipulative therapy are:

1. neoplastic lesions of the spine, ribs and pelvis
2. non-neoplastic bone disease (osteomyelitis, osteoporosis)
3. active spondyloarthropathies
4. cauda equina syndrome
5. referred pain from visceral disease
6. healing fracture or dislocation

7. gross segmental instability and spinal anomalies
8. congenital generalised hypermobility
9. obvious spinal deformity
10. large abdominal aneurysm

2.5.1.2 REFERRALS

Chiropractors are first-contact physicians who possess the diagnostic skill to differentiate between health conditions that are amendable to their management from those conditions that require referral or co-management (Waddell, 2004).

Assendelft et al., (1995) reported that most Dutch chiropractors seldom refer patients to other forms of regular or complimentary health care. The chiropractors that did refer, referred their patients to general practitioners, acupuncturists and homoeopaths.

In a study by Nyiendo and Olsen (1988) assessing visit characteristics of children attending a chiropractic college teaching clinic, eight children (3.6%) were referred from the teaching clinic to other health care professionals for treatment of problems beyond the scope of expertise available at the clinic.

2.5.1.3 INVESTIGATIONS

Most Danish chiropractors regard x-rays as an essential part of the diagnostic work-up (Assendelft *et al.*, 1995). In addition, the majority of Danish chiropractors also stressed the importance of access to magnetic resonance imaging (MRI), computed tomography (CT), myelography and laboratory testing (Assendelft *et al.*, 1995).

Plain film radiographic imaging was the most frequently reported diagnostic study by Mootz *et al.*, (2005) and magnetic resonance imaging was used in less than 2% of visits.

Waaalen *et al.*, (1994) investigated demographic and epidemiological variables at the Canadian Memorial Chiropractic College. Of the 15 174 patient sample, 5 215 (34.4%) were x-rayed, with the lumbar region being most frequently x-rayed (36%).

2.5.2 TREATMENT FREQUENCY

Sawyer and Ramlow (1984) conducted a study on the attitudes of patients receiving care at a chiropractic teaching clinic in 1984. For patients on record, the mean number of clinic visits was 5.8 (SD = 4.7) and the median 4.3 visits.

In a study by Waaalen *et al.*, (1994) at the Canadian Memorial Chiropractic College of patient demographics and clinic characteristics, the average number of treatments for resolution of lumbar complaints was 6.7 and 6.5 for sacro-iliac complaints.

Suleman (2001) in his study at the Calgary Urban Project Society (CUPS) found that 988 treatments were rendered to 183 individuals. The average number of visits per person was 5.4 (SD = 7.6); or broken down by gender, 4.6 (SD = 6.6) for men and 7.1 (SD = 9.3) for women.

Therefore, from the reviewed literature, the number of follow-ups at teaching clinics range between 4-6; but could be more for women.

2.6 TEACHING CLINIC COMPARISONS

Most chiropractic teaching clinic research has been conducted in the United States, Australia and in Canada. Most of these studies aimed to provide a database of patient demographics and clinical characteristics at chiropractic teaching clinics. The aim of the majority of these studies were to compare the characteristics of local chiropractic teaching clinics with those found abroad. A few studies aimed to define differences and similarities among patient populations found in private practice and college teaching clinics (Phillips *et al.*, 1992).

According to Bryant *et al.*, (2003) the most common presenting condition was low back pain (40%) at an Australian teaching clinic. Waalen *et al.*, (1994) found that if lumbar (24.4%) and sacro-iliac (10.0%) regions were combined, as low back complaints at the Canadian Memorial Chiropractic College, then it would also be the most common complaint. The result of the study by Holt and Beck (2005) was similar with low back pain being the most common complaint (38.1%).

In the study by Bryant *et al.*, (2003) the ratio of male to female was 54% male and 46% female as compared to 47.4% male and 52.6% female in the study by Walsh (1992) and to an equal approximation of male to female in the study by Waalen *et al.*, (1994). Holt and Beck (2005) also concurred a slight female preponderance with 51.9% females and 48.1% males.

According to Waalen *et al.*, (1994) the mean age of the patients was 28 years as compared to the study by Walsh (1992) where the mean age was 34.4 years. The mean age in the study by Bryant *et al.*, (2003) was 36.6 years and was regarded as consistent with data from six chiropractic clinics conducted by Nyiendo *et al.*, (1989). Holt and Beck (2005) concluded a mean age of 32.3 years.

Walsh (1992) concluded that non-manual occupations were the largest group in the three clinics, followed by light manual. Heavy manual was the smallest group. Phillips *et al.*, (1992) discovered that the majority of patients (48%) in the teaching clinic were in non-manual occupations. Bryant *et al.*, (2003) deduced

that white collar (consisting of non-manual labour) workers represented 37%, while blue collar (consisting of those whose work consisted of manual labour) workers represented 31% of the sample.

Walsh (1994) and Walsh and Jamison (1994) carried out epidemiological studies at teaching clinics and private clinics respectively. Regarding the aetiology of the complaint, nearly half was of unknown aetiology.

Nyiendo and Olsen (1988) analyzing visit characteristics at teaching clinics. Spinal manipulation was utilized 100% by interns for musculoskeletal diagnoses. Leboeuf-Yde *et al.*, (1997) also deduced that spinal manipulation was utilized 99% by chiropractors in Sweden.

Sawyer and Ramlow (1984) and Waalen *et al.*, (1994) conducted studies at chiropractic teaching clinics. The mean number of clinic visits was 5.8 (SD = 4.7) and the average number of treatments for resolution of lumbar complaints was 6.7 and 6.5 for sacro-iliac complaints.

2.7 SUMMARY

Low back pain is a major public health problem in all nations. Not much is known about low back pain in developing countries. In Africa, there is not much known about the epidemiology of low back pain.

Low back is a common complaint encountered and treated by chiropractors in private practice or in teaching clinics. Chiropractic teaching clinics have served as a data source for much research overseas. The magnitude of low back pain in a South African chiropractic teaching clinic has not been investigated.

In South Africa, The Durban University of Technology Chiropractic Day Clinic is situated in Berea, Kwa-Zulu Natal. This teaching clinic opened in April 1994. This

study aimed to provide data on lumbo-sacral cases recorded from 1995 to 2005 at The Durban University of Technology Chiropractic Day Clinic with respect to demographics, management, diagnostic profiles, and referral patterns. The results of this type of study would increase the empirical information on both chiropractic teaching clinics and lumbo-sacral complaints in teaching clinics in South Africa.

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 study was designed in the form of a retrospective, non-experimental, cross-sectional survey of lumbo-sacral cases recorded at the Durban University of Technology Chiropractic Day Clinic from the 13th January 1995 to 30th November 2005. This time frame was chosen to avoid overlapping with a study that was done in 1994, which also used data from the clinic. This study involved collecting data from patient files where the primary complaint was related to the lumbo-sacral region.

3.2.1 PATIENT CONFIDENTIALITY

In this study, all data extracted from the patient files was converted into code form and captured on the specific data collection sheet in order to maintain patient confidentiality. Only the researcher and the research supervisor had access to this information, ensuring anonymity. Once the data had been captured, the spreadsheet containing the randomised sampled file numbers was destroyed therefore denying access to third parties. A statement of confidentiality was signed by the researcher (Appendix 6) and consent was obtained in writing from the clinic director prior to data collection and capturing. The researcher manually extracted all the files in the sample. Prior to the researcher transmitting relevant data from the selected files onto the data collection sheet (Appendix 5), another individual (not involved in this research study) blocked off patient names on those files to ensure that the researcher could not match the file to a patient during data collection.

3.2.2 SAMPLING AND SAMPLE ALLOCATION

Within the timeframe selected from the 13th January 1995 to 30th November 2005, 24 487 active and dormant patient files were recorded at the Durban University of Technology Chiropractic Day Clinic. A 30% random sample (7487 files) was generated using SPSS version 11.5 (SPSS Inc., Chicago, Illinois, USA) (Esterhuizen, 2006) for analysis. This study was a retrospective chart review of 7487 patient files.

3.2.3 INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA

- 1) This study was limited to patient files opened from the 13th of January 1995 to 30th of November 2005.
- 2) Dormant and active files, in which lumbo-sacral complaints were reported or investigated on the initial visit, were analysed (Dormant files are patient files that have not been used for three years or longer from the date of the last consult and active files are files that have been used within three years).
- 3) Analysis was only done on files with all completed initial visit paperwork (Appendix 1, 2, 3 and 4).

EXCLUSION CRITERIA

- 1) Patient files falling out of the allocated time frame were excluded.
- 2) Patient files that pertained to cervical region, thoracic region and extremities were excluded.
- 3) Files opened for clinical research studies done during the allocated timeframe were excluded.

3.2.4 DATA COLLECTION

The study involved data collection from files where lumbo-sacral conditions were reported and investigated on the initial consultation. Data was collected within the confines of the Chiropractic Day Clinic. The data collection tool (Appendix 5) was a template designed to gather relevant information from patient files, which related to the lumbo-sacral region. The data collection tool was designed considering the information required to meet the objectives of the study and the information recorded in clinic files so as to efficiently combine both and eliminate unnecessary information. The data collection tool was tested in a focus group, which included 5 chiropractors, 4 students, a statistician, a clinic administration staff member, the researcher and the research supervisor. The purpose of the focus group was to avoid ambiguous or vague terms, leading questions and a confusing layout.

3.2.4.1 THE PRIMARY DATA

The primary data was obtained from patient files on record at the Durban University of Technology Chiropractic Day Clinic where lumbo-sacral conditions were reported and/or investigated on the initial consultation.

3.2.4.2 THE SECONDARY DATA

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

3.2.5 RESEARCH PROCEDURE

This research took place in three phases to maintain order and ensure confidentiality.

3.2.5.1 PHASE ONE

The researcher manually extracted all files from the randomised sample list of 7487. The researcher then checked if the file met the inclusion criteria or not.

3.2.5.2 PHASE TWO

Names on the files that met the inclusion criteria were blocked off by another individual (not involved in this research study) to ensure that the researcher could not match the file to a patient name during data collection.

3.2.5.3 PHASE THREE

The files that met the inclusion criteria were evaluated and all information was recorded on the data collection sheet (Appendix 5), which contained the following:

- File code
- Date
- Demographics
- Consultation fee
- Reason for visit
- Pre-existing medical conditions
- Presenting complaint
- Aetiology
- Accidents/injuries to the lumbo-sacral region
- Associated signs and symptoms
- Findings on physical examination
- Diagnosis/es
- Management protocol
- Contra-indications to any treatment
- Investigations and referrals
- Frequency of consultations in four weeks
- New complaint subsequent to initial visit
- Participation in lumbo-sacral research

3.3 STATISTICAL ANALYSIS

SPSS version 13 (SPSS Inc., Chicago, Illinois, USA) was used to analyse the data.

3.3.1 METHOD OF DATA ANALYSIS

EpiCalc 2000 version 1.02 (Gilman and Myatt, 1998) was used to calculate prevalence per year and per 5 year. Demographics and other patient characteristics were analysed descriptively. Comparisons of demographic factors between the two successive five year periods were made using Pearson's chi square tests (Estehuizen, 2006).

3.3.2 AIMS/PURPOSES OF THIS STUDY

OBJECTIVE 1: To identify demographics of patients with lumbo-sacral conditions that visited the Chiropractic Day Clinic.

OBJECTIVE 2: To determine the prevalence of lumbo-sacral conditions in patients that presented to the D.U.T Chiropractic Day Clinic from 1995 to 2005.

OBJECTIVE 3: To identify the aetiology, common lumbo-sacral diagnoses and associated signs and symptoms.

OBJECTIVE 4: To determine the management protocol commonly used on the first consultation to treat patients with lumbo-sacral complaints and any contra-indications to treatment.

3.3.3 HYPOTHESIS

- 1) The Null Hypothesis (H_0) states that there shall not be a shift in the demographics of patients presenting with lumbo-sacral conditions to the D.U.T Chiropractic Day Clinic from 1995 to 2005.

The Alternate Hypothesis (H_a) states that there shall be a shift in the demographics of patients presenting with lumbo-sacral conditions to the D.U.T Chiropractic Day Clinic from 1995 to 2005.

CHAPTER FOUR

THE RESULTS OF THE STUDY

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 years and overall were calculated and compared using EpiCalc 2000 version 1.02 (Gilman and Myatt, 1998).

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 PREVALENCE OF LUMBO-SACRAL COMPLAINTS FROM 1995 TO 2005

A total of 7487 files from January 1995 to December 2005 were randomly selected from the clinic's records. Of the sample population, there were 1296 files that met the inclusion criteria during this time period. Therefore the overall prevalence of lumbo-sacral complaints on record from 1995 to 2005 was 17.31% (95% CI 16.46% - 18.19%). The annual prevalence and 95% CI are shown in Table 1.

Files from 1995 were excluded, the reason being, cases were only taken from a portion of the year and inclusion would skew the results. Therefore in the 10 year period from 1996 to 2005, the prevalence was 18% (95% CI 17.12% to 18.92%). A statistically significant increase in prevalence between the first 5 years (1996 to

2000) and the second five years (2001-2005) was detected ($p=0.004$) from 16.84% to 19.49%.

Table 1: Prevalence (95% CI) of lumbo-sacral complaints at the Chiropractic clinic from 1995 to 2005

Year	Prevalence	95% CI
1995	4.26%	2.53% - 6.96%
1996	13.18%	11.05 – 15.64%
1997	18.74%	16.17 – 21.61%
1998	17.04%	14.60 – 19.80%
1999	16.06%	13.71 - 18.70%
2000	20.59%	17.41 – 24.16%
5 years (1996-2000)	16.84%	15.70 – 18.05%
2001	12.92%	10.83 – 15.33%
2002	16.67%	14.11 – 19.79%
2003	26.51%	22.60 – 30.82%
2004	27.48%	23.78 – 31.51%
2005	20.00%	16.70 – 23.75%
5 years (2001-2005)	19.49%	18.12 – 20.93%
10 years (1996-2005)	18.00%	17.12 – 18.92%
Total (1995 – 2005)	17.31%	16.46% - 18.19%

4.2.2 DEMOGRAPHICS

Since the prevalence in 1995 ($n=16$) 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 onward and base the analysis on the 1280 cases from 1996 to 2005.

4.2.2.1 AGE

Age of the sample ranged from 10 years to 86 years. The mean age was 39.47 years (SD 16.19 years). The age group distribution of the sample is shown in Table 2. The 20-29 year age group had the highest prevalence. There was one case with the age missing.

Table 2: Age group distribution in the sample (n=1279)

	<i>Frequency</i>	<i>Valid Percent</i>
10-19 years	89	7.0
20-29 years	365	28.5
30-39 years	237	18.5
40-49 years	228	17.8
50-59 years	196	15.3
60-69 years	101	7.9
70-79 years	48	3.8
80-89 years	15	1.2
Total	1279	100.0

4.2.2.1.1 COMPARISON OF MEAN AGE BETWEEN TWO FIVE YEAR PERIODS

There was no significant change in mean age between the first and second five year period ($p=0.264$). 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	38.99	16.521	.637	0.264
	2001-2005	606	40.00	15.804	.642	

4.2.2.2 GENDER

Overall there were 55.3% males and 44.7% females in the sample, and this proportion did not change significantly over the years.

4.2.2.2.1 COMPARISON OF GENDER BETWEEN THE TWO FIVE YEAR PERIODS

Table 4 shows that there was no significant difference in the gender distribution between the first 5 years and the second 5 years. It also shows that more lumbo-sacral cases were on record between 1996-2000 than from 2001-2005.

Table 4: Comparison of gender distribution between two five year periods

			GENDER		Total
			Male	Female	
5 Year Period	1996-2000	Count	374	299	673
		Row %	55.6%	44.4%	100.0%
	2001-2005	Count	334	273	607
		Row %	55.0%	45.0%	100.0%
Total		Count	708	572	1280
		Row %	55.3%	44.7%	100.0%

Pearson chi square 0.039, p=0.844

4.2.2.3 OCCUPATION

Of the 1280 cases, 1264 participants had a recorded occupation. Of these, only 283 (22.4%) were in occupations that were classified as active (housewife, domestic worker, professional sportsperson, artisans) while the majority had

sedentary jobs which mostly involved office work 776 (61.4%). Figure 1 shows this distribution in the sample as a whole.

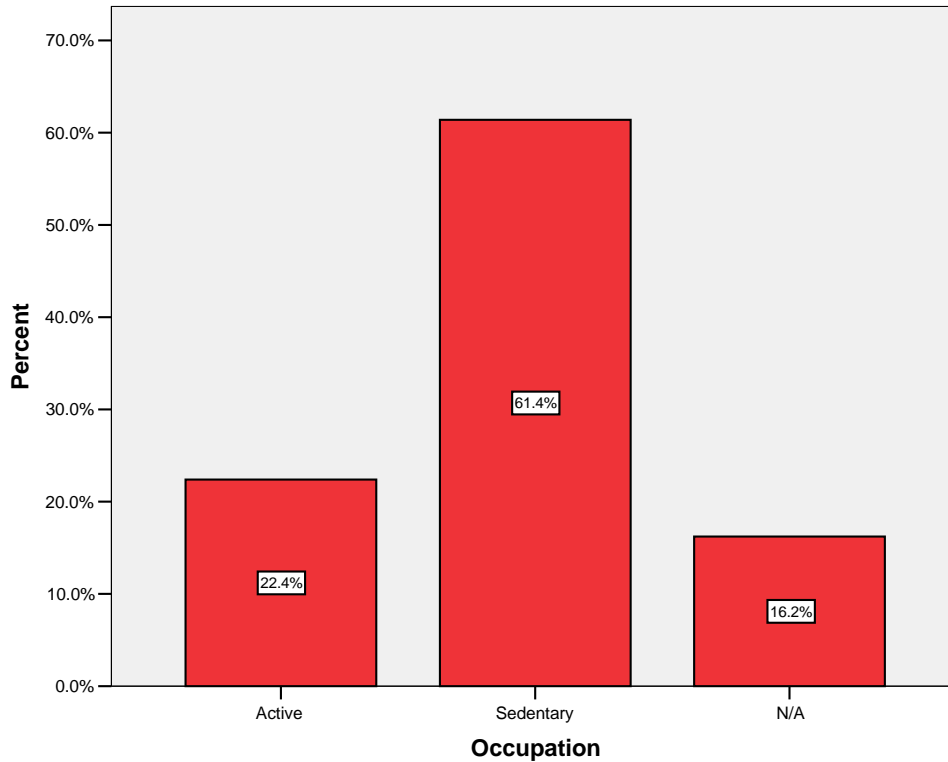


Figure 1: Type of occupation of sample (n=1264)

4.2.2.3.1 COMPARISON OF TYPE OF OCCUPATION BETWEEN THE TWO FIVE YEAR PERIODS

When the distribution of sedentary or active jobs was compared between the two five year periods, there was no significant difference ($p=0.532$). 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

			Occupation			Total
			Active	Sedentary	N/A	
5 Year Period	1996-2000	Count	151	405	116	672
		Row %	22.5%	60.3%	17.3%	100.0%
	2001-2005	Count	132	371	89	592
		Row %	22.3%	62.7%	15.0%	100.0%
Total		Count	283	776	205	1264
		Row %	22.4%	61.4%	16.2%	100.0%

Pearson chi square 1.263, p=0.532

4.2.2.3.2 DISTRIBUTION OF EMPLOYMENT IN THE SAMPLE

Over half the sample was employed (59.7%). There was also a high percentage of scholars or students (13.3%). The distribution for the sample is shown in Table 6.

Table 6: Distribution of employment in sample (n=1264)

	Frequency	Percent
<i>Employed</i>	826	65.3
<i>Scholar/student</i>	168	13.3
<i>Housewife</i>	124	9.8
<i>Unemployed</i>	37	2.9
<i>Retired/welfare</i>	109	8.6
Total	1264	100.0

4.2.2.3.3 COMPARISON OF EMPLOYMENT OVER THE TWO FIVE YEAR PERIODS

There was no significant difference in the distribution of employment over the two five year periods ($p=0.357$). This is shown in Table 7.

Table 7: Comparison of the distribution of employment over the two five year periods (n=1264)

		Occupational group					Total	
		Employed	Scholar/ student	Housewife	Unemploye d	Retired/ welfare	Employed	
5 Year Period	1996-2000	Count	423	97	69	19	64	672
		Row %	62.9%	14.4%	10.3%	2.8%	9.5%	100.0%
	2001-2005	Count	403	71	55	18	45	592
		Row %	68.1%	12.0%	9.3%	3.0%	7.6%	100.0%
Total		Count	826	168	124	37	109	1264
		% within 10 Year Period	65.3%	13.3%	9.8%	2.9%	8.6%	100.0%

Pearson's chi square 4.382, $p=0.357$

4.2.3 PRE-EXISTING MEDICAL CONDITIONS

Three hundred and thirty four cases (26.1%) had a pre-existing medical condition. Cardiac conditions such as hypertension and angina were the most common (5.9%). Abdominal conditions such as gastric ulcers, constipation and spastic colon were the second most frequent type (4.8%), while respiratory conditions (4.4%) such as asthma and sinusitis were also prevalent. The conditions are listed in Table 8 in order of frequency.

Table 8: Pre –existing medical conditions (n=334)

	Count	Column N %
Cardiac	75	5.9%
Abdominal	61	4.8%
Respiratory	56	4.4%
Endocrine	42	3.3%
Psychological	38	3.0%
Musculoskeletal	32	2.5%
Vascular	16	1.3%
Headache	13	1.0%
Ocular	13	1.0%
Genitourinary	13	1.0%
Neurological	11	.9%
Skin	7	.5%
Cancer	4	.3%
Ear	3	.2%

4.2.4 PRESENTING CONDITION

4.2.4.1 MAIN COMPLAINT

The main presenting complaint of the 1280 lumbo-sacral cases is shown in Table 9. It is clear that low-back pain was the most common complaint (89.8%). LBP was reported in conjunction with pain from other sites in many of the cases, which is the reason that the values in Table 9 add up to more than 1280.

Table 9: Main complaint in the sample (n=1280)

	Count	Column N %
LBP	1150	89.8%
Buttock Pain	61	4.8%
Leg Pain	51	4.0%
SI Pain	46	3.6%
Thigh Pain	40	3.1%
Hip Pain	26	2.0%
Knee Pain	12	.9%
Midback pain	10	.8%
Foot pain	6	.5%
Groin pain	4	.3%

4.2.4.2 AETIOLOGY

In most cases the cause was unknown (57.2%). The most common known cause was bending, lifting or carrying heavy objects (12.3%), followed by sport (11.5%), and accidental causes (11%) shown in Table 10.

Table 10: Cause of main complaint

	<i>Frequency</i>	<i>Percent</i>
Unknown	732	57.2
Bending / lifting / carrying	157	12.3
Sport	147	11.5
Fall / accident	141	11.0
Medical / surgical	25	2.0
Poor posture	24	1.9
Driving	15	1.2
Pregnancy and childbirth	14	1.1
Occupational ergonomics	10	.8
Stress	9	.7
Standing / walking	6	.5
Total	1280	100.0

4.2.4.3 HISTORY OF TRAUMA TO THE LUMBO-SACRAL REGION

Three hundred and eight (24.1%) had a history of trauma to the lumbo-sacral region.

4.2.4.4 ASSOCIATED SIGNS AND SYMPTOMS

Associated signs and symptoms are shown in Figures 2 and 3. Only 354 patients presented with associated symptoms and 120 had associated signs. The most common associated symptom was leg pain (48.6%) while the most common sign was antalgic gait (23.3%).

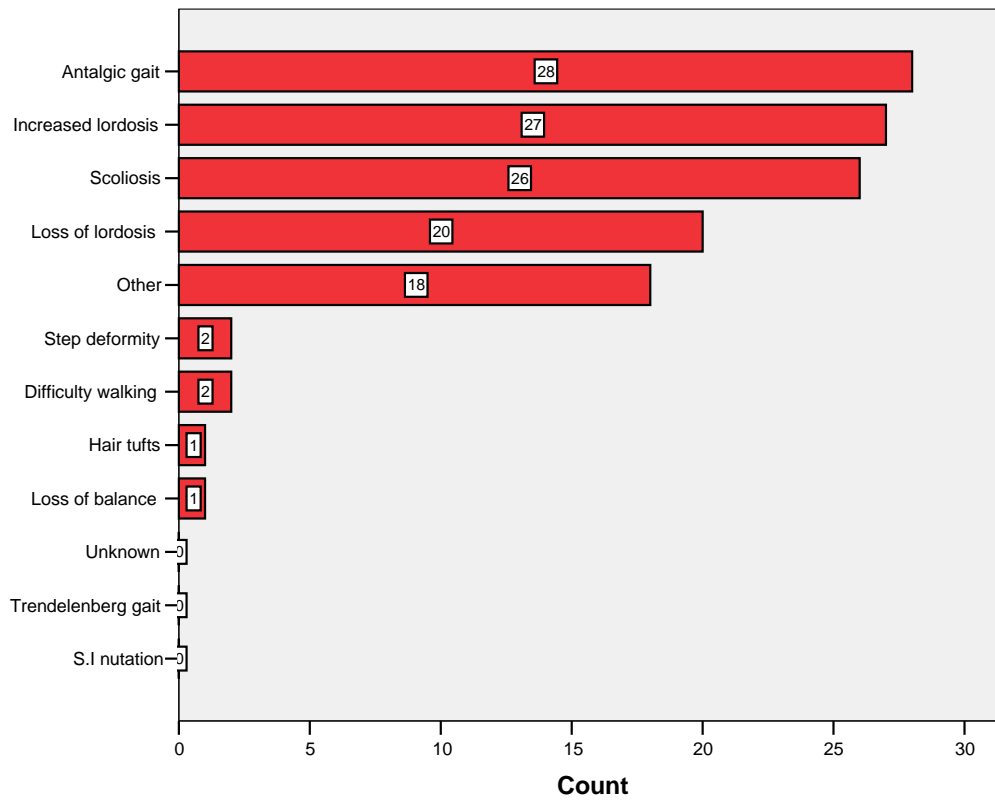


Figure 2: Associated signs of sample (n=120)

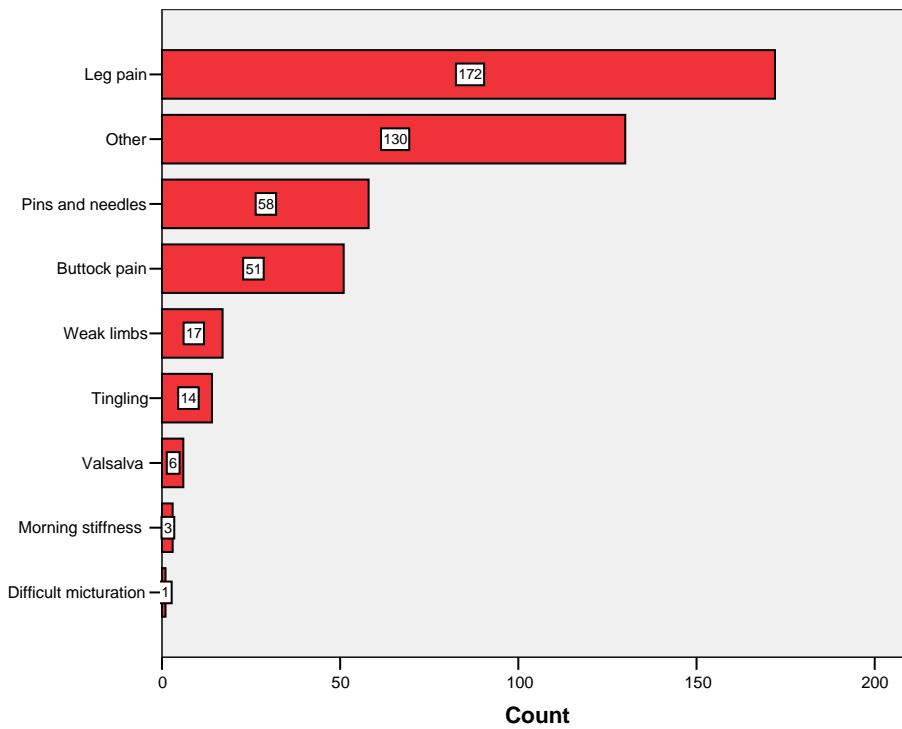


Figure 3: Associated symptoms of sample (n=354)

4.2.4.5 BLOOD PRESSURE FINDINGS

One hundred and fifty seven cases (12.3%) had recorded blood pressure abnormalities. Of these, 128 (81.5%) were high and 29 (18.5%) were low blood pressure.

4.2.4.6 GENERAL EXAMINATION FINDINGS

Of the sample, 67 (5.2%) had abnormalities on general examination. These are listed in Table 11. Lymphadenopathy was the most common (32.8% of those with abnormalities).

Table 11: General examination abnormalities found (n=67)

	<i>Frequency</i>	<i>Percent</i>
LYMPHADENOPATHY	22	32.8
PALLOR	7	10.4
ANKLE OEDEMA	6	9.0
BILAT ANKLE OEDEMA	4	6.0
JAUNDICE	2	3.0
VARICOSE VEINS	2	3.0
CLUBBING	2	3.0
PITTING OEDEMA	1	1.5
BILAT KNEE OEDEMA	1	1.5
HAEMATURIA	1	1.5
CHEST DEFORMITY	1	1.5
FUNGAL INFECTION	1	1.5
VITILIGO	1	1.5
ENLARGED LYMPH NODES	1	1.5
TELANGIECTASIA	1	1.5
ENLARGED THYROID	1	1.5
OBESITY	1	1.5
PROTEIN ON URINALYSIS	1	1.5
PSORIASIS, LYMPHADENOPATHY	1	1.5
PSORIATIC NAIL CHANGES	1	1.5
RASH ON SHINS	1	1.5
NAIL CHANGES	1	1.5
SUBUNGUAL HAEMATOMA	1	1.5
FINGER CLUBBING	1	1.5
NYSTAGMUS	1	1.5
GYNAECOMASTIA	1	1.5
CENTRAL OBESITY	1	1.5
WEAK PULSE	1	1.5
POSITIVE WALLENSBERG	1	1.5
Total	67	100.0

4.2.5 PRIMARY DIAGNOSIS

While up to three different diagnoses were made for some patients, the main diagnosis is shown in Table 12. The two most common diagnoses were SI syndrome (39.7%), followed closely by lumbar facet syndrome (37.8%).

Table 12: Primary diagnosis of sample patients (n=1280)

	<i>Frequency</i>	<i>Percent</i>
SACRO-ILIAC SYNDROME	508	39.7
LUMBAR FACET SYNDROME	484	37.8
MYOFASCIITIS	85	6.6
DISC BULGE	34	2.7
MYOFASCIAL PAIN & DYSFUNCTION	18	1.4
NERVE ROOT ENTRAPMENT	16	1.3
DISC HERNIATION	15	1.2
SACRO-ILIAC DYSFUNCTION	9	.7
SPONDYLOLISTHESIS	9	.7
COCCYDYNIA	8	.6
DEGENERATIVE JOINT DISEASE	8	.6
MUSCLE STRAIN	7	.5
THORACIC FACET SYNDROME	5	.4
PIRIFORMIS SYNDROME	5	.4
CENTRAL CANAL STENOSIS	4	.3
MAIGNES SYNDROME	4	.3
NO DIAGNOSIS	4	.3
MUSCLE SPASM	3	.2
LATERAL CANAL STENOSIS	3	.2
BURSITIS	3	.2
SCOLIOSIS	2	.2
LUMBAR SPONDYLOSIS	2	.2
ANKYLOSING SPONDYLITIS	2	.2
SCIATICA	2	.2
INSTABILITY	2	.2
NEUROGENIC CLAUDICATION	1	.1
PARS FRACTURE	1	.1
SYSTEMIC LUPUS ERYTHEMATOSUS	1	.1
SACRO-ILIAC LIGAMENT SPRAIN	1	.1
OSTEOPOROSIS	1	.1
ABSCCESS	1	.1
HIP DYSFUNCTION, SI DYSFUNCTION	1	.1
OVARIAN CYST	1	.1

DISC SYNDROME	1	.1
HIP FLEXOR CONTRACTURE	1	.1
DISC DISRUPTION	1	.1
SPINOUS PROCESS FRACTURE	1	.1
LUMBAR SPINE DYSFUNCTION	1	.1
OSTEOARTHRITIS	1	.1
COCCYX DISLOCATION	1	.1
FRACTURE	1	.1
POST SURGICAL SCARRING	1	.1
HIP CAPSULITIS	1	.1
LUMBAR MALIGNANCY	1	.1
POSTERIOR DISC PROTRUSION	1	.1
COMPARTMENT SYNDROME	1	.1
AORTIC ANEURYSM	1	.1
MUSCLE TEAR	1	.1
POST SURGICAL NEURALGIA	1	.1
SACRO-ILIITIS	1	.1
MECHANICAL LOW BACK PAIN	1	.1
SCAR TISSUE FORMATION	1	.1
BROWN SEQUAD SYNDROME	1	.1
LEG LENGTH INEQUALITY	1	.1
INTERVERTEBRAL DISC TEAR	1	.1
DISC INJURY	1	.1
TENDONITIS	1	.1
CERVICAL FACET SYNDROME	1	.1
LOW BACK PAIN	1	.1
CROHNS DX	1	.1
HEMIPLEGIA	1	.1
INTERSPINOUS LIGAMENT SPRAIN	1	.1
FIBROMYALGIA	1	.1
Total	1280	100.0

4.2.6 MANAGEMENT

4.2.6.1 COMMON TREATMENT

Treatment protocols used are shown in Figure 4. Often several combinations of treatments were used on a patient. The most common treatment was joint manipulation, which was used in 74.5% of the cases, followed by soft tissue therapy (72.7%).

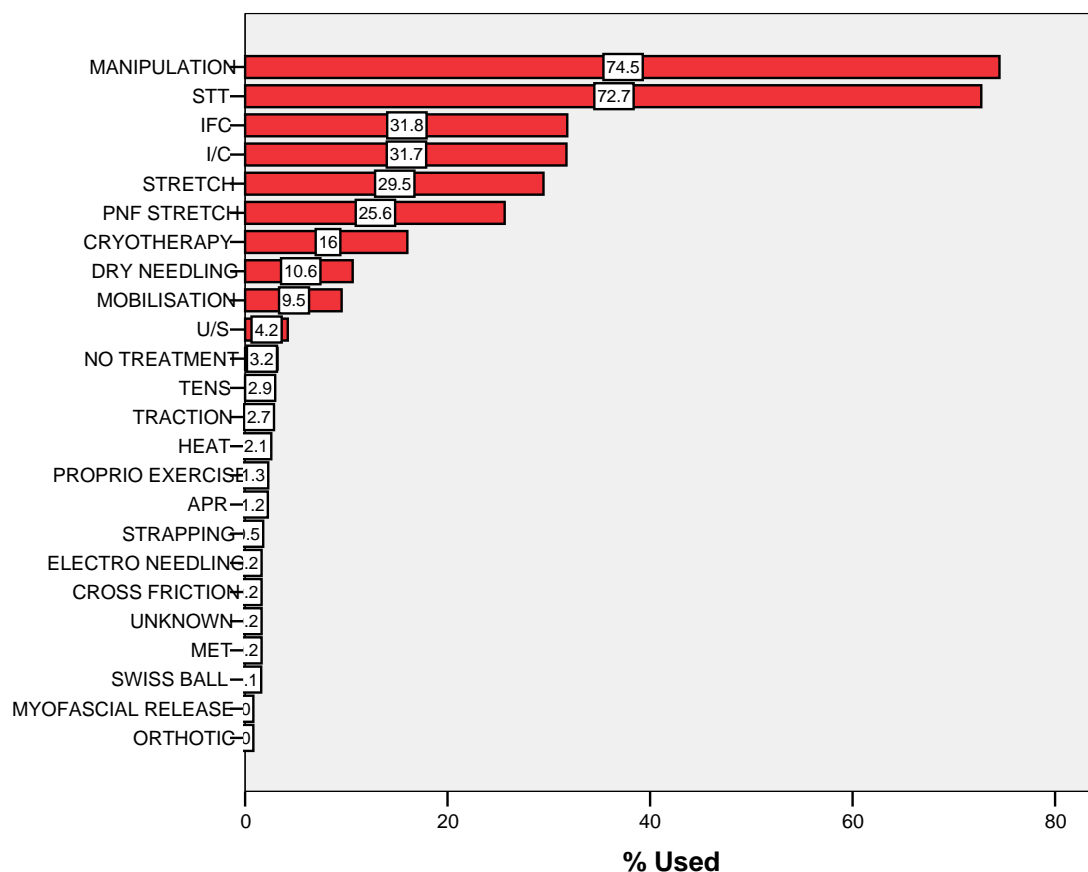


Figure 4: Percentage of times that each treatment was used

4.2.6.2 CONTRA-INDICATIONS TO TREATMENT

There were 47 contra-indications (3.7%) to treatment identified. Manipulation was contra-indicated in 41 cases, while all treatments were contra-indicated in 6 cases. The reasons for the contra-indications are shown in Table 13.

Table 13: Contra-indication to treatment

	<i>Frequency</i>	<i>Percent</i>
X-RAY FIRST	30	63.8
DISC PATHOLOGY	2	4.3
HIGH BLOOD PRESSURE	2	4.3
FRACTURE	1	2.1

POSSIBLE FRACTURE	1	2.1
CENTRAL STENOSIS	1	2.1
AORTIC ANEURYSM	1	2.1
OSTEOPOROSIS	1	2.1
KIDNEY DISEASE	1	2.1
SPONDYLOLISTHESIS	1	2.1
UNKNOWN	1	2.1
POSSIBLE FRACTURE	1	2.1
PARS FRACTURE	1	2.1
POSSIBLE ABDOMINAL AORTIC ANEURYSM	1	2.1
SCOLIOSIS	1	2.1
KIDNEY DISEASE	1	2.1
CANCER	1	2.1
Total	47	100.0

4.2.6.3 SPECIAL INVESTIGATIONS

X-rays were the most common investigations (8.5%). The other investigations like blood tests (0.5%), MRI (0.1%), ultrasound (0.2%) and ECG (0.2%) were infrequently used. Bone scan, bone mineral density (BMD) scans and computed tomography were not used at all.

Table 14: Special Investigations in lumbo-sacral patients

	Count	%
X-RAYS	109	8.5%
BLOOD TEST	6	0.5%
ULTRASOUND	3	0.2%
ECG	2	0.2%
MRI	1	0.1%
CT SCAN	0	0%
BMD	0	0%
BONE SCAN	0	0%

4.2.6.4 FOLLOW-UP CONSULTATION

Of the 1280 lumbo-sacral cases, 989 (77.3%) presented for follow up visits. The number of follow ups in a 4 week period are shown in Table 15. The median number of follow ups in the cases that had subsequent visits, was 2, with an interquartile range from 1 to 4.

Table 15: Number of follow up visits in a 4 week period

	<i>Frequency</i>	<i>Percent</i>
0	291	22.7
1	287	22.4
2	213	16.6
3	135	10.5
4	126	9.8
5	175	13.7
6	22	1.7
7	14	1.1
8	11	.9
9	4	.3
10	2	.2
Total	1280	100.0

4.2.6.5 REFERRALS

Twenty-one patients (1.6%) were referred to other practitioners. The most common referral was to the general practitioner (12, 57.1%), followed by gynaecologist (4, 19%), gastroenterologist (2, 9.5%), and neurologist (1), orthopaedic surgeon (1) and vascular surgeon (1).

4.2.7 NEW COMPLAINT

From the 1280 cases, 158 (12.3%) had a recorded new complaint subsequent to the initial lumbo-sacral consultation. The most common new complaint region was cervical (50.6%), followed by thoracic (12.7%). This is shown in Figure 5.

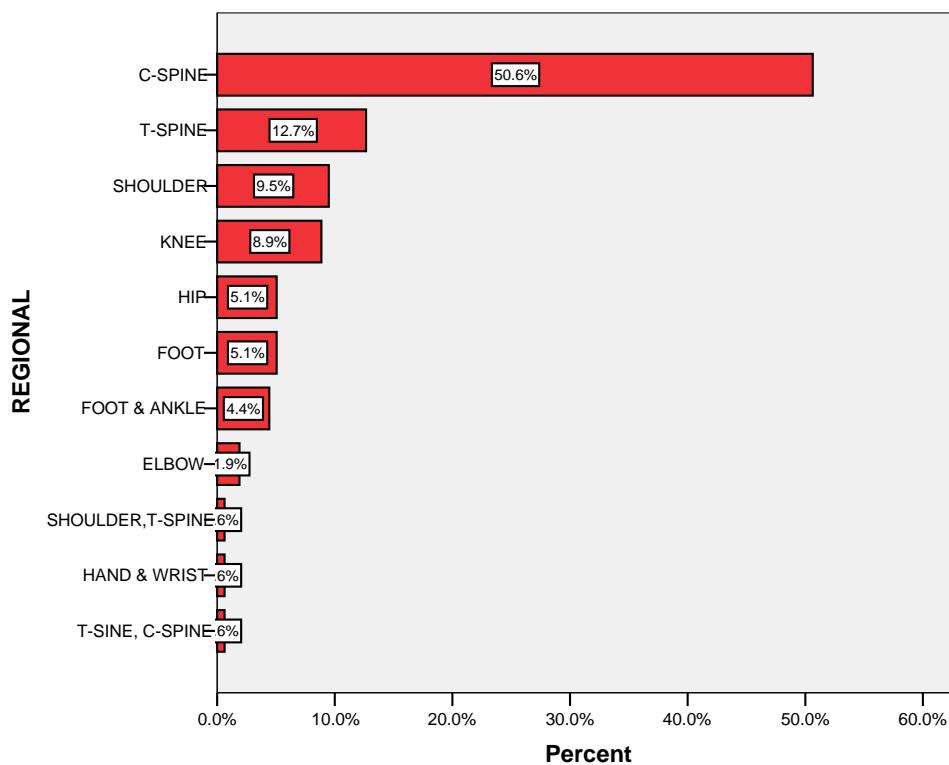


Figure 5: Region of new complaint (n=158)

4.2.8 CONSULTATION FEE

The vast majority of patients paid full fees for their consultations (96.5%). This is shown in Table 16.

Table 16: Consultation fee in lumbo-sacral patients

	<i>Frequency</i>	<i>Percent</i>
Full fee	1235	96.5
Fee reduction	34	2.7
No charge	11	.9
Total	1280	100.0

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 INTRODUCTION

The sample population was 30% of 24 487 (7487) cases recorded at the Durban University of Technology Chiropractic Day Clinic from January 1995 to December 2005. Of the 7487 cases, only 1296 met the inclusion criteria for analysis. The remainder of the files was excluded due to the exclusion criteria.

5.2 INTERPRETATION OF RESULTS

5.2.1 PREVALENCE OF LUMBO-SACRAL COMPLAINTS

The overall prevalence of lumbo-sacral cases from 1995 to 2005 was 17.31%. This result, to a great extent, is lower when compared with studies conducted at chiropractic teaching clinics abroad where the prevalence of lumbo-sacral complaints ranged from 31% to 41%, depending on the study. This may be assumed to be of significance, however since it was obtained from a sample of only 30% of 24 487 files recorded at the Durban University of Technology Chiropractic Day Clinic for the period 13 January 1995 to 30 November 2005, it is thus not a true reflection of the population from which the sample was obtained. Since a significant percentage of incomplete paperwork (25.7%) and research files (23.2%) were also noted in the sample, it is not possible to state the true prevalence of the lumbo-sacral complaints during the selected timeframe (1995-2005).

Since the prevalence in 1995 (n=16) 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 have skewed the results. Thus these files were excluded and comparisons were based on the 1280 cases from 1996 to 2005.

In the 10 year period from 1996 to 2005, the prevalence was 18%. The period prevalence during the first five years (1996 – 2000) was 16.84% and 19.49% for the second five years (2001 – 2005). There is a statistically significant increase in prevalence and indicates a larger number of lumbo-sacral cases recorded from 2001 to 2005 at the teaching clinic. This difference may represent a greater public perception on the use of chiropractic in the treatment of lumbo-sacral complaints.

5.2.2 DEMOGRAPHICS

5.2.2.1 AGE

Age of the sample ranged from 10 years to 86 years. The mean age was 39.47 years (SD 16.19 years). When cases were categorized into groups, 28.5% of the sample fell into the 20-29 year group followed by 18.5% in the 30-39 year group.

The resultant mean age of this study was consistent with studies conducted by Sawyer and Ramlow (1984) where the mean age of all subjects was 36.6 years, Nyiendo *et al.*, (1989) where the mean age of patients varied from 34 to 43 years of age, Nyiendo (1990) where the average age of patients was 37.3 years and Bryant *et al.*, (2003) where the mean age was 36.6 years. However, this result was slightly higher than results from studies by Walsh (1992) where the mean age was 34.4 years, Waalen *et al.*, (1994) where the median age of patients was 28 years and Holt and Beck (2005) reported a mean age of 32.3 years. This result may represent the age at which lumbo-sacral complaints are most prevalent.

The age range of this study was comparable with studies by Walsh (1992), which ranged from 12 to 76 years, Waalen *et al.*, (1994) with a range from 1 to 93 years, Bryant *et al.*, (2003) which ranged from 1 to 88 years and Holt and Beck (2005) where the age ranged from 0-85 years. Although the percentage of cases at either end of the age spectrum is not large, it still supports the need to prepare students to treat both children and geriatrics at teaching clinics.

The age categories of this study were consistent with many studies conducted at teaching clinic abroad. Sawyer and Ramlow (1984) reported the highest percentage of subjects (39.2%) being in the 21-30 year age group followed by the 31-40 year age group (22.3%). Walsh (1992) reported the largest age group represented at each clinic being the 20-39 year age group followed by the 40-59 year age group. Walsh and Jamison (1992) observed a similar trend at both teaching and private clinics where the largest group represented at each clinic was the 20-39 year group. Phillips *et al.*, (1992) reported that (34%) of the sample at the chiropractic college fell in the 20-29 age group. Holt and Beck (2005) also stated that majority of the sample fell into the 25-29 group followed by the 20-24 year group. This suggests that a significant number of patients seeking treatment for lumbo-sacral complaints at teaching clinics would be young adults. This result could be attributable to chiropractic student interns recruiting teaching clinic patients of their own age group, as speculated by Nyiendo and Haldeman (1986).

This study also compared the mean age between two five year periods. There was no significant difference in mean age between the first five year (38.99) and the second five year period (40.00). This indicates that the mean age of the patients treated for lumbo-sacral complaints at the teaching clinic over the timeframe had not changed and that they were more likely to be middle aged adults.

5.2.2.2 GENDER

Overall there were 55.3% males and 44.7% females in the population of 1280 cases. The proportion did not change over the years. This result is consistent with finding by Bryant *et al.*, (2003) where the ratio of male to female was 54% male to 46% female, as opposed to findings by Sawyer and Ramlow (1984) where 45.1% were males and 54.9% were females. Walsh (1992) reported slightly more females (52.6%) than males (47.4%). Phillips *et al.*, found females

comprised 55% of the teaching clinic sample and Holt and Beck (2005) reported slightly more females (51.9%) than males (48.1%) were sampled. The result of this study suggests that males were more likely to seek treatment for lumbo-sacral complaints at the D.U.T Chiropractic Day Clinic.

This study further compared the gender distribution between the two five year periods. There was no difference in the gender distribution between the first 5 years and the second 5 years indicating gender uniformity of lumbo-sacral complaints over the selected timeframe.

5.2.2.3 OCCUPATION

Overall 1264 participants had a recorded occupation. Of these, only 283 (22.4%) were employed in occupations that were classified as active (domestic worker, professional sportsperson, artisans) while 776 (61.4%) cases had a recorded sedentary job which mostly involved office work.

These results are consistent with findings by Walsh (1992) where the largest group was the non-manual (clerical, sales and management positions) followed by the light manual (nurses, domestics, tradesmen and musicians). Nyiendo *et al.*, (1989) found an average of 63% of patients at all teaching clinics were characterized in occupations as non-manual (clerical, student and professional). Phillips *et al.*, (1992) also reported that 48% of patients reported their job as being non-manual at the teaching clinic. Bryant *et al.*, (2003) reported white collar workers (consisting of non-manual labour) represented 37% of the sample while blue collar workers (consisting of those whose work consisted of manual labour) represented 31% of the sample which was significantly lower than the results of the current study. This result implies that lumbo-sacral complaints are more prevalent in persons involved in office types of work than heavy manual occupations.

This study went on to compare the type of occupation over the two five year periods. When the distribution of sedentary or active jobs was compared between the two five year periods, there was no significant difference indicating that the type of patient, with regard to occupation, seeking treatment for lumbo-sacral complaints had not changed over the years.

5.2.2.3.1 DISTRIBUTION OF EMPLOYMENT

Over half the sample was employed (65.3%). This finding is consistent with studies carried out by Nyiendo *et al.*, (1989) where over 50% of the patients attending all teaching clinics were employed. Phillips *et al.*, (1992) described the profile of low back patients where 72% of teaching clinic patients were in employment. There was also a high percentage of scholars and students (13.3%) recorded in this study. This result is in concurrence with the study by Bryant *et al.*, (2003) where students accounted for 19% of the sample. The relatively high percentage of students and scholars is expected because the chiropractic teaching clinic is situated on the campus of The Durban University of Technology and with many schools in close proximity to it.

5.2.3 PRE-EXISTING MEDICAL CONDITIONS

Three hundred and thirty four cases (26.1%) had a pre-existing medical condition. Conditions such as hypertension, angina, gastric ulcers, constipation, spastic colon, asthma and sinusitis were recorded. This is attributable to the extensive history taken by student interns on the initial consultation.

5.2.4.1 MAIN COMPLAINT

The most common main presenting complaint of the 1280 lumbo-sacral patients was low back pain (89.8%). Low back pain (LBP) was reported in conjunction with pain from other sites such as the leg, buttock and thigh regions. This could be due to referred pain patterns or radicular type pain.

5.2.4.2 AETIOLOGY

In most cases recorded, the cause was unknown (57.2%), while the most common known cause was bending, lifting or carrying heavy objects (12.3%), followed by sport (11.5%), and accidental causes (11%). This result concurs with results by Walsh (1994) where nearly half (44.9%) of the chief complaint was of unknown aetiology, with trauma related aetiologies (including motor vehicle accidents and sports injuries) making up 28% of all cases. Phillips *et al.*, (1992) also reported that 29% of cases at the teaching clinic were of unknown aetiology. In a retrospective descriptive study on 524 patients in the Netherlands with chronic low back pain in 1997 by van Tulder *et al.*, 31% of participants were unable to identify the cause of their complaint and it was noted as unknown, however, 21% ascribed their pain to working conditions, 12% to stooping or lifting. This implies the insidious onset of lumbo-sacral complaints. Where the cause was known, bending and lifting were the most likely to be the contributing factor.

5.2.4.3 HISTORY OF TRAUMA

Three hundred and eight (24.1%) had a history of trauma to the lumbo-sacral region. This suggests that old injuries to the lumbo-sacral region are more likely to develop into lumbo-sacral complaints for which treatment is required.

5.2.4.4 ASSOCIATED SIGNS AND SYMPTOMS

Only 354 patients presented with associated symptoms and 120 had associated signs. Leg pain (48.6%) was the most common symptom and antalgic gait (23.3%) was the most common sign. This demonstrates the referred and radicular pain patterns as well as compensatory mechanisms associated with lumbo-sacral complaints.

5.2.4.5 BLOOD PRESSURE ABNORMALITIES

Blood pressure abnormalities (12.3%) were also recorded. Of these, 81.5% were high and 18.5% were low blood pressure. These findings could be attributable to the compulsory physical examination performed by the chiropractic student interns on the initial consultation at the teaching clinic.

5.2.4.6 GENERAL EXAMINATION FINDINGS

A few cases (67) had abnormalities on general examination. Lymphadenopathy (32.8%), pallor (10.4%) and ankle oedema (9.0%) were the most common abnormalities recorded. These findings could also be attributable to the compulsory physical examination performed by the chiropractic student interns on the initial consultation at the teaching clinic.

PRIMARY DIAGNOSIS

There were up to three different diagnoses made for some patients. The two most common diagnoses were SI Syndrome (39.7%), followed closely by Lumbar Facet Syndrome (37.8%) and myofasciitis (6.6%). This suggests that lumbo-sacral complaints are prone to be diagnosed as either SI Syndrome or Lumbar Facet Syndrome at the teaching clinic. It could also imply limited diagnostic ability of chiropractic student interns at the teaching clinic.

5.2.6.1 MANAGEMENT

Often, several treatments were used on a patient. The most common was joint manipulation (74.5%) followed by soft tissue therapy (72.7%). Interferential current was the most common electro-modality used (31.8%).

This result for joint manipulation was similar to, but lower, than findings by Verhoef and Papadopoulos (1999) where spinal manipulation was utilized in

98.5% of cases and Mootz *et al.*, (2005) were spinal adjustments were provided in 85% of visits. This indicates that chiropractic student interns are most likely to use spinal manipulation in the treatment of lumbo-sacral complaints hence remaining faithful to their origins in this respect.

5.2.6.2 CONTRA-INDICATION TO TREATMENT

From the analysis, 47 contra-indications to treatment were identified (3.7%). and of these, 41 were to manipulation, while 6 were to all treatments. X-ray requests (63.8%) were often the reason that treatment was contraindicated on the first visit. This could be due to questionable findings on various examinations. Disc pathology (4.3%) and high blood pressure (4.3%) were other reasons that contraindicated treatment.

5.2.6.3 SPECIAL INVESTIGATIONS

X-rays (8.5%) were the most common investigation used. This was lower than the study by Waalen *et al.*, (1994) where 34.4% of patients were x-rayed. The emphasis on extensive history taking and physical examination skills could sharpen clinical judgement as to whether or not x-rays were necessary.

5.2.6.4 FOLLOW UP CONSULTATION

Of the 1280 lumbo-sacral patients, 989 (77.3%) presented for follow up visits. The median number of follow ups in those who were followed up, was 2. The median number of follow ups was significantly lower than finding by Sawyer and Ramlow (1984) where the median was 4.3 visits and Waalen *et al.*, (1994) where the average number of treatments for resolution of lumbar complaints was 6.7. This could indicate patient non-compliance or the mistaken belief by many patients that their problem would be resolved in one treatment.

5.2.6.5 REFERRALS

Twenty-one patients (1.6%) were referred to other practitioners. The most common referral was to the general practitioner (12, 57.1%), followed by gynaecologist (4, 19%), gastroenterologist (2, 9.5%), and neurologist (1), orthopaedic surgeon (1) and vascular surgeon (1). This result is in accordance to a study by Verhoef and Papadopoulos (1999) where chiropractors referred patients to other health practitioners (mostly general practitioners, medical specialists and naturopaths). Although this result is low, it does however demonstrate the willingness of chiropractic student interns to be partners in caring for the patient.

5.2.7 NEW COMPLAINT

One hundred and fifty eight (158) cases had other regions assessed subsequent to receiving treatment for lumbo-sacral conditions. The subsequent complaint was most likely to be cervical (50.6%), followed by thoracic (12.7%). This is suggestive of the increase in patients knowledge on the scope of chiropractic.

5.2.8 CONSULTATION FEE

The vast majority of patients paid full fees for their consultations (96.5%). Only a few cases were on a fee reduction. Since the costs of treatment at teaching clinics are lower than those at private practices, this may be the reason so many patients were able to pay the full fee.

5.3 CONCLUSION

The overall prevalence from 1995 to 2005 was 17.31% (95% CI 16.46% - 18.19%). A statistically significant increase in prevalence between the first 5 years (1996 to 2000) and the second five years (2001-2005) was detected from

16.84% to 19.49%. This could indicate a recent increase in public awareness on the scope of chiropractic in South Africa.

With regard to a demographic shift, there was no significant change in mean age between the first and second five year period. When comparing gender over the two five year periods there was no difference in the gender distribution between the first 5 years and the second 5 years. When occupation distribution of sedentary or active jobs was compared between the two five year periods, there was no significant difference. These findings are in accordance with the null hypothesis.

Clinical data obtained from this study shows similarity to the literature reviewed and has obtained meaningful descriptive results.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

From the findings of this study these conclusions were drawn. There was a statistically significant increase in prevalence of lumbo-sacral conditions between the first 5 years (1996 to 2000) and the second five years (2001-2005). This may indicate an increase in knowledge and public perception of the scope of chiropractic in South Africa. With regard to demographic shifts, there was no significant change in mean age, gender and occupation between the two five year periods.

Patients treated at the D.U.T chiropractic teaching clinic also report pre-existing medical conditions such as hypertension, angina, gastric ulcers and asthma to the student interns. Most of the cases treated at the D.U.T chiropractic teaching clinic were of unknown aetiology while the most common known causes were bending, lifting or carrying heavy objects followed by sport and accidental causes. Leg pain was the most common associated symptom for lumbo-sacral complaints and antalgic gait was the most common sign.

Interns at the teaching clinic perform extensive history taking, physical examinations and relevant orthopaedic tests and abnormalities were recorded in the patient file. Sacro-iliac Syndrome and Lumbar Facet Syndrome were the most common diagnoses made on the initial visit for lumbo-sacral complaints. Joint manipulation and soft tissue therapy were the most common treatments utilised by interns on the initial visit for lumbo-sacral complaints. Interns identified contra-indications to treatments and the necessary procedures were taken thereafter. There were a high percentage of follow-up visits implying that patients are likely to return for treatment for their lumbo-sacral complaint. However the average number of follow-ups were low indicating patient non-compliance. Patients that returned for treatment after lumbo-sacral complaints were likely to request treatment for their neck and midback. The majority of patients seeking

treatment at teaching clinics paid the consultation fee in full while a handful of patients paid a reduced fee.

6.2 RECOMMENDATIONS

The author of this study is of the opinion that the following recommendations shall improve information gained from this teaching clinic:

- Future studies should be conducted with a complete sample, instead of analysing a percentage of the clinic files.
- Additional research should be conducted on the nature and characteristics of lumbo-sacral complaints that presented to this teaching clinic.
- Future studies should focus on the presenting complaints of children that attended this chiropractic teaching clinic as conducted by Nyiendo and Olsen (1988).
- Since the files from 1995 were excluded from this study, analysis should be conducted solely on all new patient files opened during that year.

A chiropractic patient profile study is underway to collect data from South African field practitioners to establish if these results represent the patient population presenting to chiropractors in the field.

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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
<input type="checkbox"/> Location <input type="checkbox"/> Onset : Initial: Recent: 1. Cause: <input type="checkbox"/> Duration <input type="checkbox"/> Frequency <input type="checkbox"/> Pain (Character) <input type="checkbox"/> Progression <input type="checkbox"/> Aggravating Factors <input type="checkbox"/> Relieving Factors <input type="checkbox"/> Associated S & S <input type="checkbox"/> Previous Occurrences <input type="checkbox"/> Past Treatment <input type="checkbox"/> Outcome:		

4. **Other Complaints:**

5. **Past Medical History:**

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

- Hospitalisations

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
- Haematological
- Endocrine
- Psychiatric

APPENDIX 2

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			
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 3

REGIONAL EXAMINATION - LUMBAR SPINE AND PELVIS



Patient: _____ File#: _____ Date: ___/___/___
 Intern\Resident: _____ Clinician: _____

STANDING:

Posture- scoliosis, antalgia, kyphosis
 Body Type
 Skin
 Scars
 Discolouration

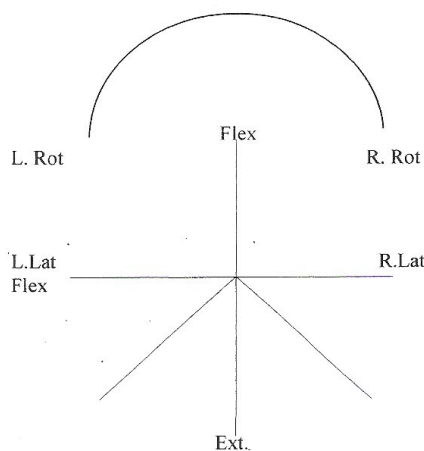
Minor's Sign
 Muscle tone
 Spinous Percussion
 Scober's Test (6cm)
 Bony and Soft Tissue Contours

GAIT:

Normal walking
 Toe walking
 Heel Walking
 Half squat

ROM:

Forward Flexion = 40-60° (15 cm from floor)
 Extension = 20-35°
 L/R Rotation = 3-18°
 L/R Lateral Flexion = 15-20°



Which movt. reproduces the pain or is the worst?

- Location of pain
- Supported Adams: Relief? (SI)
 Aggravates? (disc, muscle strain)

SUPINE:

Observe abdomen (hair, skin, nails)
 Palpate abdomen/groin
 Pulses - abdominal
 - lower extremity
 Abdominal reflexes

SLR	Degree	LBP?	Location	Leg pain	Buttock	Thigh	Calf	Heel	Foot	Braggard
L										
R										

	L	R
Bowstring		
Sciatic notch		
Circumference (thigh and calf)		
Leg length: actual -		
apparent -		
Patrick FABERE: pos\neg - location of pain?		
Gaenslen's Test		
Gluteus max stretch		
Piriformis test (hypertonicity?)		
Thomas test: hip \ psoas? \ rectus femoris?		
Psoas Test		

SITTING:

Spinous Percussion
 Valsalva
 Lhermitte

MYOTOMES

Action	Muscles	Levels	L	R
Lateral Flexion spine	Muscle QL			
Hip flexion	Psoas, Rectus femoris			5+ Full strength
Hip extension	Hamstring, glutes			4+ Weakness
Hip internal rotat	Glutmed, min,TFL, adductors			3+ Weak against grav
Hip external rotat	Gluteus max, Piriformis			2+ Weak w/o gravity
Hip abduction	TFL, Glut med and minimus			1+ Fascic w/o gross movt
Hip adduction	Adductors			0 No movement
Knee flexion	Hamstring,			
Knee extension	Quad			W - wasting
Ankle plantarflex	Gastroc, soleus			
Ankle dorsiflexion	Tibialis anterior			
Inversion	Tibialis anterior			
Eversion	Peroneus longus			
Great toe extens	EHL			

BASIC THORACIC EXAM

History
 Passive ROM
 Orthopedic

BASIC HIP EXAM

History
 ROM: Active
 Passive : Medial rotation : A) Supine (neutral) If reduced - hard \ soft end feel
 B) Supine (hip flexed): - Trochanteric bursa

MOTION PALPATION AND JOINT PLAY

	L	R
Upper Thoracics		
Lumbar Spine		
Sacroiliac Joint		

		Degree	LBP?	Location	Leg pain	Buttock	Thigh	Calf	Heel	Foot	Braggard
TRIPOD SI, +, ++	L										
	R										

Slump 7 test	L										
	R										

LATERAL RECUMBENT:

L

R

Ober's		
Femoral n. stretch		
SI Compression		

PRONE:

L

R

Gluteal skyline		
Skin rolling		
Iliac crest compression		
Facet joint challenge		
SI tenderness		
SI compression		
Erichson's		
Pheasant's		

MF tp's	Latent	Active	Radiation
QL			
Paraspinal			
Glut Max			
Glut Med			
Glut Min			
Piriformis			
Hamstring			
TFL			
Iliopsoas			
Rectus Abdominis			
Ext/Int Oblique muscles			

NON ORGANIC SIGNS:

Pin point pain
Axial compression
Trunk rotation
Burn's Bench test

Flip Test
Hoover's test
Ankle dorsiflexion test
Repeat Pin point test

NEUROLOGICAL EXAMINATION

Fasciculations

Plantar reflex

level	Tender?	Dermatomes		DTR	L		R	
		L	R		L	R		
T12				Patellar				
L1				Achilles				
L2								
L3				Proprioception				
L4								
L5								
S1								
S2								
S3								

APPENDIX 4

Patient Name:		File #:	Page:
Date:	Visit:	Intern:	
Attending Clinician:		Signature:	
S: Numerical Pain Rating Scale (Patient) Least 0 1 2 3 4 5 6 7 8 9 10 Worst		Intern Rating <input type="text"/>	A:
O:		P:	
		E:	
Special attention to:		Next appointment:	
Date:		Visit:	Intern:
Attending Clinician:		Signature:	
S: Numerical Pain Rating Scale (Patient) Least 0 1 2 3 4 5 6 7 8 9 10 Worst		Intern Rating <input type="text"/>	A:
O:		P:	
		E:	
Special attention to:		Next appointment:	

APPENDIX 5

LUMBO-SACRAL TEMPLATE

FILE NUMBER		PRE-EXISTING MED CONDITIONS	
DATE OF 1ST VISIT - MONTH		YEAR	
CONSULTATION FEE		Y/N	
FULL PAYMENT		MAIN COMPLAINT	
FEE REDUCTION			
NO CHARGE			
AGE IN YEARS (@1st visit)		AETIOLOGY/CAUSE OF CHIEF COMPLAINT:	
GENDER		HISTORY OF TRAUMA TO THE L/S REGION:	
MALE		1	
FEMALE		2	
RACE GROUP		ASSOC SIGNS	
UNKNOWN/UNSURE		0	
OTHER		1	
BLACK		2	
INDIAN		3	
WHITE/COLOURED		4	
OCCUPATION		Y/N	
		UNKNOWN	
		DIFFICULTY WALKING	
		LOSS OF BALANCE	
		ANTALGIC GAIT	
		LOSS OF LORDOSIS	
		SCOLIOSIS	
		INCREASED LORDOSIS	
		HAIR TUFTS	
		STEP DEFORMITY	
		S.I NUTATION	
REASON FOR VISIT		TRENDELENBERG GAIT	
SELF- REFERRAL		Y/N	
GENERAL CHECK-UP		OTHER, SPECIFY:	
SECOND OPINION			
OTHER, SPECIFY:			

ASSOC SYMP	Y/N
PINS&NEEDLES	
TINGLING	
PAIN DOWN LEG	
MORNING STIFFNESS	
BUTTOCK PAIN	
PAIN WITH VALSALVA	
WEAKNESS OF LIMB	
DIFFICULT MICTURITION	
OTHER, SPECIFY:	

BLOOD PRESSURE ABNORMALITY	Y/N
HIGH	
LOW	

GENERAL EXAM ABNORMALITIES	Y/N
SPECIFY:	

DIAGNOSIS:

ASSOCIATED DIAGNOSIS:

CONCOMITANT CONDITION

CONCOMITANT CONDITION

CONCOMITANT CONDITION

CONCOMITANT CONDITION

CONCOMITANT CONDITION

LOCATION OF MANAGEMENT:

TREATMENT/ MODALITIES	Y/N
UNKNOWN	
OTHER : SPECIFY	
NO TREATMENT	
ORTHOTIC/ DEVICE	
CROSS FRICTION	
CRYOTHERAPY	
DRY NEEDLING	
ELECTRO-DRY NEEDLING	
HEAT THERAPY	
ELECTROTHERAPY MODALITIES	
TRACTION	
MANIPULATION	
MOBILISATION	
MUSCLE ENERGY TECHNIQUE	
MYOFASCIAL RELEASE	
PNF STRETCHING	
PROPRIOCEPTIVE EXERCISE	
SOFT TISSUE THERAPY	
STRAPPING	
SWISS BALL EXERCISES	

CONTRA-IND TO TREATMENT:	
SPECIFY:	
REASON:	
NEW COMPLAINT	Y/N

REGIONAL DONE:

INVESTIGATIONS	Y/N
BLOOD TESTS	
X-RAYS	
M.R.I	
C.T SCAN	
ULTRASOUND SCAN	
BONE MINERAL DENSITY	
ECG	
BONE SCAN	
OTHER, SPECIFY:	

FOLLOW-UPS	Y/N

FREQUENCY OF CONSULT IN 4 WEEKS

REFERRALS	Y/N
REASON FOR REFERRAL:	
SPECIFY SPECIALIST:	

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 S.A.M.R.C guidelines are binding on myself as the principle researcher in the study titled:

A retrospective cross sectional survey of lumbo-sacral cases on record 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. R. Jaman
(Chiropractic student researcher)

Date

