

**Demographic characteristics of patients attending DUT
Chiropractic Day Clinic: A comparison of trends between 1994
and 2011**

By

Murray L. McDonald

2012

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Chiropractic Day Clinic: A comparison of trends between 1994
and 2011**

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*Dissertation submitted in partial compliance with the requirements for the
Master's Degree in Technology: Chiropractic*

Durban University of Technology

I, Murray L. McDonald, do declare that this dissertation is representative of my own
work in both conception and execution (except where acknowledgements indicate to
the contrary)

Murray L. McDonald

Date

Approved for Final Submission

Dr G. Matkovich, M. Tech: Chiropractic

Date

DEDICATION

This is dedicated to my father –
You were always there for me...
And I thank you for that.

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ABSTRACT

Background: The Durban University of Technology (DUT) chiropractic teaching clinic (CTC) represents a training facility for future chiropractors as well as providing a healthcare service to the local population. It is important to measure the demographic characteristics and presenting complaints of patients attending the DUT CTC as this information prepares the student interns for private practice. It also provides an insight into the popularity of chiropractic in the community.

Objectives: This study sought to measure certain demographic variables and presenting conditions of patients attending DUT CTC and to assess whether these have changed over time.

Method: A retrospective, cross-sectional descriptive study was performed by drawing patient files of new patients presenting to the DUT CTC for the months of February through April, during 2000, 2006 and 2011 (data from a 1994 study was included for analysis). The files had the following information regarding the patient collected: age, gender, ethnicity, occupation, medical aid, main presenting complaint, as well the duration of the most recent complaint. The data was analysed for trends using statistical software (SPSS v19).

Results: Data from 1 311 patient files were analyzed. The number of patients attending the DUT CTC had reduced significantly since 2000. The mean age ranged from 37.0 – 39.7yrs across the samples with a trend of increasing age occurring between 1994 and 2006. Ages ranged from 2 weeks – 89yrs, with 20 – 29yrs being the most common group. Females formed 50.5 – 51.2% of the samples with no significant change over time. White (46.3 – 64.2%) and Indian patients (27.2 – 40.9%) formed the majority, with Black patients showing a trend of increasing representation (from 6.4% in 2000 to 15.8% in 2011). The most common occupations were student (19.7 – 26.8%) and clerical (17 – 23%), with a trend noted between 1994 and 2006 of a decreasing student proportion. This trend reversed from 2006 – 2011. Medical aid subscription among patients reduced significantly ($p<0.05$) from

56.2% in 1994 to 41.6% in 2011. The main presenting complaints were spinal (68.2 – 84.1%), with low back (30.7 – 40.7%) and neck/head (27.8 – 33.8%) being the most common. Most main complaints were of a chronic nature (45.8 – 61.7%), though a trend of reducing chronicity was noted between 1994 and 2006. A trend of increasing sub-acute complaints was seen between 1994 and 2011.

Conclusions: The patients attending DUT CTC are similar to most international CTC's in terms of patients' age, gender, occupation, and main presenting complaint. Compared to existing data on South African private practice, the patients at DUT CTC are generally younger, less likely to be female, less likely to be White, more likely to be Indian or Black, less likely to have medical aid, more likely to present with low back pain as oppose to neck/head pain, and more likely to present in the acute/sub-acute phase. Between 1994 and 2006, the trend shows that patients at DUT CTC were older, less likely to be White, less likely to be students, less likely to have medical aid, and less likely to present in the chronic phase.

Key indexing terms:

Demography, chiropractic, teaching clinic, presenting complaints

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DEFINITIONS

Acute: Refers to a disease of sudden onset and of a brief duration. In this study, it was considered a duration of 0 – 4 weeks (Kirkaldy-Willis 1992).

Chronic: Refers to persistent disease. In this study, it was considered a duration of more than 12 weeks (Kirkaldy-Willis 1992).

Demographic: Is a term used for population characteristics and includes, age, gender, ethnicity and socioeconomic variables that identifies the characteristics of a population. In terms of this study, demographics will also be defined to mean clinical profiles or conditions of a given population (Polgar and Thomas 2002).

Descriptive: Refers to research that describes information regarding a certain topic such as demographics or diseases occurring in a population (Baumgartner, Strong and Henley 2002).

Ethnicity: Refers to a large group of common ancestry and inherited physical characteristics (Definition of Ethnicity 2012).

Medical aid: Is a term for health insurance, or third-party health cover. It is a financial entity that covers a predetermined amount of medical costs incurred by an individual in return for regular monetary contributions, or 'subscriptions' (Definition of Medical Aid 2012).

Sub-acute: Refers to a disease of moderate duration and/or severity. In this study it was considered a condition lasting 4 – 12 weeks (Kirkaldy-Willis 1992).

Teaching clinic: A healthcare facility that is operated by an educational entity with the dual purpose of patient management and student training. Patients are treated by graduate students under the supervision of licensed healthcare providers (Waalén, White and Waalén 1994).

ABBREVIATIONS

AHPCSA:	Allied Health Professions Council of South Africa
CASA:	Chiropractic Association of South Africa
CPP:	Chiropractic private practice
CTC:	Chiropractic teaching clinic
DoH:	Department of Health
DUT:	Durban University of Technology
GP:	General practitioner
KZN:	Kwazulu-Natal
RSA:	Republic of South Africa
SA:	South Africa
USA:	United States of America
WFC:	World Federation of Chiropractic

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Chiropractic is described as “a health profession specialising in the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders on the function of the nervous system and general health” (Chiropractic in South Africa 2012). The chiropractic profession was founded by D.D. Palmer in Davenport, Iowa in 1895 and has grown to become globally recognised as one of the leading professions in spinal health (About Chiropractic 2012). Chiropractic started in South Africa during the 1920’s by doctors who qualified from overseas colleges and who returned to start practices in the Republic of South Africa (RSA) (Chiropractic in South Africa 2012). The first training programme for chiropractors in the RSA began at the Natal Technikon in 1989, which later became known as the Durban University of Technology (DUT). The Natal Technikon (now DUT) chiropractic teaching clinic (CTC) opened in February of 1994 (Chiropractic at DUT 2012). CTC’s differ from private practice in that the consultations are conducted primarily by unqualified student interns under the guidance of qualified chiropractors (Drews 1995). CTC’s are usually found in close proximity to tertiary institutions, are cheaper than private practice, and perform a dual function of providing healthcare to the public as well as educational experience to the student interns (Waalén et al. 1994; Drews 1995; Holt and Beck 2005).

Descriptive data of patients presenting to chiropractic professionals have been collected in separate studies for several decades (Higgs 2008) and these provide a perspective on the patients seen at specific clinics and in different countries (Rubinstein, Pfeifle, van Tulder and Assendelft 2000). Similar studies have more recently been performed in chiropractic teaching clinics in various countries, namely Canada, Australia, New Zealand, United States of America and Mexico (Walsh 1992; Waalén et al. 1994; Bryant, Bull and Atkins 2003; Holt and Beck 2005; Martinez, Rupert and Ndetan 2009). A description of the patients’ characteristics attending a chiropractic clinic is useful for describing the target population, identifying their common complaints, and is important for gaining an understanding and knowledge of

patients' holistic care. The patient group presenting to the DUT CTC has specific demographic and epidemiological characteristics, and these characteristics may affect how the consultation, diagnosis and treatment of patients are viewed by the student interns (Waalén *et al.* 1994).

The DUT CTC serves as a training centre for the development of future chiropractors (Chiropractic at DUT 2012). The patients that present to the DUT CTC directly influence the student interns' management of patients; therefore, an accurate patient profile for the DUT CTC is needed. Drews (1995) performed a descriptive survey of patients attending the DUT CTC in 1994. Information on demographics, presenting conditions and management of the conditions were recorded. But, in view of the 17 years that have elapsed since she compiled her research, this study questions whether her results represent the current DUT CTC patient characteristics. This is because several changes have occurred in the South African socio-political climate since the first democratic election in April, 1994. The university has also undergone several changes since then, and is now known as DUT (History of DUT 2012). The chiropractic profession has also shown growth since 1994 (Chiropractic in South Africa 2012). Chiropractic was not well established in 1994 because the teaching program at DUT had only been operating since 1989. These factors may have altered the characteristics of the patients attending DUT CTC.

Although several smaller retrospective descriptive studies were performed in 2007 (Jaman 2007; Venketsamy 2007; Benjamin 2007; Khandai 2007), these were specific to separate conditions and could not provide an overview of the overall patient profile presenting to the DUT CTC. No recent study has measured the demographic and epidemiological characteristics of patients presenting to the DUT CTC.

Therefore, this study aimed to identify the different demographic profiles of patients who presented to DUT CTC and compare them to results from 1994 in order to see if they have changed over time.

1.2 Aims

This study aimed to achieve the following:

- To identify the demographic characteristics and presenting conditions of the patients attending the DUT CTC.
- To assess whether changes in these variables have occurred over time and if trends are discernible.

1.3 Objectives

The following objectives were set for this research study:

Objective One:

To identify the demographics (age, gender, ethnicity, occupation, medical aid subscription) of the patients who attended the DUT CTC in the months of February through April in 2000, 2006 and 2011.

Objective Two:

To identify the presenting conditions (diagnosis and duration of presenting complaint) of the patients who attended the DUT CTC in the months of February through April in 2000, 2006 and 2011 in 2000, 2006 and 2011.

Objective Three:

To compare the data with Drews 1994 study and identify any trends that may have emerged.

1.4 Rationale

The DUT CTC serves as a training centre for future chiropractors (Chiropractic at DUT 2012). The patients presenting to the DUT CTC represent an opportunity for 5th and 6th year students to gain clinical experience.

The patient groups presenting to teaching clinics have specific demographic and epidemiological characteristics, and these characteristics may affect the consultation, diagnosis and treatment of patients, and therefore, the functioning of the clinic (Bryant *et al.* 2003; Holt and Beck 2005). These characteristics have also been shown to change over time (Walsh, 1992; Hartvigsen, Sorensen, Stockendahl and Grunnet-Nilsson 2002; Hurwitz *et al.* 1998).

Since 1994, several changes in the South African socio-political climate, the university now known as DUT, as well as the growth of the chiropractic profession, may have altered the characteristics of the patients attending DUT CTC.

No recent study has measured the demographic and epidemiological characteristics of patients presenting to the DUT CTC. A 1994 study performed by Drews measured these variables, but the time elapsed since the performance of this study questions whether this represents the DUT CTC today and will establish the current trend.

A demographic profile was performed in order to construct a patient profile for the years of 2000, 2006 and 2011 and compare the data from these three years against Drews (1995) findings to determine the emergent trends.

Once gathered, this information will allow the DUT Chiropractic Department to:

- guide research with regards to the conditions that are most often seen in the DUT CTC (Polgar and Thomas 2008)
- highlight, to governing bodies of chiropractic, the possibility of changes required in chiropractic education (Waaen *et al.* 1994);
- make informed policy decisions (Polgar and Thomas 2008)
- refine promotion strategies within the chiropractic profession (Baum and Henkel 2004)
- better market itself to certain demographic groups (Baum and Henkel 2004);
- develop a future, value-added role for the profession within the public healthcare system (Manga 2000).

1.5 Benefits

Descriptive research attempts to gather data from population samples to accurately define and describe specific characteristics (Baumgartner *et al.* 2002). The purpose of descriptive research is to determine and then describe the present state of the area of interest. The statistics obtained from these studies can present an overview of patterns in patient health, disease processes and healthcare usage (Polgar and Thomas 2008). This data can then be used to develop hypotheses and theories for further research, as well as inform healthcare decisions for certain populations.

Based on these proposed benefits, this study aimed to provide an accurate description of the patient population attending the DUT CTC in terms of age, gender, occupation, ethnic group, medical aid subscription, presenting complaints and duration of presenting complaints. This may aid: the DUT CTC with regards to policy implementation, marketing, and education programmes; the DUT Chiropractic research community with future hypotheses and research studies; Chiropractic Association of South Africa (CASA), Allied Health Professions Council of South Africa (AHPCSA) and the Department of Health (DoH) with policy decisions and future research and healthcare initiatives.

1.6 Limitations

This cross-sectional survey relied on patient records being complete and accurate. It was also assumed that the patient was honest during the consultation and understood the questions asked, and that the student intern accurately transcribed the exchange. Ethnicity is not included in the paperwork completed by the student interns – this data was taken from the case summaries, but where this information was not included by the student intern, it was extrapolated from the patient's name which is often indicative of their ethnicity. This could be a problem regarding the validity of the data.

1.7 Outline of Chapters

The basis of the research study has been introduced in Chapter One, which also described and explained the gap in the literature. The aims and objectives, the rationale, benefits and limitations of the study were also outlined.

Chapter Two will present the background and history of chiropractic in the Republic of South Africa, the DUT and the DUT CTC. A review of the literature, relating to patients presenting to teaching clinics and private practice both locally and internationally will also be discussed thoroughly.

Chapter Three will discuss the research methods and materials. Chapter Four documents the results of this study which will be critically discussed and analysed in Chapter Five. Finally, Chapter Six will conclude the study and provide recommendations for future studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will review the history of chiropractic in RSA, the history of the DUT CTC as well as South Africa and its healthcare needs. A detailed review of the literature pertaining to descriptive and retrospective research studies in both local and international teaching clinics and private practice will also be discussed.

2.2 Chiropractic in South Africa

According to Hupke (1990, cited in Higgs 2009), there were only four or five chiropractors practising in South Africa in the early 1900's who had all been educated in the USA and Canada. The profession grew significantly over the next few decades, at which point it was deemed necessary to create legislation governing the practice of chiropractic. Act 76 of 1971 was passed which allowed for registration of all qualified and practising chiropractors in South Africa, but did not allow for new additions to the register – effectively preventing any further growth of the profession (Chiropractic history in South Africa 2012). Consistent lobbying by South African chiropractors and homeopaths led to the eventual formation in 1985 of what is now known as the Allied Health Professions Council of South Africa, thus allowing new members to register and practise in South Africa as chiropractors (Chiropractic history in South Africa 2012). The Allied Health Professions Act 63 of 1982 did not allow for the chiropractic profession to practice in locations governed by professions under the Health Professions Council, therefore precluding chiropractors from the public healthcare framework (South Africa 1982). Despite these limitations, the chiropractic profession has continued to grow and become more recognised by the public (Chiropractic in South Africa 2012).

2.3 Chiropractic at DUT

The first training programme for chiropractors in RSA began at the Technikon Natal in 1989, with a second programme commencing at the Technikon Witwatersrand in 1994 (Chiropractic in South Africa 2012). Natal Technikon combined with M.L. Sultan Technikon in April 2002 to form the Durban Institute of Technology (History of DUT

2012). The Durban Institute of Technology became the Durban University of Technology in March 2006 (History of DUT 2012).

The DUT CTC has functioned as an entity since February 1994 (Drews 1995). It is the goal of the CTC to provide chiropractic services to the population of Durban as well as to provide practical experience for the final year students and interns in the DUT chiropractic programme (Korporaal 2012). Chiropractic students need to obtain a Master's Degree of Technology in Chiropractic in order to practice (South Africa 1982). In order to graduate, they are required to consult and treat patients in the DUT CTC on the DUT Ritson campus under the supervision of qualified and registered chiropractic clinicians (South Africa 1982). In an interview with Twiggs (2012) it was confirmed that a cash fee for treatment is charged (which at R70 is considerably lower than fees charged in private practices which can range from R250 – R500), but reduction of the fee is granted to DUT students, and certain patients based on their financial status (DUT staff and DUT chiropractic students are not charged for treatment).

2.4 Demographics of the South African population

Since 1994, SA has undergone several socioeconomic and political changes (Lehohla 2011). After the abolition of Apartheid and the first democratic election taking place in April, 1994, South Africa has undergone a massive transformation in terms of government, population distribution, employment and education (Lehohla 2011). The RSA population has had a growth rate of 25% during these intervening 18 years, with 'Black' and 'Coloured' populations having shown the most growth. The SA population has a very slight female preponderance (51%) which has not changed over time. Since 1996, the ethnic proportions have shown a gradually increasing Black majority (76.9% to 79.5%), with the White proportion slowly decreasing (10.9% to 9.0%), and Coloured (9%) and Indian/Asian (2.5%) proportions remaining relatively stable (Lehohla 2011). Of these populations, 53.7% live in urban areas (a percentage that is increasing constantly), but there are differences between ethnic groups in that only 43.3% of the Black population live in urban areas as opposed to 97.3% of Indian/Asian citizens (Lehohla 2011).

According to the national census of 2011, the population in the Kwazulu-Natal (KZN) province shows a higher percentage of Black population (85%) than the national average (79%), with Indian/Asian (8.3%), White (5%), and Coloured (1.5%) making up most of the remainder (Lehohla 2011). The population in KZN is also slightly younger on average than the rest of the country, with 64.3% of the population younger than 30 years compared to the countrywide figure of 60.2% (Lehohla 2011).

2.5 Healthcare in South Africa

Two major flaws in the current healthcare system in RSA are that care is centered on in-patient management, which is costly and labour-intensive, and that the system lacks human resources to meet demands (DoH 2011). According to the National Treasury Intergovernmental Fiscal Review (2011 cited by DoH 2011), RSA spends 8.3% of its GDP on health (well above the WHO recommended 5%) which is divided into 4.1% by the private sector (serving 16% of the population) and 4.2% by the public sector (serving 84% of the population). This represents a mismatch of funds in the healthcare sector (DoH 2011). If a movement towards more active primary health care is made, chiropractic may provide a valuable service to the public healthcare sector as chiropractic care is considered more cost-efficient (Manga 2000) and meets several needs as primary care physicians (Gaumen, Koren and Gemmen 2002).

2.6 The Healthcare needs of the population in RSA

According to the DoH of RSA (2011), the burden of disease in RSA is increasing, because of the impact of HIV/AIDS, peri-natal mortality, non-communicable diseases and injuries (accidental and non-accidental). In terms of musculoskeletal pain, and its prevalence in local populations, several studies have been conducted on neck and low back pain which are usually the most prevalent conditions in populations (Kirkaldy-Willis 1992). In studies on low back pain, Van der Meulen (1997) found a local Black population to have a prevalence of 53.1%. A local White population showed a prevalence of 48% (Dyer 2012), and local Indian and Coloured populations showed prevalences of 45% and 33% respectively (Docrat 1999). In studies on neck pain, Ndlovu (2006) found a local Black population to have a prevalence of 45%, whereas Slabbert (2010) found a local White population to have a prevalence of 50%, and local Indian populations were found to have a prevalence of 36% (Muchna 2011).

2.7 Meeting the needs of a population

According to Wasson and Gordon-Moore (2007), an ideal healthcare facility possesses the following qualities:

- 1) Efficiency – decreasing costs of providing care in order to minimize costs to patients as well as maximizing time spent with patients;
- 2) Access – being able to meet the needs of patients in terms of seeing patients in a timely and accessible fashion, communicating effectively (face-to-face, telephone and email), and generally enhancing the doctor-patient relationship;
- 3) Effective treatment – being prepared to provide patients with improvement in their condition physically and psychologically;
- 4) Meeting the needs of the community – these needs reflect the burden of illness in a specific population (which were previously discussed) as well as psychosocial needs that vary according to age, gender, ethnicity, and economic levels (Cockerham, Sharp and Wilcox 1983).

As a wellness-promoting profession which specializes in neuromusculoskeletal (NMS) complaints, chiropractic may be able to assume a far greater role in the healthcare system – specifically in the areas of non-communicable diseases (through measures aimed at reducing risk factors such as alcohol, smoking, poor diet and lack of exercise), and injuries (through typical chiropractic management and advice) which form a large part of the disease burden (DoH 2011). This case for inclusion into mainstream healthcare would be strengthened by displaying efficacy in the community-based healthcare initiatives (such as the DUT CTC) (Higgs 2009).

The DUT CTC must attempt to provide good quality services to the local communities that are affordable, accessible, cater to a broad range of their needs and provide continuity in care (Coulter 1992; Wasson and Gordon-Moore 2007). At the same time, the DUT CTC must serve as an effective learning facility for the chiropractic student interns (Chiropractic at DUT 2012).

2.8 Preparedness of students

Chiropractic students at DUT are trained to manage patients in a holistic fashion in accordance with a wellness model (Chiropractic in South Africa 2012) – so in addition

to a focus on NMS conditions, training is given in areas of nutrition, risk factor avoidance, exercise therapy and psychology (Chiropractic in South Africa 2012; Chiropractic at DUT 2012). In terms of hours spent on NMS complaints, the regions that are focused on include: low back, neck/head, midback, lower limb, and upper limb (Department of Chiropractic and Somatology Handbook for 2012). The subjects that are relevant to NMS illness (theory and practical) include Chiropractic Practice and Principles (CPP) III/IV/V, Clinical Chiropractic (CC) IV/V, and Clinical Biomechanics and Kinesiology (CBK) IV/V. Of these subjects, CPP V, CC V and CBK V concentrate on extremity conditions, whereas the other subjects focus on spinal conditions. In terms of hours per week (theory and practical) spent on these subjects, roughly 15 – 20 hours per week are spent on extremity conditions, whereas about 30 hours are spent on spinal conditions (with about 60% spent on low back and 40% on neck, mid-back and head) (Department of Chiropractic and Somatology Handbook for 2012).

This training is to prepare them for the patients to be seen at the DUT CTC, while the DUT CTC represents a training experience to prepare the interns for private practice (Chiropractic at DUT 2012; Waalen *et al.* 1994). In order for the chiropractic profession to be considered a viable healthcare provider, its patient profile should be a reflection of the demographics and disease epidemiology of the local population (Manga 2000; Gaumer *et al.* 2002).

As has previously been discussed (in section 2.6), presenting complaints vary amongst local populations with regards to age, gender, ethnicity and occupation. The prevalence of low back complaints varied from 33 – 53% amongst different ethnic groups, was more common in older populations and in lower economic groups (Van der Meulen 1997; Docrat 1999; Dyer 2012). The prevalence of neck pain complaints varied from 36 – 50% amongst different ethnic groups, and was more common in females and in those who were employed (Ndlovu 2006; Slabbert 2010; Muchna 2011). The high prevalence of these conditions in local populations is proportional to the amount of training received by chiropractic students at DUT.

At DUT CTC (Drews 1995), interns see complaints that are approximately 35% low back, 25% neck/head, 10% mid-back, 20% lower limb, and 10% upper limb complaints, whereas in private practice (Mahomed 2007), complaints were

approximately 45% neck/head, 30% low back, 10% mid-back, 8% lower limb, and 4% upper limb. In comparison to the amount of training received by chiropractic students in each area currently, it can be seen that the students see a similar distribution of complaints as was seen in the DUT CTC in 1994 with low back, neck and extremity complaints forming the largest components (Department of Chiropractic and Somatology Handbook for 2012); Drews 1995). However, when compared to private practice in 2007, students spend relatively inadequate time training in neck complaints and relatively exaggerated time training in extremity complaints (Department of Chiropractic and Somatology Handbook for 2012; Mahomed 2007).

2.9 Barriers to the provision of healthcare at DUT CTC

The barriers to integrating chiropractic healthcare into a community are: legal, professional, financial, consumer preference and accessibility (Gaumer *et al.* 2002).

Applied to DUT CTC, the barriers to integration into the healthcare system are:

1. Legal – According to the Allied Health Professions Act of 1982 (as amended) (South Africa 1982), chiropractic is prohibited from practicing in locations in which medical doctors (or other professions governed by the Health Professions Council of South Africa (HPCSA)) are practicing, from advertising services, as well as from performing certain diagnostic and treatment procedures;
2. Professional – The issue of being unable to practice in certain locations with professionals under the HPCSA, as well as the perception of competition, creates a situation in which inter-professional referrals are not frequent and form as little as 3% of new patients (Mahomed 2007); the DUT CTC also competes with private practice for patients;
3. Financial – Medical aid is not available to many, and some aspects of chiropractic care are not covered, creating a barrier to patients utilizing chiropractic services due to financial difficulties; patients may also be unwilling or unable to pay for treatment, or may feel that if they are going to be paying for chiropractic services that they would prefer private care;
4. Consumer preference and demand – there may be a lack of knowledge and an incorrect perception of chiropractic by the population and general practitioners, which may include being unaware of what conditions can be treated, the effectiveness of treatment, or the legitimacy of the profession as a

whole; they might be unaware that medical aid covers chiropractic, or they might view chiropractic as inferior to other professions;

5. Accessibility – Chiropractic care might not be available in the areas that it is needed, or the area is viewed as undesirable; another barrier may be an inability to advertise services due to legal constraints – this makes it difficult for the DUT CTC to market itself in the community, with a resultant lack of growth. Lastly, a lack of integration into the healthcare system with resultant lack of referrals may be stunting any growth for the DUT CTC as patients are not made aware of services available by their existing primary healthcare practitioners.

A major challenge in recent years that the DUT and DUT CTC face is the violent protests that have occurred almost annually since 2006 (DUT 2012; UKZN 2012). This provides negative media attention and may deter patients from attending the DUT CTC. The clinic itself is also situated in a lower income area and it is in close proximity to the city centre, which is deemed as unsafe by many (South Africa 2012 OSAC Crime and Safety Report 2012).

2.10 The importance of demographics in healthcare provision

Chiropractic is a holistic paradigm of healthcare (Chiropractic in South Africa 2012). According to Coulter (1992) and Gaumer et al. (2002), holistic care must take into account not only the physical manifestation of illness, but also the patient as a unique entity and all the factors that may influence their health, illness and recovery. This implies that each patient possesses a unique combination of demographics, cultural practices and socioeconomic characteristics (Coulter 1992). It has also been shown in numerous studies in a South African setting that demographic factors such as age, gender, ethnicity and occupation have a significant bearing on the conditions that a certain population may experience and with which they may present to a healthcare provider (Van der Meulen 1997; Docrat 1999; Slabbert 2010; Dyer 2012).

The Durban/KZN regional population has a demographic profile in which 64% of the people are under 30yrs (years of age), 49% male, and 85% are Black, 5% White, 3% Coloured and 9% Indian (Lehohla 2011). These factors may directly affect the types of complaints that present to the DUT CTC (Goodyear, Watts and Haste 2006), as well as how the patients view their conditions (Cockenham *et al.* 1982).

The measurement of demographics, is therefore, important to study with regard to service delivery i.e. are the needs of the population being met by a healthcare provider (Gaumer *et al* 2002; Polgar and Thomas 2008).

2.11 Descriptive and retrospective research

Descriptive research describes the characteristics of populations for specific variables such as demographic characteristics e.g. age, gender or ethnicity (Baumgartner *et al.* 2002). The data from descriptive research can provide an overview of the state of health and utilization of healthcare services in a given community (Polgar and Thomas 2008). This can be in the form of information on prevalent conditions or the healthcare needs of a population. The data obtained can also form the basis of hypotheses and theories to be tested by further research studies (Polgar and Thomas 2008).

Retrospective research (also termed historical research) involves the process of attempting to record and understand the past (Baumgartner *et al.* 2002). To provide data about the past, the researcher must obtain reliable information – this is done by consulting primary sources and secondary sources of material (Baumgartner *et al.* 2002). Primary sources consist of original documents e.g. original patient records, or eyewitness accounts of events, and secondary sources consist of second-hand accounts such as textbooks, newspapers and encyclopaedias (Baumgartner *et al.* 2002). Secondary data should only be used if primary data is unavailable (Baumgartner *et al.* 2002; Polgar and Thomas 2008).

2.12 Descriptive studies of chiropractic teaching clinics compared to private practice clinics

Several epidemiological studies have been conducted on the patients attending CTC's worldwide (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Bryant *et al.* 2003; Holt and Beck 2005; Martinez *et al.* 2009). These studies have looked at, amongst other factors, demographics, presenting conditions, diagnostic profile, mode of referral and previous treatments. These studies aimed to describe the populations making use of the respective clinics at that time, but Holt and Beck (2005) stated that there was a possibility that a patient profile, with regards to demographics and

presenting conditions, would change over time as a clinic became more established in the community.

The information from studies obtained from teaching clinics has routinely been compared to information gained from chiropractic private practice studies (Walsh 1992). The comparison of information between private practice and teaching clinics has often shown discrepancies in the demographics (Walsh and Jamison 1992; Drews 1995).

Descriptive studies of patients attending private chiropractic clinics have been conducted in Europe, North America and Australasia and consisted of patient profile surveys.(Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002a; Coulter and Shekelle 2005; Mootz *et al.* 2005). Some of these studies have compared earlier demographic data to current demographic data to identify any changes that have occurred over time (Hurwitz *et al.* 1998; Hartvigsen *et al.* 2002b), because the frequency and reasons for patients presenting to chiropractic clinics for treatment have been shown to change over time (Hurwitz *et al.* 1998).

These studies have generally discussed the following factors: demographics, main presenting complaints, number of appointments, treatment expectations and mode of referral (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005).

Two studies of chiropractic private practice in RSA have been performed (Drews 1995; Mahomed 2007). The study conducted by Drews (1995), during 1994, aimed to identify characteristics of chiropractic patients and their complaints at the CTC at DUT (previously known as Technikon Natal) and compare them against chiropractic patients in private practice in South Africa. The study looked at patient age, gender, occupation, medical aid, and main presenting complaint (including duration of complaint). A total of 162 new patients completed the questionnaire at DUT CTC. The comparison showed few differences between private practice patients and the CTC patients, however CTC patients were, on average, slightly younger, more likely to be students and less likely to have medical aid.

In 2007, Mahomed conducted a survey of patients attending chiropractic private practice in South Africa by having participating chiropractors fill in questionnaires following patient consultations. The questionnaires included sections on demographics, main presenting complaints, investigations e.g. radiographs, mode of referral and previous treatments.

A retrospective cross-sectional analysis of the DUT CTC patient files was performed in 2007 by different researchers using files from 1995 to 2005 (Jaman 2007; Venketsamy 2007; Benjamin 2007; Kandhai 2007). The researchers randomly selected a sample of 30% of the available patient files between 1995 and 2005. Data collected included demographics, presenting complaints, treatment and referrals. A time based comparison was performed between the 1995-2000 data and the 2001-2005 data.

2.13 Demographic characteristics measured in this study

2.13.1 Age

Increasing age is associated with several musculoskeletal complaints (Kirkaldy-Willis 1992; Slabbert 2010; Dyer 2012). However, certain presenting conditions are more likely at different ages e.g. low back pain incidence increases with age (Kirkaldy-Willis 1992), whereas neck pain is more often found in a middle-aged (30-50yrs) population (Muchna 2011). Different age groups may also experience pain differently and/or communicate with healthcare practitioners differently (Cockenham *et al.* 1982).

In studies performed in private practice in Sweden, Holland, Denmark and the USA, certain trends were noted in the average age of patients presenting for chiropractic care: the mean age for these patients ranged from 40.8yrs - 46.0yrs between the studies, with the mode being 42yrs (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005).

Walsh (1992) studied demographic data in three Australian teaching clinics. The ages ranged from 12-76yrs with the mean ranging from 34.2 - 34.7yrs across the three clinics, reflecting a study mean of 34.4yrs. Waalen *et al.* (1994) collected

demographic data from 15 174 new patients attending a teaching clinic in Canada over a five-year period. The ages ranged from 1 - 93yrs and the mean age was 28.0yrs. Bryant *et al.* (2003) found similar demographics at the McQuarie University teaching clinic. The ages ranged between 1 - 88yrs, with the mean age being 36.6yrs. Holt and Beck (2005) found similar results from their study.

In a local study performed at DUT CTC, Drews (1995) measured patient demographics and presenting complaints using a questionnaire. The ages ranged between 1 – 85yrs and the mean age was 37yrs. Drews also showed that, compared to the patients seeking private chiropractic care, patients attending the CTC are typically younger. Thus, an age discrepancy between teaching clinics and private practice can be seen with CTC's generally seeing younger patients. This was most likely due to the location of the clinic reflecting the local population. When a similar trend was found by Nyiendo *et al.* (1989) the authors suggested that the referrals from the students and interns formed a significant proportion of total referrals.

Mahomed (2007) showed that patients who attended private practices in RSA have a mean age of 41.8yrs, which is consistent with several international studies (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005) but considerably older than the patients' profiles studied by Drews (1995) at DUT CTC.

2.13.2 Gender

Each gender is predisposed to certain conditions owing to different biomechanics, occupations and psychological factors (Slabbert 2010; Muchna 2011). Females are also known to be more likely to recognize illness, and therefore, more likely to seek care (Popenoe *et al.* 1997 cited by Higgs 2009). In this way, gender may impact on the conditions presenting to DUT CTC. Findings from international studies have indicated that more female patients than male patients attended chiropractic private practices (Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005).

The majority of literature concerning the demographics of people utilising CTC services show females tend to form the larger proportion. A study by Holt and Beck

(2005), at a teaching clinic in New Zealand, demonstrated a sample consisting of 51.9% females, which is similar to results from Walsh (1992) in Australia, and Nyiendo *et al.* (1989) in the USA, who showed samples consisting of 52.6% and 52% females respectively. However, the margin between males and females is smaller than in private clinics, where females formed between 57% and 61% of the samples (Rubinstein *et al.* 2000; Coulter and Shekelle 2005; Mootz *et al.* 2005). Only in private practice in Sweden (50%) and Denmark (51%) did the female predominance more closely approximate the results in CTC's (Leboeuf-Yde *et al.* 1997; Hartvigsen *et al.* 2002)

Drews (1995) found that more females attended chiropractic private practices in RSA than the DUT CTC. Studies performed in 2007 at the DUT CTC show conflicting results as the studies were designed around individual presenting complaints, so the demographic data can only be generalised to those specific complaints as opposed to the clinic as a whole (Jaman 2007; Venketsamy 2007; Benjamin 2007; Kandhai 2007).

A study in South Africa by Mahomed in 2007 showed that 62.6% of patients attending private practices were female, which is considerably higher than DUT CTC in 1994, as well as slightly higher than private practice in RSA in 1994 (Drews 1995). This remains a high percentage of female patients compared to the local demographics (Lehohla 2011). However, the statistics at the DUT CTC are similar to gender demographics of local populations.

2.13.3 Ethnicity

According to Goodyear *et al.* 2006, certain complaints show different levels of prevalence in different ethnic groups. Studies show low back pain is more prevalent in local Black populations compared to Coloured populations (Van der Meulen 1997; Docrat 1999), and neck pain is more prevalent in White populations compared to Indian populations (Slabbert 2010; Muchna 2011). Different ethnic groups may have their own language, culture, and /or beliefs (Goodyear *et al.* 2006). Ethnic groups show significant differences in language e.g. Black populations speak primarily isiZulu in KZN, whereas the majority of White populations speak English as their home language (Lehohla 2012). Different ethnic groups may also experience pain

differently (Portenoy 2004 cited by Slabbert 2010). In this way, ethnicity may impact on the conditions presenting to DUT CTC.

Very few international and local studies have measured the ethnic group of patients who have attended chiropractic clinics. Of the studies reviewed in private practice, only two studies from North America investigated which ethnic group was more like to attend chiropractic clinics (Coulter and Shekelle 2005; Mootz *et al.* 2005). There were no international studies in which the researchers investigated which ethnic group preferred to attend teaching clinics (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Bryant *et al.* 2003; Holt and Beck 2005; Martinez *et al.* 2009).

Results from Mahomed's (2007) local study of which ethnic group of patients preferred private practice to a teaching clinic showed that White patients (75.66%) were four times more like than Indian patients (15.93%) to attend a private practice. A very small percentage of Black (3.54%) and Coloured (3.98%) patients chose to attend a private practice. Data of patients attending private practice show a predominantly white population (Mahomed 2007). This is inconsistent with the demographics of the South African population (Lehohla 2011), as Black South Africans form the largest ethnic group. High perceived costs of chiropractic services coupled with a low average income of Black populations may have caused this ethnic group to under-utilise chiropractic (Mahomed 2007). However, the massive shift in government in RSA has led to progressive, though gradual, economic empowerment of Black populations over the past two decades (Lehohla 2011). This, coupled with greater awareness of chiropractic as a profession (Chiropractic in South Africa 2012), may have led to progressively increased usage of the DUT CTC by Black populations since 1994. Unfortunately no trend can be found as no previous data of ethnicity of the patients attending DUT CTC exist.

2.13.4 Occupation

Occupation may have an impact on presenting complaints by affecting patients in terms of biomechanics, levels of stress (and other psychological factors), and/or financial factors (such as access to healthcare) (Kirkaldy-Willis 1992; Higgs 2009). In the RSA, the percentage of unemployment amongst economically active people is 25.7%, with females more likely to be unemployed than males (Lehohla 2012). The unemployment rate is lower in KZN than the RSA average, but females again, are

more likely to be unemployed. In terms of numbers employed, the largest occupation groups are manual, public services, sales and clerical professions, with males forming the majority in all professions except public services (Lehohla 2011).

In terms of patient occupation, studies in private practice worldwide have used a variety of categories to collect data, but many have not included occupation amongst the variables investigated. Private practice patients in Sweden were more likely to be employed (67%), with housewives (11%), retirees (9%) and students (4%) forming smaller proportions (Leboeuf-Yde *et al.* 1997). Rubinstein *et al.* (2000) categorised the occupations of patients in their study and found that 10% were in high class professions e.g. managerial, 23% in middle class professions e.g. clerical, 30% were skilled labour or low class professions, and 18% housewives.

In contrast, data on employment or occupation forms part of numerous studies which have been undertaken at chiropractic teaching clinics worldwide. Nyiendo *et al.* (1989) found that employment at their teaching clinics under review ranged from 54-75%, with the mode at 75%. Unemployment was between 24-47%. Of those employed, 58-75% were classified as non-manual (e.g. managerial, clerical, etc) professions and 25-42% were classified as manual professions.

In a teaching clinic in Canada, it was found that the occupation of patients attending the clinic were 26.2% students, 17.4% clerical workers, 10.4% semi-professionals, 5.2% unemployed, 4.2% retired and 2.9% housewives (Waalén *et al.* 1994).

Bryant *et al.* (2003) found at an Australian teaching clinic that there was a slightly larger percentage who were categorised as non-manual workers (37%), with manual professions forming 31% of the sample. The remainder was made up of 19% students and 13% unemployed.

In South Africa, Drews found that patients attending the CTC in 1994 were mostly students, with housewives, clerical employees and executives having roughly equal proportions. In comparison, South African private practice showed the largest proportions to be 24% clerical professions, 16% managerial, 10% skilled labour, and 10% housewives. Retirees formed 8% of the sample and students formed 4% (Mahomed 2007). Compared to national data (Lehohla 2011), the patient profile at

DUT CTC (Drews 1995) as well as private practice (Mahomed 2007) show a large proportion of executives, clerical and sales professions, as well as low representations of manual workers and public services professionals.

Since 1994, average income per household has gradually increased (Lehohla 2011). However, the world economy has also taken a downturn in recent years (Global Issues 2012), and unemployment rate in RSA has increased 2.3% since 2009 (Quarterly Labour Force Survey 2011 cited by Lehohla 2011). The DUT CTC offers a cheaper alternative when compared to chiropractic private practice (Twiggs 2012). These factors may have had a significant bearing on the occupations of patients that present to the DUT CTC, as people possibly try to find cheaper alternatives in a means to reduce costs (Global Issue 2012) or reduce chiropractic utilization as it may be seen as an unessential service (Manga 2000; Gaumer *et al.* 2002).

2.13.5 Medical Aid

Only 16% of the country subscribes to medical aid schemes, but this proportion contributes an almost equal amount to the total spending in healthcare in RSA (4.1% of GDP vs. 4.2% provided by public funds) (DoH 2011). Research by Meng *et al.* (2011 cited by DoH 2011) shows that those who are not adequately covered by any form of health insurance are women, children, the elderly and low income groups. These groups would therefore be at a disadvantage in accessing chiropractic care as chiropractic does not play any significant role in public healthcare (Manga 2000; Gaumer *et al.* 2002). In 2007, patients attending chiropractic private practice in South Africa were far more likely to have medical aid (81.5%) than to not have it. Only 18.5% of the patients had no form of medical aid (Mahomed 2007).

Outside of South Africa, few studies have documented the medical aid subscription rate of patients attending chiropractic private practice. In a study by Coulter and Shekelle (2005) in the USA, 37% of the sample was not covered by any insurance. Another study published in the same year showed that of the patients presenting to private practice in the USA, 31 – 40% had no form of health insurance, with 26 – 37% having private insurance (Mootz *et al.* 2005).

There were 56% of patients who attended DUT CTC that subscribed to medical aid rates in 1994 (Drews 1994). This was significantly lower than the patients attending private practice in RSA, of which 75% subscribed to medical aids (Drews 1994). A 2007 study of patients attending chiropractic private practice in RSA showed that 81.5% had medical aid, an increase of 7% since 1994 (Drew 1995; Mahomed 2007). This shows that patients using chiropractic care have an increased level of insurance coverage compared to the RSA population (Lehohla 2012). However, since 1994, no study has measured the medical aid subscription rates in patients attending the DUT CTC.

2.13.6 Presenting complaints

In terms of presenting conditions, chiropractors have traditionally treated predominantly musculoskeletal conditions, the majority of which are lower back complaints. International studies that investigated the presenting complaints at chiropractic private clinics have shown that the majority consist of musculoskeletal conditions, with low back pain being the most common (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002a; Coulter and Shekelle 2005; Mootz *et al.* 2005).

Patient presenting with complaints were measured in USA private practices (Hurwitz *et al.* 1998). The results indicated that 68% presented with low back pain. The remaining complaints were 16% neck/head pain, 6.4% mid-back pain, 5.4% extremities (3.8% upper) and 4.2% other complaints (Hurwitz *et al.* 1998).

Results from a 1989 study of six teaching clinics in the USA highlighted that common complaints were of 34-41% low back, 19 – 30% neck and head, 10 – 15% mid-back, and 17 – 22% extremities (Nyiendo *et al.* 1989). Waalen *et al.* (1994) found similar complaints from patients studied at a Canadian teaching clinic. Their results indicated that 34.4% of patients complained of low back pain, 32.4% of neck pain, 11.2% mid-back, 18.8% of extremity pain and 3.2% of other pain, that included headaches, arthritides, and autonomic dysfunction.

At a New Zealand teaching clinic, results were similar in that the sample was 38.1% low back, 26% neck/headache, 9.5% mid-back, 8.8% extremity (6.2% upper), and 11.6% presented with no complaint (Holt and Beck 2005).

The results observed in CTC's (Nyiendo *et al.* 1989; Waalen *et al.* 1994; Holt and Beck 2005) compared to private practices (Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Mootz *et al.* 2005) indicate that a higher percentage of extremity complaints are seen at teaching clinics. Martinez *et al.* (2009) suggested that this may be due to a higher number of young patients attending the clinic. They proposed that younger patients are more likely to present with a traumatic conditions – these often involve the extremities e.g. ankle sprains playing football (Martinez *et al.* 2009).

In 1994, Drews measured the complaints at DUT CTC and found that low back and neck pain were the most commonly treated areas, with extremities (non-spinal joints) being the third most treated area. However, the proportion of low back complaints is lower than other teaching clinics worldwide (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Holt and Beck 2005; Martinez *et al.* 2009). Drews pointed out, however, that a limitation of her study was that these findings were a rough estimate as she did not differentiate between primary and other complaints, making it difficult to compare with other studies' data (Drews 1995).

Data collected at the DUT CTC in 2007 suggests that some changes may have occurred in the proportions of presenting complaints (Benjamin 2007; Jaman 2007; Kandhai 2007; Venketsamy 2007). When combined, these 2007 studies at DUT CTC provide a complaint profile consisting of 36.1% low back pain, 37.4% neck/head pain, 6.9% mid-back pain, and 19.6% extremity pain. However, differences in the collection of these data between Drews' 1994 study and the 2007 studies warrant the study of the complaints seen most commonly at the DUT CTC and how they have changed over time. This is supported by the inability of the 2007 studies to accurately display any significant changes over time and the difficulty in comparing the 1994 data to other studies.

In a study of South African private practices, it was found that the sample consisted of 30% low back pain, 46.7% neck pain (with/without radiation) and headaches, 7% mid-back pain, 11.1% extremities (3.9% upper, 7.2% lower), and 4.4% maintenance treatment (Mahomed 2007). In comparison with international studies, South Africa follows the trend of spinal complaints (especially neck and low back) being the most common areas of complaint. It is, however, different from most of the European

studies as well as Mootz *et al.* and Hurwitz *et al.* (done in the USA) in that neck complaints form a larger proportion than low back complaints (Mahomed 2007; Leboeuf-Yde *et al.* 1997; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002a). The RSA private practice statistics are in similar to Coulter and Shekelle's study in the USA, with neck complaints being the most common complaint (Coulter and Shekelle 2005). When reviewing the statistics gained in prevalence studies of local populations (Van der Meulen 1997; Docrat 1999; Ndlovu 2006; Slabbert 2010; Muchna 2011; Dyer 2012), the patients at DUT CTC present with complaints (Drews 1995) that more closely resemble the prevalence of neck and low back pain reflected by the local population than the statistics that are reflected in private practices (Mahomed 2007).

2.13.7 Duration of presenting complaints

The period of time a patient suffers from a condition before seeking treatment is relevant to the diagnosis and treatment of that condition, as chronicity is suggestive of certain conditions and usually proportional to time taken to recover once treatment has been initiated (Waalén *et al.* 1994; Hurwitz *et al.* 1998). An increased percentage of chronic complaints presenting to a chiropractic clinic can be seen as a lack of integration into the local community as well as a lack of integration of chiropractic into the healthcare system (Hartvigsen *et al.* 2002b; Holt and Beck 2005).

Of the international studies that were conducted in chiropractic private practice, most showed that patients tended to present in the acute phase of their condition (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005). Only in Holland were patients more likely to present in the chronic phase (Rubinstein *et al.* 2000).

A study in Denmark found that, over 3 years, patients presented with more acute complaints (increased to 64% acute complaints) (Hartvigsen *et al.* 2002b). This may have occurred due to greater public awareness of chiropractic or because referrals to chiropractors significantly increased - especially from general practitioners (GP's) (Hartvigsen *et al.* 2002b). In contrast, a 2007 study performed in South Africa showed that only 28% of patients presented in the acute phase of their complaint (Mahomed 2007).

Studies performed in CTC's internationally have generally shown that patients are less likely to present in the acute phase than private practice patients - the proportion of patients presenting in the acute phase ranged from 20 – 36% (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Martinez *et al.* 2009). This is markedly lower than the range of 49 – 64% seen in private practice (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Hartvigsen *et al.* 2002a; Coulter and Shekelle 2005).

Drews found that the majority of patients attended the CTC in the chronic phase (more than 12 weeks) during 1994. She suggested that this was because chiropractic was not the first choice of healthcare consulted for the complaint (68% had consulted another practitioner first), which was the reason also given in a 2007 study in South African chiropractic private practice (Drews 1995; Mahomed 2007). Data obtained via national survey showed that between 1994 and 2007, a significantly larger proportion of patients with chronic conditions attended private practice (Drews 1994; Mahomed 2007). It is unknown at this time whether the DUT CTC has experienced a similar change in the chronicity of presenting complaints.

2.13.8 Summary of demographics measured in this study

Studies show that chiropractic teaching clinics are different entities to chiropractic private practice. The demographics that present to teaching clinics are different to the demographics that present to chiropractic private practice and as such the findings from studies of private practices cannot be assumed to be true for teaching clinics, and as such teaching clinic need to be assessed and studied as separate entities.

2.14 Summary

As many social and economic changes have occurred in RSA, the population that presents to the DUT CTC may have changed. This may have led the DUT CTC to adapt to the needs of the possibly changing demographic characteristics of the patients who attend the CTC for chiropractic care. It is therefore necessary for these variables to be measured in order for an accurate and current assessment of the DUT CTC to take place.

CHAPTER THREE

METHODS AND MATERIALS

3.1 Introduction

This chapter describes and explains the methods used in this research study. It includes the study design, sampling method, inclusion/exclusion criteria, full data collection procedure, data collection tool and statistical methods used to analyse the resultant data.

3.2 Study design

This study is a descriptive, retrospective, cross sectional survey (Polgar and Thomas 2008). The research was approved by the Faculty of Health Sciences Research and Ethics Committee (REC 23/12) indicating that the research protocol satisfied the ethical requirements set out by the Faculty of Health Sciences Research and Ethics Committee, Durban University of Technology as well as the Declaration of Helsinki (Johnson 2005).

3.3 Sample

Data were collected from the CTC patient records of new patients attending the CTC for the first time in the months of February, March and April for the years 2000, 2006 and 2011, in accordance with the views of Hammond (2012) in email correspondence. These months were chosen to match the months chosen by Drews (1995) to prevent any fluctuations in data that may occur over the course of a given year. The year 2011 was chosen to reflect the most recent data available, and 2000 and 2006 were chosen to equate to roughly equal time intervals between 2011 and 1994.

3.4 Sample size

The sample size was determined by estimating (using new patient files per year) that there were 500 new patients for each year under review (total new patients

presenting to the DUT CTC in the months of February, March and April) (Jaman 2007).

Three years were being reviewed in the study (2000, 2006 and 2011) and compared to data from 1994. The sample for the study was 1693 new patients from the 3 years under review and 162 new patients from Drews' (1995) 1994 data, therefore the total sample for this study was 1855 new patients from the 1994, 2000, 2006 and 2011 samples.

3.5 Sampling procedure

All files of all new patients attending the CTC for the first time in the aforementioned time-frames (the months of February, March and April in the years 2000, 2006 and 2011) were drawn from the file storage in the DUT CTC.

3.6 Sample characteristics

To be included in the study, the files had to meet the following criteria:

3.6.1 Inclusion criteria:

1. The study was limited to all new patient files opened in the months of February, March and April in the years of 2000, 2006 and 2011.
2. Initial consultation paperwork had to be included (informed consent form, patient information form, SOAPE note, case history, physical examination and regional examination forms).

3.6.2 Exclusion criteria:

1. New patient files opened for clinical research studies
2. Files that were opened previously but the patient had only returned after six months which, according to DUT CTC regulations, require new patient paperwork to be completed (these patients are not considered new patients in this study as this was not their first visit to the clinic).

3.7 Procedure

Permission to conduct the research was granted under reference number REC 23/12. A list of all file numbers (names not included) opened during the review

periods were obtained from the clinic administrator. Permission for access to the files was granted by the Head of Department. The appropriate files were drawn from the locked DUT CTC file storage units as they are currently stored in the locked clinic practical room (MS140) due to renovations currently underway on the DUT CTC. Though the files were locked in storage, they were accessible to the researcher as permission was obtained. The researcher retrieved the files from storage or filing system, and transported the files to the Part-Time Lecturer's office in the chiropractic department. The researcher then assessed whether the files were fit for inclusion: they had to have been opened in the appropriate review period, the initial visit paperwork had to be present (informed consent form, patient information form, SOAPE note, case history, physical examination and regional examination forms), and they could not be clinical research patients. The data from the included files were collected by the researcher within the confines of the DUT premises (the Part-Time Lecturers office).

1. The data were transferred onto a pre-constructed form (Appendix A) which was based around Drews' original study. This acted as the data collection tool during the pilot study. Data was subsequently collected and typed onto a Microsoft Excel spreadsheet version of the data collection tool.
2. The information gathered included: age, gender, occupation, ethnicity, medical aid subscription, main presenting complaint, and duration of main presenting complaint.
3. Files with missing data had that variable noted as 'missing' so as to prevent any selection bias (Polgar and Thomas 2008)
4. Data was then sent to the research statistician and statistical analysis took place, which was confirmed via email by Hammond (2012)
5. To ensure confidentiality, only the researcher, the research supervisor and the research statistician had access to the completed data collection sheets. The files were locked in a Part-Time Lecturer's office during the study period.

3.8 Research tool

The data collection tool was based on the variables used in Drews (1995) study in 1994. The variables were selected to meet the objectives of the research study while utilising information included in the patient files at the DUT CTC (Appendix A). This ensured data could be reliably compared.

3.8.1 Pilot study

A pilot study was performed in order to assess the data collection tool for feasibility i.e. are all variables collected in a manner that is simple and will produce the best data (Polgar and Thomas 2008; Baumgartner et al. 2002). This ensures that the study is feasible and the data obtained is reliable (Polgar and Thomas 2008; Baumgartner et al. 2002). A pilot study was recommended by Hammond in email correspondence (2012) and an expert group (also known as a focus group) was deemed unnecessary. 50 files for each of the years reviewed were randomly drawn and the relevant data collected using the data collection sheet. It was noted after the pilot study that converting the hard copies into a Microsoft Excel spreadsheet was very time-consuming, and so the decision was made to collect the data directly onto the Excel spreadsheet.

3.9 Statistical analysis

Statistical analysis was performed on the data using the SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). According to email correspondence with Hammond (2012), analysis included descriptive analysis of variables measured (percentages, frequencies, mean, standard deviation, range), and time-based comparisons using Pearson's chi squared tests (all under the recommendation of the research statistician).

3.10 Ethical considerations

The considerations in this study centred on patient confidentiality and informed consent. Confidentiality was ensured by the following: all patient files were recorded by a unique number; no patient names were recorded; the researcher and research supervisor both signed confidentiality statements. Consent to access the patient files for research purposes is included in every Informed Consent form signed by the patient and/or their guardian that received treatment at the DUT CTC. However, under recommendation from the Faculty of Health Sciences Research and Ethics Committee, signs were placed in and around the DUT CTC stating the intent of the research and inviting the patients, should they wish, to rescind access to their files for research purposes (Appendix C).

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the results obtained from this study and compares them with the results collected from Drews (1995) findings. The data was analysed using SPSS version 19 (SPSS Inc., Chicago, Illinois, USA) and Pearson's chi square tests. Data was considered significant when $p < 0.05$.

Data is presented using frequency tables and bar graphs. Descriptive statistics such as frequencies and percentages were used for categorical data; range and mean were used for quantitative data where available.

Primary data consisted of the original documents from the patient files and the data collection tool used to collect the information. Secondary data consisted of the data summaries created from the primary data, and the statistical analyses performed and documented.

4.1.1 Abbreviations

e.g.	example
n	number
p	p -value
<	less than
>	greater than
%	percent
vs.	versus
yrs	years

4.2 The Results

4.2.1 Number of patients

The new patients presenting to the DUT CTC during the sample periods are listed in the table below. The data ranges from 162 – 629 patients with the year 2000 having the highest number.

Table 1: Number of sampled patients per year

Year	Number of patients
1994	162
2000	629
2006	391
2011	291

Table 2: Number of patients per year including research patients

YEAR	TOTAL FILES	%	RESEARCH	%	SAMPLE	%
2000	762	100	133	17%	629	83%
2006	527	100	136	26%	391	74%
2011	404	100	113	28%	291	72%

A distinct trend of reduced numbers in patients is observed between 2000 and 2011.

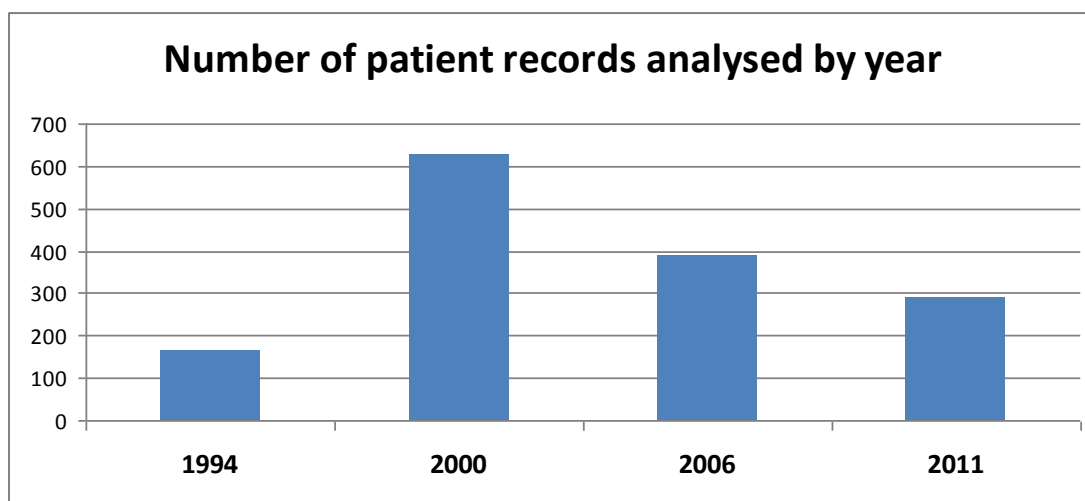


Figure 1: Number of patients per year

4.2.2 Age

Age in the samples ranged from 2 weeks to 89 yrs, with the mean of 37.03 yrs in 2000, 39.76 yrs in 2006 and 37.8 yrs in 2011. The percentages of each age group per year are summarised in Table 3.

Table 3: Age groups per year

	0-10yrs	11-19yrs	20-29yrs	30-39yrs	40-49yrs	50-59yrs	60-69yrs	70-79yrs	80+yrs	not filled in
	%	%	%	%	%	%	%	%	%	%
1994	0.0	14.2	32.1	20.4	12.3	9.3	6.8	4.3	0.0	0.6
2000	1.7	10.7	31.0	16.2	14.8	13.2	8.1	4.0	0.3	0.0
2006	0.3	5.9	27.1	18.9	15.3	20.7	9.0	2.3	0.5	0.0
2011	0.3	11.0	28.9	16.8	16.5	15.8	6.2	3.8	0.7	0.0

When viewing the graph below and on Pearson's chi square testing, 2006 was noted to have significantly fewer in the 11-19yrs group and significantly more in the 50-59yrs group ($p < 0.05$). Between 1994 and 2006, fewer patients in the 10 – 19yrs and 20 – 29yrs groups were seen and a greater number of patients aged 30 – 59yrs was seen. This trend is reversed between 2006 and 2011.

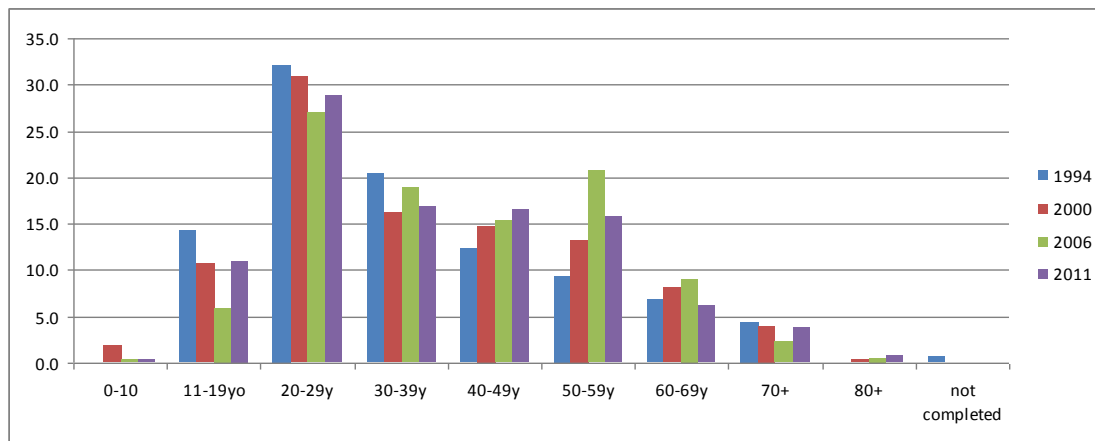


Figure 2: Age groups per year

4.2.3 Gender

The percentage of males per sample was 49.5% in 2000, 48.8% in 2006 and 49.1% in 2011. Per sample, females made up 50.5% in 2000, 51.2% in 2006, and 50.9% in 2011.

No significant changes were noted in gender demographics over the years under review ($p < 0.05$).

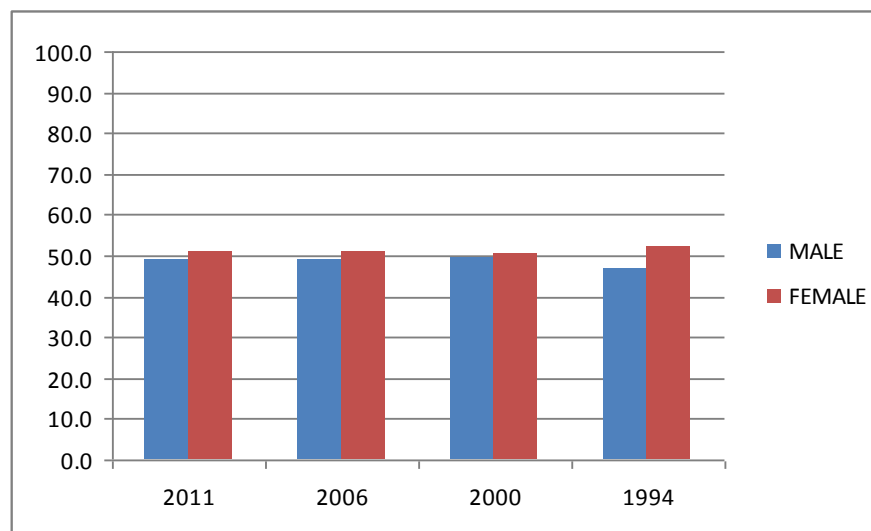


Figure 3: Gender distribution per year

4.2.4 Ethnicity

A greater number of White patients attended the clinic in the years sampled, with the Indian population consistently second largest. The data is summarised below.

Table 4: Ethnic distribution per year

	Black	Coloured	Indian	White	
2000	6.4	2.2	27.2	64.2	100.0
2006	10.2	2.6	40.9	46.3	100.0
2011	15.8	0.7	34.0	49.5	100.0

The findings indicated that in 2000, significantly more White patients were seen ($p<0.01$). In the same year of 2000, significantly fewer Indian patients ($p<0.05$) and Black patients ($p<0.01$) attended the DUT CTC. In 2006, significantly more Indian patients were seen ($p<0.05$) and significantly fewer White patients were seen ($p<0.05$). The findings show that Black patients formed an increasing percentage of the patients attending the CTC over time. This is shown in figure 4.

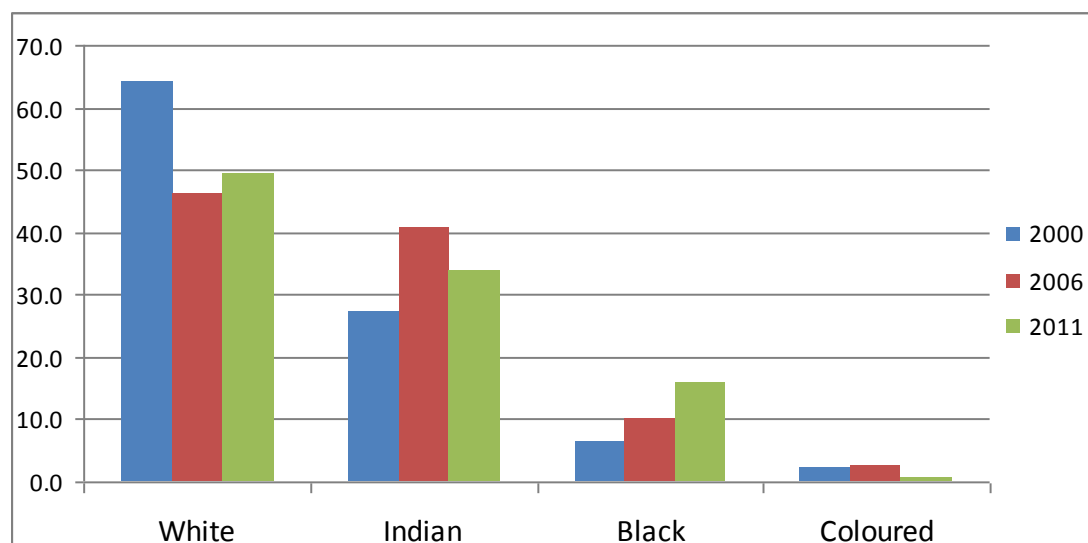


Figure 4: Ethnic distribution per year

4.2.5 Occupation

Predominantly over the reviewed years, the two largest groups were Students (range of 19.7-26.8%) and Clerical (range of 17.0-23.0%). Sales professions were the third most common occupations (range of 11.0-15.1%). The data is grouped by occupation and summarised in Table 6.

Table 5: Occupation distribution per year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
1994	3.7	11.1	30.2	1.9	3.1	4.9	4.9	1.9	13.0	14.2	3.1	8.0
2000	7.6	10.3	19.7	7.5	1.4	5.2	12.2	4.1	17.0	5.9	5.2	3.7
2006	7.2	10.5	14.8	11.5	0.0	5.4	15.1	3.6	22.3	3.6	4.1	2.0
2011	6.9	8.2	26.8	6.9	0.3	5.2	11.0	2.4	23.0	3.4	4.1	1.7

In 2011, significantly more students were seen than in the other samples ($p<0.05$). Another notable variable seen was that in 1994, significantly more executives were seen and fewer manual labourers were seen ($p<0.05$).

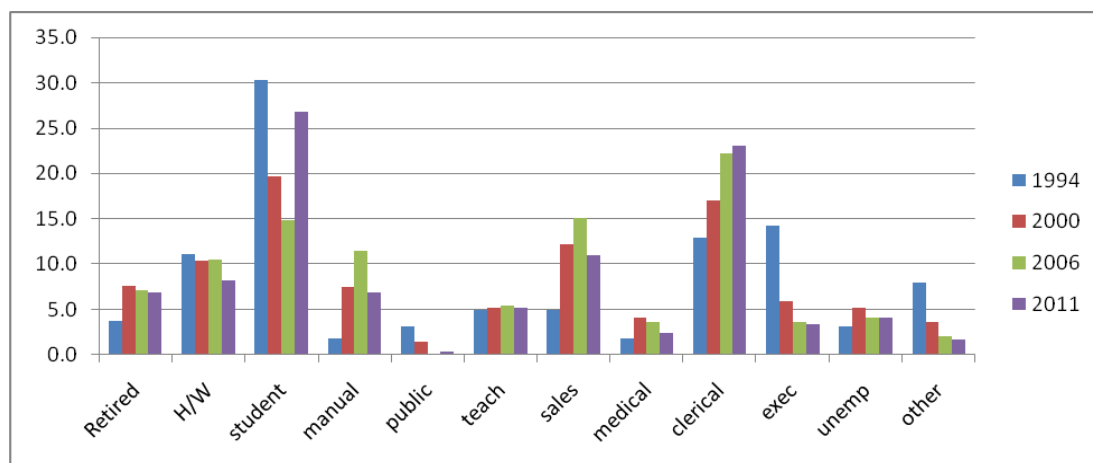


Figure 5: Occupation distribution per year

4.2.5.1 Gender vs. Occupation

When gender and occupation were compared for trends, no significant results were obtained. It was noted that female patients were most likely to be students (15.0-28.6%), clerical workers (19.9-22.4%) or housewives (15.6-20.5%). Housewives were exclusively female, and teachers and medical professionals were more likely to be female. Unfortunately, a data breakdown for 1994 was not available, so is therefore excluded from this comparison.

Table 6: Female occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	6.3	20.5	21.5	3.2	0.9	5.7	8.8	6	19.9	1.6	3.8	1.9
2006	7	20.5	15	7.5	0	7.5	10	5.5	20.5	1.5	3.5	1.5
2011	5.4	15.6	28.6	3.4	0.7	7.5	5.4	4.1	22.4	0.7	4.8	1.4

Male patients were most commonly employed in clerical work (14.1-24.1%), were students (14.7-25.0%) or were employed in sales (15.8-20.4%). Manual workers and executives were predominantly male.

Table 7: Male occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	9	0	17.7	12	1.9	4.8	16	2.3	14.1	10	6.8	5.5
2006	7.3	0	14.7	16	0	3.1	20	1.6	24.1	5.8	4.7	2.6
2011	8.3	0.7	25	10	0	2.8	17	0.7	23.6	6.3	3.5	2.1

4.2.5.2 Ethnicity vs. Occupation

When ethnicity and occupation were compared, no significant trends were identified. However, White patients were most likely to be in clerical professions (19.1-23.2%), were students (18.1-25.0%) in sales professions (11.8-17.1%). Unfortunately, a data breakdown for 1994 was not available, so is excluded from this comparison.

Table 8: White occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	8.7	6.9	18.1	4.5	1	5.9	14	4	19.1	7.7	5	5.2
2006	6.6	5.5	18.8	9.4	0	4.4	17	4.4	23.2	3.9	3.3	3.3
2011	9.7	4.9	25	4.9	0	6.9	12	2.8	21.5	4.9	5.6	2.1

Indian patients were most likely to be in clerical professions (13.5-27.3%), housewives (17.2-20.5%) or students (8.1-19.3%). The percentage of Indian patients that were in clerical professions also increased between 2000 and 2011 from 13.5% to 27.2%.

Table 9: Indian occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	4.7	20.5	19.3	13	2.9	3.5	8.2	4.1	13.5	3.5	5.8	1.2
2006	8.1	18.1	8.1	8.1	0	5.6	18	2.5	21.9	4.4	4.4	1.3
2011	3	17.2	18.2	8.1	0	3	13	2	27.3	3	3	2

Black patients were most likely to be students (25.0-52.2%), manual workers (10.9-32.5%) or in clerical professions (12.5-19.6%). The percentage of Black patients in clerical professions increased from 12.5% in 2000 to 19.6% in 2011.

Table 10: Black occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	7.5	2.5	37.5	13	0	7.5	10	5	12.5	0	5	0
2006	7.5	2.5	25	33	0	10	0	2.5	15	0	5	0
2011	4.3	0	52.2	11	0	4.3	4.3	2.2	19.6	0	2.2	0

The population for Coloured patients was too small for any trends to be assessed.

Table 11: Coloured occupation distribution by year

	Retired	Housewife	Student	Manual	Public service	Teachers	Sales	Medical	Clerical	Executive	Unemployed	Other
	%	%	%	%	%	%	%	%	%	%	%	%
2000	14	7.1	21.4	14	0	0	14	7.1	14.3	0	7.1	0
2006	0	10	10	20	0	0	0	10	40	0	10	0
2011	50	0	0	0	50	0	0	0	0	0	0	0

4.2.6 Medical Aid

The proportion of patients with medical aid decreased from 56.2% in 1994 to 41.6% in 2011. The lowest proportion was seen in 2006 (36.8%). Data is summarised in Table 13.

Table 12: Medical aid subscription per year

YEAR	Yes		No		Not completed	
	n	%	n	%	n	%
1994	91	56.2	66	40.7	5	3.1
2000	276	43.9	353	56.1	0	0.0
2006	144	36.8	247	63.2	0	0.0
2011	121	41.6	170	58.4	0	0.0

The data show that the percentage of patients with medical aid decreased between 1994 and 2006. In 1994, a significantly higher percentage of patients had medical aid ($p<0.05$), with patients in 2006 having the lowest percentage (36.8%) with medical aid.

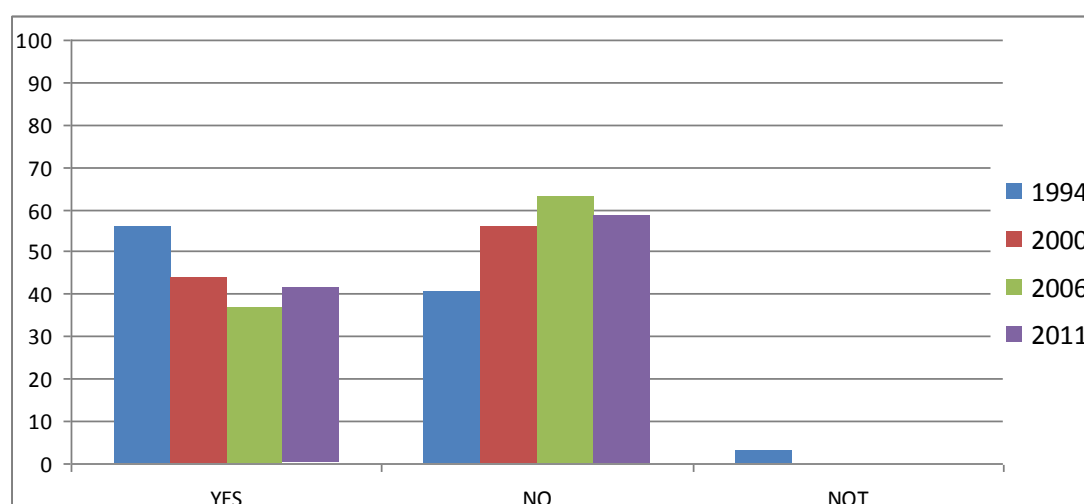


Figure 6: Medical aid subscription per year

4.2.7 Duration of main complaint

In terms of time, an acute complaint was considered to be one that is less than 4 weeks, a sub-acute complaint between 4 and 12 weeks, and a chronic complaint more than 12 weeks. Chronic complaints formed the greatest proportion in all years reviewed (range of 45.8-61.7%). The second largest group was for acute complaints. Data is summarised below.

Table 13: Duration of complaint by year

	Acute	Chronic	Sub-acute	Not completed	TOTAL
1994	22.2	61.7	9.9	6.2	100.0
2000	33.2	52.9	13.8	0.0	100.0
2006	32.2	45.8	22.0	0.0	100.0
2011	25.1	51.2	23.7	0.0	100.0

A trend of increasing sub-acute complaints can be seen in Figure 7. Chronic complaints are also seen to decrease between 1994 and 2006.

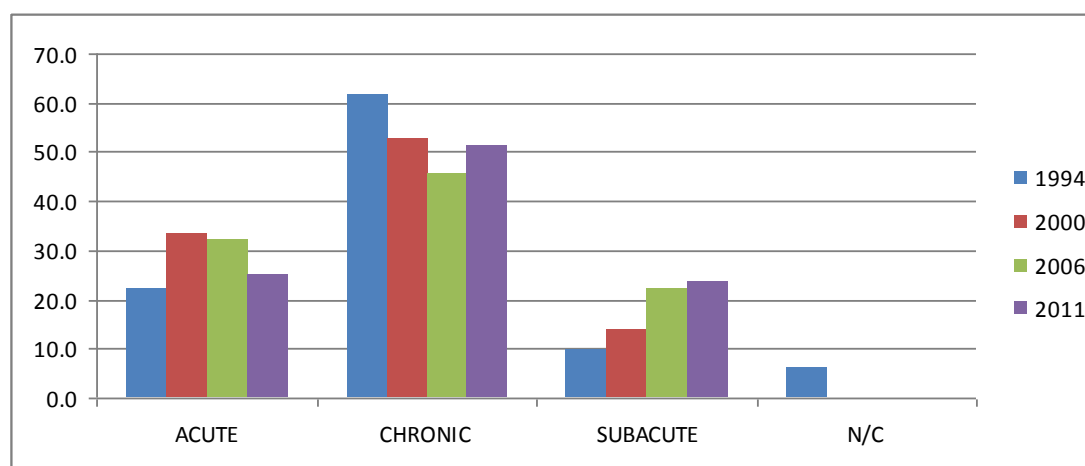


Figure 7: Duration of complaint per year

4.2.8 Main presenting complaint

Due to a difference in the methods used to capture data, the main presenting complaints for 1994 could not be included in the comparison. The top three complaints in each year were: in 2000, low back, neck/head, and ankle; in 2006, low back, neck/head, and mid-back; in 2011, low back, neck/head, and knee. Low back complaints formed the largest proportion in each year (30.7-40.7%). The most common upper limb region seen was the shoulder (4.6-6.8%). The hip was the least common presenting complaint of all the lower limb complaints (1.3-3.7% of complaints).

Table 14: Main presenting complaint distribution per year

YEAR	2000	2006	2011
	%	%	%
Neck/head	29.3	33.8	27.8
Midback	8.3	9.7	7.2
Low back	30.7	40.7	35.7
Shoulder	6.8	4.6	6.2
Elbow	0.8	1.5	0.7
Wrist	2.2	1.3	0.7
Hip	3.7	1.3	3.4
Knee	7.9	3.1	8.9
Ankle	9.2	3.6	7.9
Other	1.1	0.5	1.4
TOTAL	100	100	100

Spinal conditions formed the majority of the main presenting complaints in all three years reviewed (68.2-84.1%), with lower limb complaints forming the second largest percentage in all three years.

Table 15: Main presenting complaint distribution per year: spinal vs. Extremities

YEAR	2000	2006	2011
	%	%	%
ALL SPINAL	68.2	84.1	70.8
UPPER LIMB	9.9	7.4	7.6
LOWER LIMB	20.8	7.9	20.3

Significantly fewer ankle complaints and knee complaints were seen in 2006 compared to other years ($p<0.01$). In 2006, significantly more spinal complaints ($p<0.05$) and fewer lower limb complaints ($p<0.01$) presented to the DUT CTC when compared to 2000 and 2011. During 2000, patients attending the DUT CTC presented with a greater percentage of lower limb complaints than other years ($p<0.05$).

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter shall discuss the results of this study with regards to the existing data in relation to the DUT CTC, South African chiropractic private practice, as well as international chiropractic teaching clinics and private practices.

5.2 The characteristics

5.2.1 Number of patients

In Drews (1995) study of 1994, it was seen that the presenting patients increased from 1994 to 2000. The 1994 number of patients represents the first few months of the clinic opening. There was a relatively low number of 162. This can be expected as there was probably a lack of public exposure with the clinic being new. When reviewing the number of patients that presented during the study periods in 2000, 2006 and 2011, a trend of declining numbers can be seen. The number of research patients seen has not significantly increased as seen in Table 2; therefore, the decrease in new patients is unlikely to be a result of patients taking part in research studies in place of seeking regular treatment.

According to Gaumer *et al.* (2002), there are a number of possible barriers that may prevent patients presenting to the clinic, and these include issues with accessibility, financial difficulty, lack of knowledge, and/or the chiropractic profession's integration into the healthcare framework. Firstly, poor accessibility for the population – the clinic is on a university campus (one that has seen several violent protests in recent years – but only 2 weeks of a year and none this year) and may be perceived as inaccessible (or unsafe). Another issue is financial difficulties of potential patients – patients may be unwilling or unable to pay for treatment, or may feel that if they are going to be paying for chiropractic services that they would prefer private care. There may be a lack of knowledge and an incorrect perception of chiropractic by the

population and general practitioners, which may include being unaware of what conditions can be treated, the effectiveness of treatment, or the legitimacy of the profession as a whole. Another barrier may be an inability to advertise services due to legal constraints – this makes it difficult for the DUT CTC to market itself in the community, with a resultant lack of growth. Lastly, a lack of integration into the healthcare system with resultant lack of referrals may be stunting any growth as patients are not made aware of services available (and more cheaply at the DUT CTC) by their existing primary healthcare practitioners.

5.2.2 Age

The mean age of the sample ranged between 37.03 yrs in 2000 to 37.8 yrs in 2011. This is comparable to the 1994 data from Drews in which the mean age was 37yrs. This range over the time period reviewed has not shown much variation, and as such the target population can be said to be consistent in terms of age. The largest age group was the 20 – 29yrs group across all samples, with the 30 – 39yrs group often being second largest. The number of patients in each age group is similar to the age distribution of the local population, which is unusual as health complaints tend to increase with age (Kirkaldy-Willis 1992).

The average age is lower than the majority of international private clinics, which range in mean age from 40 – 46yrs (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005). Similarly, in a 2007 South African study of private practices, the mean age was 41.8yrs (Mahomed 2007). The results of this study are similar to studies of teaching clinics in the USA and Australia, whilst being significantly higher than studies in Canada and New Zealand (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Bryant *et al.* 2003; Holt and Beck 2005). Most of these teaching clinics show the 20 – 29yrs group to be the highest proportion of patients, which can be explained by the locations of the clinics (close to student populations) and a significant proportion of the referrals resulting from the student interns recruiting their peers (Nyiendo *et al.* 1989; Hurwitz *et al.* 1998).

The sample age ranged from 2 weeks old to 89yrs, and this broad range is consistent with international private practice and teaching clinics (Walsh 1992; Waalen *et al.*

1994; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000). This broad range supports the argument for student interns to be adequately prepared for both paediatric and geriatric cases (Holt and Beck 2005).

The trend towards a reduction of the number of younger patients presenting to the DUT CTC between 1994 and 2006 is consistent with the reduced percentage of students presenting to the clinic (students are generally relatively young). This remains the case when the percentage of students increased in 2011, along with an increase in the percentage of young patients. This trend may also indicate the clinic reaching a greater acceptance amongst the community, with a larger number of older patients becoming aware of chiropractic and/or the DUT CTC. An increasing population of older patients would increase the number of degenerative conditions that would be seen (Kirkaldy-Willis 1992) which are more likely to be chronic (this is supported by the measured change in chronicity), as well as affect the consultation as perception of pain and health changes with age (Cockenham *et al.* 1982).

5.2.3 Gender

The proportion of female patients ranged from 50.5 – 51.2% between 2000 and 2011, which is consistent with Drews' (1995) findings (52.5%). There was very little change in gender distribution of patients attending the DUT CTC over time, with a consistent, almost equal distribution. This distribution pattern is very similar to the gender distribution of the population in the area (Lehohla 2012). Compared to international private practice, this represents a lower proportion of female patients (Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005; Mootz *et al.* 2005). When compared to the South African private practice figure of 62.6% female, it is considerably lower (Mahomed 2007). According to Popenoe *et al.* (1997), as cited by Higgs (2009), statistics show that women are more likely to notice signs of illness and seek treatment, possibly explaining the larger female preponderance in private practice. The differences between private practice gender distribution and DUT CTC may lie in the presenting complaints – private practices typically see more neck/head complaints, which have been shown to present more commonly in females (Venketsamy 2007; Slabbert 2010). Conversely, low back complaints present slightly more frequently in males (55% of cases), which

constitutes the main presenting complaint at the DUT CTC (Jaman 2007). This may have the effect of balancing the gender distribution at DUT CTC.

The results from this study are consistent with the majority of international teaching clinics, which show a tendency towards an almost equal or slightly higher female populations, but with markedly smaller differences than private practice (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Holt and Beck 2005).

5.2.4 Ethnicity

The White population was consistently the largest proportion over all samples, with the Indian population being the second largest. This stands in contrast to the ethnic demographics of the greater Durban population, in which the Black population is the largest (Lehohla 2011). Of the few international studies that have looked at ethnicity, most have found their samples to be roughly consistent with the local population (Coulter and Shekelle 2005; Mootz *et al.* 2005). The difference in data in this study from standard trends may be explained by certain factors: the high perceived cost of chiropractic leading to only the more affluent populations using chiropractic services; the low per capita income and unemployment rate (Lehohla 2011) of Black populations compared to other population groups may make it more unfeasible for Black members of the community to afford treatment; and finally, the student intern population being mostly White and Indian which may affect the referrals to the clinic – patients tend to see a healthcare practitioner of the same ethnic group as them, and a significant number of referrals to the clinic may come from the student interns themselves (Nyiendo *et al.* 1989; Mahomed 2007). The data stands in contrast to a statement by Manga (2000) that ethnic minorities are less likely to utilize chiropractic care.

When the data from this study is compared to 2007 national data, it is noted that, while the proportions are consistent (with White being the largest, Indian second largest), the DUT CTC data more closely represents the local ethnic demographics (Mahomed 2007; Lehohla 2012). It was also noted by Mahomed (2007) that White patients tend to see White chiropractors and Indian patients tend to see Indian chiropractors – this may affect the patient demographics at the DUT CTC because if

there are not many Black student interns, Black patients may be deterred from attending the clinic (the 5th year class of 2010 had only one Black student intern).

A trend was noted over the sampled period that an increasing percentage of Black patients presented to the clinic. This may be explained by a larger proportion of Black DUT students and staff that are attending the clinic, increased awareness of the DUT CTC and chiropractic amongst the local community (of which the majority is Black), or the increasing popularity of chiropractic in general in RSA. As Black South Africans represent the largest proportion of the South African population, this can be seen as a positive sign with regards to chiropractic's acceptance in South Africa. If chiropractic gains acceptance with the different population groups in South Africa, especially the majority groups, it will be of more value to the healthcare system. It must be said that the lack of Black chiropractic student interns may inhibit the DUT CTC's ability to attract Black patients as Black patients may prefer care from someone of the same ethnic group due to cultural or language reasons. The same can be said for chiropractic private practice. An increased focus on the health and socioeconomic needs (e.g. language) of Black patients may increase the popularity of the clinic and the chiropractic profession as a whole (Mahomed 2007).

5.2.5 Occupation

The three largest groups in the 2000, 2006 and 2011 samples were students, clerical professionals and sales professionals. In 1994, the three largest groups were students, clerical professionals and executives (Drews 1995). This can be explained by the location of the clinic leading to greater utilization by students. The large number of clerical and sales professionals may be due to these professions being common in the community. In the South African population, manual and public services are the largest professions (Lehohla 2011). The larger number of executives in Drews' sample compared to this study may be explained by the clinic being newly opened when the Drews study was done – this may have led to a greater proportion of executives attending due to direct student referral, or the proportions may have been affected by the undocumented ethnic proportions of patients presenting to DUT CTC (White populations are more likely to be in executive positions (Lehohla 2011)).

Comparing this data to international observations is difficult due to the many different ways that occupations can be categorized. The proportion of unemployed serviced by the DUT CTC is similar to those seen in teaching clinics in Canada and Australia as well as private practices in Sweden and Holland (Walsh 1992; Waalen *et al.* 1994; Leboeuf-Yde *et al.* 1997; Rubinstein *et al.* 2000). The number of students seen at DUT CTC is also similar to teaching clinics in Canada and Australia (Waaen *et al.* 1994; Bryant *et al.* 2003). The patient population is also similar to the majority of international clinics in that the patients tend to be in non-manual professions.

Compared to South African private practices, DUT CTC sees considerably more students while private practice sees greater numbers of executives and clerical/liberal (e.g. lawyers) professionals (Mahomed 2007). This may be explained by the location of DUT CTC being more convenient to students, and the more affluent executives and clerical/liberal professions being more likely to attend private practice as apposed to a teaching clinic. The DUT CTC and private practices see comparatively similar numbers of retirees, housewives, teachers, sales professionals and manual/artisanal workers. With national unemployment at 25%, it is apparent that the unemployed are significantly under-serviced by the DUT CTC (as well as private practice). This is most likely due to financial reasons (Manga 2000).

When the samples of 1994, 2000, 2006 and 2011 are reviewed for trends occurring over time, it can be seen that progressively greater numbers of clerical, sales and manual/artisanal professionals have presented to the clinic. Simultaneously, the proportion of students decreased, apart from the 2011 sample which showed a significantly increased proportion of students. This mirrors the trend seen in age between 1994 and 2011. The usage of the DUT CTC by non-students in the area increased between 1994 and 2006, but then began to regress from 2006 to 2011. The decreasing percentage of students and increasing non-students shows increased usage of the DUT CTC by the local Durban community, which shows that the clinic became more integrated in this community.

The reduced usage by non-students from 2006 to 2011 means that fewer members of the community used the clinic while the number of students stayed relatively constant. There are a number of possible explanations: either the community is increasingly using private practice instead of DUT CTC, the community finds the cost of care at DUT CTC unacceptable in light of recent financial difficulties, or the

location of the clinic is deemed increasingly inaccessible to the community. This reduced accessibility may be the result of the student strikes at DUT in recent years and a related perception that the clinic is unsafe. This, coupled with the inability of the DUT CTC to advertise due to legal constraints, may have reduced any growth that would be possible via word-of-mouth or otherwise. Perception studies into the usage of the clinic by the community would further elucidate the issue.

5.2.5.1 Occupation vs. Gender

While no significant changes over time were noted, females were most likely to be students, clerical workers or housewives. Males were most likely to be clerical workers, students or sales professionals. Males were also more likely to be manual laborers and executives than women, whereas females were more likely than males to be teachers or medical professionals. The differences in gender distribution amongst different professions may explain these findings e.g. housewives are only females by definition. The trend of females being more likely to be students correlates with the trends seen in the overall occupation distribution, as well as the fact that the chiropractic student population has a female majority and forms a significant number of the students seen at the DUT CTC. Compared to national statistics on gender distribution amongst occupations (Lehohla 2011), the differences in profession seen between genders are relatively similar.

No other studies have been undertaken to show the statistics on the relationship between occupation and gender in chiropractic practices, so no comparisons can be made with other teaching clinics or private practices.

5.2.5.2 Occupation vs. Ethnicity

When looking at the relationship between occupation and ethnicity, it is seen that White patients are most likely clerical workers, students or sales professionals which is similar to the overall occupational distribution in this study as well as national statistics (Lehohla 2011). White patients are more likely to be clerical workers than students, which differs from the overall occupational distribution – this may be

explained by the different ethnic proportions of the occupational groups in the community i.e. clerical professionals are more commonly White, therefore it would be reasonable to expect a similar trend attending the DUT CTC. Indian patients, however, are more likely to be clerical workers, housewives or students. Indian patients – if female - are twice as likely to be housewives compared to the rest of the ethnic groups. It can also be seen in Table 10 that an increasing percentage (13.5% in 2000 to 27.2% in 2011) of the Indian sample were in clerical positions, which may show an increasing acceptance of the DUT CTC by the Indian middle-class in the area.

The Black population presenting to DUT CTC were either students, manual workers or clerical professionals, with clerical professions showing a gradual increase in proportion from 12.5% in 2000 to 19.6% in 2011. This may also show increasing acceptance of chiropractic and the DUT CTC, or it may have occurred due to increasing numbers of clerical professionals being Black due to economic empowerment of Black populations since RSA became democratic in 1994. It must also be noted that an increasing proportion of students were present in the sample which mirrors the trend seen in occupation overall. The large student contingent may be explained by the location of the clinic in relation to the DUT which has a large percentage of Black students.

5.2.6 Medical Aid

Medical aid coverage of the population attending DUT CTC has declined since 1994, dropping from 56% to 36% between 1994 and 2006 with a slight increase to 41% in 2011. Interestingly, this change correlates with the trend in the number of students presenting to the clinic, but is inversely proportional to the number of sales and clerical personnel present in the sample. This possible correlation may be explained by students being covered by parental medical aid. The high percentage of patients having no medical aid does not correlate with international studies, which show a greater proportion of patients having medical aid coverage (Hurwitz *et al.* 1998; Coulter and Shekelle 2005; Mootz *et al.* 2005).

Between 1994 and 2007, medical aid subscription rates of patients attending South African private practices increased from 75% to roughly 82% (Drews 1995; Mahomed

2007). The opposite has occurred at DUT CTC, with medical aid subscription decreasing. A possible explanation is that patients with medical aid are seeking care from chiropractic private practice instead of the teaching clinic. Another explanation is that private practice patients are tending to be increasingly affluent whereas the DUT CTC is attracting a portion of the less affluent members of the population in the area. This may be because the fees at DUT CTC are lower than private practice as the treatments are from unqualified student interns. The reduction may also be that the global recession has led a number of patients to no longer subscribe to medical aid in order to reduce their expenses.

With only 16% of South Africans subscribing to medical aid, the DUT CTC patients are twice as likely to have medical aid compared to the local community, whereas private practice patients are five times as likely. The DUT CTC therefore better represents the local population than private practice. This does, however, highlight that the population without medical aid is being under-served.

In order for the clinic to be considered an integral healthcare supplier to the community, measures must be undertaken to provide services to those without medical aid. In terms of financial sustainability, this would require either financial input from public funds (i.e. government) in order to decrease prices, or an increase in medical aid subscription such as that proposed in the National Health Insurance policy (Lehohla 2011). This would imply a greater integration into the public healthcare system which would be beneficial to both the DUT CTC and the community.

5.2.7 Duration of presenting complaint

The majority of patients between 1994 and 2011 presented to the DUT CTC in the chronic phase of their illness. Mahomed (2007) reasoned that a predominantly chronic patient presentation was explained by the observation that chiropractors are not consulted first in many cases as a result of chiropractic not being part of mainstream healthcare. This would explain why a patient's condition reached a chronic stage before presenting to a chiropractic clinic.

In contrast, the majority of patients attending chiropractors in the USA presented to the chiropractor first (Coulter and Shekelle, 2005). The majority of international private practices in Sweden, Denmark and the USA see patients in the acute phase (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Hartvigsen *et al.* 2002; Coulter and Shekelle 2005). Only in Holland and South Africa are patients more often seen in the chronic phase (Rubinstein *et al.* 2000; Drews 1995; Mahomed 2007).

A trend that is commonly seen is for patients in lower socioeconomic groups to more often present in the chronic phase of illness as they are unable or unwilling to seek treatment earlier (Manga 2000; Higgs 2009). The DUT CTC attracts lower socioeconomic groups as it is a teaching institution with discounted consulting fees, so one would expect a greater likelihood of patients attending DUT CTC to be in a chronic phase of illness. This study would therefore seem to support this assertion. Another factor that may cause more chronic patients to attend the DUT CTC is that the student interns spend longer with the patient than if they were seen in a private practice. This, in addition to the consultation being overseen by a qualified clinician, may be preferable to patients with chronic complaints as they value the more thorough and lengthy consultations at DUT CTC.

In terms of chronicity of presenting complaints, a trend was seen of more patients presenting in the sub-acute phase. Between 1994 and 2000, an increased percentage of patients presented in the acute and sub-acute phases whereas fewer chronic patients were seen. A similar change was noted between 2000 and 2006, with the proportion of sub-acute patients increasing and the chronic patients further decreasing. However, between 2006 and 2011, the number of chronic patients increased and the number of acute patients decreased – this would represent a reversal of the trend seen between 1994 and 2006. This would not be ideal as an increased chronicity of the presenting illness leads to a longer treatment and/or convalescence (Waalén *et al.* 1994). Therefore, measures should be undertaken to encourage patients to seek chiropractic treatment in the acute or sub-acute phase so as to improve health outcomes.

Hartvigsen *et al.* (2002) described an increasingly acute proportion of patients presenting to chiropractic clinics as a possible sign of increased public awareness and/or increased referrals from general practitioners and other health professionals. It could, therefore, be argued that the modest reduction in the proportion of chronic

patients represents an improvement in the awareness of the clinic, greater acceptance of chiropractic as a profession, or increased referrals from other sources. According to Mahomed (2007), the number of referrals from general practitioners to chiropractic private practice only increased from 3.7% to 5.3% between 1994 and 2007 – an almost inconsequential change which is unlikely to explain the reduction in chronicity presenting to private practice (Drews, 1995; Mahomed, 2007). Due to the low level of referrals from other healthcare professions and chronic patients forming the majority, chiropractic in South Africa cannot be considered an established part of the healthcare framework (Rubinstein *et al.* 2000; Mahomed 2007). However the data obtained from this study shows a modest improvement in the proportions of acute/sub-acute as opposed to chronic conditions presenting, suggesting that the clinic has improved its establishment in the area since 1994. Further research into mode of referral is needed to assess if increased acceptance into the healthcare referral network has occurred.

5.2.8 Main presenting complaint

Spinal conditions formed the largest proportion (68.2 – 84.1%), with low back conditions seen more commonly (30.7 - 40.7%) than neck/head conditions (29.3 – 33.8%) throughout the years under review. This makes sense as chiropractors are musculoskeletal specialists. These results correlate well to most studies of international private practices, although differences in categorization and methods of data collection make comparison imprecise (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et al.* 2002; Mootz *et al.* 2005). The trend continues in most international teaching clinic studies, though it can be seen that most teaching clinics show less of a predominance of low back complaints than private practices (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Holt and Beck 2005; Martinez *et al.* 2009). It is also worth noting that the number of non-musculoskeletal conditions (e.g. colic, sinusitis, otitis media) seen at DUT CTC is almost negligible (0.5-1.4%), which is considerably lower than the 10 – 15% of all cases estimated by the American Chiropractic Association (Hurwitz *et al.* 1998).

The number of extremity conditions (15.4 – 30.7%) is considerably larger than the proportions seen in international private practice, which range from 3 – 13% (Leboeuf-Yde *et al.* 1997; Hurwitz *et al.* 1998; Rubinstein *et al.* 2000; Hartvigsen *et*

al. 2002; Mootz *et al.* 2005). This is similar to international teaching clinics that tended to see more patients with extremity complaints than private practices – proportions ranged from 15 – 28%, with the shoulder region being the most common extremity area seen (Nyiendo *et al.* 1989; Walsh 1992; Waalen *et al.* 1994; Holt and Beck 2005; Martinez *et al.* 2009).

This may be due to chiropractors typically being known as ‘spinal specialists’ - this may lead to private practices seeing mostly spinal complaints. At DUT CTC, no emphasis is placed on spinal complaints at the expense of extremity complaints in the learning process, so this may explain why considerably more extremity cases are seen compared to private practice. Also, as previously mentioned, Martinez *et al.* (2009) suggested that this may be due to a higher number of young patients attending the clinic. They proposed that younger patients are more likely to present with a traumatic conditions – these often involve the extremities e.g. ankle sprains playing football (Martinez *et al.* 2009).

The 2006 data showed significantly fewer knee and ankle complaints. While the exact reason for this is unclear, it may be related to the fact that 5th year students are unable to take lower limb cases before April/May (Korporaal 2012). These cases are taken by 6th year students – if however, these students graduate early and no longer work in the clinic, this will mean that fewer extremity cases can be seen at the clinic.

When comparing the data obtained from this study to a 2007 study of South African private practice by Mahomed (2007), it can be seen that private practices saw significantly more neck/head complaints (47%) than low back complaints (30%) which is not the case at the DUT CTC. The DUT CTC also saw more extremity patients (15.4 – 30.7%) compared to private practice (11%). These represent notable differences in the presenting conditions seen at the DUT CTC compared to South African chiropractic private practices. The increased proportion of neck/head complaints seen in private practice may be a result of the increased female population attending private practice – females have been shown to be more likely to present with neck/head complaints (Venketsamy 2007). The lack of extremity cases seen in private practice may be a result of the perception of chiropractors as ‘spinal specialists’, whereas at the DUT CTC, with an emphasis on learning, student interns are encouraged to assess and treat all NMS complaints. The increased number of extremity complaints may also be related to the number of younger patients who may

be more likely to present with extremity complaints. It is notable that the high prevalence of neck pain compared to back pain in private practice is not representative of the prevalence of these conditions in the community – this represents a mismatch in service delivery (Lehohla 2012).

Although a difference in data categorization makes comparison with Drews' study difficult, it can be seen that spinal conditions are the vast majority with low back complaints being slightly more common than neck/head complaints (Drews 1995). Drews' findings also agreed with the international trend of extremity conditions being more commonly seen at teaching clinics compared to private practice. Compared to local trends for neck and low back complaints, the DUT CTC is similar in terms of the prevalence of these conditions which supports the idea that the DUT CTC and chiropractic as a profession has the potential to play a significant role in the public healthcare system considering the burden of disease on the country (Gaumer *et al.* 2002).

5.3 Summary

This chapter discussed each of the measured variables in relation to the available literature regarding international and local chiropractic private practices and teaching clinics. Any changes that occurred over time were also noted and discussed, with possible explanations included. The variables discussed were the number of patients, as well as the patients in terms of age, gender, ethnicity, occupation, medical aid subscription, presenting complaint and the duration of that complaint.

Chapter six that follows will conclude the discussion of this research study as well as provide recommendations for future research.

CHAPTER SIX

CONCLUSION & RECOMMENDATIONS

6.1 Conclusion

The results of this study show that the DUT CTC has experienced a decline in the number of patients presenting to the clinic since 2000. This may have been as a result of certain barriers to accessing the public: a lack of knowledge of chiropractic by the public regarding what complaints can be treated or the existence of the DUT CTC; the inability of the clinic to advertise its location or services due to regulations set out by the Allied Health Professions Act 63 of 1982 (South Africa 1982), the limited integration into the healthcare system with a resultant lack of referrals from other healthcare practitioners; and/or the public perceiving the location of the clinic as undesirable as it is in a lower priced area and there has been a recent history of violent protests on the campus. It is apparent from this study that 'word of mouth' advertising of the clinic is not effecting the necessary growth in the patient base. This may be because of the negative media coverage regarding the episodic violent protests on campus, or perhaps the perception that the services provided by the student interns are not of a sufficiently high standard. This needs to be addressed if the clinic is to continue providing public healthcare as well as adequately training the chiropractic student interns.

The ages of patients presenting to the DUT CTC are comparable to other teaching clinics worldwide, with the majority in the 20 – 29yrs and 30 – 39yrs groups. This is lower when compared to results of studies in private practice in South Africa and internationally, which may not provide the interns with enough contact to older patients. A possible reason is because of the location of the clinic being at a tertiary education facility and the age of most student interns leading to increased referrals of their peers i.e. other people their age. A broad range of ages presents to the clinic, underscoring the need for adequate paediatric and geriatric training for the chiropractic students which they receive in their 5th year. An increasing average age would lead to more degeneration-type injuries presenting to the clinic, which would require increased emphasis on these conditions in student preparation.

The gender distribution of a very slight female majority (51%) found in this study is consistent with the population in the Durban area (Lehohla 2011), as well as most international teaching clinics. This reflects adequate service delivery to both genders in the community as a healthcare provider. The results in this study are considerably lower than those found in South African private practices. This may be as a result of the perception of chiropractic on a national scale as an alternative form of healthcare (Manga 2000), which females are more likely to embrace (Mahomed 2007), and this view not being shared by the population attending the clinic. This may not provide the interns with enough experience with female patients.

In terms of the ethnic groups attending the DUT CTC, the majority of patients were White and Indian, with lower than expected representation from Coloured and Black patients with regard to the ethnic proportions of the population in the Durban area, as well as the country. This may be a result of the cost of chiropractic care (with Black populations having higher unemployment and being less likely to have medical aid), the lack of integration of chiropractic into the public healthcare framework, or that most student interns are White or Indian – this may deter Black patients due to cultural or language barriers, or this may reflect the effect of interns' referrals to the clinic. A trend of increasing usage of the clinic by Black patients shows a positive trend in terms of chiropractic integration into the South African patient base, but considerable effort must be made to increase the number of Black patients using the services at the DUT CTC if chiropractic is to play a future role in public healthcare. This may require addressing financial factors at the clinic, increasing the number of Black interns, including cultural or language training for interns, or piloting awareness programmes into Black communities.

Most patients attending the DUT CTC were students, clerical professionals or sales professionals, which is similar to most teaching clinics worldwide. South African private practice sees fewer students and a greater number of executives, which can be explained by location of the DUT CTC, the cost of care, and/or the student interns forming a significant referral base for the DUT CTC. An increasing number of non-students are noted between 1994 and 2006, but the trend has reversed in recent years. Explanations include the inability to adequately market the clinic, as well as the increased negative media exposure in recent years regarding violent strikes on and around the campus. Manual workers, public servants as well as the unemployed are under-served populations that should be encouraged to use the clinic through

possible pilot awareness programmes in the industries or through addressing financial difficulties.

The proportion of patients subscribed to medical aid has decreased over the years, with the majority having no medical aid coverage. This is opposite to the trend seen in South African private practice. This may be explained by the DUT CTC attracting mostly patients without medical aid due to lower cost compared to private practice or that it is representing the local population more accurately; it may also be due to patients with medical aid preferentially seeking treatment from private practice due to a perception of better quality of care in private practice, and/or increased coverage of chiropractic on most medical aids. With only 16% of South Africans having medical aid coverage, DUT CTC better represents the public than private practice. This shows that chiropractic care is valued by the local population, but that lack of medical aid is a factor that may deter patients from using the DUT CTC. In order to provide care to the local population, measures must be implemented to provide care for those without medical aid.

Most patients presented to the DUT CTC in the chronic phase of their complaint, which is similar to private practice. This represents a lack of integration into the healthcare system manifested by a lack of referrals from other healthcare professionals, but is also seen where chiropractic is usually not the first healthcare practitioner to see the patient (thus the patient is in the chronic phase before a chiropractor is consulted). However, a gradual trend of increasing acute/sub-acute complaints seen at DUT CTC may be representative of an increasing acceptance of chiropractic by the population as it shows that patients will utilize chiropractic services before the condition reaches the chronic stage, and possibly before other non-chiropractic healthcare professionals. If chiropractic achieves greater integration into the healthcare system it could be expected that a greater number of acute/sub-acute conditions will be presented to the DUT CTC.

With regards to presenting complaints, most cases were spinal in nature, with lower back and neck conditions being most common. This is similar to international trends (Hurwitz et al. 1998; Holt and Beck 2005). DUT CTC patients differ from private practice patients in that considerably more low back and extremity conditions are seen at the DUT CTC. This may represent a mismatch in terms of training for student interns as comparatively more neck complaints will be seen in private practice,

however, the training received by the interns does more closely reflect the population in terms of neck and low back complaints. This shows that chiropractic interns may be prepared to provide healthcare to the local population.

6.2 Limitations

The following limitations were noted in the performance and completion of this study:

- Data were based on existing patient folders, so all information was assumed to be accurate although no proof of accuracy is possible.
- In order to gain a fuller picture of patients attending the clinic, research patients should have been included (but noted as research patients) as they form a significant proportion of patients attending the clinic.
- Whether the patient received a fee reduction should have been included, including those given to students and staff.
- The study would have benefited from more regular cross-sectional samples in order to provide a more accurate trend i.e. a sample from every year.
- The sample period of February – April may have affected the data due to the timing of the university calendar as well as this period being the most common time for strikes to occur on the campus.

6.3 Recommendations

The following recommendations are made based on this research study:

- More regular data capturing of patient demographics at the DUT CTC would enhance the accuracy of changes in seen over time.
- Ethnicity and income characteristics of patients should be recorded at consultations for statistical purposes.
- Investigation as to whether the DUT CTC patient population still differs from private practice in terms of gender proportions is needed.
- Investigation into the reasons why people in the area would or would not consider attending DUT CTC would be helpful with regards to marketing the clinic.
- An updated patient profile of patients attending South African chiropractic private practice should be performed as the last survey was performed in 2007 and is now possibly outdated.
- A review of the course structure by the DUT chiropractic department may be warranted in order to focus on those complaints that will be seen in private practice more than DUT CTC (such as neck complaints).
- An extensive patient benefit survey at DUT CTC would aid the legislative bodies governing chiropractic in deciding whether increased finance at the DUT CTC would improve service delivery to the local population, and whether to include chiropractic in the public healthcare system in the future.

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Appendix A

[illegible]

YEAR	
NUMBERS	

Appendix B

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 patient profile of DUT chiropractic teaching clinic: A comparison of trends between 1994 and 2011

- 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.

_____ Mr. M.L.McDonald (Chiropractic student researcher)

_____ Date

Appendix C

Dear Sir/madam

A study is currently being conducted at the Durban University of Technology Chiropractic Day Clinic. The title of the study is:

Demographic characteristics of patients attending DUT Chiropractic Day Clinic: A comparison of trends between 1994 and 2011

The study will be utilising patient files opened in the months of February, March and April for the years of 2000, 2006 and 2011 from the clinic in order to collect epidemiological data. This information includes patient age, gender, occupation, ethnicity, medical aid, presenting condition and duration of presenting condition.

No names will be included in the data collection process and all information will be kept completely confidential. Any information collected in the study will be deleted once statistical analysis has been performed.

Should you feel that you do not want your information to be included in this study, kindly leave your name and contact information with the receptionist and we will oblige this request. Should you require any more information, kindly contact us in office hours.

Thank you for support of the DUT Chiropractic Day Clinic and research program.

Yours sincerely,

Murray McDonald (Chiropractic research student)

Contact number: 0724444113

Dr. G. Matkovich (Research supervisor)

Contact number: 0825763486

Appendix D

17 Winmure
50 Gordon Road
Morningside
Durban
4001
17th March 2012

Dear Dr G. Talmage

Re: Permission to conduct a study at DUT Chiropractic Teaching Clinic

The title of the research I have selected to perform is:

Demographic characteristics of patients attending DUT Chiropractic Day Clinic: A comparison of trends between 1994 and 2011

This study aims to identify the demographic characteristics and presenting conditions of the patients attending the CTC and to assess if changes in these variables have occurred over time and if trends are present. The study will hope to satisfy the objectives of identifying the demographics (age, gender, ethnicity, occupation, medical aid) and the presenting conditions (diagnosis and duration of most recent condition) of the patients who attended the CTC in 2000, 2006 and 2011, and then to compare the data with 1994 and identify any trends that may emerge.

This study will be a descriptive, retrospective, cross sectional survey utilising data collected from the CTC patient records of new patients that attended the clinic in the months February, March and April for the years 2000, 2006 and 2011. This will require the researcher to have access to the appropriate files currently stored in room MS 140. The research is being supervised by Dr G. Matkovich.

The researcher would therefore like to formally request that access to these files be allowed and for the aforementioned research to proceed as planned. Your approval in this matter would be greatly appreciated.

Yours sincerely,

Murray McDonald (researcher)

Appendix E

DURBAN UNIVERSITY OF TECHNOLOGY CHIROPRACTIC DAY CLINIC

CONFIDENTIAL PATIENT INFORMATION

Date:

Male/ Female:

Surname: Title:

First name: Initials:

Birthdate: I.D..number:

Occupation: Marital status:.....

Medical aid: M/A number:

Med doctor: Last visit:

Chiropractor: Last visit:

Postal address: Residential address:

.....

.....

.....

Tel - work: Tel - home:

Cell number:

Employer:.....

Employer's address:

.....

.....

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

FINANCIAL INFORMATION

The current fee schedule of the Chiropractic Day Clinic is:

<u>Student (5th Year Students)</u>		<u>Student Intern (6th Year Students)</u>	
Initial visit:	R 60.00	Initial visit:	R 80.00
Subsequent visits	R 50.00	Subsequent visits	R 70.00
All consumables (e.g. needles) : Prices are available on request at the reception desk.			

Medical Aid schemes pay in varying degrees for coverage of Chiropractic Services. This coverage is therefore medical aid dependant and we request that you check with your medical aid in this respect. **The DIT Chiropractic Day Clinic is contracted out of medical aid**, which means that we run on a **strictly cash only basis**, whereby you are requested to pay cash in advance of services rendered. You will be sent a monthly statement which you must submit to your medical aid for them to refund you directly. This statement will be sent out at the **end of each month**.

Charges are **not** applicable to **research patients**

Medico-Legal Reports:

As the Chiropractic Day Clinic is a teaching facility we are not in a position to generate any reports required for medico-legal purposes, claims that relate to injury on duty (IOD) or workman's compensation

Report of findings:

It is imperative that the student / student intern treating you explains fully your diagnosed condition, both as an educational requirement for the intern but also, **and more importantly**, such that you are able to make an informed decision about the type of treatment that you wish to receive.

Treatment options:

It is imperative that the student / student intern explains all treatment options that are available for you based on the diagnosed condition(s) that was/ were given to you in respect of the above.

Risks/Benefits:

The student / student intern must explain to your satisfaction / understanding all risks and benefits in relation to treatment of your reported diagnosis / condition(s).

As a Patient at this, the Chiropractic Day Clinic, I understand that I am attending an educational facility and I give my permission to allow observation, and if necessary the video recording of supervised examination and treatment by Doctors of Chiropractic and Interns. In addition I, as the patient note, that information generated through my attendance of the clinic, may be used for research purposes (either through my direct participation in the research or alternatively through data collected in my patient file).

By signing this form I agree that

- I understand and take full financial responsibility for consultations.
- I understand that I cannot request records for medico legal reasons.
- I understand that should I be on medical aid, that my diagnosis and treatment information will be shared for the purposes of medical aid reimbursing me according to that which I am contractually bound in terms of my medical cover (and that only a written request or instruction from myself will be accepted in terms of discontinuing this practice by my health care provider – the Chiropractic Day Clinic).
- The student / student intern has discussed with me to my satisfaction, and I fully understand, my / my minor child's diagnosed condition(s) that I have.
- The student / student intern has discussed with me to my satisfaction, and I fully understand all treatment and/or non treatment options and their relative successes and/or failures as applicable to the diagnosed condition(s).
- I am making an informed decision with regard to, and will submit to / consent to my minor child being submitted to, the treatment protocol as explained.

Date: **Patient Signature:**

Date: **Parent / legal guardian signature:**
(in the case of patient's who are under the age of 21 years)

Relationship of guardian to the minor:

Date: **Intern Signature:**

Date: **Clinician Signature:**

Appendix F

Correspondence with Statistician

30/11/11

Greetings Dr Hammond

My name is Murray McDonald and I am a M.Tech Chiropractic student at DUT. I am enquiring as to whether you would be able to assist me with the statistics that my research survey is aiming to generate.

My study is a retrospective, cross-sectional analysis performed on information in the patient files in the DUT Chiropractic Day Clinic. I want to assess the epidemiological characteristics of the patients attending in the years 1994, 2000, 2006 and 2011, and analyse for any trends that are present.

If you would be able to help me in any way, please email me at this address. Let me know if there is any additional information that you would like.

Thank you for your time.

Kind regards,

Murray McDonald

Cellphone # 0724444113

2/12/11

Dear Murray

I am willing to be your statistician.

Please send me your proposal (PG4) with a rough idea of the numbers involved.

Regards

Dr MG Hammond

4/12/11

Dear Murray

I have read your proposal and it looks very interesting.

You are going to analyse data from 500 patients per year. This will be roughly 150 for each of three ethnic groups and about 50 for coloureds and half that for male and female. Further subdivisions for each diagnosis may result in small numbers and consequently difficult to show significant differences but trends may still be useful.

The average budget is 8 hours at R450 per hour.

Regards

Dr MG Hammond

14/2/12

Dear Dr Hammond

The research process is again up and running at DUT, and as such I was hoping you could help me with finalising my proposal document. Just to summarise for you, my research is basically this: a demographic survey was performed on 162 patients attending the DUT Chiropractic Clinic from February to April 1994; I plan to collect data from patient files (roughly 500 per year) for the same months in 2000, 2006 and 2011; I will be measuring age, gender, ethnic, occupation, medical aid, diagnosis and duration of complaint; from the collected data, I hope to compare the data from 1994, 2000, 2006 and 2011 and assess whether any trends emerge.

I have a few questions I'm hoping you could answer for me. Firstly, do you see any obvious flaws in this plan? Secondly, is 500 per year sufficient to achieve significance? Or could I even use fewer? And thirdly, I have attached two possible data collection sheets that I might use to collect the data from the files - namely DATA COLLECTION and DATA COLLECTION2. Which seems more practical to you? I think the second may be quicker and use less paper... But I have zero experience in this, so your input would be greatly

appreciated.

And lastly, if you have any other comments or questions regarding my research, please do not hesitate to email me as I am grateful for any help you can provide.

Thank you in advance for your help, and I hope you are well.

Yours sincerely,

Murray McDonald (DUT Chiropractic intern)

14/2/12

Dear Murray

Your project looks fine.

There were 162 patients in 1994, if you can collect data from 500 in the years you suggest, that should be enough.

There is no difference between the questionnaires if the person completing them understands the to diagnosis and duration parts of the questions.

It may be preferable to collect data from all the patients from February to April and if later years exceed 500 by a very large number, then use only two months.

It should be the same period for every year to eliminate possible differences.

Regards

Dr MG Hammond

16/2/12

Dear Murray

A pilot study of data from about 50 patients may be helpful for you to see how easy or difficult the data collection will be.

If you have already examined the files and are clear on the method you will use to capture the data, then a pilot study is not really necessary

Regards

Dr MG Hammond

6/3/12

Dear Murray

Dr Korporaal has suggested that I explain to you what I expect from you in the way of data.

The main theme of your project is to compile demographic and clinical data for three months of 1994, 2000, 2006 and 2011.

I see that you will capture the data onto an EXCEL spreadsheet with one row per patient and one column per variable.

There will be a column for the year that the patient attended.

For each column there will be four small tables summarising the data for that column for each year - for example Gender 1994

Male/Female 64/53, 2000 M/F 70/30 etc. .

If there is a range of values eg 1-9 then the summary tables will have the numbers for each.

I will use these tables to test for significant differences. The tables can also be used for graphical representation.

This spreadsheet will contain a lot of data and I should be able to complete the analysis within two weeks of receiving your spreadsheet and tables and I will send my findings to you for you to write your report.

Regards

Dr MG Hammond

Appendix G

Sawubona,

Sikwethulela futhi sikwazisa ngocwaningo olusungulwe i-Durban University of Technology Day Clinic. Isihloko socwaningo sithi: Umbiko wohlobo lweziguli ezilashwa umtholampilo i-DUT chiropractic clinic kusukela ngo-1994 kuya ku-2011. Lolucwaningo luzocaphuna ulwazi kwimibiko yeziguli enyangeni kaFebruwari , noMashi kanye noEphuleli wonyaka ka-2000, u-2006 kanye no-2011. Lolu lwazi lubheka iminyaka, ubulili, umsebenzi, ubuzwe, isimo sezempilo.

Siyaqiniseka ukuthi ulwazi oluzosetshenziswa luzokuba imfihlo kanti namagama abantu ayofihlwa angaveli embikweni wocwaningo. Ukuba yinxenye yalolucwaningo akuphoqelekele ngakho uyacelwa ukuthi uma ungathandi ukuba inxenye, sicela usishiyele igama neminingwane yakho kumamukeli wehhovisi. Uma udinga eminye iminingwane, xhumana nathi ngezinkathi zomusebenzi.

Siyabonga kakhulu ngokuxhasa loluhlelo locwaningo olunganyelwe i-DUT Chiropractic Day Clinic

Yimina Ozithobayo

Murray McDonald (Chiropractic research student)

Contact number: 0724444113

Dr. G. Matkovich (Research supervisor)

Contact number: 0825763486

