Patients at Marburg Haven Clinic:
A demographic and disease profile

By

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I, Candice Elaine Hitge, do declare that this dissertation of representative of my own work in both concept and execution (except where acknowledgements indicate contrary).

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DEDICATION

This study is dedicated to my loving parents Debbie and Tokkie Van Coppenhagen, who have always given me the best so that I may have the life that I have today. Thank you for always being there for me, encouraging me through the difficult times and celebrating with me through all the milestones along the journey.

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ABSTRACT

Heading: Patients at Marburg Haven Clinic: A Demographic and Disease profile

Aim: A paucity of information on chiropractic patients presenting in public community clinics in South Africa (SA) exists. The purpose of this study was to carry out a demographic and disease survey of the patients that presented to the Marburg Haven Clinic, so to identify the patients that presented in a rural community outreach programme.

Methods: A retrospective analysis on the patient files at Marburg Haven Clinic was completed in September 2012. Data recorded included demographic data, presenting complaints, patient history and management protocols.

Results: Data of 117 patients were documented. Most patients were female (76.1%), with a mean age of 53.3 years. Indian patients (50.4%) presented most often, with a quarter of the patients unemployed (26.5%) or pensioners (21.4%). Of the employed patients, 26.5% had not specified the type of occupation and 9.4% were non-manual workers. Musculoskeletal complaints (21.2%) were the most common complaints at the Marburg Haven Clinic, with the primary diagnosis of sacroiliac syndrome (16.2%), followed by general myofascitis (22.4%). Common co-morbidities reported were hypertension, diabetes and asthma. Less than half the patient population had undergone previous surgeries and/or sought previous treatment from other medical practitioners. Sixteen patients were contra-indicated for manipulation. Common treatment protocols used were spinal manipulation, spinal mobilisation and stretching.

Conclusion: This is a demographic and descriptive study of a public community outreach centre in South Africa. In relation to international studies, similarities were that the majority of the patients were female, anatomical sites of complaint (lumbar and cervical pain), common usage of radiographs, co-morbidities including cardiovascular and endocrine pathologies and manipulation were used as the treatment of choice. A prospective longitudinal study with more specific criteria for patient tracking and more defined data capture requirements is recommended to more accurately gather all data within similar settings.

Key indexing terms:

Demography, prevalence, epidemiology, chiropractic, South Africa.

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DEFINITIONS

Acute: Referring to a disease of sudden onset and brief duration. With respect to this study, it was considered a duration of less than three months (Stedman, 2005).

ANOVA significance testing: "The ANOVA test procedure produces an F-statistic, which is used to calculate the p-value. As described in the topic on Statistical Data Analysis if $p < 0.05$, we reject the null hypothesis. It can then be concluded that the average of the dependent variable is not the same for all groups" (www.statisticallysignificantconsulting.com, 2012).

Chronic: Term used to describe persistent disease or a long term illness. With respect to this study, it was considered as a time period of 6 months or more (Stedman, 2005).

Combination Labour: Combination labour consists of an amalgamation of manual and non-manual labour throughout a working day.

Communicable disease: This is an infectious disease that may either be transmitted directly or indirectly from one person to another (Taber, 2005).

Content validity: verification that the method of measurement actually measures what it is expected to measure (medical-dictionary.thefreedictionary.com).

Co-morbidities: A concomitant but unrelated pathologic or disease process (Stedman, 2005).

Coloured: In South Africa it is an ethnic label for people of mixed ethnic origin including Khoisan, African, Malay, Chinese and White people (oxforddictionaries.com, 2012).

Demographic profile: Study of statistical information that helps promote the understanding of patterns of population related characteristics within a certain geographical area. A demographic profile can be adapted to answer almost any questions relating to a population as well as to provide background information of disease progression. Profiles are mainly illustrated in reports where tables, charts and graphs are used to describe current, past and future characteristics of a particular population. Demographic profiles are generated from census' data, past research that has been done on a particular population, building permits and economic data (Van Zyl *et al.,* 2010; Habib and Saha, 2010; Mayosi *et al.,* 2009; Stevens, 2007; Louw *et al.,* 2007; Sorensen *et al.,* 2006; Stedman, 2005).

Disease profile: Is a snap shot of a disease (namely: communicable disease, non-communicable disease and injury) that affect a particular population, and the risk factors that contribute to these diseases (Van Zyl *et al.,* 2010). A disease profile is used to determine how risk factors predispose a particular population to a disease. The statistics collected from disease profiling is an important aspect of healthcare as the information can be used to identify the health gaps within the population that need to be addressed to improve the collective health status of that population (Bradshaw *et al.,* 2003). It is also used to help reduce the risk factors from the population being studied (Van Zyl *et al.,* 2010; Mayosi *et al.,* 2009).

Ethnic group: A social group with characteristic social and cultural traditions maintained from generation to generation and a common sense of recognition within a group (Stedman, 2005).

Fisher's exact test: Fisher's exact test looks at the relationship between two dimensions on a table. The test looks at the classifications in rows and the classifications in columns. It then determines the null hypothesis, which should be that these two classifications (the rows and columns) are not different. (www.statsdirect.com).

High blood pressure/Hypertension: Persisting high arterial blood pressure, that exceeds values of 140mmHg systolic or exceeding 90mmHg diastolic (Stedman, 2005).

Incidence: This refers to the number of new cases that develop in a given period of time (Webster, 2005).

Low blood pressure/Hypotension: Abnormally low arterial blood pressure, where the values are not lower than 90mmHg systolic and 60 mmHg diastolic (Stedman, 2005).

Manual labour: Labour that has been done using the hands. Productive work, completed for wages, and which does not require much skill (Yip, 2004; Harkness, 2003 and Vingard and Nachemson, 2000).

Non-communicable disease: A disease that is not transferable by direct contact with another person (Webster, 2005).

Non- manual labour: Involves mental and mechanical work and not physical labour (Yip, 2004; Harkness, 2003; Vingard and Nachemson, 2000).

Non-traumatic aetiology: Science and study of the origin of disease and their procedure when it does not involve a traumatic origin (Stedman, 2005).

Prevalence: "The proportion of individuals in a population having a disease or characteristic. Prevalence is a statistical concept referring to the number of cases of a disease that are present in a particular population at a given time. (www.medterms.com, 2012).

Socioeconomic: An individual's or group's position within a hierarchical social organization. Socioeconomic status (SES) depends on a combination of variables, including occupation, education, income, wealth, and place of residence (dictionary.reference.com/browse/, 2012).

Soft tissue manipulation: A technique used to in which the connective tissue is stretched, restoring mobility at the dermis/hypodermis and dermis/fascia interface and promoting rehabilitation of collagen (Holey, 1995).

Sub-acute: “Denoting the course of a disease of a moderate severity and duration between three to six months” (Stedman, 2005).

Subluxation: A motion segment in which alignment, movement integrity, and/or physiologic function are modified even though contact between the joints surface remain intact (Gatterman, 2005).

Survey: A systematic collection and analysis of data relating to a particular population, which is taken from a representative sample (Oxford English Dictionary, 2003).

Traumatic aetiology: The science and study of the origin of disease and their mode of operation when it involves an impact source (Stedman, 2005).

Unknown aetiology: The science and study of the origin of disease and their mode of operation, when the aetiology of the source was unknown or forgotten (Stedman, 2005).

1.1 Introduction

Demographic and disease profiling of a population group reflect the personal and economic details of a particular country or region (Rubinstein *et al.,* 2000). Demographics include the characteristics of a population, namely: age, gender, marital status, employment and various diseases. A comprehensive description of patients' complaints also includes diagnosis that may identify other disorders such as musculoskeletal and non-musculoskeletal conditions (Rubinstein *et al.,* 2000). These factors may indicate a population group more at risk of developing certain diseases or musculoskeletal disorders (Mayosi *et al.,* 2009). Demographic and descriptive studies are therefore important in that they establish incidence and prevalence of diseases that may affect a particular population group (Coulter and Shekelle, 2005; Leboeuf-Yde *et al*., 2005; Sorensen *et al*., 2002; Hawk *et al*., 2001; Rubinstein *et al*., 2000).

South Africa is in the middle of a health shift that is characterised by the concurrent occurrence of infectious diseases and a rise in non-communicable diseases/chronic diseases namely: hypertension and chronic lower pulmonary disorders, in a population facing a heavy burden of peri-natal and maternal disorders, injury, and violence. Unfortunately this impact of disease in South Africa affects mortality, incidence of disease and the financial expenses have increased since 1994, by four times compared with developed countries, and twice as much when compared with other developing countries (Mayosi *et al.,* 2009).

The reason for disease burden could be due to diseases such as HIV (Human Immunodeficiency Virus)/AIDS (Acquired Immune deficiency Syndrome) which play a large role in mortality and secondly non-communicable diseases which are on an ever increasing rise in the country (Mayosi *et al.,* 2009). Therefore South Africa has taken much of its medical resources and focused it on HIV/AIDS. This has restricted the time and financial resources available for health education and prevention of chronic diseases (Econex, 2009).

Non-communicable diseases seem to affect the poor communities that are within urban settings (Mayosi *et al.,* 2009). Therefore, non-communicable disease affects a

large part of South Africa as the majority of the population is Black (79.4%) and in KwaZulu-Natal where 83.5% of the population is Black (Elsenburg, 2009) and has a low socioeconomic status (www.statssa.gov.za. 2010). Serious consideration needs to be given to the escalating burden of lifestyle disease in South Africa (Van Zyl *et al.,* 2010).

Musculoskeletal disorders, for example low back pain and neck pain, are ranked first as a risk factor of chronic health problems, long term disability and increased consultations with health professionals (Dagenais and Haldeman, 2012; Haldeman *et al.,* 2008; Kopansky-Giles *et al*., 2007; Louw *et al.,* 2005). Musculoskeletal disorders are also ranked the second most important risk factor for restricted activity and use of over the counter and prescribed drugs (Dagenais and Haldeman, 2012; Manga, 2000). In this study, the incidence and prevalence of musculoskeletal disorders, such as low back pain, is high in both developed countries and non-developed countries and of increasing concern (Dagenais and Haldeman, 2012; Bronfort *et al.*, 2010; Dagenais e*t al.,* 2008; Louw *et al.,* 2005; Woolf and Pfleger, 2003).

According to Dagenais and Haldeman (2012); McBeth and Jones (2007); Kopansky-Giles (2007), demographic factors (namely: gender, age, education and marital status) may predispose the patient to musculoskeletal/back pain. Income levels, disability or other insurance covers often affect the care seeking options for musculoskeletal conditions (Morris, 2006; Wasiak *et al.,* 2003).

Access to the Chiropractic profession is still very limited to the public, largely because Chiropractic is a relatively young profession in South Africa as the first registration was granted in 1982 and Chiropractic had yet to be integrated into the public hospitals and clinics (Myburgh and Mouton, 2007). Therefore, patients of low socioeconomic status without medical aid and insurance covers do not have access to the care provided through the Chiropractic profession (Myburgh and Mouton, 2007) leaving the service only available within a private sector (Higgs, 2009). This is because the cost of private hospitals and private health care in South Africa is too high for those not covered by medical aid (Myburgh and Mouton, 2007). This not only limits the contribution of the Chiropractic profession to the improvement of

musculoskeletal disorders and chronic lifestyle diseases within the country where Chiropractic is being practiced, but it also excludes patients that would otherwise only have access to care in the public facilities (Myburgh and Mouton, 2007). This is important as Chiropractic specializes in treating musculoskeletal disorders and aids with the education and monitoring chronic lifestyle diseases (Gatterman, 2005).

The above findings are of relevance as both non-communicable disease and musculoskeletal disorders have a significant impact on the South Africa population and the contribution of the various healthcare providers. The findings are critical in assisting the country in the developing well co-ordinated, sustained and substantial healthcare for all citizens (Mayosi *et al.,* 2009; Leboeuf-Yde *et al*., 2005; Sarnat and Winterstein, 2004).

There is an ever increasing scrutiny of the high financial healthcare expenditures by government and insurance companies therefore, an urgent need for undertaking this type of basic clinical research is required for decision making with regards to reasonable and equitable healthcare expenditure (Dagenais *et al*., 2008). This pertains to all aspects of disease both non-musculoskeletal and musculoskeletal (Econex, 2009). Infrastructure, such as education to the population and management/treatment of non-musculoskeletal and musculoskeletal disease needs to be set in place in order to manage the influence of disease (Van Zyl *et al.,* 2010; Econex, 2009; Mayosi, *et al.,* 2009). Education and management of disease will however only be made possible if risk factors of disease and disease profiles are established within specific communities (Van Zyl, *et al.,* 2010).

The highest healthcare expenditures in the world are for treatment and prevention of multiple chronic diseases, which are mainly due to life style choices (Sarnat and Winterstein, 2004), and secondly the burden of expenses of musculoskeletal disorders (Louw *et al.,* 2007). This study assessed the healthcare profile of patients for both musculoskeletal and non-musculoskeletal disease.

Studies such as this are also important for other reasons: Morschhauser *et al.,* (2003) found that clinical experience is enhanced when students in clinical training are presented with diverse patient base. A different population may be served in a

public/rural clinic compared to the population served at an on-campus teaching clinic. The diverse patient demographics can provide students with opportunities beyond what they regularly see. Therefore, observing the trends and the patient profiles in a rural setting (Marburg Haven Community) might provide insight into the patients' health related problems and provide documented interventions. This forms a basis for future research to elaborate on health expenditure and improved patient outcomes.

Leboeuf-Yde *et al*., (1997), states that factors such as political differences between countries and their diverse cultures could result in variations in both the Chiropractic practice and patient profiles. This may be true for a multicultural and multiracial country like South Africa, with its population and structure and different lifestyles led by different populations (Popenoe *et al*., 1997). Thus the need for statistical and descriptive information pertaining to patients in South African community outreach programs is warranted to detect if any variation in practice and patient profiles exists.

The purpose of this study was to carry out a demographic and descriptive profile of the patients that presented to the Marburg Haven Clinic, so as to identify the patients in a rural community outreach programme in terms of demographics, common presenting conditions, common aetiologies, special investigations such as radiographs, and referral patterns. The common management protocol used for these patients was also recorded. This was done in an effort to establish an updated and more complete case profile of patients presenting in the public community clinic in South Africa KwaZulu-Natal. Where possible an effort was made to compare and distinguish the above information to previous Chiropractic demographic studies undertaken at Kimberly hospital, which is a public hospital within the private sector and a teaching institution in South Africa. International Chiropractic demographic studies were also compared.

1.2 Problem statement, Aims and Objectives

The problem statement for this study is: Are we delivering appropriate care to different patient populations, when it is known that different patient populations have differing health care needs?

The aim of this study was to generate a disease profile of the patients that presented to the Marburg Haven Clinic, in order to provide a basis for further evaluation of the above research question.

Objective One: Describe the demographics (gender, age, employment, occupation, ethnicity, marital status, residence) of the patients at Marburg Haven Clinic.

Objective Two: To outline patient health profiles: describing the disease profile (main complaint and diagnosis) of the patient on the initial consultation.

Objective Three: To determine the prevalence of musculoskeletal and non-musculoskeletal complaints (example: hypertension, diabetes mellitus and cerebrovascular disease).

Objective Four: Identify common healthcare management procedures, and associations between demographic factors and patient complaints, and referrals made.

Objective Five: To identify associations between demographic factors and musculoskeletal and non-musculoskeletal complaints

1.3 Rationale

1. Sociodemographic, psychosocial (Dagenais and Haldeman, 2012; Haldeman *et al*., 2008) and socioeconomic (Metz, 2004) factors may predispose patients to musculoskeletal disorders. People from a low socioeconomic status are also less likely to use and have access to healthcare services for preventative treatment (Stevens, 2007) and therefore create and increase the burden on healthcare

expenditures (Haldeman *et al.,* 2008). Patients from poor communities also tend to be more prone to chronic illness (namely: musculoskeletal conditions, hypertension and diabetes mellitus (Van Zyl *et al.,* 2010; Vijayakumar *et al.,* 2009) Therefore, determining time trends using patient profiles in a rural setting (Marburg Haven Community) will help in identifying these factors in this community and highlight differences when comparing results with findings of other similar studies conducted in different settings.

2. There is an increased scrutiny of healthcare expenditures by government and insurance companies (Dagenais *et al*., 2008; Haldeman *et al.,* 2008) and the growth of expenditures is becoming an urgent problem as government and insurance companies are scrutinising how applicable certain health care providers are (Sarnat and Winterstein, 2004). Therefore more systematic quantitative information about factors that drive patient demand for healthcare provision (Van Zyl *et al.,* 2010; Sarnat and Winterstein, 2004) as well as Chiropractic care is needed (Sharma, 2003).

3. A patient profile aids in giving a better perspective of Chiropractic practice (Hestbaek and Stochkendahl 2010; Rubinstein *et al*., 2000). For adequate descriptive data, the demographics, patient health status and clinical characteristics of patients seeking Chiropractic care is needed (Coulter and Shekelle, 2005). This information can also be used to identify the health gaps within the population that need to be addressed to improve the collective health status of that population (Bradshaw *et al.,* 2003).

4. To reduce the incidence of musculoskeletal and non-musculoskeletal complaints, it is necessary to obtain an understanding of the aetiology relating to people in a low socioeconomic community (Roffey *et al*., 2010; Van Zyl *et al.,* 2010), as it has been found that there are differences in patients being treated in community outreach clinic compared to private practice (Suleman, 2001).

1.4 Benefits

1.4.1 General benefits of a demographic and descriptive study

The primary use of descriptive epidemiological studies in health sciences is to investigate the aetiology and natural history of diseases with the intention of disease prevention and health promotion. Secondly, descriptive studies are used to access the effectiveness of risk screening techniques and diagnostic instruments. Thirdly, (in the case of this study) descriptive studies investigate the measurement of healthcare requirements, and the evaluation of clinical management with the aim of improving the efficacy and efficiency of healthcare (Brink, 1998).

1.4.2 Specific benefits of this study

1. This clinical research was required for purposes of training practitioners that are able to effectively deal with patients present with multiple disorders. As Waalen *et al.,* (1994) stated, knowing the information of the patients being treated by Chiropractic students will help to determine if they are ready for private practice once qualified and that they are capable of effectively treating diverse populations (Morschhauser *et al.,* 2003). The latter is particularly true in that Suleman (2001) found that there were differences in the patients being treated in the community outreach compared to that of private practice. This may indicate that Chiropractors who may be faced with practice in more rural settings should be exposed to patients from rural areas during training (Kopansky-Giles and Papadpoulos, 1997). However, the paucity of this information is not possible (Coulter and Shekelle, 2005).

2. With an improved understanding of different population groups, the medical and chiropractic health care education facilitators would be able to improve the student experience. This possible improvement will allow for enhanced clinical training particularly if students are exposed to a diverse patient base, different disease profiles and therefore develop a range of effective management and treatment strategies (Morschhauser *et al.,* 2003).

1.5 Limitations

1. This study was limited to investigating the patients' records at Marburg Haven Clinic as there was a larger data base at Marburg Haven Clinic compared to that of Sea Cow lake clinic in Durban.
2. There were limited paediatric files to analyse.
3. As this was a retrospective study there was a considerable degree of reliance on the information recorded accurately at the time of the initial consultation.

1.6 Conclusion

This chapter has established the reason why this research is essential; further explanation on the subject will be discussed in Chapter Two. Chapter Three presents the methods which outline how the study was conducted. Chapter Four then introduces the results of the study. Chapter Five discusses the results and Chapter Six concludes the study and presents the recommendations.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

Chapter Two will introduce the background to the present study at Marburg Haven Clinic. It also addresses demographic and descriptive studies that have been performed in various countries and within South Africa over the recent years, documenting factors such as patient demographics and common complaints. These studies are critically evaluated and the results are summarised in a table format under the five main objectives of the study. Similarities and differences in patient demographics and treatment protocols between this study and other studies are then highlighted and reviewed.

2.2 Demographic and disease profiles

The burden of disease (communicable disease, non-communicable disease and injury) has become a major public international problem (Sarnat and Winterstein 2004). Specifically since 1994, as the statistics for South Africa highlight that communities around South Africa are affected by non- communicable disease, which is largely due to socioeconomic transformation (Van Zyl *et al.,* 2010; Mayosi *et al.,* 2009; Louw *et al.,* 2007).

South Africa has four main disease burdens: (Econex, 2009)

- Communicable disease (Infectious diseases apart from HIV/AIDS).
- HIV/AIDS.
- Non-communicable disease.
- Traumatic injuries (Motor vehicle accidents and repetitive injuries).

South Africa is classified as a developing country (Econex, 2009). Even so, the reports on the different diseases indicate that South Africa has a high amount of differing diseases that impact people lifestyle (Econex, 2009; Mayosi *et al.,* 2009; Bradshaw *et al.,* 2003). It is therefore important that individual disease profiles be

produced for specific communities so that further education and knowledge focused on that community can be developed (Van Zyl *et al.,* 2010).

Chronic diseases (namely: hypertension and diabetes mellitus) now account for the majority of healthcare expenditures in the world. This is because the population now faces a behaviour-provoked epidemic of chronic illnesses, from lifestyle choices that individuals have made (Sarnat and Winterstein, 2004). These diseases are rising in the rural communities as a result of uneven access to healthcare services and insufficient quality of education (Van Zyl *et al.,* 2010 and Mayosi *et al.,* 2009).

The research documented within this study is derived from six different countries (United States of America (USA) and Canada, Denmark, Netherlands, Mexico and South Africa). With this taken into consideration, it is noted in Table 2.0 that in the USA, Canada, Denmark and the Netherlands; heart disease, cancer and cerebrovascular accidents are the leading causes of death (Table 2.0). In developing countries such as Mexico and South Africa, the leading causes of death differed, as diabetes mellitus (diabetes) complications are diagnosed in Mexico and HIV/AIDS is more commonly diagnosed as the leading cause of death in South Africa.

Table 2.0: Top three diseases causing death in International countries and South Africa

Country	Disease	Percentage	Reference
America	Heart disease	28.5%	Kung *et al.,* 2008
	Cancer	22.8%	
	Cerebrovascular disease	6.7%	
Canada	Cancer	30.0%	www.statcan.gc.ca. 2009
	Heart disease	20.7%	
	Cerebrovascular disease	5.9%	
Denmark	Cardiovascular disease	31.0%	World health organisation, 2010
	Cancer	30.0%	
	Lower respiratory infection	7.0%	
Mexico	Heart disease	16.4%	World health organisation, 2006
	Diabetes complications	13.1%	
	Cancer	12.9%	
Netherlands	Cancer	32.0%	World health organisation, 2010
	Cardiovascular disease	31.0%	
	Respiratory disease	6.0%	
South Africa	HIV/AIDS	26.4%	http://www.statssa.gov.za/publications, 2010
	Cardiovascular disease	13.9%	
	Lower respiratory infection	13.1%	

In addition, musculoskeletal disorders caused from acute or repetitive traumatic injury, have a significant role amongst the primary causes of activity limitation and short-term disability, whilst simultaneously being the most prevalent cause of chronic conditions and long-term disability in Africa (Louw *et al.,* 2007). Musculoskeletal disorders are classified as the second most costly health problems in other disease studies (Louw *et al*., 2007; Suleman, 2001; Manga, 2000).

This highlights the importance of identifying distinct risk factor profiles for specific community groups. This process supports and allows the development and implementation of community specific intervention programmes in order to address specific community health problems (Van Zyl *et al.,* 2010). This is possible in a service centre such as Marburg Haven Clinic, as it is designed to create a social environment in which there is medical assistance to the surrounding disadvantaged community. Implementing programmes for this community could be made possible as day clinics are held at the centre where volunteers, doctors and other health workers provide their services (www.mealsonwheelsknfsa.org.za, 2012).

Therefore, this study is aimed at identifying the disease profile of the population of Marburg and surrounding areas, as there are pre-transitional diseases such as hypertension and diabetes that are linked to lower socioeconomic statuses within an urban society, where diet and lifestyle changes have been made (Louw *et al.,* 2007; Kopansky-Giles *et al.,* 2007; Bradshaw *et al.,* 2003).

2.3 Background to the Marburg Haven clinic

Marburg Haven and Marburg Haven Clinic is a community outreach centre based in Marburg (Port Shepstone, South coast of KwaZulu-Natal) that provides many different services to those that are unable to care for themselves due to poor financial situations as well as in some instances age related restrictions. The Marburg Haven was founded and has been operating since 1988, though the Marburg Haven was officially open to the public in 1993. Naidoo (2012) said the vision of Marburg Haven was to take care of the poorest of poor and vulnerable persons in the Port Shepstone and its surrounding areas. They offer a “Meals on Wheels” service which supply food to the elderly, those that have been rendered

homeless, and those that have just been discharged from hospital and have no one to care for them (Naidoo, 2012). It also offers other services such as a day care centre for children and providing avenues towards community up-liftment (Naidoo, 2012). Some services provided at the Marburg Haven are social activities for the people of the community and surrounding areas, which include home help, arts and crafts, church services, income generating projects, transport, promotion of healthy living and medical services (Naidoo, 2012).

None of this would be possible without sponsors that have had a part in running Marburg Haven Clinic, such as Meals on Wheels South Africa (KwaZulu-Natal and Free State) and the Department of Social and Development (Pretoria). These funds, provided by these agencies were utilised to deliver food and household supply parcels (namely: blankets and none perishable foods) to 2500 families over a period of six months in 2011. Other sponsors have been Cornelius and Saville Chartered accountants, KwaZulu-Natal and Free State Conference (Seven Day Adventist' Church). There are also many companies that generously donate food supplies to Marburg Haven Clinic, such as Woolworths, Miki and Mo Wholesalers, TP Panel beaters, R&R Upholsters and Sheppie Green Grocers.

From a medical perspective the Chiropractic students have been supporting the Marburg Haven community since 2004. Marburg Haven Community Centre provides day clinics to the disadvantaged people of Port Shepstone and the surrounding rural towns. The Chiropractic students provided a healthcare service on a specific day of the week at the Marburg Haven Clinic for patients who would not normally have been able to attend a medical facility. The purpose of the students operating this Clinic was to provide the community with healthcare knowledge and to care for those that had little access to healthcare facilities. Conversely, it assisted students with completion of required practical requirements towards their qualification, whilst encountering diseases that may not have been seen in the private sector or even within the DUT Chiropractic Teaching Clinic. Furthermore, this work at Marburg Haven Clinic assisted students in becoming more comfortable with treating patients from diverse communities, and providing care to those who may be disadvantaged.

2.4 Introduction to demographic and descriptive studies

Although international descriptive studies involving patient demographics have been compiled on Chiropractic patients; many of these studies have been performed in the private sector (Rubinstein *et al.,* 2008; Sorensen *et al.,* 2006; Coulter and Shekelle, 2005; Leboeuf-Yde *et al.*, 2004; Mootz *et al.,* 2005; Haas *et al.,* 2004; Hartvigsen *et al.,* 2002; Nyiendo *et al.,* 2001; Rubinstein *et al.,* 2000; Leboeuf-Yde *et al.*, 1997). This applies similarly to descriptive studies of this nature in South Africa where the majority of studies have been undertaken within the DUT Chiropractic Teaching Clinic or in private practice (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Mahomed, 2007; Venketsamy, 2007). The nature of these studies therefore indicates that there is relatively little information available on Chiropractic patients in the public sector. Only seven of these demographic studies included a history of illness, which could reflect a disease profile (Higgs, 2009; Jaman, 2007; Kandhai, 2007; Steven, 2007; Venketsamy, 2007; Sorensen *et al.,* 2006; Nyiendo *et al.,* 2001).

In addition to the above seven studies, further international studies were conducted on patients in the public sector: two studies were undertaken at Urban Canadian Health Centres (Garner *et al.,* 2007), one study at a multidisciplinary spinal pain unit in Australia (Giles *et al*., 2002); and one study at St. Michael's Hospital and a number of studies at satellite clinics in Canada which are associated with other satellite teaching clinics in the vicinity (Kopansky-Giles *et al*., 2007). Other studies have also been carried out at a free Chiropractic clinic in Buffalo, New York USA (Stevens, 2007), and the Calgary Urban Project in Alberta (Suleman, 2001). The only published article on Chiropractic patients in the public sector in South Africa was a descriptive study by Till and Till (2000) at Kimberly Hospital Complex (KHC) in 1997 and an unpublished dissertation by Higgs (2009) that was also undertaken at the KHC.

2.4.1 The demographic and descriptive studies conducted in international public clinics

The Canadian Memorial Chiropractic College (CMCC) has three community based teaching clinics located in the inner city region of Toronto, namely in Sherbourne Health Centre, Anishnawbe Health Toronto and St. Michael's Hospital, (Kopansky-Giles *et al*., 2007). The focus of the research conducted by Kopansky-Giles *et al.,* (2007) was to describe the experiences of the community-based teaching clinics of the CMCC, who offered Chiropractic services to poor patients that had no access to Chiropractors. Limited demographic information was documented, as this was not the main objective of their study. It was concluded, that these clinics enabled access to Chiropractic service for many people that would not normally have received treatment. It was also an opportunity for students to obtain experience in a field outside a teaching clinic, enhancing the students' awareness to problems commonly occurring within the disadvantaged or marginalised communities (Kopansky-Giles *et al*., 2007). From the results of the study reported in Summary Table 2.1 to 2.8 it was seen that the patients were unemployed and came from different areas to receive treatment from the clinic. Half of the patients were black (53.2%). The presenting complaints where mainly that of musculoskeletal conditions (82%) of which were all diagnosed as musculoskeletal complaints. The majority of these complaints were chronic in nature, showing that there is a lack of education on prevention strategies, management strategies (including treatment) and provision of musculoskeletal condition education (Kopansky-Giles *et al*., 2007). This study did not focus on other disease profiles/co-morbidities that the patients might have had outside of the musculoskeletal disease conditions. This indicates that Chiropractors are limited to treating musculoskeletal conditions and are not contributing to lowering the burden of disease in Canada. This may be a result of limited interest in other disease processes with a focus on mainly musculoskeletal conditions by Chiropractors.

A similar study was carried out by Garner *et al.,* (2007) who investigated the effectiveness of Chiropractic care for patients of low socioeconomic status within the Canadian Community Health Centres. This study suggested that Chiropractic care at these centres improved the patients' general health status by reducing pain and disability (Garner *et al.,* 2007). The results of their study showed that the majority of

the patients were female (74%), presenting with chronic musculoskeletal complaints (86.2%). Once again, as in the study by Kopansky-Giles *et al.,* (2007) there was no information on the general health status on the patients, other than their musculoskeletal conditions.

Additionally, a retrospective study undertaken by Stevens (2007) at the multi-disciplinary Lighthouse Free Chiropractic Clinic (including dental, medical and psychology departments) in Buffalo New York, investigated the demographics of patients presenting to a free Chiropractic clinic in a low-income neighbourhood. The study noted how patients became aware of this clinic (Stevens, 2007) and the data collection tool documented patient names, addresses, ethnicity, gender, chief complaint, co-morbidities, stages of care, and referral source. The researchers gathered demographic information from existing clinic intake forms of 256 patients. Noted limitations to this study included a restricted true mean age as patients younger than 18 years of age were not included in the study. From the results of the study found in Summary Table 2.1 to 2.8 it was seen that the majority of the patients where female (65%) and African American (63%). The presenting complaints were musculoskeletal conditions that were mainly chronic (68%) in nature. Stevens (2007) did however investigate the history of illness other than musculoskeletal complaints, where hypertension (27%) was found to be the most common co-morbidity, followed by depression (22%) and hypercholesterolemia (raised cholesterol) (13%). These results are similar to findings indicated in Table 2.0, where heart disease is highlighted to be the highest cause of fatality in America. Stevens (2007) did not investigate the treatment protocol, and therefore it was not established whether there was further education and treatment of the co-morbidity such as hypertension.

By contrast a perspective study performed in a public healthcare system in Queensland, Australia (Giles *et al*., 2002) documented patients that presented to the clinic from July 5, 1995 to January 31, 2002. Data were documented on patient characteristics, radiological findings, treatment modalities used and any significant complications as a result of the treatment. Patient information was recorded from 1775 patient records (patients who presented with spinal pain syndromes). In addition patient satisfaction questionnaires were then sent to a random sample of patients (n = 779 or 44%) to assess their level of satisfaction with the specialised

multidisciplinary spinal pain unit. This multidisciplinary spinal pain unit consisted of Chiropractors, acupuncturists and medical practitioners (Giles *et al.,* 2002). From the results of the study found in Summary Table 2.1 to 2.8 it was found that the majority of the patients were male (53.5%) and unemployed (33%). This study focused on the radiological findings of spinal conditions where the researchers observed that 83% of the patient population had radiological abnormalities. Once again, there was no investigation into other existing co-morbidities.

An older retrospective study was done at Calgary Urban Project Society (CUPS) Health Clinic in Alberta by Suleman (2001), to gain insight into Chiropractic services offered to people of a low-socioeconomic status in a non-educational and non-hospital setting. The study examined the demographics from the files of patients from CUPS over a period of one year. CUPS provides many services such as dentistry, nurses, doctors and councillors, therefore a setting like CUPS may provide insight into Chiropractic services that would not be apparent in a private practice. The demographics of these patients' musculoskeletal problems were noted. From the results of the study, reflected in Summary Table 2.1 to 2.8, it was seen that the majority of the patients were male (67%) and unemployed (66%). No co-morbidities were investigated; only musculoskeletal conditions were examined and diagnosed. Once again, this shows that there is very little integration between chiropractics and main stream medicine and that the focus of chiropractics and the education of chiropractics to patients, is only towards musculoskeletal conditions.

2.4.2 Demographic and descriptive studies at private Chiropractic clinics in South Africa and international private Chiropractic clinics

There has only been one study in South Africa conducted by Mahomed (2007), who conducted a demographic and descriptive study on patients that presented to private Chiropractic clinics in South Africa, in which both demographic and disease profile data were captured from patients and practitioners. Twenty percent of the total Chiropractic population participated in the study from all nine provinces in South Africa. It is important to note that limitations of this study include a low response rate from Chiropractors (there were no responses from the Mpumalanga, Limpopo and Free State Provinces, and there were no private practitioners in the Northern Cape

at that time). The overall practitioner and patient response was 22.47% and 18.63% respectively. Therefore, this may not have given a true sample of the number of the private clinics in all provinces of South Africa. From the results indicated in Summary Table 2.1 to 2.8, the majority of the patients were white (75.6%) and female (62.8%). The presenting complaints were musculoskeletal related, and co-morbidities (conditions besides musculoskeletal complaints) were not investigated, leaving a gap in the knowledge as to whether Chiropractors interact with patients and contribute towards the resolution of chronic lifestyle diseases such as hypertension and diabetes mellitus.

Rubinstein *et al.,* (2008), conducted a practised-based prospective study in the Netherlands that examined clinical and socio-demographic variables as predictors of favourable outcomes in patients with non- specific neck pain who were treated by Chiropractors. Of the 189 Chiropractors that belonged to the Netherlands Chiropractic Association only 79 Chiropractors (42% of the total Chiropractic population) participated in the study. These Chiropractors were each asked to obtain consent from ten new patients over a period of 12 months.

The data was collected using self-administered questionnaires that were completed at the first visit, second and fourth visit, then again at three months and 12 months. The 12 month follow-up was done by postal mail, and if the patient did not respond, then they were requested to take part in a short telephonic interview. The sample included a total of 529 patients from the participating Chiropractors, of which 96% and 87% returned their questionnaire on the second and fourth visits respectively and 90% and 92% returned their questionnaire during the third month and twelfth month long-term follow-up. Of the 92% that were contacted during the 12 months, 12% had a telephonic interview. From the results reflected in Table 2.1 to 2.8, it was found that the majority of the patients were female (69%). As this study had focused on non-specific neck pain, less than 2% of the presenting complaints were non-musculoskeletal. The co-morbidities and treatment protocol were not investigated. This information again leaves a gap in the knowledge of how Chiropractors are managing patients (particularly those with non-musculoskeletal conditions as reflected in Table 2.0), and whether only musculoskeletal conditions are being managed.

Sorensen *et al.,* (2006) did a similar study on Danish Chiropractic patients. However, their study focused on a descriptive comparison of these patients'. This study expanded on the information that was gathered on a previously completed survey done in 1999 by, Hartvigsen *et al.,* (2002). The data was collected from all licensed Chiropractic clinics in Denmark, of which 213 (85%) participated in the survey. They were asked to collect data over a period of a week. However, the questionnaire was aimed at all patients that had not consulted a Chiropractor during the past year.

At the end of the study, 1 595 (81%) self-administered questionnaires had been completed. From the results of the study shown in Summary Table 2.1 to 2.8, it was seen that the male (49.5%) to female (50.5%) ratio was similar. However, several co-morbidities were reported with lung disease (23%) being the highest percentage of the co-morbidity. Although the treatment protocol was not investigated, Sorensen's *et al.,* (2006) data seems to suggest that patients seen by Chiropractors in Denmark are managed for both musculoskeletal and non-musculoskeletal conditions (Table 2.0).

Coulter and Shekelle (2005) carried out a descriptive analysis of 131 Chiropractors and 1275 patients in five states of the United States of America. The data was gathered from both the interviews and from patient files. The results of this study showed that Chiropractic is established into the healthcare system of the United States of America as a primary source of healthcare for back pain as well as in Canada. This is because just over half of the patients (58%) reported having had no treatment for their current injury/illness prior their consultation with the Chiropractor, therefore Chiropractors are the entry level of care for the majority of musculoskeletal complaints. From the results of the study, indicated in Summary Table 2.1 to 2.8, sixty one percent of the patients were female, and white (82.5%). All presenting complaints were musculoskeletal complaints, that where mainly acute (45%) in nature. History of other co-morbid illnesses and treatment protocol was not investigated. In contrast to Sorensen's *et al.,* (2006) study, Coulter and Shekelle's (2005) study showed that Chiropractors with in the USA and Canada focus principally on musculoskeletal disorders. There were few reports on non-

musculoskeletal diseases and the outcomes of the care that Chiropractors gave to their patients.

Mootz *et al.,* (2005) carried out a survey on a sample of Chiropractors in Arizona and Massachusetts. The objective of which was to describe, Chiropractic care using data collected at the time of each patient treatment. The Chiropractors were asked to document data for 20 consecutive patient visits. Data was collected directly after the consultation with the use of questionnaires. A total of 2 550 patient questionnaires were documented. A limitation of this study was that there was no distinction made between patients who had or who had not been to the Chiropractor before. The results indicated that 58% of the patients were female and 93% were white (Summary Table 2.1 to 2.8). The majority of the patients complained of low back pain (41% and 44% for the prospective clinics in Arizona and Massachusetts). There was no record of possible co-morbidities and treatments protocol was purely musculoskeletal namely: spinal adjustments and ischaemic compression. This study reflects similar findings to that of Coulter and Shekelle's (2005) study, but is in contrast to what Sorensen's *et al.,* (2006) report.

In addition to the studies discussed above (Sorensen *et al.,* 2006; Coulter and Shekelle, 2005; Mootz *et al.,* 2005) some demographic and descriptive studies have included data pertaining to whether the patients presented with musculoskeletal and/or non-musculoskeletal conditions and then compared the findings of musculoskeletal conditions and non-musculoskeletal conditions (Coulter and Shekelle, 2005; Leboeuf-Yde *et al.,* 2004; Hawk *et al.,* 2001; Sorensen *et al.,* 2002; Rubinstein *et al.,* 2000).

One example is the multination survey that was completed by Leboeuf-Yde *et al.,* (2004). The survey was described as a self-reported questionnaire, which noted improvements as a result of Chiropractic treatment of non-musculoskeletal conditions such as allergies, asthma, and breathing problems. This study assessed whether the responses were influenced by country, by Chiropractors' attitudes, patient demographics and/or the treatment protocols. Information was gathered from questionnaires given to both the Chiropractic practitioners and Chiropractic patients in different countries all over the world (namely: Canada, United States, Mexico,

Hong Kong, Japan, Australia and South Africa). To achieve this outcome there were seven different research teams set up in each of the different countries, these teams recruited additional volunteer Chiropractors to assist with data collection. A standard questionnaire was developed and translated into different languages. The research groups then collected the information resulting in a total 385 Chiropractor participants, with 6 156 patient questionnaires having been completed (of these, 549 were invalid/incomplete questionnaires). The results indicated that 60% of the patients were female. The majority of the main complaints were musculoskeletal, though 8% of the complaints were non-musculoskeletal. Of the non-musculoskeletal complaints, 19% were digestive complaints, followed by circulatory problems (12%) and allergies (11%) (Summary Table 2.1 to 2.8). These complaints are similar to the chronic disease conditions seen in countries around the world, in which heart disease, cerebrovascular diseases and pulmonary disease are the main causes of death (Table 2.0).

When reviewing all the regional studies done overseas, as well as the one global study (Leboeuf-Yde *et al.,* 2004), it becomes apparent that patients seen in private practice present with a multitude of conditions. The majority of conditions being musculoskeletal in nature, which stands to reason based on the Chiropractors scope and understood identity; the minority of conditions being non-musculoskeletal diseases with a focus on cardiovascular, respiratory and allergy related conditions. This discussion contrasts starkly with Table 2.0 in which the national governments of these particular regions (collectively internationally) report that cardiovascular (cerebrovascular), malignancy and infective diseases (namely: HIV) are the most prevalent and form the basis for their national health strategies. This latter outcome therefore suggests that Chiropractors contribute in a limited manner to their respective national health strategies.

A prospective, non-randomised, practise based observational study was done in the greater Portland area of Oregon, USA by Haas *et al.,* (2004), where the reports of pain and disability outcomes for mechanical low back pain from both General Practitioners, and Chiropractors were noted. An overall number of 2 870 acute and chronic low back pain patients from 60 Chiropractic and 111 General Practitioners' practices participated in the study. Information was gathered using the Revised

Oswestry Disability questionnaire. From the results of this study, it was found that 55.4% of the patients were female and 91.8% were white. The study was focused on low back pain with 72% being acute low back pain. Haas *et al.,* (2004) did state that 45.7% of the patients suffered from a chronic co-morbidity (Summary Table 2.1 to 2.8), though because the conditions were not specified it makes it difficult to relate these patients to the national information reflected in Table 2.0. The treatment protocols were also not investigated.

A study done by Hartvigsen *et al.,* (2002) to illustrate the basic characteristics of the Danish Chiropractic patients, administered a questionnaire to all new patients who registered at all the Chiropractic clinics in Denmark. However, the research was limited because it was undertaken in a randomly selected week (namely: time limited). It was noted that 80% of the clinics participated in the study, with 1897 (94% of the total questionnaires distributed) patients completing the questionnaire. The result revealed that Chiropractic is integrated quite well with the primary healthcare system in Demark, in that almost 75% of patients chose to consult a Chiropractor out of their own initiative. This percentage is much higher than the percentages from other European countries. From the results of this study, it can be seen that 51.5% of the patient population was female (Summary Table 2.1 to 2.8). The majority of the complaints were low back pain (53%), of which the majority was sub-acute in nature (80%). Unlike in Sorensen *et al.,* (2006) Hartvigsen *et al.,* (2002) did not investigate co-morbidities and treatment protocols, thus being similar to the American and Canadian studies previously discussed (Coulter and Shekelle, 2005; Mootz *et al.,* 2005).

At the turn of the century, Nyiendo *et al.,* (2001) completed a prospective, observational, community-based feasibility study that involved Chiropractors and family General Practitioners from Portland (Oregon) in the USA. This study included forty private Chiropractic clinics; the outpatient clinic of the department of Family Medicine Oregon Health Science University and five other Portland family doctor practices. The outcomes were to measure pain severity, functional disability and effectiveness of the treatment and patient satisfaction was recorded after seven to ten days and again after one month. The General Practitioners and Chiropractors also completed questionnaires either during or directly after the patient consultations,

to provide data on the on the clinical impression of the patient and patient management. The Chiropractors treatment choice was that of manipulation followed by physical modalities, where General Practitioners chose anti-inflammatory drugs. It was found that 55% of the patients were female and 91.8% were white. The focus of the study was chronic low back pain therefore no other musculoskeletal conditions were recorded. Nyiendo *et al.,* (2001) did record that 31.2% of the patients were suffering for co-morbidities, however, no co-morbidities were specified (Summary Table 2.1 to 2.8). With regards to the treatment protocol, manipulation was the most common form of treatment used, though nutritional advice (10.6%), self education (50.1%) and exercise plans (57%) were also given to each of the patients. This suggests that the chiropractors focus was not only musculoskeletal in that reported non-musculoskeletal conditions were also noted and addressed in the treatment protocols.

Similarly, Rubinstein *et al.,* (2000) undertook a retrospective questionnaire based study which described the Chiropractic patient population in the Netherlands. The questionnaire was given to a study population that consisted of ten consecutive new patients per Chiropractor. Of the 130 Chiropractors registered in the Netherlands 94 of them took part in the study, and 883 patients returned the questionnaire. The main reason for the patients consulting the Chiropractor was neuro-musculoskeletal in nature. From the results of the study, it was found that females were the majority of the patients complaining of musculoskeletal conditions, with less than two percent of the patients complaining of non-musculoskeletal symptoms. Similar to Nyiendo *et al.,* (2001) Rubinstein *et al.,* (2000) noted all types of patient complaints inferring that practitioners acknowledged and addressed these in practice. One limitation presented by Rubinstein et al., (2000) study is the lack is the lack of specific diagnoses of the non-musculoskeletal conditions, which impairs the reader's ability to determine whether the complaints seen are similar or dissimilar to those conditions noted in the Netherlands (Table 2.0).

At about the same time that Nyiendo *et al.,* (2001) and Rubinstein *et al.,* (2000) undertook their studies, Hawk *et al.,* (2001) compiled a study evaluating the demographics of patients and the prevalence of non-musculoskeletal conditions in Chiropractic patients in United States of America, Canada and Australia. The

purpose of the study was to note characteristics of patients that were seeking Chiropractic care for non-musculoskeletal complaints and the practitioners linked with such patients. The study drew data predominantly from thirty-two states in America. There were 7 651 patients that completed forms from 110 different practices. Non-musculoskeletal complaints accounted for 10.3% of the main complaints. Particular characteristics that were associated to non-musculoskeletal complaints were; children under the age of 14, patients who lived in a rural area or a small town and who presented with multiple medical complaints; patients who had received Chiropractic treatment before 1960 and having received medical care for the chief complaint. Limitations to this study included volunteer practices and only their patients whom had given their consent were included. This meant that respondents may not have been representative of the general patient population. Secondly, there was no quality assurance, ensuring that the patients understood the questionnaire, and as in all questionnaires, patients were expected to answer the questions truthfully and to the best of their ability (Hawk *et al.,* 2001). Notwithstanding these limitations, the recorded non-musculoskeletal conditions reported in this study (Hawk *et al.,* 2001) reflect minimal overlap with the disease profile as noted in Table 2.0. This poor match suggests that practitioners participating in this study were not exposed to a patient population that reflects the USA national norm for non-musculoskeletal diseases.

2.4.3 Demographic and descriptive studies of teaching institutions in South Africa and abroad

There are several patient demographic studies that were conducted at the Durban University of Technology (DUT) Chiropractic Teaching Clinic in the year 2007. These studies attempted to gather demographic and descriptive information on Chiropractic patients that attended the DUT Chiropractic Teaching Clinic between 1995 - 2005 (Benjamin, 2007; Jaman, 2007; Kandhai, 2007 and Venketsamy, 2007). The retrospective analysis was focused on patients' different anatomical regions (namely: cervical, thoracic, lumbar and extremity cases respectively). Thirty percent of the sample were randomly selected and analysed in each of these studies. The results of these studies showed that the majority of the patients were female with exception of the study completed by Kandhai, (2007) where the majority of the patients were

male (37.9%) (Summary Table 2.1 to 2.8). Co-morbidities were also investigated in depth with cardiovascular and respiratory disorders shown to be the main non-musculoskeletal complaints. These correspond with the top three causes of death in South Africa (Table 2.0) with cardiovascular disease rating second and respiratory disease rating third (www.statssa.gov.za. 2010). Treatment protocols consisted of musculoskeletal-based treatment. There was no intervention of the co-morbidities listed.

Similarly, a number of studies have been compiled overseas in which comparisons were made between Chiropractic teaching clinics and private practice (Holt and Beck, 2005; Morschhauser *et al.*, 2003; Walsh and Jamison, 1992; Nyiendo *et al.*, 1989). The limitations of these studies are that they may not be generalisable to all Chiropractic teaching clinics and/or to patient populations attending private clinics; as each teaching clinic showed to have at least one distinct characteristic to separate its patient population from other clinics (Morschhauser *et al.,* 2003). Some of these characteristics were noted demographic information (including; age, education, employment and income) (Morschhauser *et al*., 2003; Walsh and Jamison, 1992; Nyiendo *et al*., 1989) which were not found in other studies (Holt and Beck, 2005; Walsh and Jamison, 1992). It is possible that these variances reflect the different neighbourhoods and areas in which the clinics were located. By contrast it was concluded that there were no differences in the types of complaints for which patients sought treatment and the characteristics of the complaints were similar (Walsh and Jamison, 1992; Nyiendo *et al*., 1989).

2.4.4 Summary Table alphabetical coding

A - Public international Chiropractic practices

B - Private international Chiropractic practices

C - International teaching clinics

D - Public local Chiropractic clinics

E - Private local Chiropractic clinics

F - Local teaching clinics

2.4.5 Index of Summary Tables

Summary Table 2.1: Demographics Table

	Study	Countries/Areas	Female	Male	Age
	Suleman, 2001	Calgary Canada	33.0%	67.0%	Not reported
A	Giles e*t al.,* 2003	Queensland Australia	46.5%	53.5%	43.0
	Garner *et al.,* 2007	Ontario Canada	73.0%	27.0%	Not reported
	Stevens, 2007	Buffalo NY	65.0%	35.0%	30 -59
	Rubinstein *et al.,* 2000	Netherlands	Mainly women		41.0
	Nyiendo *et al.,* 2001	Oregon USA	55.0%	45.0%	42.1
	Hartvigsen *et al.,* 2002	Denmark	51.5%	48.5%	42.0
	Haas *et al.,* 2004	Portland USA	55.4%	44.6%	42.2
B	Leboeuf-Yde *et al.,* 2004	Canada, USA, Mexico,	60.0%	38.0%	Not reported
	Coulter and Shekelle, 2005	Canada and USA	61.0%	38.0%	42.0
	Mootz *et al.,* 2005	Arizona	58.0%	42.0%	46.1
		Massachusetts	57.0%	43.0%	44.7
	Sorensen *et al.,* 2006	Denmark	50.5%	49.5%	42.0
	Rubinstein *et al.,* 2008	Netherlands	69.0%	31.0%	41.0
	Waalen *et al.,* 1994	Canada	49.5%	50.5%	28.0
	Morschhauser *et al.,* 2003	Main Teaching Clinic	50.6%	49.4%	56.4% between 18-24
C		Outreach	44.2%	55.8%	43.6% between 45-64
		Inner City	59.1%	40.9%	49.2% between 18-24
		Satellite	60.3%	39.7%	42.8% between 18-24
	Kaponsky-Giles *et al.,* 2007	Toronto Canada	Not reported	Not reported	Not reported
	Martinez *et al.,* 2009	Mexico	61.2%	38.8%	43.0
D	Till and Till, 2000	South Africa	79.0%	21.0%	53.3
	Higgs, 2009	Kimberly hospital SA	70.7%	29.3%	47.5
E	Mahomed, 2007	South Africa	62.8%	37.2%	41.8
	Benjamin, 2007	DUT, SA	54.7%	44.9%	33.3
F	Jaman, 2007	DUT, SA	44.7%	55.3%	39.5
	Kandhai, 2007	DUT,SA	37.9%	62.1%	39.6
	Venketsamy, 2007	DUT, SA	59.6%	40.4%	37.0

Summary Table 2.2: Demographics Table

	Study	Employment and occupation	Ethnicity	Marital status
	Suleman, 2001	From referral program:	Not reported	Not reported
		66% no income, 19% employed, 35% assistance		
		From outreach program:		
		20% employed, 38% no income, 15% social		
A		assistance, 27% other.		
	Giles *et al.,* 2002	Unemployed 33%, Manual worker 18.3%,	Not reported	Not reported
		Self employed 13% , Pensioner 2.3%, other 23.4%		
	Garner *et al.,* 2007	Not reported	Not reported	Not reported
	Stevens, 2007	Not reported	African American 63%, white 32%, Hispanic 4%, Asian 0.4%	Not reported
			Arabic 1%	
	Rubinstein *et al.,* 2000	Students, unemployed, early retired and	Not reported	Not reported
		medically unfit to work 17%, Unskilled Labourers		
		3%, Housewives 18%, Skilled labourers 30%,		
		Middle class personal 23% and high class		
		personal 10%		
	Nyiendo *et al.,* 2001	Full time 55.8%, Part time, 11.6%s, self employed	91.8% white	Married 60.1%
		13,2% and unemployed 19.4%		
	Hartvigsen *et al.,* 2002	Not reported	Not reported	Not reported
B	Haas *et al.,* 2004	Not reported	91.8% white Chronic and 91.6% white acute	Married 60.2%
	Leboeuf-Yde *et al.,* 2004	Full time 41%, part time 11%, self employed	Not reported	Not reported
		15%, Housewife 11%, retired 9%, student 4%,		
		Unemployed 2%, other 2%, missing 2%		
	Coulter and Shekelle, 2005	Not reported	White 82.5%, Black 3.9%, Hispanic 6.4% Other 7.1%	Married 56.7%
	Mootz *et al.,* 2005	Not reported	Asian 1%,African 2%, Native American 4%, White 93%	Not reported
			Hispanic 11%	
		Not reported	Asian 2%, African 3%, Native American 0%, White 95%	
			Hispanic 5%	
	Sorensen *et al.,* 2006	Not reported	Not reported	Not reported
	Rubinstein *et al.,* 2008	Full time/ Part time 77%, Unemployed 15%	Not reported	Not reported

Summary Table 2.2: Demographics Table

	Study	Employment and occupation	Ethnicity	Marital status
		Sick leave/Workman's compensation 7%		
	Waalen *et al.,* 1994	Student 26.2%, Clerical 17.4%, Semi-professional	Not reported	Not reported
		10.4%, Managerial 9.4%, Professional 7.7%,		
		Unskilled 6.7%, skilled 5.3%, Unemployed 5.2%		
		Semi-skilled 4.5%, Retired 4.2%, Housewife 2.9%		
	Morschhauser *et al.,* 2003	Not reported	White 65%, African American 25%	Not reported
C			White 35%, African American 44%	
			White 65%, African American 5%	
			White 90%, African American 5%	
	Kopansky-Giles *et al.,* 2007	Unemployed 7% in the city and 12% in the mass	Not reported	Not reported
		areas, 22, 7% in the park areas		
	Martinez *et al.,* 2009	Housewife 26%, Manual labour 13.2%, Office job	Not reported	Married 59.6%
		Farmer 0.1%		
	Till and Till, 2000	Unemployed or pensioner 42.4%	Coloured and Black 83%	Not reported
D	Higgs, 2009	Employed 42.9%, Unemployed 30.5%, Pensioners	Black 53.2%, Coloured 31.4%,White 14.1%, Indian 1.3%	Not reported
		22.7%, Students 3.9%		
	Mahomed, 2007	23.4% Other	White 75.6% , Indian 15,9%, Black 3,54%, coloured 0.8%	Married 62.6%
		worker 10%, housewife 10%, Clerical 8%,		
E		educator 6%, Retired 6%, Salesmen 5%,		
		self-employed 5%, Student 4%, Businessmen 3%		
		Pensioner 2%, Farmers 1%		
	Benjamin, 2007	Employed 58.1%, Student 21.2%, Housewife 11,2%,	Not reported	Not reported
		Self-employed 4.6%, unemployed 2.9%, Retired		
		/welfare 2.1%		
	Jaman, 2007	Employed, 65.3%, Student 13.3%, Housewife 9.8%,	Not reported	Not reported
		Unemployed 2.9%, Retired/welfare 8.6%		
F	Kandhai, 2007	Employed 49.2%, Self-employed 4.9%, Student	Not reported	Not reported
		22.2%, Housewife 8 %, Unemployed 2.9%		
		Retired/welfare 9.6%, Unknown 3.2%		
	Venketsamy, 2007	Employed 57.9%, Self-employed 4.1%, Student	Not reported	Not reported
		18.9%, Housewife 10.5%, Unemployed 1.7%,		
		welfare 5.3%, Unknown 1.7%		

Summary Table 2.3: Presenting complaints

	Study	Anatomical Location
	Suleman, 2001	Neuromusculoskeletal 100%
	Giles *et al.,* 2002	Soft tissue and nonspecific spinal pain syndromes 17% and Radiologically identifiable pathology 83%
A	Garner *et al.,* 2007	Not investigated
	Stevens, 2007	Lumbo-pelvic 57%, Neck 18%, Thoracic 7%, Headache 1%, Ankle 1%, foot 1%, knee 5%, hip 2%, shoulder
		4%, Maintenance 2%, other1%
	Rubinstein *et al.,* 2000	Lower back pain 47%, Neck pain 19%, Headache 7%, thoracic pain 3%, Neck and head 3% Lower
		extremities 2%, Upper extremities 1%, other Neuromusculoskeletal problems are less than2%,
		Non-neuromusculoskeletal problems are less than2%, and multiple areas of complaint 15%.
	Nyiendo *et al.,* 2001	Lower back pain primary complaint
	Hartvigsen *et al.,* 2002	Lower back pain 53% and neck pain with headaches 15%
	Haas *et al.,* 2004	Chronic lower back pain 28%, Acute lower back pain 71%
B	Leboeuf-Yde *et al.,* 2004	Lower back pain 60%, Neck pain 51%, Midback 30%, Hip 23%, Shoulder 21%, Sciatica 16%, headache 29%
		Arm 12%, Dizziness 8%, Other extremities 12%, Non-musculoskeletal 8%, Maintenance 16%
		Non-musculoskeletal Problems: Allergies 11%, Asthma 5%, Breathing 8%, Circulation 12%,
		digestion 19%, hearing 4%, heart function 4%, tinnitus 5%, sinus 10%, urination 4% and vision 9%
	Coulter and Shekelle, 2005	Neck/cervical problems 27%, Lower back problems 22%, Back and spine 21% and Extremities 13%
	Mootz *et al.,* 2005	Lower back pain 41%, Neck/face pain 26%, Extremity 9%, Headache 6% and wellness 4%
		Lower back pain 44%, Neck/face pain 23%, Extremity 4%, Headache 5% and wellness 10%
	Sorensen *et al.,* 2006	Lower back pain and pelvis 49%
	Rubinstein *et al.* , 2008	Neck pain is the main complaint, non-musculoskeletal < 2%
	Waalen *et al.,* 1994	Cervical pain 32.4%, Thoracic pain 11.2%, lumbar pain 24.4%, sacroiliac 10%, Non-spinal 18.8%
		and other 3.2%
	Morschhauser *et al.,* 2003	Back 44%, Extremities 20% and Multiple areas 20%
		Extremities 40%, Back 33% and Neck 20%
C		Back 40%, Extremities 22% and Neck 20%

Summary Table 2.3: Presenting complaints

	Study	Anatomical Location
		Back 35%, Extremities 25% and Neck 20%
	Kaponsky-Giles *et al.,* 2007	Spinal 82%: Lower back pain 40%, Neck pain 8%, Upper back pain 11%
C		Non-Spinal 18%: Headaches 3%, Multiple sites 19%, Non-Spinal 11%
	Martinez *et al.* , 2009	Lower back pain 29%, extremities 28%, Head and neck 16.4%, Thoracic 12.6%, pelvis 8.4%, Sacrum and
		and coccyx 3.8%, Radiculopathy 0.4%, other 1.2%
	Till and Till, 2000	Extremity disorders 29.8%, Lumbar spine 19.4%, Cervical Spine 14.4%, Sacroiliac joints 13.9%, Thoracic spine 12.5%
	Higgs, 2009	Lumbar pain 35%, Sacroiliac pain 31.2%, Shoulder pain 26.8%, Leg pain 22.4%, Neck pain 18.5%, Hip pain
		10.9%, Knee pain 10.8%, Thoracic pain 7%, elbow pain 6.4%, Neck pain and headache 5.1%,
D		Cervicogenic headache 5.1%, Lower hip pain 4.5%, Forearm pain 3.8%, Wrist pain 2.5%, Arm pain 1.9%
		Iliac crest pain 1.9%, Hand pain 1.9%, Upper leg pain 1.9%, foot pain 1.9%, Scapula pain 1.3%, Calf pain
		1.3%, Ankle pain 1.3%, Tension type headache 1.3%, Generalised headache 1.3%, Buttock pain 1.3%
		Groin pain 1.3%, general Body pain 1.3%, Chest pain 0.6%, Insomnia, facial pain, coccyx pain, oedema,
		cramps, shin pain, cluster headaches, and no complaint were all 0.6%.
	Mahomed, 2007	Head and neck pain 25.6%, Lower back pain 18.5%, neck pain 11.9%, lower back pain with leg pain 11.5%
E		Mid back pain 7%, Neck and arm pain 5.7%, maintenance 4.4%, Headaches 3.5%, Shoulder pain 3.1%,
		Hip pain 3.1%, Ankle and foot pain 1.8%, Knee pain 1.3%, Thigh pain 0.4%, elbow pain, Shin pain, Calf
		pain, wrist and hand pain, and fitness training advise were all 0.4%
	Benjamin, 2007	All thoracic pain related: mid back pain 41. 4%, Thoracic pain 26.5%, Pain between the shoulder blades
		7.2%, upper back pain (T1-T4) 6%, midthoracic pain (T5-T8), 3.2%, Chest pain 2.8%, Rib pain, Scapular pain, Anterior
		chest pain interscapular pain, thoracic and chest pain, and thoracic spine pain were all 0.8%, Lower back pain,
		lower sternal pain, Lower thoracic pain (T9-T12), chest and shoulder pain, mid and upper T-spine pain, left
		shoulder pain, migraine headaches, thoracic and rib pain, thoracic and rhomboid pain, tense thoracic area,
		T-spine pain, shoulder pain, sharp thoracic pain, right thoracic pain, pain in sternum and chest, neck pain and
		headaches, neck pain and pain in rib cage were all 0.4%
F	Jaman, 2007	All lower back pain related: lower back pain 89.9%, Buttock pain 4.8%, Leg pain 4%, Sacroiliac pain 3.6%, thigh 3.1%
		Hip pain 2%, knee pain 0.9 % Mid-back pain 0,8%, Foot pain 0.5%, groin pain 0.3%

Summary Table 2.4: Presenting complaints

	Study	Primary diagnosis	Percentage of acute, subacute and chronic complaints
	Suleman, 2001	Not reported	Not reported
	Giles *et al.,* 2002	Nonspecific Spinal pain syndromes 17% and Radiological abnormalities 83%	Acute 2.2%, Subacute 7.3% and Chronic 92.7%
A	Garner *et al.,* 2007	Lower back 56%, Neck 11.6%, T-spine 11.2%, Lower extremity 6.6%,	Chronic 86.2% and Acute 13.8%
		Pelvis 5.8%, Upper extremity 4.6% Missing 2.7%, Systemic 1.5%	
	Stevens, 2007	Not reported	Acute 21%, Subacute 9%, Chronis 68%, Maintenance 2%
	Rubinstein *et al.,* 2000	Not reported	Chronic 77%
	Nyiendo *et al.,* 2001	Lower back pain	100% Chronic (study was based on chronic lower back pain)
	Hartvigsen *et al.,* 2002	Not reported	Subacute 80%, Greater than 3 months 35%, and greater than 1 year 21%
	Haas *et al.,* 2004	Lower back pain	Acute 72% and Chronic 28%
B	Leboeuf-Yde *et al.,* 2004	lower back pain	Not reported
	Coulter and Shekelle, 2005	Not reported	Less than 3 weeks 45% and more than 6 months 21%
	Mootz *et al.,* 2005	Not reported	Not reported
		Not reported	Not reported
	Sorensen *et al.,* 2006	Not reported	Acute 64%
	Rubinstein *et al.* , 2008	Neck pain (the entire study was based on neck pain)	Acute 8%, Subacute 17% and Chronic 75%
	Waalen *et al.,* 1994	Not reported	30.8% > 2 years, and 31.6% < 1 month
	Morschhauser *et al.,* 2003	Not reported	1 week > 20% , 1-6 weeks 18% and 1 year < 40%
			1 week > 5% , 1-6 weeks 17% and 1 year < 55%
C			1 week > 10% , 1-6 weeks 15% and 1 year < 53%
			1 week > 10% , 1-6 weeks 15% and 1 year < 53%
	Kaponsky-Giles *et al.,* 2007	Primary spinal diagnosis 82%, and Non-spinal 18%	Acute 19%, Recurrent 19% and Chronic 67%
	Martinez *et al.* , 2009	Not reported	Acute 24.4%, Chronic < 365 days 13.6%, Chronic > 365 days 62%
	Till and Till, 2000	Not reported	Not reported
	Higgs, 2009	Lumbar Myofascitis 21%, Thoracic facet syndrome 9.6%, sacroiliac	Acute 21.6%, Subacute 10.2% and Chronic 68.2%
D		syndrome 8.9%, Cervical facet syndrome 7%, cervical myofascitis 5.7%	
		Lumbar facet syndrome 1.9%, Lumbar nerve root entrapment 1.9%	

Summary Table 2.4: Presenting complaints

	Study	Primary diagnosis	Percentage of acute, subacute and chronic complaints
		Osteoarthritis of the knee 1.3% and cervicogenic headaches 0.6%	
	Mahomed, 2007	Cervical facet syndrome 7.05%, Sacroiliac syndrome 5.7%, whiplash	Acute 28.7%, Subacute 13.24% and Chronic 57.9%
		4.9%, Not applicable 4.4%, Cervical facet syndrome with myofascitis	
		4%, Cervical facet syndrome with myofascitis and cervicogenic	
E		headache 4%, cervicothoracic facet syndrome 4%, lumbar facet	
		syndrome 4%, Lumbar facet with lumbar scoliosis/spondylolisthesis/	
		increased lordosis 3.1%, Lumbar discogenic disease with radiculopathy	
		3.10%	
	Benjamin, 2007	Thoracic facet syndrome 74.4%, myofascitis 8.8%, costotransverse	Not reported
		syndrome 2%	
	Jaman, 2007	Sacroiliac syndrome 39.7%, lumbar facet 37.8%, myofascitis 6.6% ,	Not reported
		disc bulge 2.7%, myofascial pain 1.4%, NRE 1.3%, disc herniation 1.2%	
	Kandhai, 2007	UPPER LIMB: Myofascitis 12.9%, supraspiantus tendonitis 7.8%,	Not reported
F		Lateral epicondylitis 7.1% , Bicipital tendonitis 6.8%,	
		adhesive capsulitis 5.4%	
		LOWER LIMB: Patellafemoral pain syndrome 12.2%, inversion ankle	
		sprain 8.2%, myofascitis 8.2%, osteoarthritis 7% , Plantarfascitis 4.2%	
	Venketsamy, 2007	Cervical facet syndrome 67.4%, Myofascitis 14.2%, cervicogenic	Not reported
		headache 3.5%, NRE 2.1%, joint dysfunction 2%, tension headache 1.6%,	
		migraine 1%,	

Summary Table 2.5: Presenting complaints

	Study	Aetiology	Special Investigations
	Suleman, 2001	Not reported	Not reported
A	Giles *et al.,* 2002	Not reported	CT, MRI, and Laboratory tests
	Garner *et al.,* 2007	Not reported	Not reported
	Stevens, 2007	Not reported	Not reported
	Rubinstein *et al.,* 2000	Not reported	Not reported
	Nyiendo *et al.,* 2001	Not reported	X-Ray 25.6%, CT 0.4%, MRI 1.5%
	Hartvigsen *et al.,* 2002	Not reported	Not reported
	Haas *et al.,* 2004	Not reported	Not reported
B	Leboeuf-Yde *et al.,* 2004	Not reported	Not reported
	Coulter and Shekelle, 2005	Reported injury 53%, Non-work related injuries 43%, work related injuries 16%	Not reported
	Mootz *et al.,* 2005	Not reported	X-ray 17%, MRI 1%
		Not reported	X-ray 6%, MRI 1%
	Sorensen *et al.,* 2006	Not reported	27% X-rayed by the Chiropractor
	Rubinstein *et al.* , 2008	Not reported	Not reported
	Waalen *et al.,* 1994	Not reported	X-Ray 34.4%
C	Morschhauser *et al.,* 2003	Not reported	Not reported
	Kaponsky-Giles *et al.,* 2007	Not reported	Not reported
	Martinez *et al.* , 2009	Trauma 47%, Work related 14.8%, Sports 13.6%, Idiopathic 19.6%, Other 5%	Not reported
D	Till and Till, 2000	Not reported	Not reported
	Higgs, 2009	Unknown 33.1%, Non-Traumatic 33.8%, traumatic 33.1%	X-Ray 7.6% , Blood tests 1.9%
E	Mahomed, 2007	Not reported	X-Ray 37.4%, Ultrasound 3.2% Blood test 2.4%
	Benjamin, 2007	Unknown 61.4%, Sport 8.4%, Lifting and carrying 5.6%	X-Ray 5.6%
	Jaman, 2007	Unknown 57.2%, Carrying and bending 12.3%, Sport 11.5%, Accident 11%, surgical	X-Ray 8.5%, Blood 0.5%, Ultrasound 0.2%
F		2%	
	Kandhai, 2007	Unknown 53.9%, Sport 25.4%, Accident 14.4%,	UL X-Ray 5.1% and LL X-Ray 4.7%
	Venketsamy, 2007	Unknown 61.8%, Accident 9.9%, depression 5.6%, Poor posture 5.6%, Sport 4.6%	X-ray 8.7%, other 0.4%
		Ergonomics 3.5%, bending and lifting 3.2%, Surgical 2.3%	

Summary Table 2.6: History of illness, smoking and blood pressure

	Study	History of illness	Smoker	Blood pressure
	Suleman, 2001	Not reported	Not reported	Not reported
	Giles *et al.,* 2002	Not reported	Not reported	Not reported
A	Garner *et al.,* 2007	Not reported	21.2%	Not reported
	Stevens, 2007	Cholesterol 13%, Heart disease 4 %, Diabetes 12%, Depression 22%	30.0%	27.0%
		Alcoholism 3%, chemical dependency 3%		
	Rubinstein *et al.,* 2000	Not reported	Not reported	Not reported
	Nyiendo *et al.,* 2001	Previous lower back pain 89.4%, present co-morbidity 31.2%	21.9%	Not reported
	Hartvigsen *et al.,* 2002	Not reported	Not reported	Not reported
	Haas *et al.,* 2004	Co-morbidity: Chronic 45.7%, acute 50.7%	Chronic patients 22%	Not reported
			Acute patients 23%	
B	Leboeuf-Yde *et al.,* 2004	Not reported	Not reported	Not reported
	Coulter and Shekelle, 2005	Not reported	Not reported	Not reported
	Mootz *et al.,* 2005	Not reported	15.0%	Not reported
		Not reported	13.0%	Not reported
	Sorensen *et al.,* 2006	Lung disease 23%, Asthma 14%, Gastrointestinal 12%, Reproductive 13%,	32.0%	Not reported
		cardiovascular 5%, Diabetes 1%		
	Rubinstein *et al.,* 2008	Not reported	Not reported	Not reported
	Waalen *et al.,* 1994	Not reported	Not reported	Not reported
C	Morschhauser *et al.,* 2003	Not reported	Not reported	Not reported
	Kaponsky-Giles *et al.,* 2007	Not reported	Not reported	Not reported
	Martinez *et al.,* 2009	Not reported	Not reported	Not reported
	Till and Till, 2000	Not reported	Not reported	Not reported
D	Higgs, 2009	Diabetes 12.8%, Allergies 5.8%, heart condition 5.1%, Asthma 4.5%	15.9% Smoke	28.2%
		Rheumatoid arthritis 3.8%, tuberculosis 3.2%, cancer 3.2%, Osteoarthritis	12.1% previous smokers	

Summary Table 2.6: History of illness, smoking and blood pressure

	Study	History of illness	Smoker	Blood pressure
		2.6%, epilepsy 1%, and Stroke 0.6%		
E	Mahomed, 2007	Not reported	Not reported	Not reported
	Benjamin, 2007	Not reported	Not reported	Not reported
	Jaman, 2007	Cardiovascular 5.9%, Abdominal 4.8%, respiratory 4.4%, endocrine	Not reported	12.30%
		3.3%, musculoskeletal 2.5%, Vascular 1.3%, headaches 1.0%		
	Kandhai, 2007	UL: Cardiac 9.2%, respiratory 7.5%, abdominal 3.7%,	Not reported	11.10%
		Musculoskeletal 3.4%, endocrine 7.5%, psychiatric 2.4%, other 3.4%		
F		LL: Cardiac 8.2% respiratory 5.7%, abdominal 1.7%,		
		Musculoskeletal 2.7%, endocrine 2%, psychiatric 1.5%, other 1.7%		
	Venketsamy, 2007	Respiratory disorder 24%, heart disease 20.5%, Endocrine 14.2%	Not reported	13.60%
		abdominal 13.4%, psych 13.4%, Neuro 11.7%, Musculoskeletal 7.6%		
		Genitourinal 6.6%, blood 4.2%, other 4.2%, Dermatological 3.7%		
		Oncological 2.4%, vascular 1.5%		

Summary Table 2.7: History of Conditions

	Study	Pre-existing spinal conditions	History of surgery	Previous chiropractic treatment
	Suleman, 2001	Not reported	Not reported	Not reported
	Giles *et al.,* 2002	Inflammatory arthritic conditions 1.9%	Failed spinal surgery 6.7%	Not reported
A		Malignancies 0.6%, other e.g. osteoporosis		
		2.2%		
	Garner *et al.,* 2007	Not reported	Not reported	Not reported
	Stevens, 2007	Not reported	Not reported	Not reported
	Rubinstein *et al.,* 2000	Low back pain 76%, Neck pain 59%, Multiple sites 38%	Not reported	14%
	Nyiendo *et al.,* 2001	Pre-existing lower back pain	Not reported	Not reported
	Hartvigsen *et al.,* 2002	57% did have previous treatment	Not reported	55% previous treatment with a chiropractor
	Haas *et al.,* 2004	Chronic Lower back pain 81.2%	Not reported	Not reported
		Acute lower back pain 90.5%		
B	Leboeuf-Yde *et al.,* 2004	Not reported	Not reported	56% over the past 3 months
	Coulter and Shekelle, 2005	Not reported	Not reported	Not reported
	Mootz *et al.,* 2005	Not reported	Not reported	81% seen previously, of which 90% was the same complaint
		Not reported	Not reported	89% seen Previously, of which 90% was the same complaint
	Sorensen *et al.,* 2006	Previous problems were noted in 60%	Not reported	Previous treatment 44%
	Rubinstein *et al.* , 2008	Neck pain 72%	Not reported	37%
	Waalen *et al.,* 1994	Not reported	Not reported	Not reported
C	Morschhauser *et al.,* 2003	Not reported	Not reported	Not reported
	Kaponsky-Giles *et al.,* 2007	Not reported	Not reported	Not reported
	Martinez *et al.* , 2009	Not reported	0.40%	Not reported
D	Till and Till, 2000	Not reported	Not reported	Not reported
	Higgs, 2009	7.7% have had previous treatment	50.3%	78.7%
E	Mahomed, 2007	100% Have consulted previous doctors	Not reported	70%
	Benjamin, 2007	Not reported	Not reported	Not reported
F	Jaman, 2007	Not reported	Not reported	Not reported
	Kandhai, 2007	Not reported	Not reported	Not reported
	Venketsamy, 2007	Not reported	Not reported	Not reported

Summary Table 2.8: Management protocol

	Study	Referals	Contraindications for treatment	Treatment protocols
	Suleman, 2001	Not reported	Not reported	Not reported
	Giles *et al.,* 2002	12.6% Referred to various disciplines	Pneumthorax complications from	Acupuncture 28.6%, Manipulation 11.7%,
		Orthopaedics, Neurosurgery and	acupuncture	Medication 7.6%, Soft tissue 0.6%.
		physiotherapy		
A	Garner *et al.,* 2007	8% referred to more suited doctors	Mental and physical health problems8%,	Modalities and Nutrition 0%
			Family and legal problems 6%,	
			Contra-indications to more suited doctors 8%,	
			Multiple problems 4%	
	Stevens, 2007	Not reported	Not reported	Not reported
	Rubinstein *et al.,* 2000	Not reported	Not reported	Not reported
	Nyiendo *et al.,* 2001	0.8% referred to other physicians	Not reported	Manipulation 87.3%, Physio-modalities 48.8%
				Bed rest 4.8%, Posture advice 19.6%, Support
				and brace 6.7%, Nutritional advice 10.6%, Self care
				education 50.1%, exercise plan 57%
	Hartvigsen *et al.,* 2002	Not reported	Not reported	Not reported
	Haas *et al.,* 2004	Not reported	Not reported	Nearly 100% manipulation and 50%
				Physio-modalities
B	Leboeuf-Yde *et al.,* 2004	Not reported	Not reported	manipulation 83%, Soft tissue 52%, Mechanically
				assisted adjustment 35%
	Coulter and Shekelle, 2005	Not reported	Not reported	Not reported
	Mootz *et al.,* 2005	Not reported	Not reported	Spinal Adjustments 82%, extremity adjustments 9%
				Ischaemic compression 12% and Active release 10%
		Not reported	Not reported	Spinal Adjustments 85%, extremity adjustments 11%
				Ischaemic compression 13% and Active release 14%
	Sorensen *et al.,* 2006	Not reported	Not reported	Not reported
	Rubinstein *et al.* , 2008	Not reported	Not reported	Not reported
	Waalen *et al.,* 1994	Not reported	Not reported	Not reported
C	Morschhauser *et al.,* 2003	Not reported	Not reported	Not reported
	Kaponsky-Giles *et al.,* 2007	Not reported	Not reported	Not reported
	Martinez *et al.* , 2009	Not reported	Not reported	Not reported

Summary Table 2.8: Management protocol

	Study	Referrals	Contraindications for treatment	Treatment protocols
	Till and Till, 2000	Not reported	Not reported	Not reported
D	Higgs, 2009	3.8%	20.0%	Manipulation 90.4%, Dry needling 76.4%, strapping 1.3%, Soft tissue therapy 38.9%, Mobilization 7%, home exercises 0.6%
E	Mahomed, 2007	Not reported	Not reported	Not reported
	Benjamin, 2007	0.1%	2.8%	Manipulation 82.6%, soft tissue 79.4%, Stretch 44.9%, Ischaemic 26.7%, Cyrotherapy 22.7%, Dry Needling 15%, Mobilisation 10.1%, PNF stretching Heat therapy 4.9%, soft tissue mobilisation 2.8% No treatment 2.8%
	Jaman, 2007	1.6%	3.7%	Manipulation 74.5%, Soft tissue therapy 72.7%, Ischaemic compression 31.7%, stretch 29.5%, PNF s stretch 25.6%, cyrotherapy 16%, dry needling 10.6%
F				Mobilisation 9.5%, No treatment 3.2%, heat 2.1% strapping 0.5%
	Kandhai, 2007	2.9%	1.9%	Soft tissue mobilisation 42.2%, cyrotherapy 37.4% Mobilisation 34.1%, Manipulation 27.5%, Cross frictional massage 18.9% stretches 16.2%, dry needling 15.6%, PNF stretching 12.9%, ischaemic compression 11.3%, No treatment 6%, strapping 5.6%, heat therapy 2.2%.
	Venketsamy, 2007	2.1%	6.3%	Soft tissue 83.4%, Manipulation 74.7%, Stretch 43.6% Ischaemic compression 36.9%, PNF stretch 20.1%, dry needling 18.5%, Cyrotherapy 14%, Heat therapy 3.3%, No treatment 3.1%

2.5 Discussion of the five main objectives in this study and the trends analysed in the Tables 2.1 to 2.8 documented on the pages 27 - 39.

2.5.1 Introduction

According to Dagenais and Haldeman (2012), McBeth and Jones (2007) and Kopansky-Giles *et al.,* (2007), sociodemographic factors as well as income levels, litigation circumstances, disability or other insurance covers for the patient may predispose to musculoskeletal/back pain singularly or in combination. With Chiropractic being a relatively young profession in South Africa, with the Chiropractic service being availible principally within the private sector (Higgs, 2009). Suleman (2001) found, that there were differences between the patients being treated in the community outreach program as compared to that of private practice. This suggests that practitioners practicing in more rural settings should be exposed to such patients (Kopansky-Giles and Papadpoulos, 1997). However with a paucity of information in both South African and international context the comparison between private and public sector patients seen by Chiropractors is not possible (Coulter and Shekelle, 2005).

2.5.2 Discussion of the Demographic Tables (Summary Table 2.1 and 2.2)

For adequate descriptive data the objective data regarding patient demographics, patient health status and clinical characteristics of patients seeking Chiropractic care is needed (Coulter and Shekelle, 2005).

2.5.2.1 Gender (Summary Table 2.1)

Data regarding gender are represented in the Summary Table 2.1. The majority of the studies showed a higher proportion of females being treated than that of males with the few exceptions of certain studies (Kandhai, 2007; Jaman, 2007; Suleman, 2001, Giles *et al.,* 2002; Waalen *et al.,* 1994). This is similar to the results found in Tatalias (2006) where it was reported that females are more likely to use alternative medicines, as they seem to have a greater knowledge of these practices, and have

generally also had poorer experiences with General Practitioners, leading them to look for alternative medical options (Tatalias, 2006).

Of the studies with the higher male patient participation, two of the studies (Giles *et al.,* 2002; Suleman, 2001) were located in public clinics closely related to socio-demographic populations. Three of them were in teaching clinics (Jaman, 2007; Kandhai, 2007; Morschhauser *et al.*, 2003), which also draw socio-demographically disadvantaged populations. Suleman (2001), however, had the greatest number of males in his study. This may be attributed to the fact that only a few males had healthcare coverage in other provinces besides Alberta, and so more males came across from the other provinces to use the CUPS facility in Alberta.

2.5.2.2 Age (Summary Table 2.1)

Data regarding age is also seen in Summary Table 2.1. The mean age varied in all 24 studies that were documented in the literature. The patients' ages ranged from 28 and 53.3 years of age. The highest mean age of all the studies presented in Summary Table 2.1 was found in, Till and Till (2000), where the mean age was 53.3 years of age. Reasons for this variance could include clinic location, population type and study inclusion criteria (Morschauser *et al.,* 2003). Nevertheless, both internationally and locally, the mean age of patients in private clinics is between 38.5 and 42 years of age, where as the mean age in teaching clinics range from 33.3 and 43 years of age. This observation that younger patients attended teaching clinics was supported by Nyiendo *et al.,* (2001). This pattern was also evident in the mean age of the patients needing care at the DUT Chiropractic Teaching Clinic in South Africa (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007).

2.5.2.3 Employment and occupation (Summary Table 2.2)

Employment and occupation were investigated in most of the studies reflected on the Summary Table 2.2 (Higgs, 2009; Martinez *et al.,* 2009; Rubinstein *et al.,* 2008; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Kopansky-Giles *et al.,* 2007; Mahomed, 2007; Steven, 2007; Venketsamy, 2007; Leboeuf-Yde *et al.*, 2004; Giles *et al.,* 2002; Nyiendo *et al.,* 2001; Suleman, 2001; Rubinstein *et al.,* 2000; Till and

Till, 2000; Waalen *et al.,* 1994). In most of the studies a higher proportion of patients were employed. The studies showed that there were higher levels of unemployment associated with patients attending the public clinics, both internationally and in South Africa. The greatest percentage was reported by Suleman (2001), where 66% of the patients were unemployed, and Till and Till (2000) showed that there was 42.4% of patients who were unemployed, the other two studies that demonstrated this trend were Higgs (2009) and Giles *et al.*, (2002).

2.5.2.4 Ethnicity (Summary Table 2.2)

Patients that presented to the majority of private clinics in USA, Canada and South Africa were mainly White (Caucasian). In the study compiled by Stevens (2007) a greater proportion of African Americans were noted. This was mirrored by Till and Till (2000) who documented 83% of the population as African and Higgs (2009) who reported 53.2% Africans in her study. In the study completed by Morschhauser *et al.,* (2003) there was a higher portion African Americans in the outreach clinic. The common element is that all four of these studies were completed in public clinics. These results are in line with Hurwitz (1998) who suggested that similarities and differences can be seen between the patients that present to the Chiropractic clinics based on where the neighbourhood and where the clinic is situated.

2.5.2.5 Marital status (Summary Table 2.2)

Data regarding the marital status (seen on Summary Table 2.2), showed that the majority of the local and international patients in private practice were married (Mahomed, 2007; Coulter and Shekelle, 2005; Haas *et al.,* 2004; Nyiendo *et al.,* 2001). In the study completed by Martinez *et al.,* (2009) within the international teaching clinic, it was also observed that more than half the patients were married. The remaining studies had not recorded the marital status of the participating patients (Higgs, 2009; Rubinstein *et al.,* 2008; Benjamin, 2007; Garner *et al.,* 2007; Jaman, 2007; Kandhai, 2007; Kopansky-Giles *et al.,* 2007; Stevens, 2007; Venketsamy, 2007; Sorensen *et al.,* 2006; Mootz *et al.,* 2005; Leboeuf-Yde *et al.,* 2004; Morschhauser *et al.,* 2003; Giles *et al.,* 2002; Hartvigsen *et al.,* 2002; Suleman 2001; Rubinstein *et al.,* 2000; Waalen *et al.,* 1994).

2.5.3 Presenting Complaints (Summary Table 2.3 - 2.5)

In this descriptive study the main complaints that were documented at the Marburg Haven Clinic included the anatomical location of pain (as reported by the patient at the time of the first consultation). Thereafter the primary diagnosis was recorded (as documented by the Chiropractic student at the first consultation). The secondary diagnoses as well as the duration of the complaint before the patient received treatment were also recorded. The aetiology of the complaint (non-traumatic, traumatic repetitive, traumatic acute and unknown) was also recorded. Any special investigations requested by the Chiropractic student at the time, was also documented.

Primary and secondary diagnoses were considered for the following reasons:

- The main complaints pointed towards the common problems that occur among the patients at the Marburg Haven Clinic and therefore typically representing complaints they may occur in public Chiropractic facilities in the region of Kwa-Zulu Natal South Africa.
- If differences were found in the Marburg Haven Clinic, then these problem areas were highlighted for further investigation.
- If similarities were found, it suggested that the current course outline at the teaching institution and the level of clinical experience acquired by the students prepared them to manage patients as these clinics present a more diverse patient base for the students (Morschhauser *et al.,* 2003).
- Added future benefits of this data were to establish whether there are any specific complaints amongst the community of Marburg and the surrounding rural areas.
- The main complaint and the chronicity of the complaint gave a good indication to the level of understanding and insight of patients that came to the clinic.
- These factors were measured in other studies, therefore inclusion into the present study allowed meaningful comparisons to be made to other local and international studies.

2.5.3.1 Main complaint (Summary Table 2.3)

The main complaints of the patients are documented in Summary Table 2.3 which represented their anatomical locations. The location of the patients' main complaint was examined in 23 of the studies, with the exception of Garner *et al.,* (2007), and was reviewed within Tables 2.1 to 2.8. It was thus possible to analyse this data for the most common area of complaint in all the studies except for the studies that were designed to look at a specific area of the human anatomy (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007).

In relation to the area of main complaint, most of the patients from different clinics gave similar responses. They reported that their low back pain was the most problematic area. There were two studies that had exceptions to this report; the findings from Coulter and Shekelle (2005) and Mahomed's (2007) study both highlighted that, the cervical region complaints were more common than the low back region. Coulter and Shekelle (2005) had a five percent difference between patients complaining of cervical pain versus low back pain, and Mahomed (2007) had a seven percent difference between patients complaining of cervical pain versus low back pain. The high proportion of neck pain could be related to the high percentage of managerial professions in the population sub-group that were documented in Mahomed (2007). Coulter and Shekelle (2005) did not investigate occupation type. Nevertheless, if results from Mohamed (2007) are reviewed they seem to indicate that there may be a link between higher level education and managerial and secretarial professions. This study may indirectly bear the same observation if the high percentage of patients who had high level of education was taken into consideration.

2.5.3.2 Primary diagnosis and duration of main complaint (Summary Table 2.4)

In relation to the main complaint, primary diagnosis and duration of main complaint pre-treatment has been stated in Summary Table 2.4. Primary diagnosis was not documented in many of the studies, as the anatomical location of the complaint as per the patient was recorded. The studies that were completed at DUT Chiropractic Teaching Clinic were location specific and the student only documented specific

diagnosis for that particular region. A finding of interest was that the most common diagnosis made in private South African clinics was cervical facet syndrome (7.05%) and subsequently sacroiliac syndrome (5.7%) (Mahomed, 2007), yet in South African public clinics the most common diagnosis was lumbar myofascitis (21%) followed by thoracic facet syndrome (9.6%) (Higgs, 2009).

There was a discrepancy with regards to the duration of the chief complaint. At the time of the research participation, many developed countries [Denmark, Europe, Canada, Sweden and USA] (Sorensen *et al.,* 2006; Coulter and Shekelle, 2005; Haas *et al.,* 2004; Waalen *et al.,* 1994) reported patients' presentations as acute. By contrast clinics that had been set up in areas where there was a lower socioeconomic status such as Buffalo (New York, USA) Queensland (Australia) and developing countries such as Mexico and South Africa, patients presented in the sub-acute and chronic stages (Higgs, 2009; Martinez *et al.,* 2009; Rubinstein *et al.,* 2008; Garner *et al.,* 2007; Kopansky-Giles *et al.,* 2007; Mahomed, 2007; Stevens , 2007; Leboeuf-Yde *et al.,* 2004; Giles *et al.,* 2002; Morschhauser *et al.,* 2003; Nyiendo *et al.,* 2001; Rubinstein *et al.,* 2000) (Summary Table 2.2). In South Africa and possibly other lower socioeconomic regions, this delay in seeking medical treatment which causes the chief complaint to be presented as sub-acute or chronic, may be due to a number of factors listed below:

- **Accessibility barriers (Gaumer, Koren and Gemmen, 2002)**

The many rural communities, who form the public sector, may not have ready access to Chiropractic care in South Africa. However, Chiropractic is readily available in the private sector and urban areas, for example in the greater areas of Durban, Johannesburg and Cape Town (Chiropractic Association of South Africa (CASA), 2012).

- **Financial barriers (Gaumer *et al.,* 2002)**

The low socioeconomic status prevailing in South Africa, with respect to the general population, also contributes as a preventative factor for seeking medical treatment

(Ataguba *et al.,* 2011). Chiropractic is covered by 98% of the medical aid schemes but since most Chiropractors in South Africa work within the private sector (CASA, 2012); they mainly service the middle and higher income earners, who tend to be part of medical aid schemes. (17.6% of the total South African population) (Statistics South Africa, 2010).

- **Legal barriers (Gaumer *et al.,* 2002)**

There are stringent legal limitations curtailing advertising in South Africa which means that knowledge of Chiropractic cannot be raised among the general public (Allied Health Professions Council South Africa, 2012).

2.5.3.3 Aetiology of main complaint (Summary Table 2.5)

Of the twenty-four studies reviewed in Summary Table 2.5, only seven investigated the aetiology of the conditions as reported by the patients (Higgs, 2009; Martinez *et al.,* 2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007; Coulter and Shekelle, 2005) and therefore indirectly the patients knowledge of what they can access Chiropractic care for. The aetiology of the complaints was investigated in this study to determine what may be the causes of the main complaints with which patients presented in the public sector. The study would also highlight the level of awareness of the common causative factors. Of the studies examined four out of the seven were done at the DUT Chiropractic Teaching Clinic in South Africa (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy 2007) and one study was compiled at Kimberly hospital (Higgs, 2009). The aetiology of complaints cannot be compared to the private sector in South Africa as this was not examined by Mahomed (2007). Exact comparisons were difficult to make in this section of data as different terminology was used in the studies to describe the aetiology of the complaint.

2.5.3.4 Special investigations (Summary Table 2.5)

In terms of the special investigations that were performed (Summary Table 2.5), radiographs were the most common special investigations requested. Radiographs were investigated by ten of the studies examined on the Summary Table 2.3 (Higgs,

2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Mahomed, 2007; Venketsamy, 2007; Mootz *et al.,* 2005; Sorensen *et al.,* 2006; Nyiendo *et al.,* 2001; Waalen *et al.,* 1994). Radiography was most commonly used by Chiropractors due to the cost factor as compared to Magnetic Resonance Imaging (MRI) and computed tomography (CT) scans. Additionally, the time frame for receiving radiographic reports is much shorter. Sorenson *et al.,* (2002) pointed out that a higher number of radiographs were taken for patients' at the initial consultation. They also found that more radiographs were recommended for patients who were suffering from chronic conditions and those older patients (60 years of age and above) (Sorenson *et al.,* 2002).

2.5.3.5 Medical barriers

- **Knowledge and awareness of the medical profession**

Langworthy and Birkelid (2001) recommended that with an increasing emphasis on multidisciplinary healthcare needs there should be a larger emphasis on improving communication skills between practitioners so patients gain maximum benefits. However, numerous researchers have shown that a poor level of knowledge and perception of Chiropractic exists between the public and other healthcare professions in South Africa (Labuschagne, 2009; Myburgh and Mouton, 2007; Louw, 2005; Van As, 2005; Hunter, 2004; Langworthy and Smink, 2000).

- **Integration of Chiropractic practice into the healthcare profession**

The incorporation of Chiropractic care in the medical healthcare profession has been limited (Myburgh and Mouton, 2007). This barrier was created because Chiropractic was seen as an unscientific cult (Murphy *et al.,* 2008) and as such was registered under the Allied Health Professions Services Council in 1982 (Myburgh and Mouton, 2007). This limited integration with the Health Professions Council and its members (Hupkes, 1990). This act restricted communication and integration of medical professionals with Chiropractors and the Chiropractic profession. Additionally, Chiropractors do not seem to be achieving their potential because of practitioner

limits on the types of treatment used during the management of a patient (Myburgh and Mouton, 2007). Langworthy and Birkelid (2001) also found that communication with medical practitioners was limited. In addition, Chiropractic services are absent from the formal public hospitals and therefore may go unnoticed from the larger community as well as healthcare officials (Gilbert and Gilbert, 2004).

2.5.3.6 Patient barriers

- **Public awareness**

Kopansky-Giles *et al.,* (2007) noted that there was lack of public awareness especially amongst the poorer population who do not have medical aid and in areas where Chiropractic care was not easily accessible. Mothibi (2012) noted that only 17% of the black population in East Rand (Daveyton), South Africa were aware of the function of a Chiropractor. According to Myburgh and Mouton (2007), there is also a lack of training in the public sector and thus a limit on how Chiropractors reach patients who only have access to these facilities.

- **Patient Perception**

It cannot be assumed that that the perception of the profession is the same for all countries (Bergh and Theron, 1999; Robbins, 1996). This may be due to the fact that perception is mainly directed by social and cultural growth of the perceiver (Bergh and Theron, 1999; Robbins, 1996). This may be very true for South Africa as there is a diverse population structure and different lifestyles being lead amongst the population (Popenoe *et al.,* 1997).

- **Consumer preference and demand barriers**

According to Gaumer, Koren and Gemmen (2002) most Chiropractic patients and potential patients view Chiropractors as back pain specialist. If Chiropractors are to serve as primary care practitioners as per the proposal of the Allied Health Professions Council of South Africa 2001 Act 63 of 1982 (as amended) and if they

are to change the existing Chiropractic patient base, Chiropractors then need to overcome the impressions that they only treat back pain (Gaumer, Koren and Gemmen, 2002).

In another study done by Myburgh and Mouton (2007), it seems that local patients' see Chiropractic as contributing towards the movement of holistic health care, which is also the trend noted overseas (Barnes *et al.,* 2004).

The result of the points discussed above was interpreted in a study done in South Africa on private Chiropractic practices and patients (Mahomed, 2007). This study showed that many patients present to the Chiropractor with chronic complaints only after having received unsuccessful treatment conservative care treatment. Therefore, these results indicate that Chiropractic is neither seen as a primary source of care for patients with musculoskeletal disorders (or any other health disorder) and nor are they seen as having established themselves as part of the healthcare referral system in South Africa.

2.5.4 Patient History (Summary Table 2.6 and 2.7)

According to Gatterman (1990), it is vitally important to know the patient's history. This is because the information and current symptoms may eliminate probable answers; offer options for differential diagnoses and point of treatment options. These factors were considered for the following reasons:

- The knowledge of the patients pre-existing illnesses and their blood pressure readings adds to the Chiropractors' knowledge about any contraindications to manipulative therapy that may be present before carrying out the physical examination (Gatterman, 1990).
- The knowledge of the patient's history of smoking, pre-existing spinal conditions, surgical history, and history of previous Chiropractic treatment, all contribute to the decision of the management of the patient (Gatterman, 1990).

- The awareness of the common conditions that present to public health facilities in KwaZulu-Natal and the knowledge of the patients histories give a better guide pertaining to general health status of the patients (Van Zyl *et al.,* 2010).
- These factors can also help in establishing the prevalence of musculoskeletal and non-musculoskeletal conditions in the patients that present to the Marburg Haven Clinic in terms of Objective Three [To determine the prevalence of non-musculoskeletal and musculoskeletal disease in patients presenting to the Marburg Haven Clinic] (Mayosi *et al.,* 2009; Van Zyl *et al.,* 2010).
- These factors (pre-existing illness, blood pressure, history of smoking) were included in other studies and therefore inclusion of these factors into this study allowed for comparisons to be made to other local and international studies.

2.5.4.1 History of illness/co-morbidities (Summary Table 2.6)

Cardiac disease and respiratory disease were the most commonly reported co-morbidities (Summary Table 2.6), followed by depression and diabetes mellitus (Higgs, 2009; Jaman, 2007; Kandhai, 2007; Stevens, 2007; Venketsamy, 2007; Sorensen *et al.,* 2006). Of the twenty-four studies, hypertension was recorded in five of the studies with 28.2% (Higgs, 2009) and 27% (Stevens, 2007) found to be the highest percentage of patients that presented with hypertension as a co-morbidity. Both of these studies were done in a public setting where the population was of a low socioeconomic status. The three studies that were done in the South African teaching clinics (urban setting) reported hypertension ranging between 12.1% and 13.6%, which is significantly lower than that of the rural public setting.

2.5.4.2 History of pre-existing spinal conditions and smoking (Summary Table 2.7)

Six of the studies investigated pre-existing spinal disease (Rubinstein *et al.,* 2008; Sorensen *et al.,* 2006; Haas *et al.,* 2004; Giles *et al.,* 2002; Nyiendo *et al.,* 2001; Rubinstein *et al.,* 2000) (Summary Table 2.7). Some of the conditions documented where that of inflammatory arthritic conditions, malignancies, and osteoporosis. History of surgery was only documented in three of the studies (Higgs, 2009;

Martinez, *et al.,* 2009; Giles, *et al.,* 2002). Seven of the studies reported if patients where smokers or non-smokers (Higgs, 2009; Garner *et al.,* 2007; Stevens, 2007; Sorensen *et al.,* 2006; Mootz *et al.,* 2005; Haas *et al.,* 2004; Nyiendo *et al.,* 2001). Stevens (2007) study had the highest percentage of smokers (30%) and the lowest percentage of smokers was reported by Mootz *et al.,* (2005) (13%).

2.5.4.3 History of previous treatment (Summary Table 2.7)

The history of previous treatment for the same complaint by a Chiropractor was documented in Table 2.7. This was recorded to determine the number of patients that had received follow-up treatments from the Chiropractor, with regards to their main complaint. Eight of the studies documented that patients had received previous treatments (Higgs, 2009; Rubinstein *et al.,* 2008; Sorensen *et al.,* 2006; Mahomed, 2007; Lebouef-Yde *et al.,* 2004; Mootz *et al.,* 2005; Hartvigsen *et al.,* 2002; Rubinstein *et al.,* 2000). Six of these studies were private clinic international studies (Rubinstein *et al.,* 2008; Sorensen *et al.,* 2006; Mootz *et al.,* 2005; Lebouef-Yde *et al.,* 2004; Hartvigsen *et al.,* 2002; Rubinstein *et al.,* 2000). Of these Mootz *et al.,* 2005) reported that 81% had received previous treatment and of that percentage, 90% had been treated for the same condition. It was also reported in a local study (Mahomed, 2007) that 70% of patients had received previous treatments and in the local public sector 78.7% of patients had received previous treatments (Higgs, 2009).

2.5.5 Patient management (Summary Table 2.8)

An accurate and complete diagnosis can be made from a patient's medical history which assists in the formulation of a logical plan of treatment (Kirkaldy-Willis, 1992). The management of a patient with regards to referrals, contraindications to treatment and treatment protocols were all detailed in this study in order to recognize the common contraindications, treatments, and the quantity of patients that were referred out of the Marburg Haven Clinic. If management protocols were reported in studies that have been reviewed, these protocols were compared to the local and the international, private, public and teaching clinics to determine similarities and/or differences that may be present (Summary Table 2.8).

2.5.5.1 Referrals (Summary Table 2.8)

It is important to record how many patients were referred from Marburg Haven Clinic to other practitioners, as this information is crucial in terms of determining the relationship of Chiropractic and how it fits into the public health facility. Of the twenty-four studies, eight (Higgs, 2009; Benjamin, 2007; Garner *et al.,* 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007; Giles *et al.,* 2002; Nyiendo *et al.,* 2000) documented data regarding the patient referrals from Chiropractors to other more suitable practitioners. Four of these were at the DUT Chiropractic Teaching Clinic and one in the public sector at Kimberly hospital. The percentage of referrals made from Chiropractors to other practitioners in South Africa ranged from the lowest percentage being 0.1%, a DUT Chiropractic Teaching Clinic study, to the highest percentage being 3.8% (Higgs, 2009) a public sector study. These results were much lower compared to the three international studies, where the lowest reading was 0.8% (Nyiendo *et al.,* 2001) which was in a private clinic, and 8% and 12.6% (Garner *et al.,* 2007; Giles *et al.,*2002) respectively, which was in the public sector.

2.5.5.2 Contraindications to treatment (Summary Table 2.8)

According to the Chiropractic Association of South Africa (CASA) (2012), “Chiropractic is a health profession specialising in the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system and the affects of these disorders on the function of the nervous system and general health.” An adjustment is defined as “any Chiropractic therapeutic process that uses a controlled force, leverage, direction amplitude and velocity directed at specific joints or anatomical locations” (Gatterman, 2005). Due to the force of the adjustment, contraindications to spinal manipulative therapy may either be absolute contraindications (where the patient should not receive any form of manipulation or mobilisation) or contraindications where manipulation is not advised, though other treatments protocols may be used (namely: joint mobilisation: in which slow vacillating movements are used on the individual cervical vertebrae which, is a much safer technique used for brittle and arthritic joints (Leaver *et al.,* 2010)). Examples of contraindications are; joint hypo-mobility to arthritides, tumours, aneurysms, bone infections, vascular complications, psychosocial considerations and neurological

complications (Gatterman, 1990). Contraindications were studied by all four of the studies completed in the DUT Chiropractic Teaching Clinic (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007). Higgs (2009) also studies contraindications in her study at the Kimberly hospital and similarly Garner *et al.,* (2007) studied contraindications in their study conducted in a public clinic in Ontario, Canada (Garner *et al.,* 2007).

2.5.5.3 Treatment Protocols (Summary Table 2.8)

Treatment protocols were recorded in eleven of the studies documented in Summary Table 2.8 (Higgs, 2009; Benjamin, 2007; Garner *et al.,* 2007; Haas *et al.,* 2004; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007; Mootz *et al.,* 2005; Leboeuf-Yde *et al.,* 2004; Giles *et al.,* 2002; Nyiendo *et al.,* 2001). In seven of the above studies, manipulation was the most commonly used treatment of choice. This high percentage was expected as manipulation is the basis of the Chiropractic practice, and is used in the reduction of joint fixations (Gatterman, 2005).

Other treatments that were commonly used in conjunction with manipulation were non-manipulative procedures such as soft tissue techniques, massage, dry needling and physiotherapy modalities (Higgs, 2009; Benjamin, 2007; Giles *et al.,* 2002; Garner *et al.,* 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007; Mootz *et al.,* 2005; Haas *et al.,* 2004; Leboeuf-Yde *et al.,* 2004; Nyiendo *et al.,* 2001). It was also interesting to see that acupuncture and soft tissue treatments were most commonly used in the other three studies (Kandhai, 2007; Venketsamy, 2007; Giles *et al.,* 2002). In the study done by Giles (2002), the majority of the treatments comprised of acupuncture (28.6%) with manipulation being 11.7%. This could possibly be due to the high percentage of patients that presented with failed spinal surgeries, large disc herniations, advanced osteoporosis and osteoarthritis. It may also have been the reason for high referral rates in this study. The other two studies where manipulation was not the most common treatment was for extremities (Kandhai, 2007) and for cervical pain (Venketsamy, 2007). This may be explained by the high number of contraindications to manipulation in the cervical spine, due to the high number of patients that presented with hypertension.

2.6 Limitations of this study

As this study is demographic and descriptive in nature, the design of this study had some known limitations. These limitations were then addressed as follows:

- A limitation to the study is that as with many retrospective studies there is a lack of control over the collection of the data (Suleman, 2001).
- A language barrier was also a limitation as the patients might not always have understood the questions asked by the Chiropractor during the initial consultation and therefore important data could be missing from the patients' files (Higgs, 2009).
- The study was limited to looking at the information pertaining to the initial consultation (Brink and Wood, 1998).

2.6 Conclusion

Leboeuf-Yde *et al*., (1997) states that, factors such as political differences between countries and their diverse cultures could result in variations in both the Chiropractic practice and patient profiles. This may be true for a multicultural and multiracial country like South Africa, where different lifestyles are led by different populations (Popenoe *et al*., 1997). Thus, the need for demographic and descriptive information pertaining to patients in South African community outreach programmes is warranted to detect if this variation in practice and patient profiles exists.

Chapter Two discussed the available literature that relates to this study. Twenty four studies were recorded (Tables 2.1 to 2.8) in relation to the five objectives of this study. Chapter Three discussed the research will follow in which the methodology of this study.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

Chapter Three addresses the research methodology of this study, including study design, development of the research tool, and a step by step explanation of the research procedure and data collection that was undertaken at the Marburg Haven Clinic. The statistical methodology and ethical considerations will also be discussed.

3.2 Study Design

This study was a retrospective, quantitative, non-experimental clinical survey. Data were collected over one week from patient files with particular reference to the requirements of the data collection sheet (Appendix A), developed for this study at Marburg Haven Clinic. Approval was granted by the Institutional Research and Ethics Committee (IREC) (Appendix O) of the Durban University of Technology (DUT), indicating compliance with the Declaration of Nuremburg, Belmont and Helsinki of 1975 (Johnson, 2005).

3.3 Notice

This study was completed outside of the Durban University of Technology and involved a partner Non-Governmental Organisation, who is responsible for the administration and operation of Marburg Haven:

1. Consent was obtained in writing from the Marburg Haven Clinic co-ordinator (Appendix D) prior to data collection and capturing

2. One month prior to data collection a notice, in both English and isiZulu (Appendix E and E (A)), was placed outside the Marburg Haven Clinic stating that research would be conducted on patients' files at that clinic and if anyone had queries related to the research or wished not to participate in the research, they were to then contact the Marburg Haven Clinic co-ordinator, as

directed. This was done in interest of best practice principles (Gallan and Ogibene, 2012).

3.4 Sample

The purpose of the study was to achieve a total population sample, which consisted of all patient files. The study however totalled to 117 patients' files that contained a completed consent form, (Appendix J). This consent form, signed at the first consultation indicated that the patient knew that their file may in future be utilised for teaching, learning and/or research purposes. None of the patients declined participation in the study. There were however, an additional 13 patient files that were not used in the study as they had did not contain a complete consent form (12) and one file had been used for the pilot study prior to the start of the research. This file was removed from the data collection during the study.

3.4.1 Size

All the data was analysed as one group, with no subgroups being determined prior to the data analysis. Further subgroup analysis was only done once data had been sourced and options for analysis were analysed. According to Dasappa (2011), the liaison of Marburg Haven Clinic, there was a total of 130 patients' files. However, of the 130 files, only 117 were used, as 12 files did not have the required signed consent forms attached to the file and one file had been used as a pilot study before the start of the research. This file was discarded from data collection during the study. Within the data group subgroups were developed for purpose of comparison with regards to patient demographics, such as age, gender and ethnicity (Haldeman *et al.*, 2008).

3.5 Patient confidentiality

In this study, all the data was extracted from the patients' files at Marburg Haven Clinic. All data was changed into a numerical coding system and captured on specific data collection forms (Appendix A) to maintain patient confidentiality (Krishna *et al.,* 2006). Only the researcher, her supervisor and co-supervisor had access to this information. A statement of confidentiality was signed by the researcher, supervisor and co-supervisor (Appendix B), and consent to complete the research was obtained in writing from the Marburg Haven Clinic co-ordinator prior to data collection and capturing (Appendix D).

3.6 Inclusion/exclusion criteria

3.6.1 Inclusion criteria for analysing patients' files were as follows:

- Both dormant records (files not in use for three years or longer from the patient's date of last consultation) as well as active records were analysed.
- Of these files, data was collected from files in which the signed patient's consent forms were attached (Appendix J).
- Similarly, only data was collected from files in which a case history (Appendix K), physical examination (Appendix L), regional examinations of the musculoskeletal complaint(s) in question (Appendix M) and corresponding SOAPE notes (Appendix N) were included.

3.6.2 Exclusion criteria for the patients' file

- Data was not collected from the files, if the signed patient's consent form was not attached (Appendix J).

3.7 Research procedure

The research procedure was as follows:

1. A formal letter was emailed to Pastor Naidoo (December, 2011), the Marburg Haven Clinic co-ordinator (Appendix C) requesting permission to carry out research at the Marburg Haven Clinic, who in turn granted permission (Appendix D).

2. One month prior to data collection a notice (Appendix E and E (A)), in both English and isiZulu, was placed outside Marburg Haven Clinic stating that research will conducted on patients' files at this clinic. The notice further advised that if anyone had queries related to the research or wished not to participate in the research, they then had to contact Marburg Haven Clinic's co-ordinator within that month. The co-ordinator then notified the researcher of anyone not willing to participate. If the patients wished to see the formal documents related to the research approval (Appendix O) and the consent form issued by the co-ordinator (Appendix J), they were then requested to contact the co-ordinator at Marburg Haven Clinic.

3. The boardroom was set aside for the researcher to ensure patient confidentiality, and to ensure the files were locked away over night during the research process.

4. The researcher then manually extracted all files that were already placed in alphabetical order to, ensure that the files met the inclusion criteria or not.

5. It was not possible to remove the patient's names from their files as there were no file numbers (filing system is alphabetical by surname). This necessitated the use of confidentiality statements which had to be signed by the researcher, research supervisor and co-supervisor (Appendix B). No patients' names were used in the results and the spread-sheet that contained the coding of patients' names to numbers was destroyed once the results had been analysed.

6. Data collection then commenced over a period of one week. The patients' files were assessed with the focus on demographic information and specific questions that were related to the case history (Appendix K), physical examination (Appendix L) as well as each regional of the musculoskeletal system (Appendix M1 – M9). Management protocols, special investigations sought or done, referrals including the total number of follow up treatments were recorded. Any new musculoskeletal complaint beside from the initial visit was also noted.

7. An independent person from Marburg Haven Clinic carried out a spot verification, to ensure the research was completed according to the research process stated as per points 1-6 of the research procedure (no confidentiality statement was signed by the independent person as the files had already been placed in code form).

3.8 Data Collection

Data was collected within Marburg Haven Clinic over a period of one week during September 2012. The data collection tool (Appendix A) was based upon similar studies conducted at Durban University of Technology Chiropractic Day Clinic (Higgs, 2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007) as well as international studies (Kopansky-Giles *et al*., 2007; Stevens, 2007; Giles *et al*., 2002; Suleman, 2001). This collection tool was used so that comparisons between demographic data, diagnoses and patient management could be drawn between the findings from the present study and findings from these local and international studies.

All information that was gathered was recorded on the data collection tool (Appendix A). The main aspects of the data collection sheet consisted of information pertaining to:

- Demographic factors
- Main complaint
- Patient's history
- Patient's management

3.9 Data collection tool

The data collection tool (Appendix A) was based upon similar studies conducted internationally (Kopansky-Giles *et al*., 2007; Stevens, 2007; Giles *et al*., 2002; Suleman, 2001) and local retrospective studies conducted at Durban University of Technology (Higgs, 2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007).

The data collection tool (Appendix A) was additionally adapted from local (Higgs, 2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007) and international studies (Kopansky-Giles *et al*., 2007; Stevens, 2007; Giles *et al*., 2002; Suleman, 2001) to meet the objectives of the study.

The data collection tool was tested by an expert group. The purpose of the expert group was to ensure content validity of the data collection tool. This data collection was considered to have content validity because it had the ability to access the demographics and disease profile of a specific population group (Bernard, 2000). The expert group consisted of eight people, four qualified Chiropractors, one General Practitioner, one Statistician and two Chiropractic students. Initial contact was either made by telephone or email. The expert meeting was then established and a letter of information (Appendix F), an informed consent form (Appendix G), a confidentiality statement (Appendix H) and a data collection template (Appendix A) were given to each member of the expert group. Each of the participants were required to read the letter of information (Appendix F) and sign the informed consent form (Appendix G) before they could participate in the expert group meeting, indicating that they

participated voluntarily and they understood their role in the research process. The participants then commented on the clarity and understanding of the data tool, and suggested any improvements that could be made. After the assessment was completed, the suggestions were reviewed and the appropriate changes were made. The expert group had been run according to Stewart and Shamdasani (2007) and Morgan's (1997) recommended procedures.

Changes were made to the original data tool document (Appendix P) after the expert group meeting as well as the pilot study as there were errors noted by the members of the meeting and during the pilot study. Below is a list of changes made after the expert group meeting:

- Question 4: Employment, "Part time, Non-specified and other" was included.
- Question 9: Needed to include more physiological systems (namely: back pain, knee pain, coughing and dizziness) as options for the main areas of complaint.
- Question 11: Traumatic needed to be broken down into traumatic repetitive and traumatic acute.
- Question 12: Severity pain rating scale was added to the Data collection sheet
- Question 20: History of illness codes were taken from the DUT Chiropractic clinic codes.
- Question 24: Chiropractic clinic codes were used.
- Question 24: More systems were added for primary diagnosis.
- Question 32: Clinic treatment codes were used.
- Spelling mistakes were corrected.

The data collection sheet was then used within a pilot study (Van Teijlingen *et al.,* 2001), where one file was randomly selected to gather the information, and thereafter that file was discarded from the data collection during the study.

Below is a list of changes made after the pilot study:

- Question 7: Education was changed to Marital status as there were no questions about education within the patient's information sheet and case history

- Question 11: “Unknown” was inserted.
- Question 12: “Unknown” was inserted.

From these changes the main data tool (Appendix A) was developed. It was broken down into demographic information, main complaint, history of illness (including non-musculoskeletal complaints), special investigations, primary diagnosis made by the Chiropractor, contraindications to treatment, and the treatment protocol used (Appendix A).

3.10 Statistical analysis

For the descriptive data, a pie and/or bar graphs and other forms of representation were used to characterise the demographics and disease profiles of the patients who attended the Marburg Haven Clinic. If there was a significant difference that was found when comparing the data between different subgroups, then inferential statistics were used to determine if there was a significant relationship (namely: regression analysis, where the *p*-value was <0.05 and the confidence interval was at 95% (Hammond, 2011). Multiple regression analysis was utilized to assess relationships between demographic variables and musculoskeletal and non-musculoskeletal diseases and between different diagnoses. Identified relationships were explored using independent t-tests and/or ANOVA testing. Pearson’s correlation analysis was also used to assess relationships between quantitative variables. Version 15.0 of SPSS was used.

3.11 Ethical considerations

One month prior to data collection a notice (Appendix E and E (A)), in both English and isiZulu, was placed outside the Marburg Haven Clinic stating that research would be conducted on patient files at the Marburg Haven Clinic and if anyone had queries related to the research or wished not to participate in the research, they were to then contact the Marburg Haven Clinic co-ordinator before such time of data collection, who would then contact the researcher with any queries from the patients.

The patients' names were not removed from their files, as there were no file numbers. None of the patients' names were used in the results and the spreadsheet that contained the coding was destroyed once the results had been completed. Confidentiality forms were signed by the researcher, research supervisor and co-supervisor to ensure full patient confidentiality.

3.12 Conclusions

Chapter Three addressed the research methodology of this study, including the study design, development of the research tool and a step by step explanation of the research procedure. This study involved a one week prevalence descriptive survey at Marburg Haven Clinic. The study utilised a data collection tool that was developed from local and international validated studies, and validated by the researcher supervisor/co-supervisor and expert group, the results of which are discussed in Chapter Four.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This chapter represents the results of the data collected. Although unusual to discuss the results in the same chapter, this will be done to facilitate ease of understanding. It was decided to follow this format to facilitate understanding of the results it would make for difficult reading to continuously switch between results and the discussion of results. The results are discussed as per the five objectives in Chapter One which will then be compared and contrasted against the literature reviewed of local and international private, public and teaching clinics.

4.2 Data

4.2.1 Primary data

Primary data gathered from the collection data sheet includes:

- Selected demographics of patients including: gender, age, employment, occupation, ethnicity, marital status and residence.
- Selected descriptions of patient's complaints included: prevalence of musculoskeletal and non-musculoskeletal conditions, common presenting conditions, common aetiologies, special investigations, referral patterns and common management protocol.

4.2.2 Secondary data

Secondary data were obtained from:

- International studies within the private and public sectors, and teaching clinics.
- South African studies undertaken within the private sector.
- South African studies compiled within the public sector.
- South African studies carried out within a teaching institution.

4.3 Records analysed over the study period of one week

The aim of the study was to profile the patients that presented to Marburg Haven Clinic, with regards to their presenting complaints and comparing the results with local and international studies. There were one hundred and seventeen records analysed.

4.4 Results per objective

4.4.1 Objective One: To describe the demographics of the patients at Marburg Haven Clinic (gender, age, employment, occupation, ethnicity, marital status and residence).

4.4.1.1 Gender

The sample consisted of 28 (23.9%) males and 89 (76.1%) females (Table 4.1).

Table 4.1: Gender of the sample

		Frequency	Percent
Valid	Male	28	23.9
	Female	89	76.1
	Total	117	100

4.4.1.1.1 Discussion of gender

The findings stated in Table 4.1, indicated that the majority of the patient sample was female (76.1%). This was comparable with other local studies undertaken in the public sector of South Africa, where Higgs (2009) found that 70.7% of the sample studied was female and similarly, Till and Till (2000) found that 79% of their sample was female. Within the private sector of South Africa Mahomed's (2007) found 62.8% of the sample studied, were female, which was lower than that of the public sector. However, two of the four studies undertaken at the DUT Chiropractic Teaching Clinic in South Africa found that female and male patients were more evenly distributed (Benjamin, 2007 (54.7%) and Venketsamy, 2007 (59.6%). The results of this study, coincides with the international private sector (Rubinstein *et al.,*

2008; Mootz *et al.,* 2005; Coulter and Shekelle, 2005; Leboeuf-Yde *et al.,* 2004; Haas *et al.,* 2004; Hartivigsen *et al.,* 2002; Nyiendo *et al.,* 2001; Rubinstein *et al.,* 2000), two public sector studies (Stevens, 2007; Garner *et al.,* 2007) and Martinez *et al.,* (2009) and Morschhauser *et al.,* (2003) teaching clinic studies. This finding could be attributed to the fact that although both genders are affected by back pain (Kirkaldy and Willis, 1992), statistics have shown that females are more likely to notice signs of illness and seek treatment, thus tending to use health serves more often than males (Tatalias, 2006; Schaufer and Lamm, 1998; Popenoe *et al.,* 1997: 226). Tatalias (2006) found that females are also more likely to seek alternative medicines compared to males.

4.4.1.2 Age

The sample consisted of a mean age of 53.34 years with a standard deviation of 19.13 years and a range from 11 to 83 years (Table 4.2).

Table 4.2: Summary Statistics for age sample

N	Valid	110.00
	Missing	7.00
Mean		53.34
Std. Deviation		19.13
Minimum		11.00
Maximum		87.00

4.4.1.2.1 Discussion of age

It was found that the mean age of the patients at Marburg Haven Clinic was 53.34 years of age (standard deviation 19.13), with a range from 11 to 87 years. There were only two patients under the age of 20, namely 19 and 11. Two patients were between the ages of 20 and 29 with eleven patients aged 30 to 39 years, sixteen patients aged 40 to 49 years and twenty-one patients' aged between 50 and 59 years. The largest age group comprising of 43 patients were between the ages of 60 and 69 years, with a smaller number of patients (15) older than 70 years of age, the oldest being 83 years of age.

The mean age of patients documented at by Higgs (2009) and by Till and Till (2000) was Kimberly Hospital Complex (KHC) who reported that patients were 47.5 years of age and 53.3 years of age.

The results of the mean age at Marburg Haven Clinic are therefore similar to that of the study done at KHC by Higgs (2009) and Till and Till (2000). However, the mean age of the patients in this study was relatively higher than previous studies in the local private sector (Mahomed, 2007 (41.8)) and the private sector internationally (Rubinstein *et al.,* 2008 (41); Sorensen *et al.,* 2006 (42); Mootz *et al.,* 2005 (46); Coulter and Shekelle, 2005 (42); Haas *et al.,* 2004 (42.2); Hartvigsen *et al.,* 2002 (42) Nyiendo *et al.,* 2001 (42.1); Rubinstein *et al.,* 2000 (41)). The overall mean age of private clinics both locally and internationally ranged from 41 to 46 years of age. Therefore these findings show that the mean age of this study is similar to other studies, though considerably higher than patients presenting in teaching clinics (Benjamin, 2007 (33.3); Jaman, 2007 (39.5); Kandhai, 2007 (39.6); Venketsamy, 2007 (37)). This could be due to a large percentage of patients visiting the teaching clinics are younger due to their associations with the students (Nyiendo *et al.,* 2001) (discussed in Chapter Two – see page 40).

4.4.1.3 Employment

Of the total sample of patients' files, the person taking their medical history had not specified their occupation (27.4%). However, of the remaining 72.6%, it was recorded that 26.5% of the patients were unemployed, 21.4% were pensioners, 20.5% were employed, 1.7% of the patients were self employed and similar number were scholars and 0.9% worked part time.

Table 4.3: Employment

	Frequency	Percent
Not specified	32	27.4
Unemployed	31	26.5
Pensioner	25	21.4
Employed	24	20.5
Self employed	2	1.7
Scholar	2	1.7
Part time employment	1	0.9
Total	117	100

4.4.1.3.1 Discussion on employment

The results of this study indicated that the majority of the patient sample where unemployed (49.6%) of these patients, 26.5% were of an age in which they should have been employed, 21.4% were pensioners and 1.7% were scholars. Only 23.1% of the sample were employed (20.5% of these patients were in full time employment; 1.7% were self employed and 0.9% were in part-time employment). Marburg Haven Clinic offers treatment to the population of a low economic status, and therefore, the results of the study concur with this information.

The unemployment figures are consistent with that of Higgs (2009) study where 53.2% of the patient sample at KHC, were unemployed or pensioners. However, 42.9% were employed which is in contrast to the employment figures from this study. The results of this study are also similar to Till and Till's (2000) study in which 42.4% of their sample comprised of pensioners and unemployed. These substantially high levels of unemployed patients and pensioners are in contrast to the local private and teaching clinics of South Africa (Mahomed, 2007 (88% employed and 2% pensioners); Benjamin, 2007 (58.1% employed and 2.1% pensioners); Jaman, 2007 (65.3% employed and 8.6% pensioners); Kandhai, 2007 (49.2% employed and 9.6% pensioners); Venketsamy, 2007 (57.9% employed and 5.3% pensioners)). This low level of employment is also in contrast to the international private clinics: Leboeuf-Yde, *et al.,* 2004 (11% unemployed); Nyiendo *et al.,* 2001 (19.4% unemployed) and Rubinstein et al., 2000 (17% unemployed) and teaching clinics: Kopansky-Giles *et al.,* 2007 (7% unemployed); Waalen *et al.,* 1994 (9.4% unemployed). However, similar results of unemployment found at Marburg Haven Clinic have been reported

in studies done in the international public sector by Giles *et al.,* 2002 (35.3%) and Suleman, 2001 (66%). of. Therefore, it can be concluded that the results of this study are in contrast to private and most teaching clinics, but similar to the public clinics.

4.4.1.4 Occupation

Of the 23.1% of the participants who were employed, 26.5% did not specify an occupation, 9.4% were non-manual labourers, 7.7% were manual labourers and 6% divided their day between manual and non-manual work.

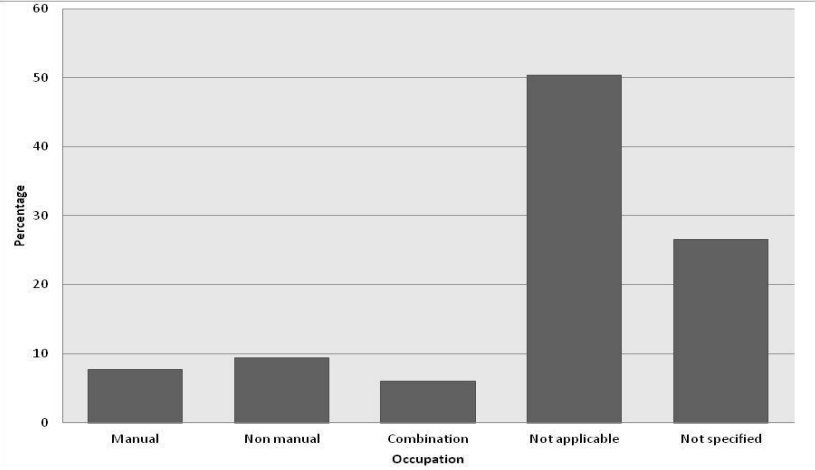

Figure 4.1: Occupation of the sample

4.4.1.4.1 Discussion on occupation

Not applicable was the most commonly reported answer. The not applicable option was given to patients if they were pensioners, unemployed, scholars and those that were only employed part time. Of those patients that were employed, many had not specified their occupation.

4.4.1.4.2 Employment profile in terms of occupation type

Of the 22.2% of the patient sample at the Marburg Haven Clinic that were employed full time, 26.5% did not specify the type of labour. Of those that did, 9.4% were non-manual labourers, 7.7% were manual labourers and 6% were combination labourers. In the study completed by Higgs (2009), 42.9% of the patients were employed, of

that 15.4% were manual labourers, 14.7% were combination of manual and non-manual labourers and 11.5% were non-manual labourers. Even though there is a discrepancy in the percentages between the two studies, it can be seen that the patients who are involved in non-manual labour was slightly higher than the manual labourers studied by Higgs (2009). The percentages in the current study may not be a true reflection as there were many patients in the sample that did not specify the type of labour in which they were occupied. In the study done by Till and Till (2000), occupation was not documented therefore no comparison could be made.

However, Mahomed (2007) documented occupation categories in the local private sector of South Africa, where 24% of the patients worked within a professional setting 16% were in managerial positions, 10% skilled artisans, 10% house wives, and 28% held other professions including that of educators, salesmen, businessmen, scholars and pensioners/retired. Direct comparisons were not possible due to the different terminology used to document occupation in terms of occupation type. In addition to the different sample sets (private sector only in terms of public sector), Mahomed's (2007) study did find that only 1% of the patients in the private sector had work that involved manual labour, where as 68% of the patients were all non-manual labour workers and 23% were involved in both forms of labour. Pensioners and scholars were included into this count, whilst in the current study they were not.

In a study conducted at an international teaching clinic in Mexico documented by Martinez *et al.,* (2009), only 13.2% of the patient sample were involved in manual labour, 24% had office jobs, which shows a higher percentage of the sample were involved in non-manual labour. This was the same for the study completed by Giles *et al.,* (2002), where only 18.3% of the population was involved in manual labour. The remaining studies that were documented in the Tables 2.1 to 2.8 in Chapter Two used different terminology to describe the type of occupation. As a result only a general overview could be discussed. It seemed that patients in the private sector are mostly in employment and the majority of them are involved in non-manual labour. However, the patients that were employed in the studies completed within the public sector were mainly manual labourers or involved in a combination of both manual and non-manual labour.

4.4.1.5 Ethnicity

Of the sample of the patients recorded, it was shown that 50.4% of the sample was Indian, 33.3% Black, 9.4% Coloured, and only 6% White.

Table 4.4: Ethnicity

	Frequency	Percent
Indian	59	50.4
Black	39	33.3
Coloured	11	9.4
White	7	6.0
Missing	1	0.9
Total	117	100

4.4.1.5.1 Discussion on ethnicity

Of the patients that presented to the Marburg Haven Clinic, there was a predominance of Indian patients (50.4%), even though there is a higher population of Black people (91.4%) residing in the Port Shepstone area (Elsenburg, 2009). Port Shepstone is a town in the Ugu district, South of KwaZulu-Natal, a province of South Africa. Even though KwaZulu-Natal is home to the largest population of Indian people (80%), there is only a small percentage of Indians living in Port Shepstone (2.6%) (Elsenburg, 2009). Therefore, the high percentage of Indian patients at the Marburg Haven Clinic may be explained by its geographic location where it is situated closest to a suburb that is predominantly Indian. Although the service provided at Marburg Haven clinic was principally provided for the patients the Clinic extended their service; those patients that had their own mode of transport were also seen at Marburg Haven Clinic. The minority of patients were Coloured (9.4%) and White (6%) people, which is consistent with the population percentages of KwaZulu-Natal (Elsenburg, 2009). These results are inconsistent with the other two studies done in KHC Higgs (2009) and Till and Till (2000)] where both studies had a predominance of Black and Coloured patients. The results from those studies were however consistent with the population of Kimberly municipal area (Higgs, 2009). It was observed in the public sector internationally that the majority of patients that presented to the clinic were African American Stevens (2007) (63%).

It was noted that the minority of patients that present to Marburg Haven Clinic were White (6%). This is in contrast to the patients that presented to the private sector both locally and internationally, where the majority of the patients were White (Haas *et al.,* 2004 (91.8%); Nyiendo *et al.,* 2001 (91.8%); Mahomed, 2007 (75.6%)) and in the international teaching clinics, where white patients mainly presented to the college teaching clinic (Morschhauser *et al.,* 2003 (65%-90%)). The results of this study could not be compared to local teaching clinics as this factor was not recorded. The results of this study are therefore consistent with the views of Nyiendo *et al.,* (2001) and Hurwitz *et al.,* (1998), who pointed out that it is the location of a clinic that draws a particular patient base which is based on the area in which the clinic is situated and the Chiropractors and medical staff that are running the clinics (see discussion in section 2.5.2.4).

4.4.1.6 Marital status

Of the recorded demographics, 41% of the patients stated that they were married; although 37.6% of the files did not clarify marital status. Just a fifth of the files indicated that the patients were single.

Table 4.5: Marital status

	Frequency	Percentage
Single	25	21.4
Married	48	41.0
Not specified	44	37.6
Total	117	100.0

4.4.1.6.1 Discussion of marital status

Of the patients that had presented to the Marburg Haven Clinic, the majority of the patients were married (41.0%). This is inconsistent with local and international studies in the private practice (Mahomed, 2007 (62.6%); Coulter and Shekelle, 2005 (56.7%); Haas *et al.,* 2004 (60.2%); Nyiendo *et al.,* 2001 (60.1%)). It is also inconsistent with a study done by Martinez *et al.,* (2009) where 59.6% of the patients

were married. These results could not be compared to the studies completed in the local and international public sector as the patients' marital status was not recorded.

4.4.1.7 Residence

Almost half the number of patients (49.6%) that presented to the Marburg Haven Clinic had not written their residential address on the patient information sheet. Of the patients that had completed the information 39.9% stated they were living within the urban area of Marburg. A smaller percentage of the patients were from the surrounding rural areas (11.1%).

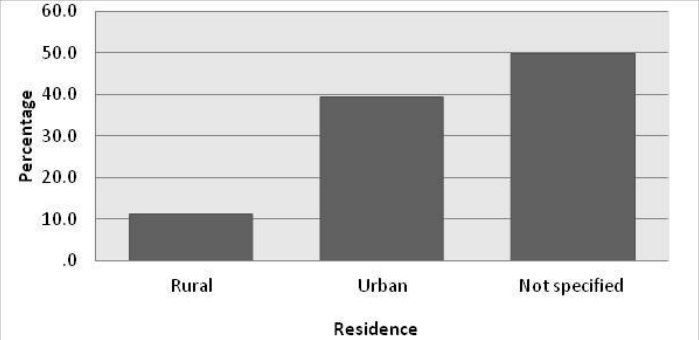

Figure 4.2 Residence of sample

4.4.1.7.1 Discussion of place of residence

The residential address of the patients that presented to the Marburg Haven Clinic was mostly unspecified by almost half of the sample studied (49.6%). Of those that had specified their residential address, 39.3% were from Marburg and surrounding urban areas. There was only a small percentage (11.1%) of patients that had come from the surrounding rural areas. These results may be obscured as many of the patients that did not complete the information may be illiterate, or may not have had formal residential addresses in the rural area.

These results are not congruent with Higgs (2009) study which indicated that 71.79% of the patients that attended KHC were from the surrounding Kimberly urban area.

The results of this study could not be compared with the other studies recorded, as place of residence was not documented in these studies.

4.4.2 Objective Two: To outline patient health profiles: describing the disease profile of the patients at the initial consultation.

4.4.2.1 Anatomical location of complaint

The recorded anatomical locations are stated in Table 4.6. The number of complaints totalled to 193. This number is greater than the sample since many patients had more than one area of complaint.

In terms of the anatomical location of complaint the specific areas were categorized (for concise overview) into four main areas from the highest to the lowest number of reports, namely musculoskeletal totalling (n = 184, 95%), neurological (n = 5, 2.6%), respiratory (n = 3, 1.5%) and gastrointestinal (n =1, 0.5%) of the total complaints.

The most common specific area of pain presenting as a primary complaint was lumbar pain (n = 41, 21.2%) followed by neck pain (n = 23, 11.9%), knee pain (n = 21, 10.9%), shoulder pain (n = 19, 9.8%), thigh pain (n = 19, 9.8%) and thoracic pain (n = 15, 7.8%). These anatomical locations and the remainder of the specific locations are listed below in Table 4.6.

Table 4.6: Presenting anatomical location of complaint

Anatomical location of complaint					
Complaint	Count	%		Count	%
Lumbar pain	41	21.2	Sacroiliac pain	2	1.0
Neck pain	23	11.9	Foot pain	2	1.0
Knee pain	21	10.9	Oedema of the lower limb	2	1.0
Thigh pain	19	9.8	Jaw pain	1	0.5
Shoulder pain	19	9.8	E bow pain	1	0.5
Thoracic pain	15	7.7	Forearm pain	1	0.5
Ankle pain	8	4.1	Calf pain	1	0.5
Hip pain	7	3.6	Generalised muscle pain	1	0.5
Chest pain	6	3.1	Hand paralysis	1	0.5
Hand pain	5	2.6	Muscle cramps	1	0.5
Upper arm pain	3	1.6	Stroke / Transient ischaemic attack	1	0.5
Wrist pain	3	1.6	Foot paralysis	1	0.5
Headache	3	1.6	Gastrointestinal / Diarrhoea	1	0.5
Rib pain	2	1.0	Neurological / Dizziness	1	0.5

4.4.2.1.1 Discussion of presenting anatomical location of complaint

Table 4.6 represents the anatomical location of the patients' complaints' who attended the Marburg Haven Clinic. Table 4.6 was categorized into ten main areas of complaints (musculoskeletal; cardiovascular; respiratory; gastrointestinal; endocrine; neurological; haematological; dermatological; genitor-urinal and other). Though most of these categories were not filled in, they were created to achieve an overall view of the most common anatomical areas of complaints presented at Marburg Haven Clinic. It was observed that spinal conditions were the most common anatomical area of complaint (including lumbar and cervical complaints, n = 64). This was then followed by upper and lower extremity complaints (including knee, thigh and shoulder complaints n = 59).

The most common specific area of complaint recorded was lumbar pain (21.2%) followed by cervical pain (11.9%) and knee pain (10.9%). There were only seven non-musculoskeletal complaints with the most common being chest pain (n = 6, 3.1%).

The findings of this study are similar to that of Higgs (2009) where lumbar pain (35%) had been reported to be the most common specific area of complaint. This was then

followed by sacroiliac pain (31.2%), shoulder pain (26.8%), leg pain (22.4%), cervical pain (18.5%) and hip pain (10.9%). This demonstrates that spinal and upper and lower extremity complaints were also within the top five areas of complaint. The results are in contrast to that of Till and Till's (2000) study where the top five areas of complaints were extremity disorders (29.8%) followed by lumbar pain (19.4%) cervical pain (14.4%), sacroiliac pain (13.9%) and thoracic spine pain (12.5%). Even so, the overall results from these three studies indicate that spinal and extremity complaints were all within the top five complaints.

These results are in slight contrast to Mahomed's (2007) study on patients that presented to the private sector clinics in South Africa. The study recorded that the most common area of complaint was head and neck pain (25.6%), and the second area of complaint was low back pain (18.5%). A similar pattern was found in Rubinstein's *et al.,* (2008) study where neck pain was stated as the most common area of complaint. This was also found in a study by Coulter and Shekelle (2005), where patients mainly presented with neck pain (27%) followed by low back pain (22%), as well as in a study done by Waalen *et al.,* (1994), where patients presented with neck pain (32.4%), followed by thoracic pain (11.2%). Although Mootz *et al.,* (2005) and Lebeouf-Yde *et al.,* (2004) also recorded high percentages of neck pain, low back complaints were much higher (41% and 60% respectively).

Similarly, the results of this study were comparable to international studies undertaken at private clinics (Sorensen *et al.,* 2006; Haas *et al.,* 2004; Hartvigsen *et al.,* 2002; Nyiendo *et al.,* 2001; Rubinstein *et al.,* 2000) and in the public sector (Stevens, 2007), as well as in teaching clinics (Martinez *et al.,* 2009; Kopansky-Giles *et al.,* 2007; Morschhauser *et al.,* 2003) where the most common anatomical location of complaint was low back pain.

4.4.2.2 Diagnosis made by the Chiropractic students

Information in Table 4.7 indicates the patients' diagnosis irrespective of whether the diagnosis was primary secondary or tertiary. The list represents all the diagnoses made, irrespective of whether some patients had more than one diagnoses. Therefore, this information shows that a number of patients had multiple diagnoses.

Sacroiliac syndrome (10%) was the most common diagnosis recorded. This was followed by cervical facet syndrome (9%) and osteoarthritis (9%).

Table 4.7: Diagnoses of patients

Diagnosis	Frequency	Percent	Diagnosis	Frequency	Percent
Sacroiliac syndrome	21	10.0	Knee joint fixation	1	0.5
Cervical facet syndrome	19	9.0	Shoulder joint fixation	1	0.5
Osteoarthritis	19	9.0	Trochanteric bursitis	1	0.5
General myofascitis	15	7.1	Myofascitis subscapularis	1	0.5
Lumbar facet syndrome	13	6.2	Disc bulge	1	0.5
None	11	5.2	Patella tracking syndrome	1	0.5
Myofascitic trapezius	9	4.3	Rotator cuff syndrome	1	0.5
Myofascitis quadratrus lumborum	9	4.3	Idiopathic scoliosis	1	0.5
Nerve root entrapment	9	4.3	Spondylosis	1	0.5
Hypertension	8	3.8	Hand sprain	1	0.5
Thoracic facet syndrome	7	3.3	Collateral ligament knee sprain	1	0.5
Myofascitis erector spinae	4	1.9	Sternoclavicular sprain	1	0.5
Myofascitis gluteus maximus	4	1.9	Patella femoral pain syndrome	1	0.5
Myofascitic gluteus medius	3	1.4	Chronic meniscal tear	1	0.5
Myofascitis sternocleidomastoid	3	1.4	Tendinitis of the wrist extensors	1	0.5
Myofascitis rhomboid	2	0.9	Tendonosis of the wrist extensors	1	0.5
Myofascitis posterior cervicals	2	0.9	Not specifed	1	0.5
Myofascitis scalene	2	0.9	Bicipital tendonitis	1	0.5
Myofascitis supraspinatus	2	0.9	Piriformis myofascitis	1	0.5
Cervicogenic headache	2	0.9	Congestive cardiac failure	1	0.5
Myofascitis Levator scapular	2	0.9	Tuberculosis	1	0.5
Muscular strain	2	0.9	Bell's palsy	1	0.5
Rheumatoid arthritis	2	0.9	Migraine / Headache	1	0.5
Ankle sprain	2	0.9	Peripheral mononeuropathy	1	0.5
Angina	2	0.9	Diabetes	1	0.5
Cerebro-vascular accident	2	0.9	Goitre	1	0.5
Peripheral ployneuropathy	2	0.9	Lateral epicondylitis	1	0.5
Adhesive capsulitis	1	0.5	Fibromyalgia	1	0.5
Cerebro-vascular accident	1	0.5	Colles fracture	1	0.5
Chondromalacia patella	1	0.5	Iliotibial band syndrome	1	0.5
			Total	**211**	**100.0**

4.4.2.3 Primary, secondary and tertiary diagnoses

The diagnoses listed in Table 4.7 were further split into primary, secondary and tertiary diagnoses (Tables 4.8 to 4.10). These tables were compiled to evaluate if there was a corresponding link between the different diagnoses. In terms of the primary diagnoses it was observed that sacroiliac syndrome was the most common diagnoses (n = 19, 16.2%), followed by cervical facet syndrome (n = 18, 15.4%) and osteoarthritis (n = 17, 14.5%).

Table 4.8: Primary diagnosis of patients

Diagnosis	Frequency	Percent	Diagnosis	Frequency	Percent
Sacroiliac syndrome	19	15.4	Knee joint fixation	1	0.8
Cervical facet syndrome	18	14.6	Shoulder joint fixation	1	0.8
Osteoarthritis	17	13.8	Myofascitis rhomboid	1	0.8
Lumbar facet syndrome	11	8.9	Myofascitis subscapularis	1	0.8
None	11	8.9	Myofascitis supraspinatus	1	0.8
Thoracic facet syndrome	7	5.7	Rotator cuff syndrome	1	0.8
Cervicogenic headache	2	1.7	Idiopathic scoliosis	1	0.8
Myofascitis Levator scapular	2	1.6	Spondylosis	1	0.8
Rheumatoid arthritis	2	1.6	Hand sprain	1	0.8
Ankle sprain	2	1.6	Collateral ligament knee sprain	1	0.8
Adhesive capsulitis	1	0.8	Sternoclavicular sprain	1	0.8
Cerebro-vascular accident	1	0.8	Muscular strain	1	0.8
Chondromalacia patella	1	0.8	Chronic meniscal tear	1	0.8
Lateral epicondylitis	1	0.8	Tendinitis of the wrist extensors	1	0.8
Fibromyalgia	1	0.8	Tendonosis of the wrist extensors	1	0.8
Colles fracture	1	0.8	Not specifed	1	0.8
Iliotibial band syndrome	1	0.8	**Total**	**123**	**100.0**

Table 4.9: Secondary diagnosis of patients

Diagnosis	Frequency	Percent	Diagnosis	Frequency	Percent
General myofascitis	11	22.4	Disc bulge	1	2.0
Quadratus lumborum myofascitis	7	14.3	Cervical facet syndrome	1	2.0
Trapezius myofascitis	4	8.2	Lumbar facet syndrome	1	2.0
Gluteus maximus myofascitis	3	6.1	Myofascitis erector spinae	1	2.0
Thoracic facet syndrome	2	4.1	Levetor scapulae myofascitis	1	2.0
Gluteus medius myofascitis	2	4.1	Posterior cervical myofascitis	1	2.0
Scalenius myofascitis	2	4.1	Supraspinatous myofascitis	1	2.0
Sternocleidomastoid myofascitis	2	4.1	Nerve root entrapment	1	2.0
Osteoarthritis	2	4.1	Patella femoral pain syndrome	1	2.0
Sacroilitis	2	4.1	Muscular strain	1	2.0
Trochanteric bursitis	1	2.0	Bicipital tendonitis	1	2.0
			Total	**49**	**100.0**

Table 4.10: Tertiary diagnosis of patients

Diagnosis	Frequency	Percent	Diagnosis	Frequency	Percent
Trapezius myofascitis	5	23.8	Gluteus medius myofascitis	1	4.7
General myofascitis	4	19.0	Piriformis myofascitis	1	4.7
Erector spinae myofascitits	3	14.3	Posterior cervical myofascitis	1	4.7
Quadratus lumborum myofascitis	2	9.5	Rhomoid myofascitis	1	4.7
Lumbar facet syndrome	1	4.7	Sternocleidomastoid myofascitis	1	4.7
Gluteus maximus myofascitis	1	4.7	**Total**	**21**	**100.0**

4.4.2.4 Non-musculoskeletal diagnoses

Non-musculoskeletal diagnoses were also documented in Table 4.11. There were only 30 non-musculoskeletal diagnoses of which nerve root entrapment (n= 9, 30%) was the most common diagnosis made, followed by hypertension (n= 8, 26.7%).

Table 4.11: Non-musculoskeletal diagnoses of patients

Non-musculoskeletal diagnoses	Frequency	Percent
Nerve root entrapment	9	30.0
Hypertension	8	26.7
Stroke / Transient ischaemic attack	2	6.7
Angina	2	6.7
Peripheral polyneuropathy	2	6.7
Congestive cardiac failure	1	3.3
Tuberculosis	1	3.3
Bell's palsy	1	3.3
Headache	1	3.3
Peripheral mononeuropathy	1	3.3
Diabetes	1	3.3
Goitre	1	3.3
Total	**30**	**100.0**

4.4.2.4.1 Discussion on the link between primary, secondary and tertiary diagnoses

The diagnoses from Table 4.7 were split in three different Tables (4.8 – 4.10) document the primary, secondary and tertiary diagnoses. This was to establish if a link between them existed. Table 4.8 shows that sacroiliac syndrome was the most common primary diagnosis (16.2%), followed by cervical facet syndrome (9%) and osteoarthritis (9%). It was noted that the most common secondary diagnosis in Table 4.9 was general myofascitis, followed by myofascitis of the quadratus lumborum (14.3%), myofascitis of the trapezius (8.2%) and then of the gluteus maximus muscle (6.1%). The most common tertiary diagnosis in Table 4.10 was myofascitis of the trapezius muscle (23.8%). When viewing all three Tables (4.8 – 4.10), it was observed that there were corresponding links between the secondary and tertiary diagnoses and the primary diagnosis. This may due to a number of reasons: firstly because of the anatomical proximity of the areas of complaint in relation to each

other (Moore and Dalley, 1999). Secondly, the biomechanical function as they relate to each other in terms of affected joints and associated muscles surrounding the area of complaint (Moore and Dalley, 1999). Thirdly, the entire body is essentially one kinematic chain where one area will affect another, and this is possibly the most frequently identified dimension of Chiropractic care in clinical practice (Ebrall *et al.,* 2004). These matching links between the primary, secondary and tertiary diagnoses (Tables 4.8 – 4.10), shows that management of the secondary and/or tertiary diagnosis had a corresponding affect on the primary diagnosis made.

When comparing the results with the most common primary diagnosis in the South African public sector (Summary Table 2.4) lumbar myofascitis was the most common primary diagnosis (Higgs, 2009). This diagnosis is in contrast to the Mohamed's (2007) private sector study, in which it was established that cervical facet syndrome was the most common primary diagnosis. The results could not be compared to South African teaching clinics as each of the studies had focused on a specific anatomical region (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007).

In comparison to international studies (Summary Table 2.4) it was found that low back pain was the most common diagnosis made within the public sector (Garner *et al.,* 2007). In the private sector Rubinstein *et al.,* (2008) documented neck pain as being the most common diagnosis, whereas Leboeuf-Yde *et al.*, (2004) and Nyiendo *et al.,* (2001), documented low back pain as being the most common diagnosis. As very few of these studies had discussed the patients' diagnoses, there is a paucity of knowledge with regards to the common diagnoses of patients', which would allow for future research.

4.4.2.5 Chronicity of main complaint before receiving treatment

A high proportion of complaints were chronic in presentation (54.7%), followed by a smaller proportion of complaints that were sub-acute (21.4%) and acute (17.1%). A small percentage was not specified (6.8%).

Table 4.12: Chronicity of main complaint before receiving treatment

	Frequency	Percent
Chronic	64	54.7
Sub-acute	25	21.4
Acute	20	17.1
Not specified	8	6.8
Total	**117**	**100.0**

4.4.2.5.1 Discussion of duration of the patients' complaint

It can be seen from the information stated in Table 4.12 that the majority of the patients at Marburg Haven Clinic presented with chronic complaints, followed by sub-acute then acute complaints. When compared to Higgs' (2009) study, it can be seen that the majority of the patient sample at KHC were in a chronic stage (68.2%) of presentation though there is discrepancy as it was followed by an acute stage (21.6%) rather than a sub-acute stage (10.2%). When compared with the South African private sector, these results were found to be similar to the study done by Mahomed (2007) where the majority of the patients' complaints also presented in the chronic stage (57.9%) (Summary Table 2.4).

These results support other findings which have been discussed previously in Chapter Two (Section 2.5.3.2) where comparisons indicate that in developing countries like South Africa and other areas with a low socioeconomic status, patients are more likely to present in the chronic stage (Morschhauser *et al.,* 2003) . This can be supported in studies done in the international public sector (Steven, 2007 and Giles *et al.,* 2002) and in the international teaching clinics (Kopansky-Giles *et al.,* 2007; Mourschhauser *et al.,* 2003; Waalen *et al.,* 1994), where a large part of the patient sample from these studies presented in the chronic stage.

The majority of the studies done within the international private sector indicated that patients' were in the acute stage of presentation (Sorensen *et al.,* 2006; Coulter and Shekelle, 2005; Haas *et al.,* 2004), which is in contrast to this study.

4.4.2.6 Most common aetiology of complaint irrespective of diagnosis

A large percentage of the aetiology of the complaint was unknown (63.2%), thereafter the most common cause was traumatic acute (19.7%), followed by non-traumatic (9.4%) and traumatic (7.7%) injuries.

Table 4.13: Aetiology of complaint

	Frequency	Percent
Unknown	74	63.2
Traumatic acute	23	19.7
Non-traumatic	11	9.4
Traumatic	9	7.7
Total	**117**	**100.0**

4.4.2.6.1 Discussion on aetiology of complaint

These results were in contrast to the study completed by Higgs (2009), where “unknown (33.1%), non-traumatic (33.8%) and traumatic (33.1%)” were almost equally divided. The cause of the complaint was not noted in the study completed by Till and Till (2000), nor in the study completed in the private sector by Mahomed (2007). The four top causes of complaints were recorded in the South African teaching clinics. These included the following: unknown (61.8%), sport (25.4%), accidents (14.4%) and lifting and bending injuries (12.3%) (Jaman, 2007; Kandhai, 2007; Venketsamy, 2007), as discussed in Chapter Two (Section 2.5.3).

Coulter and Shekelle (2005) reported that of the patients that had reported injuries, 43% were non-work related injuries and 16% were work related injuries. From the studies done in international teaching clinics, Martinez *et al.,* 2009) reported that, “47% were trauma related, 14.8% work related, 13.6% was due to sports injuries, 19.6% idiopathic and 5% other”. It was difficult to compare the studies as no common terminology was used. Further studies into the use of common terminology with regards to aetiology, is recommended.

4.4.2.7 Most common investigations ordered irrespective of diagnosis

A low percentage of special investigations were ordered from Chiropractors at the Marburg Haven Clinic. There were only two investigations ordered in total, radiographs (n =2, 1.7%) and a mammogram (n = 1, 0.9%).

Table 4.14: Investigations ordered

	Frequency	Percent
None	114	97.4
Radiograph	2	1.7
Mammogram	1	0.9
Total	**117**	**100.0**

4.4.2.7.1 Discussion on investigations ordered

There were only a small number of patients' (2.6%) that were sent for special investigations by the Chiropractic students at Marburg Haven Clinic. Of these patients, two were sent for radiographs and one for a mammogram. An explanation as to the reason there was such a low referral rate for special investigations was that many of the people that attend that Marburg Haven Clinic had minimal funding and these investigations carry a high cost factor. Secondly, many of the patients have no transport to get to and from the hospital where the investigation would need to take place as many of the patients relied on public transport to take them to and from the Marburg Haven Clinic. Thirdly, the local clinic in Port Shepstone did not do many special investigations. These numbers are too small to conclude what investigations are preferred at Marburg Haven Clinic.

It was observed in other studies completed within the South African public and private sector that radiographs were the most common special investigation used (Higgs, 2009; Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Mahomed, 2007; Venketsamy, 2007). Within the international studies, radiographs were also the most frequently used investigation in both the private and teaching clinics (Mootz *et al.,* 2005; Nyiendo *et al.,* 2001; Waalen *et al.,* 1994). In a study completed by Giles *et al.,* (2002), the Computed Tomography (CT) scan was the most commonly used

investigation. Other studies within the international public, private and teaching clinics did not document this information.

4.4.3 Objective Three: To determine the prevalence of musculoskeletal and non-musculoskeletal complaints in the patients that presented to the Marburg Haven Clinic. (This includes history of co-morbidities as reported by the patients, history of smoking and blood pressure as taken at the Marburg Haven Clinic on the day of the first consultation, history of pre-existing spinal conditions and history of surgery).

4.4.3.1 History of co-morbidities

Out of the 117 patient files that were assessed from the Marburg Haven Clinic, (n = 93, 79.5%) patients reported on an existent co-morbidity. The most common co-morbidity was hypertension (30.8%) followed by diabetes mellitus (21.4%), mycobacterium tuberculosis (2.6%) and asthma (2.6%) (Figure 4.3). Therefore, cardiovascular, endocrine and respiratory were among the highest co-morbidities reported. The least common co-morbidities reported were gastric ulcers (0.9%) and tonsillitis (0.9%) (Figure 4.3). Many of the patients had more than one co-morbidity, which in this study is referred to as the secondary co-morbidity (n = 53, 45.3%), these conditions can be seen is Figure 4.4.

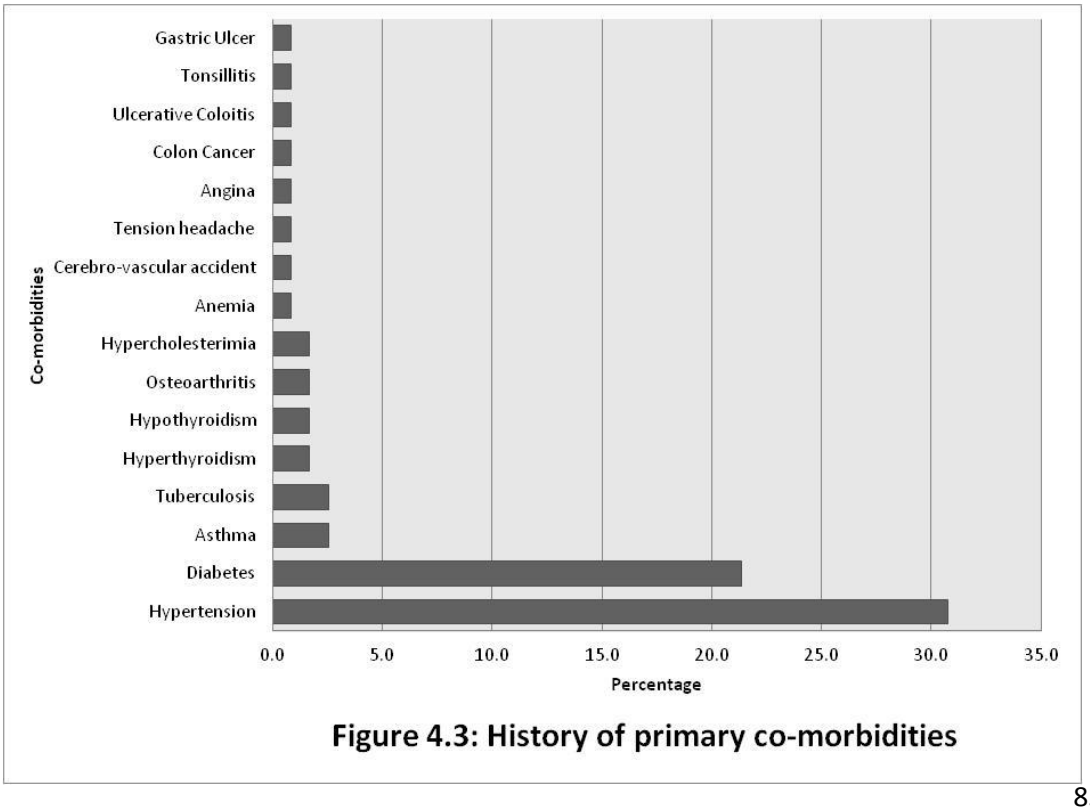

Figure 4.3: History of primary co-morbidities

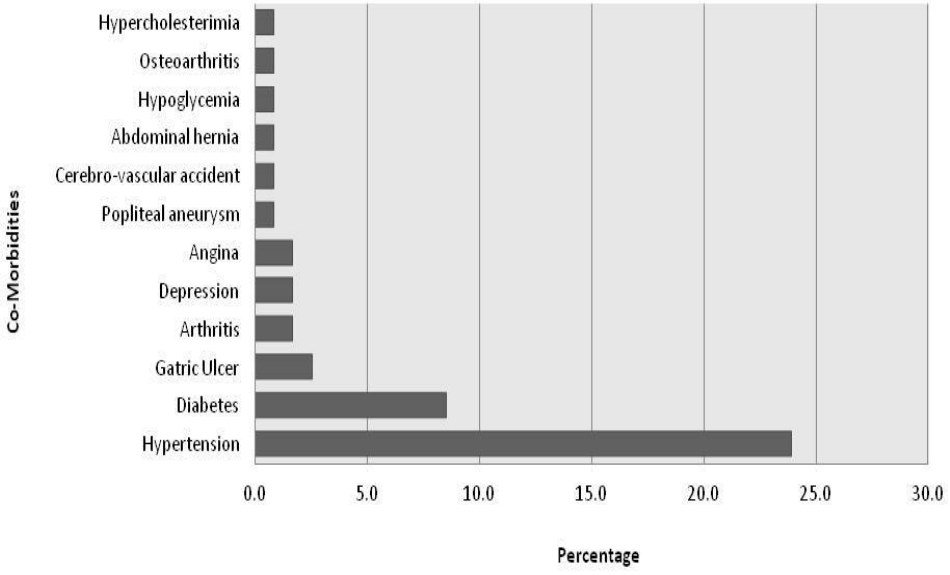

Figure 4.4: History of secondary co-morbidities

4.4.3.1.1 Discussion of history of co-morbidities

The most common co-morbidity was hypertension (30.8%), followed by diabetes mellitus (21.4%) and then mycobacterium tuberculosis and asthma at equalled 2.6% each. It must be noted that patients have reported multiple co-morbidities. When compared to Higgs' (2009) study, in which she also reported that hypertension (28.2%) was the most common co-morbidity, followed by diabetes (12.8%) and allergies (5.8%). The results could not be compared with the South African private sector as this information was not recorded in the study completed by Mohamed, (2007). Within the DUT Chiropractic Teaching Clinic hypertension was the most common co-morbidity in two of the studies (11.1%-12.3%), followed by cardiovascular disease (5.9%-9.2%), respiratory disorders (7.5%) and abdominal disorders (4.8%) (Jaman, 2007; Kandhai, 2007). In the study completed by Venketsamy (2007), hypertension (13.6%) was the most common disorder followed by respiratory disorders (24%) and heart disease (20.5%).

In comparison to Table 2.0 the results of this study seem to compare similar with the national non-communicable disease profile for South Africa, indicating that Chiropractors record communicable and non-communicable diseases and not only

musculoskeletal complaints. Chiropractors also intervene to assist patients with these conditions, whereby they will offer medical advice and educate the patients about communicable and non-communicable diseases in the context of the Marburg Haven clinic. It is noted that HIV is not a significantly reported condition with the context of the Marburg Haven Clinic; this maybe as a results of the patients either being ignorant of their status or being unwilling to disclose their status for fear of the stigma attached to the status. (www.sanews.gov.za, 2009).

In comparison to international public sector studies; it is noted that very few researchers documented communicable and non-communicable disease outcomes. In this context, Steven's (2007) reported hypertension (27%) as the most common disorder followed by depression (22%), hypercholesterolemia (13%) and diabetes mellitus (12%). Similarly, in the private sector Sorensen *et al.,* (2006) reported lung disease (23%) as the most common complaint, followed by asthma (14%), reproductive disorders (13%) and gastrointestinal disorders (12%).

It can, therefore be seen that the majority of studies documenting patient presentation at any venue (public or private) tend to be limited to only musculoskeletal complaints. This limitation inherently limits the ability of the reader to determine if a Chiropractor has an impact in their treatment of communicable and non-communicable diseases. The results from this study, Stevens (2007) and Sorensen's *et al.,* (2006) by contrast show that there may either be musculoskeletal sequelae related to the noted co-morbidities in these studies (which the chiropractor may address); or that the patient presents with independent complaints in addition to their musculoskeletal complaints which the Chiropractor may then address through health promotion and disease prevention strategies. The latter option, if recorded appropriately in future research, may allow for chiropractors to assist their national health agency in achieving their strategic health objectives.

4.4.3.2 History of pre-existing spinal conditions before receiving Chiropractic treatment

It was recorded that only (n = 3, 2.6%) had a previous history of spinal conditions. The three spinal complaints were osteoporosis, spondylolysis (degeneration of the articulating surface of the vertebrae (Stedman, 2005) and spondylosis (fibrous or bony union of the articulating surface of the vertebrae (Stedman, 2005).

Table 4.15: History of pre-existing spinal conditions

	Frequency	Percent
No	101	86.3
Unknown	13	11.1
Yes	3	2.6
Total	**117**	**100.0**

4.4.3.2.1 Discussion on history of previous spinal conditions

It was found that only three of the patients had a known history of pre-existing spinal conditions. Each of the patients had reported a different condition such as: osteoporosis, spondylolysis and spondylosis. This is not consistent with the results from the study done by Higgs (2009), where 7.7% had reported previous spinal conditions where scoliosis had been reported by two of the patients, followed by neurofibroma, degenerative disc disease, fibromyalgia, osteoarthritis and rheumatoid arthritis.

In a study completed by Giles *et al.,* (2002), which undertook radiological investigations to note any pre-existing spinal conditions, it was reported that 1.9% of the sample had inflammatory arthritic conditions, 0.6% had malignancies and 2.2% had other conditions such as osteoporosis. No other study referred to in this research documented the reported history of spinal conditions. Further studies into this aspect may yield findings and allow better comparison.

4.4.3.3 History of smoking

Of the 117 patients' files documented, six of the patients were current smokers, seven were previous smokers. A high percentage of the sample (104 patients), were non-smokers.

Table 4.16: History of smoking

	Frequency	Percent
Non-smokers	104	88.9
Previous smokers	7	6.0
Current smokers	6	5.1
Total	**117**	**100.0**

4.4.3.3.1 Discussion on history of smoking

As highlighted in Table 4.16, only 5.1% of the patients were current smokers and 6% were previous smokers. The majority of the patients were non-smokers (88.9%). The statistics of smoking in South Africa has revealed that 28% of adults smoke (Herbst, 2012). The percentages from this study are in contrast to all studies documented in this study (Higgs, 2009; Garner *et al.,* 2007; Stevens, 2007; Sorensen *et al.,* 2006; Mootz *et al.,* 2005; Haas *et al.,* 2004; Nyiendo *et al.,* 2001) where percentages of smokers are higher.

In the study completed by Higgs (2009), 15.9% of the patients were smokers and 12.1% previous smokers. This percentage of smokers is in contrast to the international private sector studies in which it was documented that between 15% and 32% of the participating patients were smokers (Sorensen *et al.,* 2006; Mootz *et al.,* 2005; Haas *et al.,* 2004; Nyiendo *et al.,* 2001). The results of the number of smokers from Higgs' (2009) study is also in contrast to the public sector studies where between 21.2% and 30% of the participating patients where smokers (Stevens, 2007; Garner *et al.,* 2007). This contrast could be due to the fact that South Africa has placed high taxes on smoking (Herbst, 2012) and the majority of the patients at Marburg Haven Clinic were unemployed and within the low socioeconomic group and therefore could not afford to smoke cigarettes. The

students from the Marburg Haven Clinic would have also educated the patients on the health risks of smoking.

4.4.3.4 Blood Pressure

Of the 117 patient files, it was documented that 36 of the patients had hypertension as a primary co-morbidity and that 28 patients had hypertension as a secondary co-morbidity. In total 65 (55.5%) of the patients reported having hypertension as a co-morbidity. Of the 117 patients, eight were diagnosed as having hypertension by the attending Chiropractic students (Table 4.17).

Table 4.17: Blood pressure summary

	Count	Percent
Hypertension as a primary co-morbidity	36	30.8
Hypertension as a secondary co-morbidity	28	23.9
Hypertension as a tertiary co-morbidity	1	0.9
Patients diagnosed with hypertension	8	6.8
Total	**73**	**62.9**

4.4.3.4.1 Discussion on hypertension

It was interesting to note that 55.5% of the patients had reported hypertension as a previously diagnosed co-morbidity in this study, and that eight more were diagnosed by Chiropractic students at Marburg Haven Clinic indicating that 62.9% of the patients were hypertensive. These results were much higher the other South African study compiled in the public sector by Higgs (2009), where only 28.2% of the population had hypertension. The results from the patients from the DUT Chiropractic teaching Clinic were even lower ranging from 11.1% to 13.6% (Jaman, 2007; Kandhai, 2007; Venketsamy, 2007).

In a study conducted by Stevens (2007), in New York (USA) in a public sector, it was reported that only 27% of the participating patients had hypertension. The remaining studies that were included in this study did not document this question.

According a study completed by Conner *et al.,* (2005), the overall prevalence rate of hypertension in South Africa is 55%. Therefore the results of this current study are only slightly higher than that of the study done by Conner *et al.,* (2005). There are many suggested reasons for this high prevalence rate. Firstly, hypertension disproportionally affects poor people living in an urban setting, as lifestyle changes are made through urbanisation of the rural areas (Mayosi *et al.,* 2009). These people are unable to afford medical care, and have poor diets and have become physically inactive leading to poor health. There is also very poor infrastructure in place to teach people about lifestyle habits (Mayosi *et al.,* 2009). Therefore, it is essential that the low levels of education in the poor communities are addressed and that enough medical care for non-communicable disease is available. This is reflected within South Africa as there is a quadruple burden of disease as HIV/AIDS is extremely prevalent and many of the medical resources have been directed into education and awareness of HIV/AIDS, leaving people uneducated about non-communicable diseases brought on by their choice of lifestyle (Econex, 2009).

4.4.3.5 History of surgery

Of the patients that were documented at the Marburg Haven Clinic, (n = 36, 30.8%) reported on previous surgery, (n = 60, 51.3%) had not reported previous surgery and (n = 21, 17.9%) were unknown. The surgeries mostly comprised of hysterectomies, caesareans and lumpectomies.

Table 4.18: History of surgery

	Frequency	Percent
No	60	51.3
Yes	36	30.8
Unknown	21	17.9
Total	**117**	**100.0**

4.4.3.5.1 Discussion on history of surgery

The information reflected in Table 4.18, indicates that, only 30.8% of the population had had previous surgeries. In general, the surgeries had consisted of hysterectomies, caesareans, thyroidectomies, bone grafts, lumpectomies, and wisdom teeth removal. In the study completed by Higgs (2009), 50.3% of the patient sample also had previous surgeries; these results may have been higher than the current study as the clinic was at the Kimberly Hospital Complex (thus there was greater access to surgery). No other studies documented in this current study reported the history of surgery. However, Giles *et al.,* (2002) reported the percentage of failed spinal surgeries (6.7%) that had presented to the spinal pain unit, which was not comparable to the findings in this study.

4.4.3.6 History of previous treatment for the same complaint

Information stated in Table 4.19 indicates that the greater percentage of the patients (n = 71, 60.7%) that had presented to the Marburg Haven Clinic have not received previous treatment to their initial consultation at the Marburg Haven Clinic.

Table 4.19: Previous treatment for same complaint

	Frequency	Percent
No	71	60.7
Yes	38	32.5
Unknown	8	6.8
Total	**117**	**100.0**

4.4.3.6.1 Discussion on previous treatments given for the same complaint

Information stated in Table 4.19 that 32.5% of the patients had previous treatment for the same complaint from various other doctors. These results are similar to that of the study completed by Higgs (2009), were 35.7% of the patients had had previous Chiropractic treatment. These results are contrast to the South African private sector, where 100% of the patients had received previous treatment from other doctors. This could be due to affordability within the private sector, where the

patients at Marburg Haven Clinic have limited opportunity to access healthcare and therefore will not seek treatment unless absolutely necessary. There is a paucity of knowledge within the public sector on previous treatments of the main complaint, however the majority of the patients have received previous treatment for the same condition. Within the international private sector, there were also a large percentage of patients that received previous treatment for the same condition. These percentages ranged from 14% to 89% (Rubinstein *et al.,* 2008; Mootz *et al.,* 2005; Leboeuf-Yde *et al.,* 2004; Hartvigsen *et al.,* 2002; Rubinstein *et al.,* 2000).

It can be concluded, taking the findings from Objective Two and Three into account that the majority of the patients that presented to the Marburg Haven Clinic, presented with musculoskeletal conditions as a primary diagnoses (n = 106, 90.6%), with (n = 25, 21.3%) accounting for non-musculoskeletal complaints. In terms of the general health status of the patients pertaining to the non-musculoskeletal conditions, it was noted that a high portion (79, 5%) presented to the Marburg Haven Clinic with co-morbidities (cardiovascular and endocrine complaints being the most common).

4.4.4. Objective Four: To identify common healthcare management procedures, and correlations between demographic factors and patient complaints, and referrals made.

4.4.4.1 Referral patterns

Fourteen patients (12%) were referred to other practitioners by the attending Chiropractor. The referral consisted of a variety of conditions such as hypertension, tuberculosis, asthma and angina.

Table 4.20: Referral from chiropractor

	Frequency	Percent
No	103	88.1
Yes	14	12.0
Total	**117**	**100.0**

4.4.4.1.1 Discussion on referral patterns from an attending Chiropractic student

Information stated in Table 4.20 that 12% of the patient sample had been referred to other practitioners due to conditions that were either out of the scope of practice of the Chiropractic student, or it required medical intervention. In the study completed by Higgs (2009), 3.8% of the sample was referred to other practitioners which is lower than the current study, though this may be due to the fact that many of the patients had been referred from practitioners within the Kimberly Hospital Complex. These results are in contrast to the studies completed at the DUT Chiropractic Teaching Clinic where very few referrals were made to other practitioners. The range of referral was between 0.1% to 2.9% (Benjamin, 2007; Jaman, 2007, Kandhai, 2007; Venketsamy, 2007).

The results of this study were similar to the international public clinic studies where Giles *et al.,* (2002) reported 12.6% of the patients were referred to other practitioners and Garner *et al.,* (2007) had reported 8% of the patients had been referred to other practitioners. In the international private sector only one study completed by Nyiendo *et al.,* (2000) had reported that 0.8% of the patients had been referred to other physicians. The remaining studies referred to in this study had not documented this question.

As a result of these findings, it can be seen that very few patients are referred to other medical physicians. Referral is usually dictated by the patient's condition, a need for a second opinion (Giles *et al.,* 2002) and the limitation of the scope of practice which limits the interventions that may be provided by the Chiropractor (Giles *et al.,* 2002).

4.4.4.2 Contraindications for treatment

It was recorded that 16 patients (13.7%) that presented to the Marburg Haven Clinic did not have joint manipulation included in the treatment programme. Hypertension was cited as a reason in 50% of the cases and secondly the language barrier accounted for 25% of the patients not receiving joint manipulation (namely: If the

Chiropractic student was unable to communicate treatment protocols appropriately, patient consent was not allowed). Other examples that inhibited the use of Chiropractic manipulation of the spine were a disc herniation, popliteal aneurysm, and suspected mycobacterium tuberculosis infection.

Table 4.21: Contraindications for manipulation

	Frequency	Percent
None	101	86.3
Yes	16	13.7
Total	**117**	**100.0**

4.4.4.2.1 Discussion on contraindications for manipulation

It can be seen that 13.7% of the patients in this current study had contraindications for manipulative treatment. Two of the patients suffering from angina and hypertension were referred immediately without any Chiropractic treatment. The majority of these patients were referred to other practitioners though they still received some form of treatment (which may have excluded manipulation) from a Chiropractic student. The reason being was that the primary diagnosis had been musculoskeletal complaints such as cervical and lumbar facet syndrome and sacroiliac syndrome. When factors were taken into consideration such as the age of the patient, history of surgery, history of previous spinal conditions and the co-morbidity with which the patient had presented, a clinical decision was made in each case that manipulative treatment would/would not be of benefit to these patients. Secondly, there was a language barrier between the Chiropractic student and two patients, and therefore without an in depth case history, it was advised that the patients did not receive manipulative therapy.

The patients between the ages of 60 and 73 (n = 6, 37.5%) ranked the highest within this co-morbidities age group. Patients who were slightly younger, between 54 and 59 years of age (n = 4, 25%), were the second highest age group within the co-morbidities, and these co-morbidities consisted of hypertension, diabetes mellitus and angina. The percentages of contraindications are similar to that of the Higgs' (2009) study within the South African public sector, where 15 patients were

contraindicated to treatment. The percentage of contraindications within the DUT Chiropractic Teaching Clinic was significantly lower, ranging between 1.9% to 6.3% (Benjamin, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007). Some of the reasons for contraindications in these studies are as follows: hepatomegaly, cancer, needing to complete a radiograph for suspected pathology, disc pathology and hypertension.

With regards to the studies completed in the international public clinics, Garner *et al.,* (2007) noted contraindications to treatment due to mental and physical health problems, legal problems and multiple problems. This could not be directly compared with the current study as the format in which the data was collected was not the same as the current study. No other studies investigated in this present study documented on the contraindications to Chiropractic treatment.

4.4.4.3 Treatment protocols

The treatment protocol most commonly used by Chiropractors at the Marburg Haven Clinic was joint manipulation (21.9%). This is followed by joint mobilization (14.8%), stretching (12.5%) and ischaemic compression (12.1%). Other treatments that were seldom used were that of proprioceptive neuromuscular facilitation (PNF) stretching (0.7%), Blocking (0.3%), myofascial release (0.3%) and proprioceptive exercises (0.3%). Some of the remaining treatments used at the Marburg Haven Clinic were dry needling (8.8%), soft tissue therapy (8.5%) and cyrotherapy (8.5%) (Table 4.22).

Table 4.22: Treatment protocols

	Frequency	Percent
Joint manipulation	87	21.9
Joint mobilization	59	14.8
Stretching	50	12.5
Ischaemic compression	48	12.1
Dry needling	35	8.8
Soft tissue therapy	34	8.5
Cyrotherapy	34	8.5
Referral	12	3.0
Strengthening	10	2.5
Heat therapy	10	2.5
Cross-fictional massage	5	1.3
Conditioning	4	1.0
No treatment	4	1.0
PNF stretching	3	0.7
Blocking	1	0.3
Myofascial release	1	0.3
Proprioceptive exercises	1	0.3

4.4.4.3.1 Discussion on treatment protocols

The majority of the patients that presented to the Marburg Haven Clinic received Chiropractic joint manipulation (21.9%). This was followed by joint mobilization (14.8%), stretching (12.5%) and ischaemic compression (12.1%). The results are congruent with the Chiropractic literature which states that manipulation is the foundation of Chiropractic treatment (Myburgh and Mouton, 2007; Gatterman, 1990). It can also be seen that joint mobilization, a more cautious form of treatment, is also largely used in this study. A likely reason for this is that a high percentage of the patients were older with the average age being 53.3 years, and many of the patients had reported arthritic problems, hypertension and diabetes mellitus leading the Chiropractic students to make clinical decisions to treat the patients with caution.

These results are in contrast to the findings by Higgs (2009). Although manipulation was the most common form of treatment used, the percentage of the patients who received such treatment was much higher (90.4%). This was then followed by dry needling (76.4%), kinesiotape (42%) and soft tissue therapy (38.9%). In the South

African teaching clinics joint manipulation was also the most commonly used treatment of choice (Benjamin, 2007 (82.6%) and Jaman, 2007 (74.5%)) though in the studies that had looked at the treatment of choice for upper and lower extremities soft tissue therapy was the most common form of treatment (Kandhai, 2007 (42.2%); Venketsamy, 2007 (83.4%)).

In the international public sector, Giles *et al.,* (2002) documented acupuncture (28.6%) as the most common form of treatment, followed by manipulation (11.7%). In the international private clinics, manipulation was once again the most common form of treatment (Mootz *et al.,* 2005 (85%); Leboeuf-Yde *et al.,* 2004 (83%); Haas *et al.,* 2004 (100%); Nyiendo *et al.,* 2001(87.3%)).

Marburg Haven Clinic does not have any physiotherapy modalities available, therefore these treatments had to be substituted with cyrotherapy, heat therapy, stretching strengthening and referral, making comparison with other studies difficult.

4.4.5 Objective Five: To identify correlations between demographic factors and musculoskeletal and non-musculoskeletal complaints

4.4.5.1 Multiple regression analysis of primary and secondary diagnoses

As the actual number of conditions recorded were too few/not recorded, the results in multiple regression could not be computed and therefore no significant values were found. However, when looking at the raw percentages, relative numbers of the diagnoses and the co-morbidities were seen in the results.

4.4.5.2 Diagnosis in terms of age

The information in Tables 4.23 and 4.24 highlight the top ten primary diagnoses and secondary diagnoses accordingly, and within which age group they were mostly likely to present. The results indicated that the patients in the age group of between 70 to 79 years of age, presented with a primary diagnosis of the highest percentage of nerve root entrapment (100%) and ankle sprain (100%). Patients between 60 to 69 years of age, presented with the highest percentage of sacroiliac syndrome

(85.7%) and osteoarthritis (78.9%). The patients between 50 to 59 years of age, presented with the highest percentage of lumbar facet syndrome (84.6%), thoracic facet syndrome (85.7%), cervicogenic headaches (100%), myofascitis of the levator scapular (100%) and rheumatoid arthritis (100%). Patients between 40 to 49 years of age, presented with the highest percentage of cervical facet syndrome (84.2%).

The results indicated that the patients in the age group of between 60 to 69 years of age, presented with a secondary diagnosis of the largest percentage of myofascitis of the quadratus lumborum (100%), myofascitis of the gluteus maximus (100%) and osteoarthritis (100%). Patients between the ages of 50 to 59 years, presented with the highest percentage of general myofascitis (90.9%), myofascitis of the gluteus medius (100%) and sacroiliac syndrome (100%). Patients between the ages 40 to 49 years, presented with the highest percentage of myofascitis of the trapezius (75%), thoracic facet syndrome (100%), myofascitis of scalenius (100%) and sternocleidomastoid (100%).

Table 4.23: Primary diagnosis in terms of age

Diagnosis	Age group	Count within age group	N	%
Sacroiliac syndrome	60-69	19	18	85.7
Cervical facet syndrome	40-49	18	16	84.2
Osteoarthrotis	60-69	17	15	78.9
Lumbar facet syndrome	50-59	11	11	84.6
Thoracic facet syndrome	50-59	7	6	85.7
Cervicogenic headache	50-59	2	2	100.0
Myofascitis levator scapula	50-59	2	2	100.0
Nerve root entrapment	70-79	2	2	100.0
Rheumatoid arthritis	50-59	2	2	100.0
Ankle sprain	70-79	2	2	100.0

Table 4.24: Secondary diagnosis in terms of age

Diagnosis	Age group	Count within age group	N	%
General myofascitis	50-59	11	10	90.9
Myofascitis quadratus lumborum	60-69	7	7	100.0
Myofascitis Trapazius	40-49	4	3	75.0
Myofascitis gluteus maximus	60-69	3	3	100.0
Thoracic facet syndrome	40-49	2	2	100.0
Myofascitis gluteua medius	50-59	2	2	100.0
Myofascitis scalenius	40-49	2	2	100.0
Myofascitis sternocleidomastoid	40-49	2	2	100.0
Osteoarthritis	60-69	2	2	100.0
Sacroiliac syndrome	50-59	2	2	100.0

4.4.5.3 Diagnosis in terms of gender

The results in Tables 4.25 and 4.26 indicate that the top four primary diagnoses and the top three secondary diagnoses respectively, in relation to gender. There were a higher percentage of male patients that presented with sacroiliac syndrome (25%) as a primary diagnosis, in comparison to osteoarthritis where only females had presented with the condition (19.1%).

The results in Table 4.26 indicate that males presented with a higher percentage of general myofascitis (14.3%) as a secondary diagnosis compared with females. The females presented with almost double the number of myofascitis of the quadratus lumborum muscle (6.7%) complaints than males.

Table 4.25: Top three primary diagnoses in terms of gender

Gender	Total	Diagnosis					
		Sacroiliac		Cervical facet		Osteoarthritis	
		Count	%	Count	%	Count	%
Male	28	7	25.0	5	17.9	0	0.0
Female	89	12	13.5	13	14.6	17	19.1

Table 4.26: Top three secondary diagnoses in terms of gender

Gender	Total	Diagnosis					
		General myofascitis		Myofascitis quadratus lumborum		Myofascitis trapezius	
		Count	%	Count	%	Count	%
Male	28	7	25.0	5	17.9	0	0.0
Female	89	12	13.5	13	14.6	17	19.1

4.4.5.4 Diagnosis in terms of employment

The information in Table 4.27 illustrates that of the patients who are employed, the most common diagnosis was cervical facet syndrome (29.2%). Of the unemployed patients, the most common diagnosis was sacroiliac syndrome (19.4%). Sacroiliac syndrome was also the most common diagnosis seen in pensioners (24.0%). Osteoarthritis (31.2%) was the most commonly diagnosed symptom in the “not specified” group.

Of the secondary diagnoses, the results in Table 4.28 indicate that of the patients who are in employment, general myofascitis (8.3%) and trapezius myofascitis (8.3%) were the most common diagnoses. Of the unemployed patients, general myofascitis (12.9%) and quadratus lumborum myofascitis (12.9%) were the most common diagnoses. General myofascitis (9.4%) was the most common diagnosis in the “not specified” group.

Table 4.27: Top three primary diagnoses in terms of employment

Employment	Total	Diagnosis					
		Sacroiliac		Cervical facet		Osteoarthritis	
		Count	%	Count	%	Count	%
Employed	24	5	20.8	7	29.2	1	4.2
Unemployed	31	6	19.4	5	16.1	3	9.7
Pensioner	25	6	24.0	1	4.0	3	12.0
Scholar	2	0	0.0	0	0.0	0	0.0
Self employed	2	0	0.0	1	50.0	0	0.0
Part time	1	0	0.0	0	0.0	0	0.0
Not specified	32	2	6.2	4	12.5	10	31.2

Table 4.28: Top three secondary diagnoses in terms of employment

Employment	Total	Diagnosis					
		General myofascitis		Myofascitis quadratus lumborum		Myofascitis trapezius	
		Count	%	Count	%	Count	%
Employed	24	2	8.3	1	4.2	2	8.3
Unemployed	31	4	12.9	4	12.9	1	3.2
Pensioner	25	2	8.0	1	4.0	1	0.0
Scholar	2	0	0.0	0	0.0	0	0.0
Self employed	2	0	0.0	0	0.0	0	0.0
Part time	1	0	0.0	0	0.0	0	0.0
Not specified	32	3	9.4	1	3.1	0	0.0

4.4.5.5 Diagnosis in terms of occupation

The results in Table 4.29 indicate that of the manual labourers' cervical facet syndrome (22.2%) was the most common diagnosis. Of the employed participants sacroiliac syndrome (18.2%) and cervical facet syndrome (18.2%) were the most common diagnoses for the non-manual labourers. Of the patients that divided their day between manual and non-manual work, cervical facet syndrome (42.9%) was the most common diagnosis. Sacroiliac syndrome (20.3%) was the most common diagnosis of the not applicable group, and osteoarthritis (29.0%) was the most common of the "not specified" group.

Table 4.29: Top three primary diagnoses in terms of occupation

Occupation	Total	Diagnosis					
		Sacroiliac		Cervical facet		Osteoathritis	
		Count	%	Count	%	Count	%
Manual	9	1	11.1	2	22.2	1	11.1
Non-manual	11	2	18.2	2	18.2	0	0
Combination	7	2	28.6	3	42.9	0	0
Not applicable	59	12	20.3	6	10.2	7	11.9
Not specified	31	2	6.5	5	16.1	9	29

Table 4.30: Top three secondary diagnoses in terms of occupation

Occupation	Total	Diagnosis					
		General myofascitis		Quadratus lumborum myofascitis		Trapezius myofascitis	
		Count	%	Count	%	Count	%
Manual	9	0	0	1	11.1	0	0
Non-manual	11	2	18.2	0	0	0	0
Combination	7	0	0	0	0	2	28.6
Not applicable	59	6	10.2	5	8.5	2	3.4
Not specified	31	3	9.7	1	3.2	0	0

4.4.5.6 Diagnosis in terms of ethnicity

The results in Table 4.31 illustrate that of the Black patients, the most common diagnosis was cervical facet syndrome (38.9%). Cervical facet syndrome was also the most common diagnosis in both the White (42.9%) and Coloured (18.2%) patients. Of the Indian patients sacroiliac syndrome (20.3%) was the most common diagnosis.

The results indicated that of the Black patients, the most common secondary diagnosis was quadratus lumborum myofascitis (14.4%). Of the Coloured patients the most common diagnosis was general myofascitis (18.2%), this was the same for the Indian (10.2%) patients. Myofascitis of the trapezius muscle was the most common diagnosis in the White patients (28.4%). (Table 4.32)

Table 4.31: Top three primary diagnoses in terms of ethnicity

Ethnicity	Total	Diagnosis					
		Sacroiliac		Cervial facet syndrome		Osteoarthristis	
		Count	%	Count	%	Count	%
Indian	59	12	20.3	6	10.2	7	11.9
Black	39	3	17.8	7	38.9	10	41.1
Coloured	11	2	18.2	2	18.2	0	0.0
White	7	2	28.6	3	42.9	0	0.0
Missing	1	0	0.0	0	0.0	0	0.0

Table 4.32: Top three secondary diagnoses in terms of ethnicity

Ethnicity	Total	Diagnosis					
		General Myofascitis		Quadratus lumborum myofascitis		Trapezius myofascitis	
		Count	%	Count	%	Count	%
Indian	59	6	10.2	5	3.3	2	3.4
Black	39	3	10.0	2	14.4	0	0.0
Coloured	11	2	18.2	0	0.0	0	0.0
White	7	0	0.0	0	0.0	2	28.6
Missing	1	0	0.0	0	0.0	0	0.0

4.4.5.7 Diagnosis in terms of residence

The results in Table 4.33 illustrate that of the patients living within the rural setting the most common primary diagnosis was cervical facet syndrome (23.1%). Of the patients living within an urban setting both sacroiliac syndrome (19.6%) and cervical facet syndrome (19.6%) were the most common diagnoses. Of the patients that had not specified their residence osteoarthritis (25.9%) was the most common diagnosis

The results in Table 4.34 illustrate that of the patients living in a rural setting general myofascitis (15.4%) was the most common secondary diagnosis; general myofascitis (10.3%) was also the most common secondary diagnosis for the patients that had not specified their residence. All top three secondary diagnoses were diagnosed equally in the patients within the urban setting.

Table 4.33: Top three primary diagnoses in terms of residence

Residence	Total	Diagnosis					
		Sacroiliac		Cervical facet syndorme		Osteoathritis	
		Count	%	Count	%	Count	%
Rural	13	1	7.7	3	23.1	2	15.4
Urban	46	9	19.6	9	19.6	0	0
Not specified	58	9	15.5	6	10.3	15	25.9

Table: 4.34: Top three secondary diagnoses in terms of residence

Residence	Total	Diagnosis					
		General		Quadratus lumborum		Trapezius	
		Count	%	Count	%	Count	%
Rural	13	2	15.4	1	7.7	0	0
Urban	46	3	6.5	3	6.5	3	6.5
Not specified	58	6	10.3	3	5.2	1	1.7

4.5 Discussion of multiple regression analysis of primary and secondary diagnoses

The specific primary and secondary diagnostic categories were investigated in terms of age, gender, employment, occupation and residence, so that a relationship between the diagnoses made and these demographic variables could be determined.

An analysis of the primary diagnosis as per age group (Table 4.23) illustrated that sacroiliac syndrome (85.7%) was the most commonly diagnosed complaint in the age group 60 to 69 years. Louw *et al.,* (2007) found that low back pain was more prevalent in older people versus younger people. Cervical facet syndrome was the most commonly diagnosed complaint in the age group 40 to 49 years. These results were similar to that of Rubinstein *et al.,* (2008), where he found that the mean age of patients diagnosed with neck pain were 41 years of age. Osteoarthritis was the mostly commonly diagnosed complaint in the age group of 60 to 69 years. This results supports that Osteoarthritis is the most common age related musculoskeletal disease (Anderson and Loeser, 2010).

In the analysis of the primary diagnosis in terms of gender (Table 4.25) sacroiliac syndrome (25%) and cervical facet syndrome (17.9%) were most commonly diagnosed in males. Osteoarthritis was most commonly diagnosed in females (19.1%), this is opposite to the research done by Anderson and Loeser (2010), where it was found that osteoarthritis was more prevalent in males.

When analyzed as per employment (Table 4.27) sacroiliac syndrome was the most commonly diagnosed in pensioners (24%), which could be related to the age of the patients, and secondly in the patients who are employed (20.8%). Cervical facet syndrome was most commonly diagnosed syndrome in the self-employed (50%) and the employed (29.2%). These results were similar to the study completed by Waalen *et al.,* (1994) cervical neck pain was also common in employed patients. Osteoarthritis was most commonly diagnosed in 31.2% of patients that had not specified their employment and similarly for 12% of the pensioners.

In the analysis of the primary diagnosis as per occupation (Table 4.29), sacroiliac syndrome (28.6%) and cervical facet syndrome (42.9%) were most commonly diagnosed syndromes in patients to divided their time between manual and non-manual labour (combination labourers). Higgs (2009) also found that people who were involved with combination labour had cervical facet syndrome. Osteoarthritis (29%) had been mostly commonly diagnosed in patients that had not specified their occupation.

When looking at the primary diagnosis in terms of ethnicity (Table 4.31) and comparing the results between the ethnical groups, the percentages were excluded in the following interpretation, as the conclusion drawn would be misleading as the number of patients per ethnical group differed significantly. Therefore, sacroiliac syndrome was most commonly diagnosed in Indian patients (n = 12), in addition to cervical facet syndrome (n = 6). These results were in contrast to the study completed by Higgs (2009) as sacroiliac syndrome was most commonly found in African people. Osteoarthritis was most commonly diagnosed in Black patients (n = 10).

When analyzed as per residence (Table 4.33), sacroiliac syndrome was mostly commonly diagnosed in the patients living within the urban setting (19.6%). Cervical facet syndrome was most commonly diagnosed within the patients living within the rural setting (23.1%). The reason for this could be that these patients have to carry water for long distances and many of them carry the container filled with water on their heads (Geere *et al.,* 2010). Osteoarthritis was most commonly diagnosed in patients (25.9%) that had not specified their residence.

In summary of the primary diagnoses, it is suggested that sacroiliac syndrome affects elderly males who are in the age group (60 to 69 years) and therefore are more likely to be unemployed. Cervical facet syndrome affects the younger males (40 to 49 years) that are employed, and spend their time divided between manual labour and non-manual labour (combination labour) or only spend their time doing manual work. Osteoarthritis affects the elderly females (60 to 69 years) that are either pensioners or have not specified their employment (assumption unemployed).

In the analysis of secondary diagnosis as per age group, the information highlighted in Table 4.24 illustrated that general myofascitis was commonly diagnosed in the 50 to 59 years age group. Quadratus lumborum myofascitis was most commonly diagnosed within the 60 to 69 year age group. Myofascitis of the trapezius was most commonly diagnosed within the 40 to 49 year age group. These results could not be compared with both the international studies and South African studies as they did not report on the comparison between myofascitis and age.

In analysis of the secondary diagnosis as per gender, the information stated in Table 4.26 indicated that general myofascitis (14.3%) and myofascitis of the trapezius (7.1%) were most commonly diagnosed in males, these results are in contrast to Higgs (2009) as general myofascitis was more commonly diagnosed in females. Myofascitis of the quadratus lumborum was mostly commonly diagnosed in females.

Analysis of the patients' employment status (Table 4.28) revealed that general myofascitis (12.9%) and quadratus lumborum myofascitis (12.9%) was most commonly diagnosed in the unemployed patients, whereas myofascitis of the trapezius (8.3%) was most commonly diagnosed in the patients who are employed as non-manual and combination labourers.

Analysis of the patients' who are employed indicated that general myofascitis was mainly diagnosed in the non-manual labourers (18.2%). Quadratus lumborum was mainly diagnosed in the manual labourers (11.1%) and trapezius myofascitis was mainly diagnosed in the combination labourers (28.6%). (Table 4.30)

In Table 4.32, headed "top three secondary diagnoses in terms of ethnicity" the percentages were excluded in the following interpretation as the conclusion drawn would be misleading as the number of patients per ethnical group differed significantly. From looking at the values of the samples it could be seen that general myofascitis (n = 6) and quadratus lumborum myofascitis (n = 5) was most commonly diagnosed in the Indian patients.

In Table 4.34 the diagnoses between the secondary diagnosis and residence highlighted that; general myofascitis (15.4%) and quadrates lumborum myofascitis (7.7%) was most commonly diagnosed in the patients that lived within a rural setting. Myofascitis of the trapezius (6.5%) was most commonly diagnosed in patients that lived within an urban setting.

In summary of the secondary diagnoses it can be deduced that general myofascitis affects older males (50 to 59 years) that are unemployed and live within a rural setting. Myofascitis quadratus lumborum affects older females (60 to 69 years) that are unemployed and live within a rural setting. Trapezius myofascitis condition was

found to most commonly affect younger males (40 to 49 years) that are employed and living within an urban setting.

These results show that low back pain is a prevalent musculoskeletal condition among the patients that presented to Marburg Haven Clinic as sacroiliac syndrome and quadratus lumborum myofascitis are the most common primary and secondary diagnoses. These results support Louw's *et al.,* (2007) findings that low back pain is prevalent in developing countries and patients who receive a low income as these patients have difficulty in obtaining Chiropractic treatment, consequently predisposes people to a greater prevalence of disease and disability.

4.6 Multiple regression analysis of primary and secondary co-morbidities

The numbers of the results were too small to create any significant values and therefore trends have to be analyzed using raw percentages when cross analysing the results of the co-morbidities against the demographic information.

4.6.1 Co-morbidity in terms of age

The highest number of patients that presented with co-morbidities had hypertension (n = 65) with the highest number of patients (53.8%) who had hypertension being in the 60 to 69 year age category. Diabetes mellitus was the second highest co-morbidity documented (n = 36), with the highest number of patients (63.9%) also being in the 60 to 69 year age category. This was then followed by tuberculosis (n = 3) where the highest number (100%) was found in the 40 to 49 year age category.

Table 4.35: Top three primary co-morbidities in terms of age

Co-morbidity	Age group	Count within age group	N	%
Hypertension	60-69	65	35	53.8
Diabetes Mellitus	60-69	36	23	63.9
Tuberculosis	40-49	3	3	100.0

Table 4.36: Top three secondary co-morbidities in terms of age

Co-morbidity	Age group	Count within age group	N	%
Hypertension	60-69	28	26	9.1
Diabetes Mellitus	50-59	10	9	11.2
Gastric Ulcer	60-69	3	3	10.8

4.6.2 Co-morbidity in terms of gender

The figures in Table 4.37 illustrates that of the male patients, hypertension (14.3%) was the most common primary co-morbidity. This trend was the same for the female patients (36%).

A similar trend seems to show that the most common secondary co-morbidities in male patients are hypertension (14.3%) and diabetes (14.3%). Of the female patients hypertension (27%) was the most common diagnosis.

Table 4.37: Top three primary co-morbidities in terms of gender

Gender	Total	Co-morbidity					
		Hypertension		Diabetes mellitus		Tuberculosis	
		Count	%	Count	%	Count	%
Male	28	4	14.3	3	10.7	3	10.7
Female	89	32	36.0	22	24.7	0	0.0

Table 4.38: Top three secondary co-morbidities in terms of gender

Gender	Total	Co-morbidity					
		Hypertension		Diabetes mellitus		Gastric ulcers	
		Count	%	Count	%	Count	%
Male	28	4	14.3	4	14.3	0	0.0
Female	89	24	27.0	6	6.7	3	3.4

4.6.3 Co-morbidity in terms of employment

The information in Table 4.39, illustrates that of the employed patients hypertension (16.7%) and diabetes (16.7%) were the most common primary co-morbidities. Of the unemployed patients hypertension (32.3%) was the most common primary co-

morbidity, the same trend was also seen in pensioners (36%) and those that had not specified whether they were employed (40.6%).

The most common secondary co-morbidity diagnosed in employed patients was hypertension (12.5%), this trend was the same for the unemployed (32.3%), pensioners (32%), part time employed (100%) and those that had not specified their employment status (18.8%) (Table 4.40).

Table 4.39 Top three primary co-morbidities in terms of employment

Employment	Total	Co-morbidity					
		Hypertension		Diabetes		Tuberculosis	
		Count	%	Count	%	Count	%
Employed	24	4	16.7	4	16.7	3	12.5
Unemployed	31	10	32.3	7	22.6	0	0
Pensioner	25	9	36	6	24	0	0
Scholar	2	0	0	0	0	0	0
Self employed	2	0	0	0	0	0	0
Part time	1	0	0	1	100	0	0
Not specified	32	13	40.6	7	21.9	0	0

Table 4.40: Top three secondary co-morbidities in terms of employment

Employment	Total	Co-morbidity					
		Hypertension		Diabetes		Gastric Ulcer	
		Count	%	Count	%	Count	%
Employed	24	3	12.5	2	8.3	1	4.2
Unemployed	31	10	32.3	4	12.9	0	0
Pensioner	25	8	32	1	4	1	4
Scholar	2	0	0	0	0	0	0
Self employed	2	0	0	0	0	0	0
Part time	1	1	100	0	0	0	0
Not specified	32	6	18.8	3	9.4	1	3.1

4.6.4 Co-morbidity in terms of occupation

Diabetes (11.1%) and Mycobacterium tuberculosis (11.1%) were the most common primary co-morbidity diagnosed in manual labourers. Of the non-manual labourers diabetes mellitus (27.3%) was the most common primary co-morbidity, diabetes

mellitus (14.3%) was also the most common primary co-morbidity in combination labourers. Of the patients in the "not applicable" group hypertension (52.8%) was the most common co-morbidity. This percentage was also the same for patients that had not specified their occupation (33.3%).

The results in Table 4.42, illustrates that of the manual labourers', hypertension (11.1%) and gastric ulcers (11.1%) were equally common secondary co-morbidities. Of the non-manual labourers, hypertension (27.3%) was the most common secondary co-morbidity. This trend was the same for "not applicable" group (32.2%) and "not specified" (16.7%) categories. Of the combination labourers' diabetes mellitus (14.3%) was the most common secondary co-morbidity.

Table 4.41: Top three primary co-morbidities in terms of occupation

Occupation	Total	Co-morbidity					
		Hypertension		Diabetes		Tuberculosis	
		Count	%	Count	%	Count	%
Manual	9	2	5.6	1	11.1	1	11.1
Non-Manual	11	0	0	3	27.3	1	9.1
Combination	7	2	5.6	1	14.3	1	14.3
Not applicable	59	19	52.8	14	23.7	0	0
Not specified	31	12	33.3	6	20	0	0

Table 4.42: Top three secondary co-morbidities in terms of occupation

Occupation	Total	Co-morbidity					
		Hypertension		Diabetes		Gastric ulcer	
		Count	%	Count	%	Count	%
Manual	9	1	11.1	0	0	1	11.1
Non-Manual	11	3	27.3	1	9.1	0	0
Combination	7	0	0	1	14.3	0	0
Not applicable	59	19	32.2	5	8.5	1	1.7
Not specified	31	5	16.7	3	10	1	3.3

4.6.5 Co-morbidity in terms of ethnicity

The figures in Table 4.43 indicate that the Black patients' most common primary co-morbidity is hypertension (42.2%). This trend was the same for the Indian (32.2%) and White (28.6%) patients. Of the Coloured patients diabetes (27.3%) was the most common primary co-morbidity.

The findings from the study showed that of the Coloured patients hypertension (27.3%) was the most common secondary co-morbidity. Of the Indian population, hypertension (32.2%) was the most common secondary co-morbidity. This was the same for the Black patients (17.7%). Of the White patients, diabetes mellitus (14.3%) was the most common secondary co-morbidity (Table 4.44).

Table 4.43 Top three primary co-morbidities in terms of ethnicity

Ethnicity	Total	Co-morbidity					
		Hypertension		Diabetes mellitus		Tuberculosis	
		Count	%	Count	%	Count	%
Indian	59	19	32.2	14	23.7	0	0.0
Black	39	14	42.2	7	31.1	1	14.3
Coloured	11	0	0.0	3	27.3	1	9.1
White	7	2	28.6	1	14.3	1	11.1
Missing	1	0	0.0	0	0.0	0	0.0

Table 4.44: Top three secondary co-morbidities in terms of ethnicity

Ethnicity	Total	Co-morbidity					
		Hypertension		Diabetes mellitus		Gastric ulcers	
		Count	%	Count	%	Count	%
Indian	59	19	32.2	5	8.5	1	1.7
Black	39	6	17.7	3	10.0	2	13.3
Coloured	11	3	27.3	1	9.1	0	0.0
White	7	0	0.0	1	14.3	0	0.0
Missing	1	0	0	0	0	0	0

4.6.6 Co-morbidity in terms of residence

The findings stated in Table 4.45 illustrates that of the patients that were living in a rural setting hypertension (38.1%) was the most common primary co-morbidity. In comparison, the same was seen in patients that had not specified their residence

(34.5%). Of the patients that were living in an urban setting, diabetes mellitus (26.1%) was the most common primary co-morbidity.

Similarly, 23.1% of the patients who lived in the rural setting had hypertension as the most common secondary co-morbidity. The same trend was seen in those that lived in an urban setting (30.4%) and those that had not specified their residence (19%) (Tables 4.46).

Table 4.45: Top three primary co-morbidities in terms of residence

Residence	Total	Co-morbidity					
		Hypertension		Diabetes		Tuberculosis	
		Count	%	Count	%	Count	%
Rural	13	5	38.1	2	15.4	1	7.7
Urban	46	11	23.9	12	26.1	2	4.3
Not specified	58	20	34.5	11	19	0	0

Table 4.46: Top three secondary co-morbidities in terms of residence

Residence	Total	Co-morbidity					
		Hypertension		Diabetes		Gastric ulcer	
		Count	%	Count	%	Count	%
Rural	13	3	23.1	1	7.7	0	0
Urban	46	14	30.4	6	13	0	0
Not specified	58	11	19	3	5.2	3	5.2

4.7 Discussion of the multiple regression analysis of primary and secondary co-morbidities

In respect of co-morbidity and age (Table 4.35) primary co-morbidities were most commonly reported on in the age group 60 to 69 years, where hypertension (53.8%) and diabetes (63.9%) were documented. Three of the patients in the age group 40 to 49 reported Mycobacterium tuberculosis.

Secondary co-morbidities (Table 4.36) were also most commonly reported on in the age group 60 to 69, where hypertension (92.9%) and gastric ulcers (100%) were documented. Diabetes mellitus (90%) was mostly commonly reported on in the age group 50 to 59 years.

With regard to co-morbidities in terms of gender (Table 4.37), females presented with a higher percentage of primary co-morbidities, with hypertension (36%) and diabetes mellitus (24.7%) being the most commonly reported co-morbidities. Only three males reported Mycobacterium tuberculosis. With regards to secondary co-morbidities (Table 4.38), the figures for females indicated that they had a higher percentage of hypertension (27.7%) where as males had a higher percentage of diabetes mellitus (14.3%).

The figures illustrated in Table 4.39 indicate that hypertension was the most commonly reported primary co-morbidity in the unemployed (32.3%) and pensioners (36%). Hypertension was also documented as a secondary co-morbidity (Table 4.40) in the unemployed (32.3%) and pensioners (32%). Diabetes mellitus showed a high primary co-morbidity in pensioners (24%) and as a secondary co-morbidity, it was the highest diagnosed percentage in unemployed (12.9%) patients. All three patients that had reported tuberculosis as a primary co-morbidity were in employment.

The results indicated in Table 4.41 illustrate under the heading “Top three primary co-morbidities in terms of occupation”, indicates that the highest percentage of hypertension was found in the “not applicable” group (52.8%), which were those patients that were unemployed and pensioners. The highest percentage of diabetes mellitus was found in the non-manual labourers (27.3%). This could be due to the sedentary lifestyle as the modern world has lead people to become less active due to computers and other technological advances (Habib and Saha, 2010).

Hypertension was once again the highest secondary co-morbidity percentage in the not applicable group (32.2%) and diabetes mellitus was the highest secondary co-morbidity percentage in the combination labourers (14.3%). (Table 4.42)

With respect to the primary and secondary co-morbidity in terms of ethnicity tables (Table 4.43 and Table 4.44), the percentages were excluded in the following interpretation as conclusions drawn would be misleading as the number of patients per ethnic group differed substantially. Table 4.43 illustrates that the Indian patients had the highest reported hypertension (n = 19) and diabetes mellitus (n = 14)

primary co-morbidities. This could once again be largely due to poor diet and eating of solid fats such as ghee (Habib and Saha, 2010).

This was the same for secondary co-morbidity (Table 4.44) where hypertension (n = 19) and diabetes mellitus (n =5) were highest reported in the Indian population. Neither tuberculosis nor gastric ulcers were reported on for one particular ethnicity.

In respect to primary co-morbidity and residence (Table 4.45), the highest percentage of hypertension was reported on in the patients that lived within a rural setting (38.1%) and the highest percentage of diabetes mellitus was reported on in patients that lived within an urban setting (26.1%).

With regards to secondary co-morbidity and residence (Table 4.46), the highest percentage of hypertension (30.4%) and the highest percentage of diabetes mellitus (13%) were reported on in the patients living within the urban setting. All three patients that had reported gastric ulcers as a secondary co-morbidity had not specified their residence.

The above information shows that there is a link between chronic disease (namely: hypertension and diabetes mellitus) and poorer populations. Non-communicable diseases are rising within the rural communities and are also in adversely affecting the poor populations living within urban settings. From the figures indicated in Tables 4.35 – 4.46, it can be seen that hypertension and diabetes mellitus were mainly found in those patients that were unemployed and pensioners. This could be related to their physical inactivity and poor diet (Wild *et al.,* 2004). Indians were also most commonly diagnosed with both hypertension and diabetes mellitus. This could be due to an urbanized diet and poor lifestyle choices (Vijayakumar *et al.,* 2009).

4.8 Severity pain rating

Patients pain rating scale was likely not likely to decrease between the initial and first follow-up treatments (p = 1.00).

Table 4 .47: Summary statistics for pain rating scale

Paired t-test to compare freqency at initial and first follow up (n = 27)						*P* value
		Mean	N	Std. Deviation	Std. Error mean	
Pair 1	Initial	4.96	27	3.311	0.637	1
	Follow-up	4.96	27	2.047	0.394	

4.8.1 Discussion on pain rating scale

Of the 117 patients that presented to the Marburg Haven Clinic, the severity pain rating scale could only be followed on 27 of those patients. The information stated in Table 4.47 indicate that there was no statistically significant difference in the severity of pain between the initial and follow-ups treatments (p = 1.00).

These results may not be accurate as most of the patients had follow-up treatments though the severity pain scales had not been completed. The first reason for this could have been because each week there was a different student that treated the patients. Secondly, the patients may not have come for consecutive treatments making it difficult to follow the severity of the condition. In future studies, the history of the full course of the condition of each patient should be followed, not just the initial and first follow-up.

4.9 Conclusion

Chapter Four discussed the results of the demographic and disease profile of patients at Marburg Haven Clinic who sought Chiropractic care in a community outreach setting. Along with the relevant results provided discussion to facilitate the understanding of the results. The conclusion and recommendations will be discussed in Chapter Five.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The patients at the Marburg Haven Clinic have been described in terms of their demographics, common presenting conditions, common co-morbidities, common aetiologies, any special investigations that may have taken place and common treatment management protocols. By doing so, this study has attempted to provide a comprehensive demographic and disease profile of the patients presenting to a community outreach centre in South Africa. This study also provides a clearer picture of the types of patients seen in community outreach settings and provides a basis on which Chiropractors can contribute constructively to the national health strategies as outlined by the Department of Health, whilst also decreasing the burden of disease in South Africa. This was done by comparing the data attained in this study to the data of similar attributes in both local and international studies completed in private, public and teaching clinics.

5.2 Summary

5.2.1 Objective One: Describe the demographics of the patients at Marburg Haven Clinic (gender, age employment, occupation, ethnicity, marital status and residence).

The demographic profile of the patients that had presented to Marburg Haven Clinic (as generated in this study) seemed to suggest that patients were predominantly married Indian females, with a mean age of 53.3 years. Notwithstanding this, patients' ages ranged from 11 to 87 years of age, included all ethnic groups and represented both males and females. The majority of the patients had not specified their permanent residence status on the patient information sheet. Of the patients that had completed this information the majority were from the local urban area of Marburg Haven where Marburg Haven Clinic is situated. Almost half the patients that presented to the Marburg Haven Clinic were unemployed or pensioners. Of those that were employed, the majority had not specified there employment type. The majority of the patients were from a low socioeconomic area.

In conclusion there was a diverse set of demographical data observed in the patients that presented to the Marburg Haven Clinic when compared with other studies. With regards to age, it was found that the patients at Marburg Haven Clinic were considerably older than the majority of the studies especially the studies undertaken at teaching clinics. The exception being Till and Till's (2000) study in which the findings suggested that the patients were also considerably older. With regards to gender, the results were similar to local, international, private and public sectors. Demographics pertaining to employment and occupation were similar to the international public clinics, though they were dissimilar to the international and local private, public and teaching clinics.

5.2.2 Objective Two: To outline patient health profiles: describing the disease profile (main complaint and diagnosis) of the patient on the initial consultation.

The most common presenting anatomical location of complaint was lumbar pain (21.2%). The most common diagnosis made by the Chiropractic students at Marburg Haven Clinic was sacroiliac syndrome. The majority of the complaints were chronic in presentation, and of an unknown aetiology.

When compared with the other studies, the majority had reported similar findings of the most common anatomical location of complaint, which was lumbar pain and sacroiliac pain. The most common diagnosis in the present study was sacroiliac syndrome which was similar to the Higgs' (2009) study, but in contrast to the local private sector where cervical facet syndrome was more of a common diagnoses (Mahomed, 2007). With regards to the chronicity of complaint, similarities were found within the local public, private and teaching clinics, and international public and teaching clinics. However, these results were in contrast to the international private sector, where the majority of the patients presented in the acute phase. In respect of the aetiology of the complaints, comparisons were difficult to make as different terminology was used. Yet, when compared to Higgs (2009) local public study, the results were dissimilar as the aetiology of the complaint reported were almost equal between unknown, traumatic and non-traumatic.

5.2.3 Objective Three: To determine the prevalence of musculoskeletal and non-musculoskeletal complaints (history of co-morbidities, previous spinal conditions, history of smoking, blood pressure and history of surgery).

The history of the patients that presented at Marburg Haven Clinic commonly reported co-morbidities. The most commonly reported co-morbidity was hypertension followed by diabetes mellitus. The majority of the patients were non-smokers. It was documented that 55.6% of the patients had reported hypertension as a co-morbidity and a further 6.8% were diagnosed with hypertension by the Chiropractic students at Marburg Haven Clinic. Only a quarter of the patients had reported having had previous surgery. Previous treatment for the same condition from various other practitioners was only reported by 32.5% of the patients.

When comparing these results with the other studies it was found that the majority of the studies did not investigate these aspects therefore very few comparisons could be made. With regards to co-morbidities, there were certain similarities documented, where most of the studies had reported co-morbidities, and the top three also included hypertension and diabetes mellitus disorders.

It can be concluded that the majority of the patients at Marburg Haven Clinic had presented with musculoskeletal conditions (95%). The other 5% of the complaints were neurological, respiratory and gastrointestinal in nature.

5.2.4 Objective Four: To identify common healthcare management procedures and associations between demographic factors and patient complaints, and referrals made.

With regards to patient management at Marburg Haven Clinic, the Chiropractor referred a very small percentage of the patients (12%) to other doctors. This was because the students had a wide range of skills because of their diverse training and therefore could manage their patient complaints (Kopansky-Giles *et al.,* 2007). There were 13.7% of patients that had contraindications to Chiropractic manipulation. The majority still received some form of treatment, where two of the patients were referred immediately to other practitioners. The treatment protocols

that where mainly used at the Marburg Haven Clinic were joint manipulation followed by joint mobilization and stretching. The treatment usually consisted of a combination of these three protocols.

The contraindications to treatment are similar to that of Higgs' (2009) study but dissimilar to that of studies involving local teaching clinics (Benjaminj, 2007; Jaman, 2007; Kandhai, 2007; Venketsamy, 2007). With regards to referrals made, the results were similar to Garner *et al.,* (2007) and Giles *et al.,* (2002), where the rest of the studies seemed to have lower referral rates (Higgs, 2009; Benjamin, 2007;Jaman, 2007; Kandhai, 2007; Venketsamy, 2007; Nyiendo *et al.,* 2001) . The majority of the studies had reported joint manipulation as the primary choice of treatment.

5.2.5: Objective Five: To identify associations between demographic factors and musculoskeletal and non-musculoskeletal complaints.

With regards to musculoskeletal conditions and demographics, it can be concluded that the most common primary diagnosis was sacroiliac syndrome which affected the older (60 to 69 years) males that were either unemployed or pensioners.

Cervical facet syndrome was a more common diagnosis in males between the ages of 40 to 49 years who are in employment. Osteoarthritis, which mainly affected females between the ages of 60 to 69 years, indicated that they were pensioners.

With respect to the co-morbidities, hypertension and diabetes mellitus were the most common primary and secondary co-morbidities. These co-morbidities mainly affected females between 60 to 69 years of age, and most commonly affected patients that were unemployed and pensioners. Tuberculosis was reported by three of the patients at the Marburg Haven Clinic and it was noted that all three patients were males between the ages 40 to 49 years that were in employment.

Further research needs to be undertaken to determine the cause affect relationships (why certain people present with particular diagnoses).

5.3 Conclusion

This was a descriptive study of the demographics and disease profile of patients who attended Marburg Haven Clinic that was able to provide an understanding and add to a body of knowledge in terms of characteristics of the patients that presented to this public community outreach centre in a developing country like South Africa.

The demographic and descriptive information gathered in this study, has suggested that although these patients at Marburg Haven Clinic are a unique population with their own specific characteristics, many meaningful similarities can be found between those patients and other patients found both locally and internationally, despite which sector they sought to receive treatment.

- Similarities found with regards to the patients in South Africa when compared to patients in local public, private and teaching clinics included:
    - Majority were females.
    - Top three anatomical complaints (sacroiliac syndrome, cervical facet syndrome and osteoarthritis).
    - The majority of the complaints were in the chronic stage of presentation (longer than three months duration).
    - Co-morbidities included the hypertension and diabetes mellitus.
    - Manipulation remained the treatment of choice.

- Similarities of the patients in the public sector in South Africa versus international Chiropractic patients in all sectors included:
    - Majority were female patients.
    - The top three anatomical complaints were sacroiliac syndrome, cervical facet syndrome and osteoarthritis.
    - Co-morbidities included the hypertension and diabetes mellitus.
    - Manipulation remained the treatment choice.

These similarities suggest that despite the fact that differences have been found, many of the important characteristics of Chiropractic patients may be generalised to

the different sectors, and even different parts of the world. This may show that Chiropractors are well equipped to manage patients in the public sector in South Africa, just as well as in the private and teaching sector. It also shows that allowing students to work within these community centres such as Marburg Haven Clinic expands their experience in the Chiropractic field.

With respect to the differences noted, this study has:

- Identified the most common presentation of the typical patient presenting for care in the public sector.
- Highlighted the differences noted between the different sectors both locally and internationally (from the studies reviewed in this research).
- Has compiled data available for appropriate use for other Chiropractors that may want to provide services in the public sector, those that may be doing research and possibly academics and policy makers.

According to Mayosi *et al.,* (2009) Louw *et al.,* (2007) and Suleman (2001), the population subgroups that complain the most from musculoskeletal and non-musculoskeletal conditions tend to be people of a low socioeconomic level. The patients' low socioeconomic level indicated in this study is a good display of the great need of Chiropractic services in these communities.

5.4 Recommendations

The following recommendations are made to improve similar studies in the future:

- Patients will need to be asked the questions directly at the time of the consultation and not from a secondary source, to ensure that there is less missing data.
- Patients should be asked their level of income as this will give a better indication of socio-demographic status of the patients.
- Multiple follow-up treatments should be documented, as this will give a more accurate measurement of the effect of the treatment protocols used on this population.

- Further studies into the use of common terminology with regards to aetiology, is recommended.
- Further research needs to be undertaken to determine why certain people present with a particular diagnosis.

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PATIENTS AT MARBURG HAVEN CLINIC: A DEMOGRAPHIC AND DISEASE PROFILE

APPENDIX A

	Answer				Date:	
1. File no						
2. Gender		Male: 1	Female: 2			
3. Age						
4. Employment		Employed: 1	Unemployed: 2	Pensioner: 3	Workmen's comp: 4	Disability Grant: 5
		Scholar: 6	Not employed: 7	Part Time: 8	Not specified: 9	Other:
5. Occupation		Manual Labour: 1	Non-Manual: 2	Combination: 3	Not Applicable: 4	Not specified: 5
6. Ethnicity		Black: 1	Coloured: 2	White: 3		
		Indian: 4	Asian: 5	Other:		
7. Martial Stastus		Single	Married 2			
		Other: Specify				
8. Patient residence:		Rural: 1	Urban: 2	Not specified 3		

PATIENTS AT MARBURG HAVEN CLINIC: A DEMOGRAPHIC AND DISEASE PROFILE

9. Main area/s of complaint on initial consultation							
9.1 Musculoskeletal		Ankle pain	27	Jaw pain	4	Other :	
9.1.1		Brachium pain	29	Knee pain	24	52	
9.1.2		Calf pain	26	lateral hip pain	13		
9.1.3		Cervical pain	15	Lumbar pain	9		
9.2 Cardiovascular		Chest Pain	5	Nausea	39		
9.2.1		Constipation	42	Neck pain	1		
9.2.2		Coughing	33	Palpitations	37		
9.2.3		Diarrhoea	41	Paralysis	49		
9.3 Respiratory		Dizziness	44	Parasthesia	47		
9.3.1		Dyskinesia	48	Purulant sputum	34		
9.3.2		Dysponea	32	Rib pain	7		
9.3.3		Ear pain	16	Sacroiliac Pain	10		
9.4 Gastrointestinal		Elbow pain	18	Scapular pain	8		
9.4.1		Fever	36	Shin pain	25		
9.4.2		Flaccidity	51	Shoulder pain	17		
9.4.3		Foot pain	28	Spasticity	50		
9.5 Endocrine		Forearm Pain	19	Syncope	38		
9.5.1		Groin pain	14	Thigh Pain	23		
9.5.2		Haematemesis	43	Thoracic Pain	6		
9.5.3		Haemoptysis	35	Tinnitis	46		
9.6 Neurological		Hand pain	21	TMJ headache	31		
9.6.1		Hand pain	30	Upper arm pain	3		
9.6.2		Headache	2	Vomiting	40		
9.6.3		Hip pain	22	Weakness	45		
9.7 Hematological		Iliac crest pain	12	Wrist Pain	20		
9.7.1							
9.7.2							
9.7.3							
9.8 Dermatological							
9.8.1							
9.8.2							
9.8.3							
9.9 Genito-urinary							
9.9.1							
9.9.2							
9.9.3							
9.10 Other							
9.10.1							
9.10.2							
9.10.3							

10. Duration of main complaint			
		Acute < 3 months	1
		Subacute 3-6	2
		Chronic > 6	3
		Specify	4
11. Cause of Main complaint as determined by the			
Patient		Non-Traumatic	1
		Traumatic Repetitive	2
		Traumatic Acute	3
		Unknown	4
12. Severity on pain rating scale		1; 2; 3; 4; 5; 6; 7; ;8; 9; 10	
13. Were they previously treated for the same problem		For questions 13 to 17, use the coding below	
		No	1
		Yes	2
		Unknown	3
14. History of pre-existing spinal conditions			
15. If yes for the above specify:			
16. Have they had previous Chiropractic treatment			
17. History of surgery			
18. if yes for the above specify:			
19. Smoker		No	1
		Yes	2
		Previous Smoker	3
20. History of illness			
20.1		None	1
20.2		Unknown	2
20.3			3
20.4			
20.5			
21. Special investigations (see clinic codes)		None	1
21.1			2
21.2			
21.3			

22. Referred to another practitioner		No	1
		Yes	2
23. Primary diagnosis as seen on the day: See Clinic Diagnostic codes			
Musculoskeletal			
23.1			
23.2			
23.3			
Cardiovascular			
23.4			
23.5			
23.6			
Respiratory			
23.7			
23.8			
23.9			
Gastro-intestinal			
23.10.			
23.11			
23.12			
Neurological			
23.13			
23.14			
23.15			
Genito-urinary			
23.16			
23.17			
23.18			
Hematological			
23.19			
23.20.			
23.21			
Dermatological			
23.22			
23.23			
23.24			
Endocrine			
23.25			
23.26			
23.27			
Other			
23.28			
23.29			
23.30.			
24. Contra-indications for treatment		No	1
		Yes	2
25. If yes specify (use clinic coding to identify):			
26. Treatment Protocol (See clinic treatment codes)			
26.1			
26.2			
26.3			
26.4			
26.5			

	CLINIC CODING	
Initial patient		0003
Abscess	Lung	0004
Abscess	Psoas	0005
Abscess	Tooth	0006
Abscess	Sacroiliac	0007
Acceleration - Deceleration Syndrome		0008
Achilles tendon rupture traumatic		9
Achilles tendon rupture spontaneous		0010
Acne		11
Acute anxiety episode		0012
Adhesions	Abdominal	0013
	Ligamentous	0014
Alzheimer's disease		0015
Anemia	Pernicious	0016
Aneurysm	Aortic	17
Aneurysm	Thoracic	0018
Aneurysm	Thoraco-abdominal	19
Aneurysm	Femoral	0020
Aneurysm	Iliac	0021
Aneurysm	Popliteal	0022
Ankylosing spondylitis	Juvenile	0023
Ankylosing spondylitis	Adult	0024
Anterior interosseous syndrome		25
Arthritis		0026
Arthrogryposis		27
Asthma		0028
Atherosclerosis		0029
Attention Deficit Hyperactivity Disorder		0030
Autism		0031
Avascular Necrosis		0032
AVN Proximal tibia	Blount	33
AVN Radial Head	Brailsford	0034
AVN Ulna	Burns	35
AVN Talus	Diaz	0036
AVN 2nd Metatarsal	Freiberg	0037
AVN Head of Humerus	Haas	0038
AVN Os Tibiale	Haglund's	0039
AVN 5th Metatarsal	Iselin's	0040
AVN	Keinbocks	41
AVN Lunate	Kienbocks - Children	0042
AVN Carpals / Lunate	Kienbocks - Adults	43
AVN patella 1st growth center	Kohlers	0044
AVN tarsal - navicular	Kohlers	0045
AVN hip	Legg-Calve-Perthes	0046
AVN Metacarpal heads	Mauclaire	0047
AVN Tibial tuberosity	Osgood-Schlatter	0048
AVN Capitulum - humerus	Panner's	49
AVN Calcaneus	Sever's	0050
AVN patella 2nd growth center	Sinding Larson	51
Baker's Cyst		0052
Bed Wetting / Nocturnal Enuresis		0053
Bell's palsy		0054
Boutenniere Deformity		0055
Brachial Plexus Injury		0056
Bronchitis		57
Brown Seqard syndrome		0058
Bruxism		59
Bunions		0060

Bursitis		
	General	0061
	Iliopectineal	0062
	Infrapatella	0063
	Ischiogluteal	0064
	Olecranon	0065
	Pes Anserinus	0066
	Prepatellar	0067
	Psoas	0068
	Retrocalcaneal	0069
	Subacromial	0070
	Suprapatellar	0071
	Trochanteric	0072
Calcaneal exostosis		0073
Capsulitis	Hip	0074
	Shoulder	0075
	Anterior capsulitis	0076
	Adhesive capsulitis	0077
Carpal Tunnel Syndrome		0078
Cellulitis		0079
Cerebro-vascular accident		0080
Sequelae of cerebro-vascular accident		0081
Cervical Myelopathy		0082
Cervical Radiculopathy		0083
Cervicogenic Dorsalgia		0084
Cholecystitis		0085
Chondromalacia Patella		0086
Cirrhosis	Liver	0087
Intermittent Claudication		
	Vascular	0088
	Neurogenic	0089
Coccydynia		0090
Colic		0091
Compartment Syndrome		0092
Concussion	without open wound	0093
	with open wound	0094
	spinal	0095
Congenital hip dysplasia		0096
Congestive Cardiac Failure		0097
Constipation		0098
Contracture		
	Achilles tendon	0099
	Hip	0100
	Dupuytren's	0101
	Trigger finger	0102
	Volkmann's Ischemic	0103
Contusion		
	Bone / Periosteal	0104
	Muscle	0105
	Rib	0106
Costochondritis		0107
Costovertebral dysfunction syndrome		0108
Cuboid syndrome		0109
Cushing's syndrome		0110
Cystitis		0111
De Quervain's syndrome		0112
Deep vein thrombosis		0113
Depression		0114

Diabetes mellitus			
	without complication		0115
	with complication		0116
Diabetic Neuropathy			0117
Diarrhoea			0118
Diffuse Idiopathic Skeletal Hyperostosis			0119
Digiti Quinti Varus			0120
Disc Bulge			0121
Disc Herniation			0122
Disc Prolapse			0123
Dislocation			
	Acromioclavicular		0124
	Ankle / Foot		0125
	Elbow		0126
	Hip		0127
	Knee		0128
	Patella		0129
	Shoulder		0130
	Rib		0131
	Sternoclavicular		0132
	Toe		0133
	Wrist / Hand		0134
Dowager's Hump			
	Acquired		0135
	Congenital		0136
Dysmenorrhoea			0137
Dyspepsia			0138
Dystonia			0139
Eczema			0140
Emphysema			0141
Enthesopathy			0142
Epicondylitis			
	Lateral		0143
	Medial		0144
Facet Syndrome			
	Cervical		0145
	Thoracic		0146
	Lumbar		0147
Fatpad Syndrome			0148
Fibromyalgia			0149
Fracture			
	Cervical		0150
	Colles		0151
	Epiphyseal		0152
	Galeazzi		0153
	Lumbar		0154
	March		0155
	Odontoid		0156
	Other		0157
	Stress		0158
	Thoracic		0159
	Vertebral		0160

Gait (neurogenic)		
	Adductor	0161
	Back knee	0162
	Drop foot	0163
	Flat foot	0164
	Hemiparetic	0165
	Parkinsonian	0166
	Psoatic	0167
	Scissors	0168
	Steppage	0169
	Trendelenberg	0170
Ganglion		0171
Genu		
	Amorum	0172
	Recurvatum	0173
	Valgus	0174
	Varum	0175
Gout		0176
Haemarthrosis		0177
Haematoma		0178
Hallux		
	Rigidus	0179
	Valgus / Valgum	0180
	Varum / Varus	0181
Hammer toes		0182
Headache		
	Cervicogenic	0183
	Cluster	0184
	Episodic Tension Type	0185
	Migraine	0186
	Tension	0187
Heel spur		0188
Heloma dura		0189
Haematocoele		0190
	Male	0191
	Female	0192
Hemiplegia		0193
Hepatitis		0194
Hernia		
	Abdominal	0195
	Femoral	0196
	Hiatus	0197
	Inguinal	0198
Hip pointer		0199
Hip strain		0200
Hyperpronation syndrome		0201
Hypertension		0202
	Primary	0203
	Secondary	0204
Hyperthyroidism		0205
Hypertonicity		0206
Hypoglycemia		0207
Hypothyroidism		0208
Iliotibial Band Syndrome		0209
Impingement Syndrome		0210
Insomnia		0211
Instability		
	Ankle	0212
	Cervical	0213
	Elbow	0214
	Knee	0215
	Lumbar	0216
	Patellofemoral	0217
	Shoulder	0218
	Thoracic	0219
	Vertebral	0220
	Wrist / Scapho-lunate	0221
Irritable Bowel Syndrome		0222

Joint fixation			
	Ankle		0223
	Elbow		0224
	Hand		0225
	Hip		0226
	Knee		0227
	Rib		0228
	Shoulder		0229
	Wrist		0230
Keloid			0231
Kidney infection			0232
Klippel-Feil Syndrome			0233
Kyphosis			
	Juvenile		0234
	Senile		0235
Low back pain			0236
Lumbarisation			0237
Lymphoedema			0238
Maigne's syndrome			0239
Marfan's syndrome			0240
Meniere's syndrome			0241
Meningitis			0242
Meralgia Paraesthetica			0243
Metatarsalgia			0244
Mononucleosis			0245
Morton's neuroma			0246
Morton's syndrome			0247
Multiple sclerosis			0248
Myasthenia Gravis			0249
Myalgia	Pelvic floor		0250
Myofasciitis			
	Abductor		0251
	Adductor		0252
	Biceps		0253
	Coracobrachialis		0254
	Deltoid		0255
	Erector Spinae		0256
	Gastrocnemius		0257
	General		0258
	Gluteus maximus		0259
	Gluteus medius		0260
	Gluteus minimus		0261
	Hamstrings		0262
	Iliopsoas		0263
	Iliotibial band		0264
	Infraspinatus		0265
	Intercostal		0266
	Lateral pterygoid		0267
	Latissimus dorsi		0268
	Levator scapulae		0269
	Masseter		0270
	Medial pterygoid		0271
	Obliques		0272

	Pectoralis		0273
	Peroneal / Peronei		0274
	Piriformis		0275
	Popliteus		0276
	Posterior cervical		0277
	Quadratus lumborum		0278
	Quadriceps		0279
	Rhomboid		0280
	Scalenius		0281
	Soleus		0282
	Sternocleidomastoid		0283
	Subscapularis		0284
	Supraspinatus		0285
	Temporalis		0286
	Tensor fascia latae		0287
	Teres major		0288
	Teres minor		0289
	Toe extensors		0290
	Trapezius		0291
	Triceps		0292
	Wrist extensors		0293
	Wrist flexors		0294
Myositis ossificans			0295
Nephritis			0296
Nerve root entrapment			0297
Neuralgia			0298
Intercostal neuralgia			0299
Trigeminal neuralgia			0300
Neuritis			
Neuritis	Brachial		0301
	Ulnar		0302
Neurogenic arthropathy			0303
Neuropathy			
Peripheral	Mononeuropathy		0304
	Polyneuropathy		0305
Nocturia			0306
Nocturnal enuresis			0307
Orchitis			0308
Osteitis pubis			0309
Osteoarthritis			0310
Osteocondritis dessicans			0311
Osteochondromatosis			0312
Osteomalacia			0313

Osteophytic NRE		
	Cervical	0314
	Lumbar	0315
	Thoracic	0316
Osteoporosis		0317
Ostitis externa		0318
Paget's disease		0319
Pancreatitis		0320
Paraplegia		0321
Parkinson's disease		0322
Patella		
	Alta	0323
	Baja	0324
	Bipartite	0325
	Multipartite	0326
Patella tracking syndrome		0327
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Sacroiliitis		0363
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	Without low back pain	0368
	With low back pain	0369

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	Functional	0371
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	Costotranverse	0389
	Elbow	0390
	Foot	0391
	Glenohumeral	0392
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	Iliolumbar ligament	0394
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	Achilles tendon	0427
	Adductor	0428
	Anterior tibialis	0429
	Biceps / Bicipital	0430
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	Flexor Hallucis longus	0432
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	General	0434
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	Infraspinatus	0437
	Pectoralis	0438
	Peroneal / Peronei	0439
	Popliteus	0440
	Posterior tibialis	0441
	Prox patella pole	0442
	Psoas	0443
	Quadriceps	0444
	Subscapularis	0445
	Suprapatella	0446
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Tendonosis			
	Abductor		0454
	Achilles tendon		0455
	Adductor		0456
	Anterior tibialis		0457
	Biceps / Bicipital		0458
	Calcific		0459
	Flexor Hallucis longus		0460
	Gastrocnemius		0461
	General		0462
	Hamstrings		0463
	Infrapatella ligament		0464
	Infraspinatus		0465
	Pectoralis		0466
	Peroneal / Peronei		0467
	Popliteus		0468
	Posterior tibialis		0469
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	Quadriceps		0472
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	Teres major		0476
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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 SAMRC guidelines are binding on me as the principle researcher in the study titled:

Patients at Marburg Haven Clinic: A demographic and disease profile

- To seek consent in writing from the Marburg Haven 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, co-supervisor and the Clinic Director).
- To code file names on data collection sheet to ensure patient anonymity.
- To destroy the spreadsheet containing the file names 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.

Mrs C.E. Hitge	Dr P.Z. Ndlovu	Dr C. Korporaal
(Chiropractic student researcher)	Supervisor	Co-Supervisor
Date	Date	Date

APPENDIX C

Pastor Naidoo

Administrator: Marburg Haven

RE: I would like to ask for formal permission to complete the following study at the Marburg Haven Clinic

The Title of My Research is “Patients at Marburg Haven Clinic: A demographic and Disease profile”.

Name of researcher: Candice Hitge 083 655 9146: candicemad1@yahoo.com

Name of supervisor: Prisca Zandile Ndlovu 031 373 6312: ndlovu@dut.ac.za

Name of Co- supervisor: Charmaine Korporaal 031 373 2611: charmak@dut.ac.za

Due to the paucity of information regarding demographics and clinical characteristics of patients presenting to community outreach Clinics (namely: Marburg Haven). It warrants a study that may fill the gap in the literature. Studies of this nature have been conducted in South Africa at private practices in 2007, a teaching institution in 2007 and in Kimberley Public Hospital in 1997 and 2009, whereby they describe the demographics and most common presenting complaints of patients that presented to chiropractors. With these results a comparative analysis can be made with this study.

The purpose of this study is to establish a demographic and disease profile of patients that present to the Marburg Haven clinic. The descriptive data will include the common presenting conditions, main areas of complaint, common diagnosis and common management protocols. A data collection sheet will be used by the researcher in the course of the consultation to gain the information required for the research and information extracted from the patient files.

With this information the profession will be better equipped in terms of:

a) To identify and describe the patient who presents to a community outreach.

b) Determining the prevalence of conditions that present to the Marburg Haven chiropractic clinic.

c) Guiding further research in regards to common presenting conditions.

d) Determining the role of chiropractors in a public outreach setting in South Africa.

In this study data will be extracted from the patient files at Marburg Haven clinic. The patient files will be assessed with the focus on demographical information and specific questions that are related to the physical examination as well as each component of the musculoskeletal system. Management protocols, special investigations sought or done, referrals including the total number of follow up treatments will be recorded. Any new musculoskeletal complaint beside from the initial visit will also be noted.

All procedures shall be in order to ensure complete patient confidentiality and no names will be revealed in the publication of the results.

Yours Sincerely

Candice Hitge

(Chiropractic student researcher)

APPENDIX D

APPENDIX E

PLEASE NOTE:

Research shall be taking place on patient files within the next month. If you wish to ask any questions, or do not wish to have your information in the research,

Please contact:

Pastor Naidoo

039 682 6066 / 084 682 6069

If you should wish to see the appropriate papers of formal consent please contact Pastor Naidoo

039 682 6066 /084 682 6069.

APPENDIX F

Isixhwayiso:

Isichwaningo esizobe sisebenzisa amafayili eziguli, sizoqala enyangeni ezayo.

Uma unemibuzo noma ungathandi ukuthi imininingwane yakho isetshenziswe kulolucwaningo,

Sicela uthintane no:

Pastor Naidoo

039 682 6066 / 084 682 6069

Uma ufisa ukubona amaphepha amayela nolwazi ngalolucwaningo sicela uthintane noMfundisi Naidoo.

039 682 6066 / 084 682 6069.

APPENIX G

Dear Participant,

I would like to invite you to the expert group of my study.

Title of my Research is “Patients at Marburg Haven Clinic: A demographic and Disease profile”.

Name of researcher: Candice Hitge 083 6559146:candicemad1@yahoo.com

Name of supervisor: Prisca Zandile Ndlovu 031 373 6312: ndlovu@dut.ac.za

Name of Co- supervisor: Charmaine Korporaal 031 373 2611: charmak@dut.ac.za

Due to the paucity of information regarding demographics and clinical characteristics of patients presenting to community outreach Clinics (namely: Marburg Haven). It warrants a study that may fill the gap in the literature. Studies of this nature have been conducted in South Africa at private practices in 2007, a teaching institution in 2007 and in Kimberley Public Hospital in 1997 and 2009, whereby they describe the demographics and most common presenting complaints of patients that presented to chiropractors. With these results a comparative analysis can be made with this study.

The purpose of this study is to establish a demographic and disease profile of patients that present to the Marburg Haven clinic. The descriptive data will include the common presenting conditions, main areas of complaint, common diagnosis and common management protocols.

A data collection sheet will be used by the researcher in the course of the consultation to gain the information required for the research and information extracted from the patient files.

With this information the profession will be better equipped in terms of:

a) To identify and describe the patient who presents to a community outreach.

b) Determining the prevalence of conditions that present to the Marburg Haven clinic.

c) Guiding further research in regards to common presenting conditions.

d) Determining the role of chiropractors in a public outreach setting in South Africa.

A data collection template has already been developed by the researcher. You are requested to constructively critique this data collection template and provide your opinions/views on each of the question, so that relevant changes/improvements may be made to the data collection template.

Remuneration:

None: Participation in this focus group is entirely voluntary.

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

Thank you.

Yours sincerely,

……	……..	……..
Candice Hitge	Dr. Prisca Zandile Ndlovu	Dr. Charmaine Korporaal
(Research student)	(Supervisor)	(Co-Supervisor)

APPENDIX H

INFORMED CONSENT FORM

(To be completed by the participants of the Expert Group)

Date:

Title of research project: Patients at Marburg Haven Clinic: A demographic and Disease profile

Name of supervisor: Dr Prisca Zandile Ndlovu

Name of Co-supervisor: Dr. Charmaine Korporaal

Name of research student: Candice Hitge

Tel: 083 655 9146

Please circle the appropriate answer YES /NO

1. Have you read the research information sheet?	Yes	No
2. Have you had an opportunity to ask questions regarding this study?	Yes	No
3. Have you received satisfactory answers to your questions?	Yes	No
4. Have you had an opportunity to discuss this study?	Yes	No
5. Have you received enough information about this study?	Yes	No
6. Do you understand the implications of your involvement in this study?	Yes	No
7. Do you understand that you are free to withdraw from this study at any time, without having to give any a reason for withdrawing?	Yes	No
8. Do you agree to voluntarily participate in this study?	Yes	No

If you have answered NO to any of the above, please obtain the necessary information before signing.

Thank You.

Please print in block letters: Please note for research purpose only

Please be assured that your personal particulars will remain anonymous

Participant: Signature: _____

Witness Name: Signature: _____

Researcher's Name: Candice Hitge Signature: _____

Supervisor's Name: Dr Prisca Zandile Ndlovu Signature: _____

Co-supervisor: Dr Charmaine Korporaal Signature: _____

APPENDIX I

CONFIDENTIALITY STATEMENT- EXPERT GROUP DECLARATION

IMPORTANT NOTICE:

THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE EXPERT GROUP.

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

2. The returned data collection templates, will kept confidential within the research process.

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

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

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

Please print in block letters:

Expert Group Member: _____ Signature: _____

Witness Name: _____ Signature: _____

Researcher's Name: Candice Hitge Signature: _____

Supervisor's Name: Dr Prisca Zandile Ndlovu Signature: _____

Co-supervisor's Name: Dr Charmaine Korporaal Signature: _____

APPENDIX J

DURBAN UNIVERSITY of TECHNOLOGY

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

PATIENTS AT MARBURG HAVEN CLINIC: A DEMOGRAPHIC AND DISEASE PROFILE

FINANCIAL INFORMATION

The current fee schedule of the Chiropractic Day Clinic is :

Student (5th Year Students)		**Student Intern (6th Year Students)**	
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 posi ion 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 trea ing you explains fully your diagnosed condition, both as an educa ional 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

a) I understand and take full financial responsibility for consultations.
b) I understand that I cannot request records for medico legal reasons.
c) I understand that should I be on medical aid, that my diagnosis and treatment informa ion will be shared for the purposes of medical aid reimbursing me according to hat 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 heal h care provider – the Chiropractic Day Clinic).
d) The student / student intern has discussed with me to my satisfac ion, and I fully understand, my / my minor child's diagnosed condition(s) that I have.
e) The student / student intern has discussed with me to my satisfac ion, 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).
f) 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 K

Patient: _____ Date: _____

File # : _____ Age: _____

Sex : _____ Occupation: _____

Intern : _____ Signature _____

FOR CLINICIANS USE ONLY:

Initial visit

Clinician: Signature :

Case History:

Examination:

Previous: Current:

X-Ray Studies:

Previous: Current:

Clinical Path. lab:

Previous: Current:

CASE STATUS:

PTT: Signature: Date:

CONDITIONAL:

Reason for Conditional:

Signature: Date:

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

Case Summary signed off: Date:

Intern's Case History:

1. **Source of History:**

2. **Chief Complaint : (patient's own words):**

3. **Present Illness:**

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

4. **Other Complaints:**

5. **Past Medical History:**

< General Health Status

< Childhood Illnesses

< Adult Illnesses

< Psychiatric Illnesses

< Accidents/Injuries

< Surgery

< Hospitalizations

6. Current health status and life-style:

< Allergies

< Immunizations

< Screening Tests incl. x-rays

< Environmental Hazards (Home, School, Work)

< Exercise and Leisure

< Sleep Patterns

< Diet

< Current Medication
Analgesics/week:
< Tobacco

< Alcohol

< Social Drugs

7. Immediate Family Medical History:

< Age
< Health
< Cause of Death
< DM
< Heart Disease
< TB
< Stroke
< Kidney Disease
< CA
< Arthritis
< Anaemia
< Headaches
< Thyroid Disease
< Epilepsy
< Mental Illness
< Alcoholism
< Drug Addiction
< Other

8. Psychosocial history:

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

9. Review of Systems:

< General

< Skin

< Head

< Eyes

< Ears

< Nose/Sinuses

< Mouth/Throat

< Neck

< Breasts

< Respiratory

< Cardiac

< Gastro-intestinal

< Urinary

< Genital

< Vascular

< Musculoskeletal

< Neurologic

< Haematologic

< Endocrine

< Psychiatric

APPENDIX L

PHYSICAL EXAMINATION: SENIOR DURBAN UNIVERSITY of TECHNOLOGY

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

VITALS:

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

GENERAL EXAMINATION:

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

SYSTEM SPECIFIC EXAMINATION:

CARDIOVASCULAR EXAMINATION

RESPIRATORY EXAMINATION

ABDOMINAL EXAMINATION

NEUROLOGICAL EXAMINATION

COMMENTS

Clinician: **Signature :**

APPENDIX M1

REGIONAL EXAMINATION - CERVICAL SPINE

DURBAN UNIVERSITY of TECHNOLOGY

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

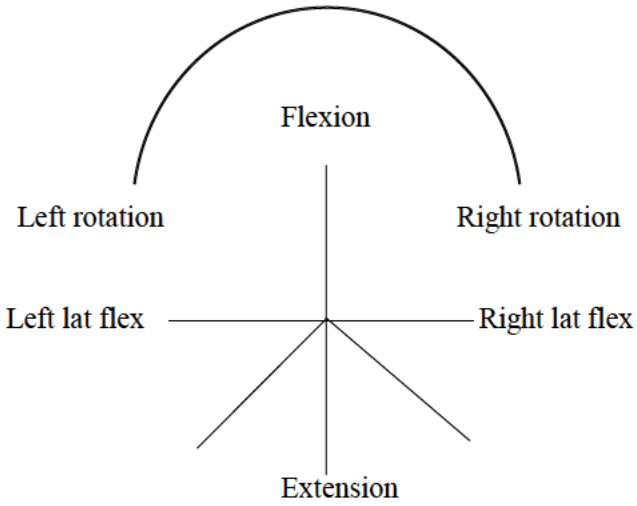
Date: ..... Student: .....

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

OBSERVATION:

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

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



RANGE OF MOTION:

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

PALPATION:

Lymph nodes
Thyroid Gland
Trachea

ORTHOPAEDIC EXAMINATION:

Tenderness		Right	Left
Trigger Points:	SCM		
	Scalenii		
	Post Cervicals		
	Trapezius		
	Lev scapular		

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

NEUROLOGICAL EXAMINATION:

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

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

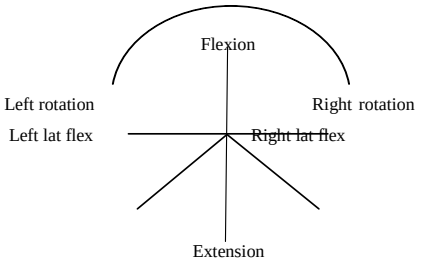
MOTION PALPATION & JOINT PLAY:
Left: Motion Palpation:
Joint Play:
Right: Motion Palpation:
Joint Play:

BASIC EXAM: SHOULDER:
Case History:

ROM: Active:
Passive:
RIM:
Orthopaedic:
Neuro:
Vascular:

BASIC EXAM: THORACIC SPINE:
Case History:

ROM:



Motion Palpation:	
Orthopaedic:	
Neuro:	
Vascular:	
Observ/Palpation:	
Joint Play:	

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APPENDIX M2

THORACIC SPINE REGIONAL EXAMINATION

Patient:_____ File:_____ Date:_____

Intern:_____ Signature:_____

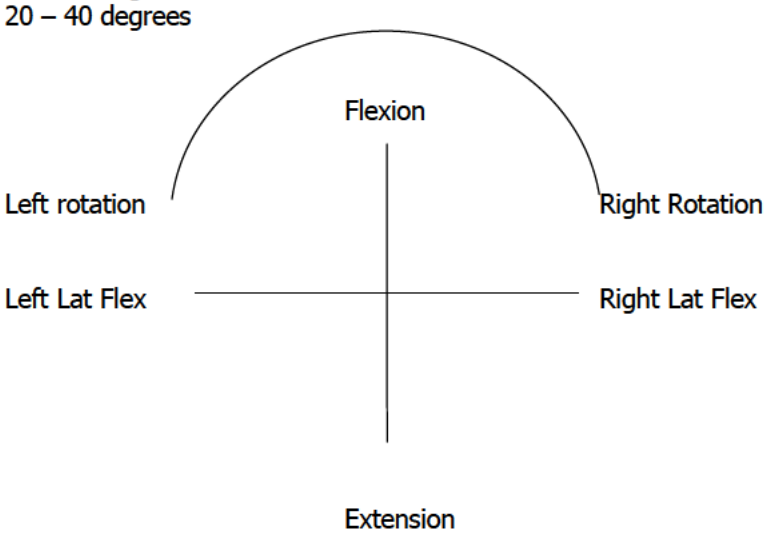
Clinician: _____ Signature:_____

STANDING:

Posture (incl. L/S & C/S)
Muscle tone
Skyline view – Scoliosis
Spinous Percussion
Breathing (quality, rate, rhythm, effort)
Deep Inspiration
Scars
Chest deformity
(pigeon, funnel, barrel)

RANGE OF MOTION:

Forward Flexion	20 – 45 degrees (15cm from floor)
Extention	25 – 45 degrees
L/R Rotation	35 – 50 degrees
L/R Lat Flex	20 – 40 degrees



RESISTED ISOMETRIC MOVEMENTS: (in neutral)

Forward Flexion
L/R Rotation
Extension
L/R Lateral Flexion

SEATED:

Palpate Auxillary Lymph Nodes
Palpate Ant/Post Chest Wall
Costo vertebral Expansion (3 – 7cm diff. at 4th intercostal space)
Slump Test (Dural Stretch Test)

SUPINE:

Rib Motion (Costo Chondral joints)
Soto Hall Test (#, Sprains)
SLR
Palpate abdomen

PRONE:
Passive Scapular Approximation
Facet Joint Challenge
Vertebral Pressure (P-A central unilateral, transverse)
Active myofascial trigger points:

	Latent	Active	Radiation Pattern		Latent	Active	Radiation Pattern
homboid Major				Rhomboid Minor			
ower Trapezius				Spinalis Thoracic			
erratus Posterior				Serratus Superior			
ectoralis Major				Pectoralis Minor			
Quadratus Lumborum							

COMMENTS:_____

NEUROLOGICAL EXAMINATION:

DERMATOMES												
	T 1	T 2	T 3	T 4	T 5	T 6	T 7	T 8	T 9	T 10	T 11	T 12
Left												
Right												

Basic LOWER LIMB neuro:

Myotomes	
Dermatomes	
Reflexes	

KEMP'S TEST:

MOTION PALPATION:

			Right	Left
Thoracic Spine				
Ribs	Calliper (Costo-transverse joints)			
	Bucket Handle	Opening		
		Closing		
Lumbar Spine				
Cervical Spine				

BASIC EXAM	History	ROM	Neuro/Ortho
LUMBAR			
CERVICAL			

APPENDIX M3

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REGIONAL EXAMINATION - LUMBAR SPINE AND PELVIS

Patient:_____
File#:_____Date:_________
Intern\Resident:_____ Clinician:_____
_____

STANDING:

Posture– scoliosis, antalgia, kyphosis
Body Type
Skin
Scars
Discolouration
Minor's Sign
Muscle tone
Spinous Percussion
Scober's Test (6cm)
Bony and Soft Tissue Contours

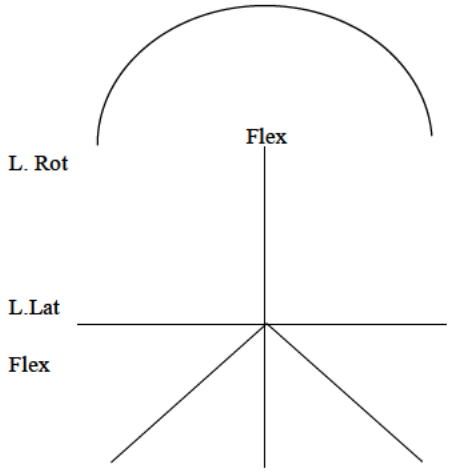
GAIT:

Normal walking
Toe walking
Heel Walking
Half squat

R. Rot

ROM:

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



Which movt. reproduces the pain or is the worst?

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

SUPINE:

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

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

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

SITTING:

Spinous Percussion
Valsalva
Lhermitte

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

Slump 7 test	**L**										
	R										

LATERAL RECUMBENT:	**L**	**R**
Ober's		
Femoral n. stretch		
SI Compression		

PRONE:	**L**	**R**
Gluteal skyline		
Skin rolling		
Iliac crest compression		
Facet joint challenge		
SI tenderness		
SI compression		
Erichson's		
Pheasant's		

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

NON ORGANIC SIGNS:

Pin point pain
Axial compression
Trunk rotation
Burn's Bench test
Flip Test
Hoover's test
Ankle dorsiflexion test
Repeat Pin point test

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

BASIC THORACIC EXAM

History
Passive ROM
Orthopedic

BASIC HIP EXAM

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

MOTION PALPATION AND JOINT PLAY

	L	R
Upper Thoracics		
Lumbar Spine		
Sacroiliac Joint		

APPENDIX M4

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SHOULDER REGIONAL EXAMINATION

Patient: …… File No: …….. Date: …….

Intern: ……Signature: ……

Clinician: ……Signature: ……...

Observation

Posture		S-C Joints	
Skin		Clavicles	
Swelling		A-C Joints	
Shoulder levels		Scapulae	
Comments			

Palpation

S-C Joint:		SCM:	Scalenes:
Sternum:		Ribs and costal cartridge:	
Clavicle:		Coracoid process:	
A-C Joint:		Acromion:	
Greater Tuberosity:			
Lesser Tuberosity:			
Intertubercular (bicipital groove):			
Trapezius:		Deltoid:	
Biceps:		Triceps:	
Supraspinatus insertion:			
Musculotendinous portion of supraspinatus:			
Axilla:	Lymph nodes:		
	Brachial artery:		
	Serratus anterior (medial wall):		
	Pectoralis major (anterior wall):		
	Lattisimus dorsi (posterior wall):		
Scapula	Borders:	Spine:	
	Supraspinous fossa:		
	Infraspinous fossa:		
Cervico-thoracic spine:			

Active Movements (note ROM and pain)

Elevation through abduction (170-180°):	
Painful arc with abduction:	
Elevation through forward flexion (160-180°):	
Elevation through scapula plane (170-180°):	
Lateral rotation (80-90°):	Medial rotation (60-100°):
Extension (50-60°):	Adduction (50-75°):
Horizontal adduction/abduction (130°):	
Circumduction (200°):	
Apley's Scratch:	

Passive movements (note end-feel, ROM and pain)

Elevation through abduction (bone to bone or tissue stretch)……
Elevation through forward flexion (tissue stretch)……..
Lateral rotation (tissue stretch)……..
Medial rotation (tissue stretch)……..
Extension (tissue stretch)……
Adduction (tissue approximation) ……..
Horizontal adduction (tissue stretch or approximation)……....
Horizontal abduction (tissue stretch)……
Quadrant Test……...

Resisted Isometric Movements (note strength and pain)

Flexion		Medial rotation	
Extension		Lateral Rotation	
Adduction		Elbow flexion	
Abduction		Elbow extension	

Joint Play Movements (and motion palpation)

SC Joint	Supero-inferior (shrug shoulder with arm at side):
	Horizontal add/abduction (arm abducted 90°):
AC Joint	A-P Shear:
	Supero-inferior shear:
Scapula	Normal scapulo-humeral rhythm?:
	General mobility of scapula:

Glenohumeral Joint

Lateral movement of humeral head _____
Inferior movement of humeral head (Caudal glide)(50°) _____
Anterior movement of humeral head (P-A glide) (25°) _____
Posterior shear of humeral head (A-P glide) **>50%** At 10° flexion _____
At 90° flexion _____
Backward glide of humeral head in abduction _____
Long-axis distraction of humeral head in abduction _____
Downward and backward (S-I → A-P) _____
Outward and backward (med-lat → A-P _____
External rotation of humeral head _____
Internal rotation of humeral head _____

Instability Tests

1. Anterior Instability Tests

	R			L		
	Pos	Neg	n/a	Pos	Neg	n/a
Anterior drawer Test						
Rowe Test						
Fulcrum Test						
Apprehension (crank) Test						
Clunk Test (tear of labrum)						
Rockwood Test						

2. Posterior Instability Tests

	Pos	Neg	n/a	Pos	Neg	n/a
Posterior Apprehension Test						
Norwood Stress Test						
Push-pull Test						
Jerk Test						

3. Inferior and Multi-directional instability tests

	Pos	Neg	n/a	Pos	Neg	n/a
Inferior Shoulder Instability Test						
Feagin Test (antero-inferior instability)						

A-C Joint Stress Test: _____

S-C Joint Stress Test: _____

Tests for Muscle or Tendon Pathology

1.	Speed's Test (bicipital tendonitis)	
2.	Gilchrest Sign (bicipital tendonitis)	
3.	Supraspinatus Test (supraspinatus tendonitis)	
4.	Hawkins-Kennedy Impingement Test (supraspinatus tendonitis)	
5.	Drop –arm Test (rotator cuff tear)	
6.	Impingement Test	
7.	Pectoralis Major Contracture Test	
8.	Ludington's Test (rupture of long head of biceps)	

Tests for neurological function

Brachial Plexus Tension Test			Radial Nerve										
			Median Nerve										
Tinel's Sign (Scalene triangle)													
Dermatones	C4		C5		C6		C7		C8		T1		T2	
Reflexes	Biceps(C5/6)						Triceps (C7/8)						

Thoracic Outlet Syndrome Tests

Adson's Test		Halstead's Test	
Costoclavicular Test		Eden's Test (cervical rib)	
Hyperabduction Test		Roos Test	
Allen's Test			

APPENDIX M5

ELBOW REGIONAL EXAMINATION

DURBAN UNIVERSITY of TECHNOLOGY

Patient:_____ File no:_____ Date:_____

Intern / Resident:_____ Sign:_____

Clinician:_____ Sign:_____

OBSERVATION

Posture and willingness to move _____
Carrying angle (anatomical position) _____
Swelling _____
Bony and soft tissue contours _____
Position of function (triangle sign) _____
Colour and texture of skin _____

PALPATION

Anterior aspect		***Medial aspect***	
Cubital fossa		Medial epicondyle	
Biceps tendon		Medial collateral ligament	
Bicep & brachialis muscle		Ulnar nerve	
Coronoid process & radial head			
Brachial artery			
Lateral aspect		***Posterior aspect***	
Lateral epicondyle		Olecranon process and olecranon bursa	
Lateral collateral ligament		Triceps muscle	
Radial head & Annular ligament			
Supracondylar ridge (ECRL)			

ACTIVE MOVEMENTS		**PASSIVE MOVEMENTS**	
Flexion (140-150°)		Flexion (tissue approximation)	
Extension (0-10°)		Extension (bone to bone)	
Supination (90°)		Supination (tissue stretch)	
Pronation (80-90°)		Pronation (tissue stretch)	

RESISTED ISOMETRIC MOVEMENTS (elbow at 90° flexion and supinated)	**R**	**L**
Flexion		
Extension		
Supination		
Pronation		
Wrist flexion		
Wrist extension		
Upward glide of radial head on ulna		
Downward glide of radial head on ulna		

JOINT PLAY MOVEMENTS

	R	L
Upward glide (I-S) of radial head of ulna		
Downward glide (S-I) of radial head of ulna		
Rotation of radial head of ulna		
Medial to lateral side tilt		
Lateral to medial side tilt		
Distraction of olecranon process on the humeral head (90°)		

FUNCTIONAL ASSESSMENT _____

_____

SPECIAL TESTS

	R	L
Ligamentous instability test (valgus/varus)		
Cozen's test		
Mill's test		
Lateral epicondyle test		
Medial epicondyle test		
Tinel's sign		
Wartenberg's sign		
Elbow flexion test		
Pronator teres syndrome		
Pinch grip test		

NEUROLOGICAL

Reflexes and cutaneous distribution

		R	L
1. Reflexes	a. Biceps = C5-6		
	b. Triceps = C7-8		
	c. Brachioradialis = C5-6		

		R	L		R	L
2. Dermatomes	C4			C5		
	C6			C7		
	C8					
	T1			T2		

MYOFASCIAL DYSFUNCTION SYNDROMES

	Active	Latent	Not Present
Brachialis			
Brachioradialis			
Ext. Carpi rad. Brev.			
Ext. Carpi rad. Long.			
Supinator			
Ext. Carpi ulnaris			
Flex. Carpi rad.			
Flex Carpi ulnaris			
Flex Digit. Super			
Flex Digit. profund			
Coracobrachialis			
Biceps			
Triceps			

APPENDIX M6

DURBAN UNIVERSITY of TECHNOLOGY

Hand and wrist regional examination

Patient:_____ File no:_____ Date:_____
Intern:_____ Signature:_____
Clinician:_____ Signature:_____

Observation:

		Right	Left
1.	bony and soft tissue contours		
2.	hand posture		
3.	vasomotor changes		
4.	scars, skin creases, and muscle wasting		
5.	fingernails		
6.	dominant hand		

Palpation:

Posterior surface			Right	Left
1.	Anatomical snuff box			
2.	Carpal bones			
3.	Metacarpal bones			
4.	Phalanges			
5.	Pulses and capillary refill			
6.	Radial styloid			
7.	Radial (Lister's) tubercle			
8.	Ulnar styloid			
9.	6 extensor tendon tunnels		Right	Left
	i.	Abd poll long		
		Ext poll brev		
	ii.	ECRB		
		ECRL		
	iii.	Ext poll long		
	iv.	Ext digit		
		Ext index		
	v.	Ext digiti mini		
	vi.	ECU		

Anterior surface			Right	Left
1.	Tendons (Lat to med)			
	a.	Flexor carpi radialis		
	b.	Flexor poll longus		
	c.	Flexor digit super		
	d.	Flexor digit profund		
	e.	Palmaris long		
	f.	Flexor carpi ulnaris		
2.	Palmar fascia and intrinsic muscles			

Active movements

Passive movements

		Right	Left		Right	Left
1.	Pronation (85-90°)			Tissue stretch		
2.	Supination (85-90°)			Tissue stretch		
3.	Ulnar deviation (15°)			Bone		
4.	Radial deviation (30-45°)			Bone		
5.	Wrist flexion (80-90°)			Tissue stretch		
6.	Wrist extension (70-90°)			Tissue stretch		
7.	Finger movements					
8.	Thumb movements					

Resisted isometric movements

			Right	Left
1.	Flexion			
2.	Extension			
3.	Radial dev			
4.	Ulnar dev			
5.	Finger	Opposition		
		Adduction		
		Abduction		

Functional movements

Gross Grip Strength

		Right	Left
1.	fist grip		
2.	cylinder grip		
3.	hook grip		
4.	sphere grip		

Precision Grip Strength

	Right	Left
pinch		
chuck		
key		

Special tests

		Right	Left
1.	Finkelstein's test		
2.	Tinel's		
3.	Phalan's test		
4.	Reverse phalan's test		
5.	Allen's test		
6.	Froment's sign		
7.	Watson’s test		
8.	Scaphoid compression test		
9.	Lunatotriquetral ballottment test		
10	Bunnel littler test		
11	Tight retinacular test		
12	Ligament stability		

Joint play movements

Hand and fingers

			Right	Left
1.	MCP and PIP + DIP	Long axis extension		
		AP, PA glide		
		Rotation		
		Side glide		
2.	Distal inter-metacarpals	AP, PA glide		
		Rotation		

Wrist

			Right	Left
1.	Long axis extension			
2.	AP glide			
3.	Carpal extension			
4.	Carpal flexion			
5.	Ulnar deviation			
6.	Radial deviation			
7.	Ul-men-triq AP+ PA glide			
8.	Inf rad-ulnar rotation	AP, PA glide		
		Rotation		

APPENDIX M7

HIP REGIONAL EXAMINATION

DURBAN UNIVERSITY of TECHNOLOGY

Patient: _____ File no: _____ Date: _____

Student: _____ Signature: _____

Clinician: _____ Signature: _____

Hip with complaint: Right ☐ Left: ☐

OBSERVATION

- Gait: _____
- Posture: _____
- Weight-bearing symmetry: _____
- Balance and proprioception (Stork-standing test): _____
- Bony / soft tissue contours: Buttock contour _____
  Hip flexion contracture _____
  Lumbar lordosis _____
  Scoliosis _____
- Skin: _____
- Swelling: _____

PALPATION

▪ **Anterior aspect**			Right	Left
1.	Iliac crests			
2.	Greater trochanter			
3.	Pubic symphysis and tubercle			
4.	Femoral head			
5.	Femoral Δ	Femoral artery		
		Lymph nodes		
6.	ASIS's			
7.	Inguinal ligament			
8.	Inguinal hernia			
9.	Muscles -	Quadriceps		
		Adductors		
		Abductors		
		Psoas		

▪ **Posterior aspect**			Right	Left
1.	Iliac crests posteriorly			
2.	Ischial tuberosity			
3.	Muscles	Piriformis		
		Gluteals		
		Hamstrings		
4.	PSIS's			
5.	Sciatic notch			
6.	SI joints			
7.	Lumbar Spine			
8.	Sacrum + coccyx			

ACTIVE MOVEMENTS (*note rom and pain*)		Right	Left
1.	Flexion (110-120°)		
2.	Extension (10-15°)		
3.	Adduction (30°)		
4.	Abduction (30-50°)		
5.	Medial rotation (30-40°)		
6.	Lateral rotation (40-60°)		

PASSIVE MOVEMENTS (*note end-feel, rom and pain*)		Right	Left
Flexion (tissue stretch or approximation)			
Extension (tissue stretch)			
Adduction (tissue stretch or approximation)			
Abduction (tissue stretch)			
Medial rotation (tissue stretch)			
Lateral rotation (tissue stretch)			
RESISTED ISOMETRIC MOVEMENTS (*note strength and pain*)		Right	Left
Hip Flexion			
Hip Extension			
Adduction			
Abduction			
Medial rotation			
Lateral rotation			
Knee flexion			
Knee extension			
REFLEXES		Right	Left
Patella			
Achilles			
DERMATOMES (*indicate deficits by level & location*)			
Level			
Location			
JOINT PLAY MOVEMENTS		Right	Left
Caudal glide (long axis traction superior – inferior)			
Compression@ 90^{o} (inferior – superior)			
Medial ➢ lateral @ 180^{o} / @ 90^{o}			
Lateral ➢ medial @ 180^{o} / @ 90^{o}			
Internal rotation			
External rotation			
Anterior ➢ posterior			
Posterior ➢ anterior			
Quadrant (scouring) test			
SPECIAL TESTS		Right	Left
Patrick FABER Test			
Trendelenberg Test			
Craig's Test			
Leg Length	Actual		
	Apparent		
Sign of the Buttock			
Thomas Test (hip flexion contracture)			
Rectus Femoris Contracture Test			
Iliopsoas contracture Test			
Ely's Test (rectus femoris hypertonicity)			
Ober's Test (ITB contracture)			
Noble Compression Test (ITB Friction Syndrome)			
Piriformis Test			
Hamstrings	Hamstring Contracture Test		
	Tripod Test		

APPENDIX M8

KNEE REGIONAL EXAMINATION

Patient:_____ File:_____ Date:_____
Intern:_____ Signature:_____
Clinician:_____ Signature:_____

! **OBSERVATION (**Standing, Seated and during gait cycle).

A. Anterior view
Genu Varum:_____
Genu Valgum:_____
Patellar position:_____
Tibial Torsion:_____
Skin:_____
Swelling:_____

B. Lateral view
Genu Recurvatum:_____
Patella Alta:_____
Patella Baja:_____
Skin:_____

C. Posterior view
Swelling:_____
Skin:_____

D. General
Movement symmetry:_____
Structures symmetry:_____

! **ACTIVE MOVEMENTS**
Flexion (0 - 135E)_____
Extension (0 - 15E)_____
Medial Rotation (20 - 30E)_____
Lateral rotation (30 - 40E)_____

! **PASSIVE MOVEMENTS**
Tissue approx_____
Bone-bone_____
Tissue stretch_____
Tissue stretch_____
Patellar movement_____

! **RESISTED ISOMETRIC MOVEMENTS**
Knee: Flexion:_____
Extension:_____
Internal rotation:_____
External rotation:_____

Ankle: Plantarflexion_____
Dorsiflexion_____

! **LIGAMENTOUS ASSESSMENT**

One-Plane Medial Instability
Valgus stress (abduction)
Extended_____
Resting Position_____

One-Plane Lateral Instability
Varus stress (adduction)
Extended_____
Resting Position_____

One-Plane Anterior Instability
Lachman Test (0-30°)_____
Anterior Drawer Sign _____

One-Plane Posterior Instability
Posterior "sag" Sign_____
Posterior Drawer Test_____

Anterolateral Rotatory Instability
Slocum Test_____
Macintosh Test_____

Anteromedial Rotatory Instability
Slocum Test_____

Posterolateral Rotatory Instability
Jacob _____
Hughston's Drawer Sign_____
Reverse pivot shift test_____

Posteromedial Rotatory Instability
Hughston's Drawer Sign_____

! TESTS FOR MENISCUS INJURY

McMurray _____ Anderson med-lat grind _____
"Bounce Home" _____ Apley=s _____

! PLICA TESTS

Mediopatellar Plica _____ Hughston's Plica _____
Plica "Stutter" _____

! TESTS FOR SWELLING

Brush/Stroke Test _____ Patellar Tap Test _____

! TESTS FOR PATELLA FEMORAL PAIN SYNDROME

Clarke's Sign _____ Passive patella tilt test _____
Waldron test _____

! OTHER TESTS

Wilson's _____ Quadriceps Contusion Test _____
Fairbank's _____ Leg Length Discrepancy _____
Noble Compression _____

! JOINT PLAY

Movement of the tibia on the femur P | A: _____ A | P: _____
Translation of the tibia on the femur M | L: _____ L M: _____
Long axis distraction of the tibiofemoral joint _____
Inf, sup, lat, + med glide of the patella _____
Movement of the inf. tibiofibular joint A | P: _____ P | A: _____
Movement of the sup. tibiofibular joint A | P: _____ P | A: _____
Movement of the sup. tibiofibular joint S | I : _____ I | S _____

! PALPATION

Tenderness _____ Swelling _____
Joint line _____ Nodules/exostoses _____
Ligaments _____ Muscles: thigh: _____
Patella: _____ Leg : _____
_____
Patella tendon: _____ Popliteal artery: _____
Bursae: _____

! REFLEXES AND CUTANEOUS DISTRIBUTION

	R	L
Patellar Reflex (L3,L4)		
Medial Hamstring Reflex (L5,S1)		

! DERMATOMES

	R	L		R	L
L2			S1		
L3			S2		
L4			S3		
L5					

APPENDIX M9

Foot and ankle regional examination

Patient:_____ File no:_____ Date:_____

Intern / Resident_____ Signature:_____

Clinician:_____ Signature:_____

Observation

Gait analysis (antalgic limp,toe off, arch, foot alignment, tibial alignment).

_____

_____

Swelling_____

Heloma dura / molle_____

Skin_____

Nails_____

Shoes_____

Contours (achilles tendon, bony prominences)_____

Active movements

Weight bearing:	**R**	**L**	***Non weight bearing:***	**R**	**L**
Plantar flexion			50°		
Dorsiflexion			20°		
Supination					
Pronation					
Toe dorsiflexion			40°(mtp)		
Toe plantar flexion			40° (mtp)		
		Big toe dorsiflexion (mtp) (65-70°)			
		Big toe plantar flexion (mtp) 45°			
		Toe abduction + adduction			
		5° first ray dorsiflexion			
		5° first ray plantar flexion			

Passive movement motion palpation (Passive ROM quality, ROM overpressure, joint play)

	R	**L**		**R**	**L**
Ankle joint: *Plantarflexion*			Subtalar joint: *Varus*		
Dorsiflexion			*Valgus*		
Talocrural: *Long axis distraction*			Midtarsal:*A-P glide*		
First ray: *Dorsiflexion*			*P-A glide*		
Plantarflexion			*rotation*		
Circumduction of forefoot on fixed rearfoot			Intermetatarsal glide		
			Tarso metatarsal joints: *A-P*		
Interphalangeal joints: *L A dist*			Metatarsophalangeal dorsiflexion (with associated plantar flexion of each toe		
A-P glide					
lat and med glide					
rotation					

Resisted Isometric movements

	R	L		R	L
Knee flexion			Pronation (eversion)		
Plantar flexion			Toe extension (dorsiflexion)		
Dorsiflexion			Toe flexion (plantar flexion)		
Supination (inversion)					

Neurological

	R	L
Dermatomes		
Myotomes		
Reflexes		
Balance/proprioception		

Special tests

	R	L
Anterior drawer test		
Talar tilt		
Thompson test		
Homan sign		
Tinel's sign		
Test for rigid/flexible flatfoot		
Kleiger test (med. deltoid)		

Alignment

	R	L
Heel to ground		
Feiss line		
Tibial torsion		
Heel to leg (subtalar neutral)		
Subtalar neutral position:		
Forefoot to heel (subtalar & Midtarsal neutral)		
First ray alignment		
Digital deformities		
Digital deformity flexible		

Palpation

Anteriorly

	R	L
Medial maleoli		
Med tarsal bones, tibial (post) artery		
Lat.malleolous, calcaneus, sinus tarsi, and cuboid bones		
Inferior tib/fib joint, tibia, mm of leg		
Anterior tibia, neck of talus, dorsalis pedis artery		

Posteriorly

Calcaneus, Achilles tendon, Musculotendinous junction		

Plantarily

Plantar muscles and fascia		
Sesamoids		

APPENDIX N

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DURBAN UNIVERSITY OF TECHNOLOGY

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

APPENDIX O

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

28 August 2012

IREC Reference Number: **REC 3/12**

Mrs C E Hitge
25 Retief Street
Ashley
Pinetown
3610

Dear Mrs Hitge

The approval letter from the Institutional Research Ethics Committee dated 9 May 2012 refers. Kindly be advised that the title indicated on the letter is incorrect. The following is the correct and approved title:

Patients at Marburg Haven Clinic: A demographic and disease profile

We sincerely apologise for the mistake and for any inconvenience this may have caused.

Yours Sincerely

[redacted]

Dr D F Naude
Chairperson: IREC

APPENDIX P

	Answer				Date:	
1. File no						
2. Gender		Male: 0	Female: 1			
3. Age						
4. Employment		Employed: 0	Unemployed: 1	Pensioner: 2	Workmen's comp: 3	Disability Grant:4
		Road Accident fund: 5	Scholar: 6	Not employed 7	Not specified: 8	
5. Occupation		Manual Labour: 0	Non-Manual: 1	Combination: 2	Not Applicable: 3	Not specified: 8
6. Ethnicity		Black: 0	Coloured: 1	White: 2		
		Indian: 3	Asian: 4	Other: 5		
7. Education		Grade 7: 0	Grade 12: 1	Tertiary Ed: 2	Not specified: 3	
		Other: Specify				
8. Patient residence:		Rural: 0	Urban: 1	Not specified 2		

PATIENTS AT MARBURG HAVEN CLINIC: A DEMOGRAPHIC AND DISEASE PROFILE

9. Main area/s of complaint on initial consultation						
9.1 Cervical		Neck pain 1	Headache 2	Arm pain 3	Jaw pain 4	Chest Pain 5
a		Thorcic Pain 6	Rib pain 7	Scapular pain 8	Lumbar pain 9	Sacroiliac Pain 10
b		Leg pain 11	Iliac crest pain 12	Hip pain 13	TMJ headacche 14	Cervial pain 15
c		Ear pain 16	Shoulder pain 17	Elbow pain 18	Forearm Pain 19	Wrist pain 20
9.2 Thoracic		Hand pain 21	Hip pain 22	Upper leg pain 23	Knee pain 24	Shin pain 25
a		Calf pain 26	Ankle pain 27	Foot pain 28	Cervicogenic 29	Tension type 30
b		Migraine 31	Generalised 32	Cluster 33	Dysponea 34	Coughing 35
c		Purulant sputum 36	Haemoptysis 37	Fever 38	Palpitations 39	Syncope 40
9.3 Lumbosacral		Nausea 41	Vomiting 42	Diarrhoea 43	Constipation 44	Haematemesis 45
a		Dizziness 46	Weakness 47	Tinnitis 48	Parasthesia 49	Dyskinesia 50
b		Paralysis 51	Spasticity 52	Flaccidity 53		
c						
9.4 TMJ						
a						
b						
c						
9.5 Upper extremity						
a						
b						
c						
9.6 Lower extremity						
a						
b						
c						
9.7 Headache						
a						
b						
c						
9.8 Chest Pain						
a						
b						
c						
9.9 Abdominal Pain						
a						
b						
c						
9.10 Neurological symptoms						
a						
b						
c						

10. Duration of main complaint			
		Acute < 3 months	0
		Subacute 3-6	1
		Chronic > 6	2
		Specify	3
11. Cause of Main complaint as determined by the		Patient	
		Non-Traumatic	0
		Traumatic	1
		Unknown	2
12. Were they previously treated for the same problem			
		No	0
		Yes	1
		Unknown	2
13. Have they had previous Chiropractic treatment			
		No	0
		Yes	1
		Unknown	2
14. History of pre-existing spinal conditions			
		No	0
		Yes	1
		Unknown	2
15. If yes for the above specify:			
16: History of surgery			
		No	0
		Yes	1
17: if yes for the above specify:			
18. Smoker		No	0
		Yes	1
		Previous Smoker	2
19. History of illness		None	0
19.1		Allergies	1
19.2		Asthma	2
19.3		Cancer	3
19.4		Diabetes	4
19.5		Epilepsy	5
		Heart conditions	6
		Hypertension	7
		TB	8
		Stroke	9
		Rheumatoid athritis	10
		Osteoarthritis	11
		Ankylosising Spondyli	12
		Other:	13

20. Specify:			
21. Blood Pressure:			
22. Special investigations		None	0
22.1		Blood tests	1
22.2		X-rays	2
22.3		MRI	3
		CT scan	4
		Ultrasound	5
		Bone Mineral Density	6
		Bone scan	7
		ECG	8
		Glucometer	9
		Urine Analysis	10
		Other:	11
23. Specify			
24. Referred		No	0
		Yes	1
25. Reason for referral:			
26. Specify specialist/ clinic			
27. Feed back from referral		No	0
		Yes	1
28. Results from feed back if any:			
29. Primary diagnosis as seen on the day: See Appendix A-D			
Cervical			
29.1			
29.2			
Thoracic			
29.3			
29.4			
Lumbar			
29.5			
29.6			
Extremeties			
29.7			
29.8			
30. Contraidications for treatment		No	0
		Yes	1
31. If yes specify:			
32. Treatment Protocol			
		No treatment	0
		Cross friction	1
		Cyrotherpy	2
		Dry needling	3
		Heat therapy	4
		Electrotherapy	5
		Traction	6
		Joint manipulation	7
		Joint Mobilisation	8
		Soft tissue	9
		manipulation	10
		Soft tissue	11
		Mobilisation	12
		Proprioceptive	13
		exercise	14
		Soft tissue therapy	15
		Kinesio tape	16
		Strapping	17
		Home exercises	18
		Orthotics	19
		NSAIDS	20
		Nutritional Advice	21
		Others	22
33. Specify			

Cervical diagnosis List	
Unknown	0
None	1
Cervical Facet syndrome	2
General Myofascitis	3
Cervical Sprain/Strain	4
Cervical disc Disorder	5
Cervical dysfunction	6
Cervical Myelopathy	7
Cervical Radiculopathy	8
Cervicogenic Dorsalgia	9
Cervical Instability	10
Torticollis	11
Whiplash	12
Cervical DJD/OA	13
Concussion Grade 1	14
Concussion Grade 2 No wound	15
Concussion Grade 3	16
Concussion with wound	17
DISH	18
Dystonia	19
Cervical Fracture closed	20
NRE	21
Arthritis	22
Headache- cervicogenic	23
Headache- cluster	24
Headache- episodic tension	25
Headache- migraine	26
Headache- tension	27
Other Specify:	28

Thoracic Diagnosis List	
Unkown	0
None	1
Thoracic facet syndrome	2
Costovertibral dysfunction	3
Sternocostal dysfunction	4
Thoracic sprain/strain	5
Thoracic disc disorder	6
Thoracic Dysfunction	7
Thoracic radiculopathy	8
Thoracic instability	9
Thoracic DJD/OA	10
DISH	11
Thoracic fracture closed	12
NRE	13
Costocondritis	14
Rib dislocation	15
Sternoclavicular dislocation	16
Joint fixation- Manubriosternal	17
Joint fixation- Thoracic	18
Kyphosis	19
Scoliosis	20
Other Specify:	21

Lumbosacral Diagnosis List	
Unknown	0
None	1
Lumbar facet syndrome	2
Sacroiliac syndrome	3
Lumbar Radiculopathy	4
Lumbar disc pathology	5
General myofascitis	6
Sciatica	7
NRE	8
Coccydynia	9
Lumber Instability	10
LBP- Idiopathic origin	11
Lumbarisation	12
Myalgia- Pelvic floor	13
Neuropathy	14
Ostitis pubis	15
Osteoathritis	16
Piriformis Syndrome	17
Psoas syndrome	18
Pubic symphysis	19
Sacralisation	20
Sciatica	21
Scoliosis	22
Spondylolisthesis	23
Spondylolysis	24
Spondylosis	25
Other Specify:	26

Extremity Diagnosis List	
Unknown	0
None	1
Avascular Necrosis	2
Bakers Cyst	3
Boutnneire deformity	4
Brachial plexus injury	5
Bursitis	6
Capsulitis- Hip	7
Capsulitis- Adhesive	8
Capsulitis- Shoulder	9
Carpal tunnel syndrome	10
Cellulitis	11
Chondromalacia patella	12
Claudication- Intermittent	13
Caludication- Neurogenic	14
Claudication- Vascular	15
Compartment syndrome	16
Congenital Hip dysplasia	17
Contracture- Achilles tendon	18
Contracture- Dupuytrens	19
Contracture- Hip	20
Contracture- Trigger finger	21
Contusion- Bone	22
Contusion- Muscle	23
Cuboid syndrome	24
De quervains disease	25
DVT	26
Daibetic Neuropathy	27
Dislocation- Ankle/foot	28
Dislocation- Elbow	29
Dislocation- hip	30

Dislocation- knee	31
Dislocation- Patella	32
Dislocation- Toe	33
Dislocation- Wrist/hand	34
Dislocation Shoulder	35
Dislocation- Lateral	36
Dislocation-Medial	37
Fat pad syndrome	38
Fracture	39
Genu recurvatum	40
Genu Valgus	41
Genu Varus	42
Hallux rigidus	43
Hallux valgus	44
Hallux varus	45
Hammer toe	46
Heel spur	47
Hyperpronation syndrome	48
ITB	49
Joint fixation- Ankle	50
Joint fixation- Elbow	51
Joint fixation- Fibula/tibia	52
Joint fixation- Hand	53
Joint fixation- Hip	54
Joint fixation- Knee	55
Joint fixation- Shoulder	56
Joint fixation- wrist	57
Mortons Neuroma	58
Mortons syndrome	59
Patella Alta	60

Patella Baja	61
Patella Bipartite	62
Patella Multipartite	63
Patella tracking syndrome	64
Patello femoral pain syndrome	65
Pes cavus	66
Pes planus	67
Planter fasciitis	68
Plica	69
Pronator ters syndrome	70
Radial Tunnel syndrome	71
Raynauds disease	72
Rotator cuff syndrome	73
Scapho-lunate dysfunction	74
scapular winging	75
shin splints	76
Slipped capital femoral epiphysis	77
Snapping hip syndrome	78
Sprain- specify	79
Strain- specify	80
Tarsal tunnel syndrome	81
Tear- specify	82
TMJ	83
Tendinitis- specify	84
Tendiniosis- specify	85
TOS	86
Unlar tunnel syndrome	87
Other Specify:	88