

# **Patient satisfaction at the Durban University of Technology Chiropractic Day Clinic using a pre- validated survey**

By

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I, Mary Ann Ruthnam, do hereby declare that this dissertation is representative of  
my own work in both conception and execution (except where acknowledgements  
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## **DEDICATION**

I dedicate this dissertation to my guardian angels in heaven, my dad Mr Yaganathan Ruthnam and my grandmother, Mrs Zubeda Bee Bee Karim, and to my angel on Earth, my mum, Mrs Narimun Bee Bee Ruthnam, who is my pillar of strength. Thank you for the values you have each instilled in me. I hope I have made you all proud.

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## ABSTRACT

**AIM:** The aim of this study was to determine the level of patient satisfaction at the Durban University of Technology Chiropractic Day Clinic and to establish if there is any association between patient demographics (age, gender, ethnicity, income) and patient satisfaction.

**SUBJECTS:** Patients attending the Durban University of Technology Chiropractic Day Clinic were approached to participate in the study.

**METHODOLOGY:** Patients who attended the Durban University of Technology Chiropractic Day Clinic between June and September 2020 were informed about the research study at the reception desk by the reception staff. The patients who were interested agreed to participate, and those who were within the inclusion criteria, were handed a letter of information and an informed consent by the reception staff. Each potential participant was required to read and understand the letter of information, as well as read, understand and sign the consent form. Each patient was then handed a questionnaire, and the patient was given time after their consult to complete the questionnaire. The consent forms and questionnaires were placed into separate boxes and a code was allocated to each questionnaire before the data were captured.

**RESULTS:** A total of 150 questionnaires were analysed and it was revealed that the patients attending the Durban University of Technology Chiropractic Day Clinic are satisfied with all aspects of the clinic, except finance. It was also shown that there was no association between patient demographics (age, gender, ethnicity and income) and satisfaction.

**CONCLUSION:** The findings of this study correlated with some studies on the association of patient demographics and satisfaction but was not in line with all those findings.

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## DEFINITIONS

### **Chiropractic:**

A health profession concerned with the diagnosis, treatment, and prevention of mechanical disorders of the musculoskeletal system, and the effects of these disorders on the function of the nervous system and general health. There is an emphasis on manual treatments including spinal adjustment and other joint and soft-tissue manipulation (World Federation of Chiropractic).

### **Chiropractic care:**

For the purposes of this study, chiropractic care is the care delivered by a Master's chiropractic student under the licence and supervision of a qualified chiropractor.

### **Clinical instructor:**

Qualified chiropractors who are present at the Durban University of Technology Chiropractic Day Clinic to supervise and consult with students while they are treating patients in the clinic. These supervising chiropractic instructors engage with the treating students to help guide them in diagnosing and treatment options for the given patient.

### **Master's chiropractic student/treating student:**

Students that are in their master's year of study within the chiropractic programme at the Durban University of Technology and who can treat patients at the Durban University of Technology Chiropractic Day Clinic.

### **Patient:**

A patient is defined as a person who is unwell or someone who is receiving treatment for a certain disease or ailment (Dorland 2011).

**Patient satisfaction:**

Satisfaction is the perception of an individual's experience compared to their expectation and, with respect to patients, it is the extent to which their general health care needs, as well as their condition-specific needs, are met (Norhayati *et al.* 2017; Pascoe 1983).

**Reception Staff:**

The staff members of the Durban University of Technology Chiropractic Day Clinic, who are responsible for scheduling appointments, receipting patients and dealing with patients' files and documentation.

## **ABBREVIATIONS**

<b>AHPCSA</b>	Allied Health Professionals Council of South Africa
<b>CASA</b>	Chiropractic Association of South Africa
<b>CDC</b>	Chiropractic Day Clinic
<b>DUT</b>	Durban University of Technology
<b>IREC</b>	Institutional Research Ethics Committee
<b>MHCA</b>	Marburg Haven Centre for the Aged
<b>NJVC</b>	Narain Jeawon Vedic Centre
<b>SERVQUAL</b>	Service Quality
<b>UJ</b>	University of Johannesburg



# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Patient satisfaction is an important and common indicator for measuring quality of health care (Prakash 2010) and it can be regarded as a gauge by which delivery of health care can be measured (Ganasegeran *et al.* 2015). According to Ilioudi, Lazakidou and Tsironi (2013), patient satisfaction is related to the extent to which health care needs are met. Norhayati *et al.* (2017) state that satisfaction is the perception of an individual's experience compared to their expectation and with respect to patients, it is the extent to which their general health care needs, as well as their condition-specific needs, are met.

Patient satisfaction is defined as an individual's experience at a facility compared to their own internal expectations (Asadi-Lari, Tamburini and Gray 2004). Patients' expectations influence their evaluation of care and the treatment outcome (Yao *et al.* 2016). A study by Manzoor *et al.* (2019) defined patient satisfaction as the state of pleasure or happiness that a patient experiences when utilising a health care service.

According to Moore and Bowden-Everson (2012), it is important to measure patient satisfaction, particularly in health care as it gives an idea of how patients perceive the care they receive. Patient satisfaction is directly related to perceived performance and expectations (Sahoo *et al.* 2016) and if patients' experiences are not consistent with their expectations, they become dissatisfied (Zarei *et al.* 2015). Measuring patient satisfaction is clinically relevant as it bridges the gap between the treating clinician and the patient (Prakash 2010) and it influences patients' compliance with treatment (Norhayati *et al.* 2017).

Factors that influence patient satisfaction can be divided into two categories: the first category is provider-related factors and the second category is patient-related factors (Batbaatar *et al.* 2017). The provider-related factors consist of competence, interpersonal skills and the facility (type of setting the patient had to wait in and was

treated in). Patient-related factors include age, gender, ethnicity, socioeconomic and general health status (Batbaatar *et al.* 2017; Thornton *et al.* 2017).

Kreitz *et al.* (2016) mentioned that the most common factors which affect patient satisfaction were timely access to appointments, provider-patient relationships, academic versus private practice setting, overall wait time and time spent with the provider.

Patient satisfaction surveys are used as a tool to understand patient concerns and to determine areas of improvement. It also aids communication between the physician and the patient, thus helping clinics or practices to document their progress and maintain high standards (Thornton *et al.* 2017).

## **1.2 Aims and Objectives**

### **1.2.1 Aim of the Study**

The aim of this study was to determine the level of patient satisfaction at the Durban University of Technology Chiropractic Day Clinic.

### **1.2.2 Objectives**

1. To evaluate the level of satisfaction that patients experience at the Durban University of Technology Chiropractic Day Clinic.
2. To determine selected demographics (age, gender, ethnicity and occupation) of the patients presenting to the Durban University of Technology Chiropractic Day Clinic.
3. To evaluate if there is a relationship between patient demographics (age, gender, ethnicity and occupation) and the level of satisfaction that patients experience at the Durban University of Technology Chiropractic Day Clinic.

## **1.3 Rationale**

Every health care institution aims to provide an environment that will impact their patients positively with regard to their health and overall experience at the facility; however, the majority of health care facilities try to create a setting or operation they believe will lead to patient satisfaction, without engaging with their patients and

gaining their feedback on what they really need or expect from the health care environment (Amankwah 2019). Thus, patient satisfaction surveys are required to gain patients' perspectives and thereby ensure health care facilities are meeting the expectations of patients, which will result in patient satisfaction (Adhikary *et al.* 2018).

Patient satisfaction at the Durban University of Technology (DUT) Chiropractic Day Clinic (CDC) was measured only once in the year 2006 (Thoreson 2006). Thoreson used an American based survey in his study, which was developed for a private practice setting. The questionnaire used in this study was developed at the DUT CDC by Singh (2017), using input from the patients attending the DUT CDC and thus fitting into a South African teaching-based clinic context.

Since 2006 and the last survey, various changes have been made at the DUT CDC. The clinic has been renovated, new paperwork systems have been implemented, equipment has been an upgraded and a change in demographics has been observed. The results of the study will aid to determine aspects of the clinic setting and operation that require improvement.

This study will benefit both the management and the patients of the DUT CDC. Patients benefit from such studies since it has been found that higher levels of patient satisfaction indicate higher levels of patient empowerment, commitment to care and compliance to recommended management, which contributes to better health care outcomes (Adhikary *et al.* 2018). The clinic will benefit from such a study as patient satisfaction also has a direct and positive influence on the financial performance of a health care facility, since satisfied patients will be loyal to the facility and recommend other patients (Kashikoli *et al.* 2017).

## **1.4 Conclusion**

This chapter summarised the study, by highlighting the subject of the study with a brief introduction to the literature, the aims and objectives of the study and the rationale for carrying out the study.

Chapter two will involve a detailed review of the literature regarding patient satisfaction and chiropractic care, and chapter three will include the materials and methods that were used to carry out this study.

Chapter four will present the results obtained from the study and chapter five discusses the results.

Chapter six expounds the limitations of the study, the conclusions drawn from the study and the recommendations for further studies.

# CHAPTER TWO

## LITERATURE REVIEW

### 2.1 Introduction

The importance of measuring patient satisfaction is due to various discrepancies between the treating clinician and the patients' rating of the health care service they have received (Bourne *et al.* 2010). According to Mohan and Kumar (2011), there is a significant correlation between measuring patient satisfaction and the continuity of care where the satisfied patients tend to comply with treatment and remain loyal to the same health care provider. He further stated that patient satisfaction represents a key marker of communication and health related behaviour. Assessing patient satisfaction adds great value to the treating clinician but some remain sceptical about the benefits it has to offer (Hudak and Wright 2000).

### 2.2 Patient Satisfaction

#### 2.2.1 Definition

A patient can be defined as a person who is unwell or someone who is receiving treatment for a certain disease or ailment (Dorland 2011). According to Asadi-Lari, Tamburini and Gray (2004), satisfaction is the extent of an individual's experience compared to their own internal expectations, and thus patient satisfaction is related to the extent to which health care needs are met (Ilioudi, Lazakidou and Tsironi 2013).

According to Yaghoubifard *et al.* (2016) patient satisfaction can be viewed as a patient's evaluation or appraisal of health care services and is one of the most essential components of the quality of health care. Patient satisfaction is seen to be the end point of a patient's perspective of what they expect and it gives an end point to the assessment of the quality of care by highlighting areas of satisfaction and dissatisfaction (Farley *et al.* 2014). Farley *et al.* (2014) further stated that patient satisfaction is affected by the patient's current health status and quality of life, giving a balance against the normally dominant perspective of the health care provider.

Patient satisfaction is a dynamic variable, as it changes as a patient's condition or expectations change, even though the treatment or care may have remained constant (Goldstein, Elliot and Guccione 2000).

### **2.2.2 The Need and Importance of Measuring Patient Satisfaction**

According to Moore and Bowden-Everson (2012), it is important to measure patient satisfaction, particularly in the health care environment, as it gives an idea of how the patient perceives the care they are receiving or have received. Patient satisfaction has emerged as an increasingly important health care outcome and is used for four purposes: compare different health care systems or programmes; evaluate quality of care; identify aspects that need to be changed to improve patient satisfaction and lastly; helps the practice or facility to identify consumers/patients who may not return for follow-up treatments (Jackson 2001; Kalaja and Myshketa 2016).

Measuring patient satisfaction bridges the gap between the treating clinician and the patient, thus making it clinically relevant (Prakash 2010). According to the United States of America Institute of Medicine, clinical practice guidelines comprise of statements that involve recommendations that are intended to optimise health care; carrying out patient satisfaction surveys can be seen as a method to optimise health care (Dizon *et al.* 2018). This is supported by Prakash (2010), who stated that measuring patient satisfaction was clinically relevant. Prakash (2010) also explained that patient satisfaction is an important and common indicator for measuring the quality of care.

There has been a lot of attention being placed on the assessment of the quality of health care that is being offered (Farley *et al.* 2014). The focus is mainly aimed at improving health care and decreasing inequalities in the health care system. The other areas addressed are the structure, process and outcome, which is normally taken from the provider's viewpoint. It is, however, also necessary to add the patient's perspective as patient-reported outcomes are becoming an increasingly popular method of assessing the patient's experience within the health care system. This is due to health care facilities now having the tendency of concentrating on patient-centred care and, thus, patient satisfaction reflects patients' involvement in

decision-making and their role as partners in improving the quality of health care services (Al-Abri and Al-Balushi 2014).

Evaluating patient satisfaction leads to better patient experience, which then leads to better treatment outcomes, and thereby benefiting both the treating clinician and the patient (Peltzer 2009; Ofei-Dodoo 2019). In addition to this, it aids clinicians by making them aware of how their treatment or service meets the needs of the public (Avis, Bond and Arthur 1995; Berhane and Enquselassie 2016) and helps to identify problems, which can lead to corrective plans of action being put into place (Labarere *et al.* 2001; Prakash 2010).

Measuring patient satisfaction is such that it allows patients to express the overall satisfaction they have experienced and report criticism of the shortcomings faced, since a patient can be both satisfied and dissatisfied simultaneously, as various factors make up a patient's total experience at a facility (Lee *et al.* 2010). Patient satisfaction does not only measure health care quality but also reveals whether the treating clinician has been successful in meeting the patient's expectations and thereafter determines the patient's behavioural intention.

According to Hudak and Wright (2000), there are distinct differences in the behaviour of satisfied patients and dissatisfied patients. Satisfied patients are more likely to adhere to treatment protocols and advice given to them (Sawyer and Kassak 1993; Ilioudi, Lazakidou and Tsironi 2013), whereas dissatisfied patients will either complain to the provider, be less loyal to the provider, switch to a new health care provider or tell other of their poor impression. In some instances, dissatisfied patients, and the public who may be influenced by them, are less likely to seek the treatment they require during an illness and may even go without proper care (Ki-Hyun and Antario 2018; Ilioudi, Lazakidou and Tsironi 2013).

The Accreditation Association of Ambulatory Health Care conducted research on patient satisfaction in 2015, which revealed that a satisfied patient will share their experience with five people and a dissatisfied patient will complain to nine people. This means a satisfied patient will bring in five more patients to a facility and a dissatisfied patient will drive away nine patients.

Patient satisfaction is clinically pertinent (Prakash 2010), as satisfied patients are known to comply with treatment; take an active role in their own care; continue using

medical services; remain with the provider and maintain a specific system (Asadi-Lari, Tamburini and Gray 2004).

Yeomans (2000) states that patient satisfaction is linked to financial performance. Tran and Vu (2018) agree with this and further state that financial performance reflects the efficiency and effectiveness of the facility's care and operation.

Dissatisfaction can lead to financial loss if patients spread their negative feedback, causing potential patients to seek alternate services or interventions, while satisfied patients have been shown to remain loyal to their health care provider and increase word-of-mouth referrals, and thus resulting in an increase in clientele. This contributes to the economic benefits of the health care provider (Goldstein, Elliot and Guccione 2000; Hsu 2018).

Patients who are dissatisfied due to an unfavourable outcome may take legal action being taken against the health care provider, in the form of lawsuits or complaints to the pertaining regulatory bodies (Sawyer and Kassak 1993; Stelfox *et al.* 2005; Ilioudi, Lazakidou and Tsironi 2013).

According to Schleiter (2009), the patient-physician relationship is the cornerstone of the medical profession; it is one that is based on trust and gives rise to ethical obligations wherein physicians place the welfare of patients above their own. He further states that for a favourable treatment outcome, there needs to be a collaboration between the patient and physician, where both play active roles in the healing process. He continues that if the encounter is not like this and involves a weak physician-patient relationship, it places the physician at higher risk of being sued for medical malpractice.

Patients have recently been redefined and are now also considered as consumers or customers, as patients see themselves as buyers of health care services since they are paying for a service rendered by a clinician (Prakash 2010). Therefore, they need to be regarded as customers, their rights need to be recognised and emphasis needs to be placed on the delivery of quality health care. Evaluating service quality adds value to the health care system as it enhances patient centricity and satisfaction (Prakash 2010).

Dall'Oglio (2015) explains that the health care industry is becoming increasingly competitive, with patients searching for the best possible health care services and



no longer taking a passive role but are rather actively involved in decision-making when it comes to their health and treatment. Hence, they have been redefined as customers (Stepurko, Pavlova and Groot 2016).

The perceptions and expectation of customers can be divided into two research theory themes: the first one is customer satisfaction and the second one is service delivery. According to Carrillata, Jaramillo and Mulki (2009) and Singh (2012), the quality of delivery leads to customer satisfaction but some researchers state that customer satisfaction and service quality are separate subjects, even though they share similar qualities (Parasuraman, Zeithaml and Berry 1985; Ismail, Zaki and Rose 2016). The quality of service given to the consumer or customer is what influences their choice, resulting in a competitive advantage (Aslam *et al.* 2016).

There is a gap in patient satisfaction research when comparing developing countries to the developed, western world. In developed countries, these studies are commonly used to address problems with access and performance of health care facilities but in low income countries or developing countries, attention is placed on providing access to health care and less emphasis is placed on assessing the quality of the health care provided (Batbaatar *et al.* 2017; Warren *et al.* 2018). Therefore, there is an increased importance to carrying out patient satisfaction studies in developing countries, like South Africa. The South African health care system was based on inequality and inequity, with race, income and geographical location being a crucial determinant of the quality and quantity of care received by patients (Ngwena 2000). According to Eyles *et al.* (2015), even after democracy, the country is still grappling with massive inequality in the health care system and, therefore, patient satisfaction research is needed in a South African context.

### **2.2.3 Factors Influencing Patient Satisfaction**

There are various instruments that have been developed to measure patient satisfaction (Rowell 2008). Satisfaction measures are global, measuring overall or general satisfaction; multidimensional, measuring satisfaction with different aspects of patients' health and care received; and disease specific, such as low back pain or other problems.

Rowell (2008) and Druica *et al.* (2019) state that satisfaction can be classified as direct and indirect. Direct satisfaction measures the actual experience of a patient

in a clinic or any other medical facility, whereas indirect satisfaction measures the patient's attitude towards their health or the care received.

In the last twenty years, there has been a growing interest in patient satisfaction (De Salins *et al.* 2016). Furthermore, patient satisfaction is being increasingly evaluated in hospital settings as there are several questionnaires which have been developed to assess the organisation of care, room comfort and the food given.

Patient satisfaction surveys are rarely performed in an out-patient setting. De Salins *et al.* (2016) mention two studies which have focused on patient satisfaction in an out-patient consultation. The first one was a study by Renzi *et al.* (2001) who used factors such as access to care, assistance and information given by the administrative staff, physicians' interpersonal skills and patients' overall satisfaction with their care. The second study was done by Ali *et al.* (2014), who analysed factors such as physicians' interpersonal skills and communication, time (time spent with the physician and waiting time), care and qualities of the staff.

The various factors that are used to assess patient satisfaction is referred to as domains. Yeomans (2000) states that domains such as satisfaction with overall care; satisfaction with the last visit; preference for care; convenience; accessibility; financial burden of treatment; physical setting; perceived efficiency; competence; interest; wait and treatment time; and staff courtesy can all affect patient satisfaction. However, Goldstein, Elliot and Guccione (2000) mention that it is a difficult task to include various domains into a patient satisfaction questionnaire.

The conceptualisation of health care quality has mainly come from the work of Donabedian which was published in 1980. His exploration into quality assessment and monitoring brought acknowledgements of early notions of health care quality. These included safety; accessibility; coordination of service delivery within and across systems; interpersonal skills of health professionals; the technical abilities of health service providers; and cost. It was from these notions that Donabedian developed a Unifying Model of Quality (Crowther 2014).

Ameh *et al.* (2017) explain Donabedian's model of quality of care is a triad, with the components being structure, process and outcome. The flow of the three components indicates that promoting good structure will result in good process, and thus influence a good outcome. According to Ameh *et al.* (2017), Donabedian

defines structure as the professional resources associated with providing health care, e.g. availability of medication, equipment and staff training; processes such as the things done to and for the patient, e.g. diagnosis, treatment and referrals; and the desired result of the care provided by the practitioner, e.g. patient satisfaction with the quality of care received. Donabedian further divided outcome into two categories. The first category is outcomes, which are the physical and functional aspects of care, such as the absence of complications and reduction of disease or disability. The second is interpersonal outcomes, which includes patient satisfaction with the health care they received and the influence on quality of life perceived by the patient.

The model of quality of care is characterised by technical care or the application of science and technology of health care to an episode of illness; the social and psychological management of the patient and amenities which are; things that contribute to the comfort, promptness, courtesy, privacy; and acceptability of health care.

Crowther (2014) mentions that Donabedian expanded his Unifying Model of Quality and explains the inter-relationship of the components of Donabedian's model with reference to cost and quality. He states that cost is linked to quantity, as cost increases, the quantity of health care decreases, and conversely, low cost or free health care services increases the risk of harm from care, which affects the delivery of effective care.

Based on Donabedian's indicators of quality, factors such as administrative technical management, interpersonal management and continuity of care are the key domains when defining patient satisfaction. This is further supported by several patient satisfaction survey instruments that are currently in use (Goldstein, Elliot and Guccione 2000; El Haj, Lamrini and Rais 2013; Crowther 2014; Ameh *et al.* 2017; Warren *et al.* 2018; Ricci-Cabello *et al.* 2018).

According to Thornton (2017), factors which influence patient satisfaction are mainly demographics, such as age, gender, income, general health status, socioeconomic status. Other factors are the type of setting the patient had to wait in and was treated in, the time the patient had to wait for the physician and the time spent with the physician.

### **2.2.3.1 Socio-Demographic Variables**

The health care service engages both health care providers and patients, and hence it is crucial to measure patient satisfaction in relation to patients' socioeconomic characteristics (Adhikary et al 2018).

#### **a) Age**

According to Moet *et al.* (2007), age is seen to be the most common factor that is associated with patient satisfaction. The study also mentions that most authors agree to the general relationship between age and satisfaction, which is that younger patients are less satisfied than older patients. Moret *et al.* (2007) cites Boudreux (2000), who found no significant relationship between patient age and satisfaction, but a study by Moret *et al.* (2007) found that patient's age is linearly and positively correlated with satisfaction before the age of 65-years-old but negatively after that age.

A study by Ibraheem, Ibraheem and Bekibele (2014) state that older individuals are generally more satisfied with the health care received in comparison to younger individuals, due to the older individuals attributing their illness to old age and, thus, they are grateful for any care received. Naseer *et al.* (2012) and Afzal *et al.* (2014) reveal that older individuals are more satisfied with health care due to having low expectations at their old age.

According to Schoenfelder *et al.* (2011), older individuals could be more satisfied with the health care they received due to being treated more gently due to their advanced age. Plitcha *et al.* (2018) find that older patients rated their health care provider with higher scores when compared to ratings by younger patients. Hekkert *et al.* (2009) agrees with their study stating that older patients have a higher overall satisfaction rate than younger patients.

#### **b) Gender**

Afzal *et al.* (2014) found that gender does not have a significant effect on patient satisfaction. Looking at the results from their study, females were comparatively more satisfied than males but the difference was not considered to be statistically significant. A study carried out in the Netherlands, which included eight academic and 14 general hospitals, also revealed that gender had no effect on the patients' overall satisfaction score (Hekkert *et al.* 2009).

Ibraheem, Ibraheem and Bekibebe (2014) conducted a patient satisfaction study at a hospital in Nigeria and find a higher number of females had excellent overall satisfaction scores when compared to their male counterparts. They further state that the higher levels of satisfaction in females can be attributed to emotional build up, which causes them to easily overlook negative aspects during their experience at a hospital. A study by Plitcha *et al.* (2018) reveals the opposite, as it was found that male patients gave higher satisfaction ratings when compared to their female counterparts.

Derosé *et al.* (2001) investigated if physician gender influenced patient satisfaction in an emergency department, and the results demonstrate that women who had a female physician was positively associated with women's satisfaction but men's satisfaction was not influenced by their physician's gender.

### **c) Ethnicity**

Prior to democracy, the South African health care system was based on discrimination and inequity, with race, income and geographical location being a crucial determinant of the quality and quantity of health care received (Ngwena 2000). According to Eyles *et al.* (2015), even after democracy South Africa is still grappling with massive inequality in the health care system and, therefore ethnicity can influence variation in patient satisfaction.

Myburgh *et al.* (2005) find that respondents who were White or with high socio-economic status were 1.5 times more likely to rank their health care service as excellent in comparison to respondents who were Black or with low socio-economic status.

A national general household survey administered by the South African Department of Health evaluated satisfaction with health care services in South Africa. Jacobsen and Hasumi (2014) conducted a weighted logistic regression analysis of that data, which reveal that the significant difference in overall satisfaction with the health care services received among the various ethnic groups can be attributed to the differences in their ability to access private health care services. Those who have visited private health care providers are

significantly more satisfied with their last appointment when compared to those who had to utilised public health care providers.

**d) Education**

Kalaja and Myshketa (2016) explain that individuals with a high level of education were likely to be less satisfied with treatment. This is due to educated people having a better understanding of diseases and expecting high levels of communication and input from the treating clinician. A study by Ashrafun and Uddin (2011) states the same and finds well educated people are more likely to be dissatisfied with care received.

**e) Income**

Financial burdens cause a negative effect on a patients' well-being and quality of care (Thind *et al.* 2010) and, thus, those with a low income may experience less satisfaction. According to Kalaja and Myshketa (2016), poor people are more satisfied with the care received when compared to their rich counterparts due to those that are not financially secure having less expectations.

**f) Occupation**

Williems *et al.* (2005) and Verlinde *et al.* (2012) state that individuals from high ranked occupations are seen to be a part of high social circles (class structure), whereas, those who are unemployed or carry out menial jobs are not part of those social circles. Doctors communication styles are influenced by the way patients communicate. Patients from high social classes communicate more actively and show more effective expressiveness, eliciting more information from the doctor. Patients from low social classes are disadvantaged because of the doctors' misperception of their desire and need for information and ability to take part in the care process.

In contrast, a study by Afzal *et al.* (2014), which investigated patient satisfaction at an out-patient department at a Punjab social security hospital in India reveals that there was no correlation between a patient's occupation and level of satisfaction experienced with the care given. Charokar and Jain (2015) found the same in a patient satisfaction survey done in a hospital in Bopal, India.

### **2.2.3.2 Service Quality Variables**

Health care contributes to the national income across the world and, hence, there is great interest in improving health care productivity. The health care system is pressured by the increase in cost of medical technologies and increased expectations by patients and management, as management is a factor that causes variation in productivity within the system and, therefore, improving management can aid in alleviating the pressure (Bloom, Sadun and Van Reenen 2014).

Studies conducted in the developing world have shown a link between patient satisfaction and various factors. From these factors, service quality is prominent (Andaleeb 2001; Chimed-Ochir 2012).

A study conducted in Kenya reveals that the quality of service offered at health care facilities significantly affects the demand for treatment. A patient is six times more likely to return for further care, rather than self-treat, if they are satisfied with the quality of service they received (Welay *et al.* 2018).

Balasubramanian (2016) states that the research done by Purasurman *et al.* (1991) reveals that, regardless of the type of service rendered and received, customers use a similar criteria to evaluate service quality. The criteria consists of five dimensions i.e. reliability, responsiveness, assurance, empathy and tangibles. Purasurman *et al.* (1991) developed a tool to measure service quality based on those five dimensions and called it the SERVQUAL (Service Quality) framework (Al-Damen 2017). Many service quality studies incorporate the SERVQUAL framework into their questionnaires (Peprah and Atarah 2014; Balasubramanian 2016; Bautista and Tangsoc 2016; Aliman and Mohamad 2016).

#### **a) Reliability**

Reliability refers to the health care provider's ability to perform the service which was promised, and performing it dependably and accurately (Andaleeb 2001; Ismail, Zaki and Rose 2016). Reliability is linked with the practitioner's attitude and competence, which are crucial factors that contribute to service quality (Bautista and Tangsoc 2016). Mosadeghard (2014) agrees with this by stating the quality of health care depends mainly on the practitioner's knowledge and skills.

## **b) Responsiveness**

According to Faleh *et al.* (2015), satisfaction with responsiveness has not been extensively studied in developing countries. A study by Kashkoli *et al.* (2017) in Iranian hospitals reveals that responsiveness has a significant effect on overall patient satisfaction and, thus, health care facilities need to place emphasis on improving responsiveness, include patients in their treatment plan and allow the patient to choose their physician.

Mishima *et al.* (2016) reports that the majority of studies have evaluated responsiveness as a whole but, in reality, responsiveness is a multidimensional variable.

Kashkoli *et al.* (2017) breaks up responsiveness into eight dimensions, which are dignity, communication, confidentiality, autonomy, prompt attention, social support, quality of basic amenities and the choice of provider. Malhotra and Do (2017) finds that the better the responsiveness of a health care facility, the greater the patient satisfaction is, which leads to increased utilisation of that facility.

## **c) Assurance**

According to Aliman and Mohamad (2016), assurance refers to the knowledge and courtesy that health care workers possess; it also refers to their ability in building trust and confidence with patients. Their study considered the link of service quality with patient satisfaction and behavioural intention, which was based in the private health industry in Malaysia, a developing country. A total of 300 outpatients participated in the study and the results revealed that assurance strongly influenced patient satisfaction and had a greater effect on satisfaction than on behavioural intentions. Assurance can be influenced by modern and functional equipment and facilities, as it shows patients that their services are reliable and can be trusted (Bautista and Tangsoc 2016).

## **d) Empathy**

Empathy in the health care environment can be defined as the practitioner being able to understand the experiences, concerns and perspectives of a patient and then being able to communicate this understanding and intention to offer help back to the patient (Hojat *et al.* 2013). When clinicians communicate with



empathy, it causes an increase in patient satisfaction and, hence, empathy is a core component of a consultation (Birhanu *et al.* 2010). Lan and Yan (2017) investigated the impact empathy has on patient satisfaction. Their study reveals that when clinicians have empathy while communicating with patients, they are able to elicit more information about the patient's illness and concerns which results in patient satisfaction and influences a positive doctor-patient relationship.

#### **e) Tangibles**

Tangibles are the appearance of the facility, the personnel at the facility and the equipment used in the facility (Peprah and Atarah 2014; Al-Damen 2017). According to Aliman and Mohamad (2016), tangibility is one of the strongest predictors of customer satisfaction and, therefore, health care providers need to ensure both their facility and equipment are modern and visually appealing. Staff at the facility also need to be neat and presentable to contribute to efficient tangibility.

### **2.2.3.3 Organisation of Care**

Organisational factors can be seen as operational attributes, processes or conditions within an organisation. These factors include resources, administrative support, communication, coordination and other operational aspects (Valaitis *et al.* 2018).

#### **a) Communication**

Communication in a health care setting is the ability of the physician to gather information so as to accurately diagnose, counsel appropriately and give therapeutic instructions, as this is a core principle to achieve a positive outcome and patient satisfaction (Ha and Longnecker 2010). Efficient communication allows for the doctor to provide quality care to patients (Chandra, Mohammanezhad and Ward 2018). Communication requires the physician to listen to the patient, as this builds a trustworthy doctor-patient relationship and aids therapeutic success (Ranjan, Kumari and Chakrawarty 2015).

When physicians communicate in a warm, reassuring, empathic manner and address patients' emotions, it reduces the patient's anxiety and distress and, thus, allows them to feel like they have support and are cared for and thereby it

improves patient satisfaction and adherence (van Osch *et al.* 2017). Patients will return to facilities or physicians who treat them well (Warren *et al.* 2018).

#### **b) Availability, Access and Continuity of Care**

Accessibility and continuity of care are important aspects of good general practice and they are key components needed to improve quality performance. Accessibility and continuity of care have a positive impact on patient satisfaction (Raivo *et al.* 2014). The availability of resources within a health care facility affects patient satisfaction and treatment outcomes (Mosadenghard 2014).

A study by Qadri *et al.* (2012), in a tertiary care hospital located in rural Haranya, India, reveals that out of 420 participants, 76% reported dissatisfaction with the operational times of the outpatient department, as this department was only open from 09h00 to 14h00, and thus availability and access influences patients' overall satisfaction.

Wetmore *et al.* (2014), in a study conducted at Victoria family medical centre in London, reveal that access and continuity of care with patients' regular doctors influenced patient satisfaction greatly. Thus, alluding that the greater the continuity of care is, the greater the likelihood of better health indicators (Wetmore *et al.* 2014; Bower, Roland and Campbell 2003).

#### **c) Process Features**

Donabedian was one of the first researchers to use the process concept in health care. He identified the importance of using organisational structure and process to achieve outcomes for patients (Bergman, Neuhauser and Provost 2010). Andaleeb (2001) defines process features as the orderly management of the overall health care service process.

According to Mosadeghard (2014), management quality is ensuring services are delivered in resource-efficient ways. He further states that everything in a hospital setting is affected by management, as management enables quality care to be rendered and the quality of health care can be improved by proper management of resources, staff and processes.

#### **d) Waiting Time**

A waiting time is the time a patient spends in a waiting area or examination room, waiting to be seen by the health care provider. If waiting time exceeds the patient's expectation, they would require the provider to acknowledge this delay because it shows the patient it is an unwanted event, and the provider respects and cares about their time (Chu *et al.* 2019). According to Al-Harajin, Al-Subaie and Elzubair (2019), there is a negative correlation between waiting time and patient satisfaction. Waiting time can affect patient's utilisation of a service, and a long waiting time reduces the patient's willingness to return to the clinic, which then negatively impacts the continuity of care and, therefore, reducing wait time increases patient satisfaction.

#### **e) Consultation Time**

According to Lemon and Smith (2014), some proponents believe that longer consultation time has a positive and direct influence on patient satisfaction and this is also supported (Azraii, Kamaruddin and Ariffin 2017; Alarcon-Ruiz, Heredia and Taype-Randon 2019). Elmore *et al.* (2016) mention that there is evidence that longer consultation time results in better health outcomes. It has been observed that doctors with longer consultation times prescribe less and offer more advice on lifestyle and other health promoting activities (Azraii, Kamaruddin and Ariffin 2017).

#### **f) Convenience**

Perceived convenience is defined as agility, accessibility and the availability of a service with flexibility in time and location (Okazaki and Mendez 2013). Convenience has become an important topic in health care over the recent years, from arranging the ability to schedule appointments online to mobile kiosks that allow patients to check-in (Tuzovic and Kuppelwieser 2016). According to Chang, Yan and Tseng (2012), a service is convenient when it lowers the emotional, physical and cognitive burdens.

A study by Taneja *et al.* (2014) investigated the convenience of health care in hospitals located in Chandigarh, Mohali and Panchkula. They used the following variables to evaluate convenience: easy to make an appointment; location; hours during which care can be obtained; clarity of information to

access place and the consideration of the needs and wants of the patients. The study reveals that convenience is a major factor that drives patient satisfaction.

#### **g) Cost**

Zarei *et al.* (2015) report that satisfied patients increase profit by returning to the facility and by referring other patients. Their study was aimed at evaluating the impact of service quality on patient satisfaction in private Iranian hospitals. The results reveal that patients' perception of service costs has the greatest effect on their overall satisfaction. It was also observed that patients without medical insurance have lower overall satisfaction.

According to Kim *et al.* (2017), in order for a patient to feel that the cost spent for treatment was worth-while, they need to experience satisfaction with other aspects of the consult as well, and this also aids their response to treatment.

Cost also has an effect on adherence to treatment. Chimbindi *et al.* (2016) carried out a study in rural KwaZulu-Natal and found that even though HIV and TB patients receive free treatment at government facilities, they still face private costs like transportation, which puts them in financial distress. The study also found that if this is resolved, it would positively impact retention and adherence to treatment.

Health expenditures consists of buying medication, treatment tools, medical products and hospital bills (in- and out-patient), millions across the world do not access the required health services because they simply cannot afford it (Yousefi *et al.* 2014).

#### **h) Billing**

Billing issues seem to have a direct impact on patient satisfaction, according to Yates (2017); when a patient interacts with a physician, a full picture of their account must be available to them. The physician must be able to send one statement with all the services rendered and have multiple ways to facilitate this, be it on paper or digitally. He states that the combination of these three measures can ensure you the highest level of patient satisfaction.

Patients are unlikely to discuss out-of-pocket costs with their physician; thus, physicians need to initiate the topic to discover any financial burden. Patients do

not like spending on low-value services with minimal benefits. Advising patients on where they can get discounted rates on things that fall under out-of-pocket costs influences patient satisfaction (Riggs and Ubel 2015).

#### **2.2.3.4 Interpersonal Skills**

Tanveer, Shahid and Hafeez (2018) define interpersonal skills as the ability to interact with people. A physician needs to uphold professionalism during all interactions with patients; the physician's behaviour is a key factor for patient satisfaction (Manzoor *et al.* 2019).

Further, a physician-patient interaction depends on how physicians interpret and respond to patients. According to Peck (2011), the patient-centred approach in health care consists of the patient's desires and expectations being incorporated into the decision-making process. The physician and the patient contribute to all decisions made with regards to the patient's health.

Patients' satisfaction with their relationship with their doctor is an important element in the efficiency and usage of health services. Adherence to treatment, provision of continuous care and clinical management of illness is closely related to satisfaction with doctor-patient interaction (Norhayati, Messeni and Azlina 2017).

Plantanova *et al.* (2008) report that satisfied patients describe their primary care doctors as those who genuinely show interest in their well-being; give a clear description of their illness and consequences of it; and give patients time to talk about their health and how their illness affects their daily life.

#### **2.2.3.5 Technical Quality of Care**

According to Mohamed, Mohamad and Azizan (2017), technical qualities are qualities that are provided by a group of professional service providers, such as nurses or doctors. These qualities are also related to the effectiveness of care in producing achievable health gains (Mosadeghard 2014).

Stepurko *et al.* (2016) state that the technical quality of care is related to provider competence. Fiala (2012) further explains that technical competence is hard to evaluate from a patient's perspective, because patients who do not come from a medical background lack the knowledge required to judge the finer points of technical quality in medicine and, thus, they are not equipped to make a rational

technical quality assessment of a health care provider or system. He further states an example of technical quality in surgery would be the return to function, absence of mortality and morbidity and the lack of post-operative complications.

### **2.2.3.6 Outcome of Treatment**

Treatment satisfaction is an important factor in evaluating routine clinical practice, as it aids in improving and maintaining patients' well-being by assessing the quality of patient care (Lloyd *et al.* 2014). Donabedian categorises outcomes into two categories. The first is technical outcomes which are the physical and functional aspects of care, such as an absence of complications and a reduction in disease, disability and death. The second category is interpersonal outcomes, which relates to a patient's satisfaction with care and the effect of the care received on the patient's life, which is perceived by the patient (Ameh *et al.*, 2017).

Commitment to care and the compliance with the management that has been advised influences treatment outcomes positively (Adhikary *et al.* 2018). According to Alacon-Ruiz, Heredia and Rondon (2019), patient satisfaction is associated with treatment outcomes: the greater the level of satisfaction, the better the outcome will be.

Despite the importance of patient satisfaction in measuring treatment outcomes, there is a paucity of such studies in developing countries (Ofei-Dodoo 2019). Ofei-dodoo (2019) investigated patient satisfaction and treatment outcomes of primary care practices in Ghana and the results show that patient satisfaction with overall outpatient care and treatment outcomes are significantly related.

## **2.3 Patient Satisfaction Surveys and Questionnaires**

Check and Schutt (2012: 160) define survey-based research as “the collection of information from a sample of individuals through their response to questions”. The usage of surveys in research allows for a variety of methods to recruit participants, collect data and use various methods of instrumentation (Ponto 2015). Surveys are seen as powerful research tools that convey valuable information on disease trends, risk factors, treatment outcomes, quality of life and the cost-effectiveness of care. They facilitate a large sample size, which contributes to greater statistical power.

Surveys increase the ability for gathering large amounts of information and increase access to a target population since surveys can be conducted online or on paper (Turk *et al.* 2018).

Historically, the primary purpose of survey-based research was to obtain information describing the characteristics of a large sample of individuals quickly. In recent years, these studies have scientific strategies which determine who to include in the study, how to distribute the surveys, when to initiate them and how to check up on the participants who do not respond. This ensures the high-quality processes and outcomes of the study (Ponto 2015).

Surveys are useful when carrying out non-experimental, descriptive studies that aim to describe reality (Mathers, Fox and Hunn 2009; Azhar *et al.* 2013). Questionnaires are useful survey tools for gathering data about abstract concepts that are normally difficult to quantify, such as opinions, attitudes and beliefs (Jones, Baxter and Khanuja 2013; Artino *et al.* 2014).

According to Mathers, Fox and Hunn (2009) and Azhar *et al.* (2013), the usage of surveys has five major advantages. Firstly, surveys have internal and external validity; secondly, they are efficient because a small sample size can generate findings that can draw conclusions from a whole population and, thus, thirdly, they make the study cost-effective. The fourth advantage is that they can cover geographically spread samples due to the range of administration, such as by means of the telephone, mail or email and the fifth advantage is that surveys have an ethical advantage as participants are not exposed to any invasive techniques and are not withheld from treatment and it is also a flexible tool that can be combined with other methods to produce rich data.

Patients' evaluation of care can be seen as a realistic tool that can be used to provide an opportunity for improvement, enhance strategic decision making, reduce costs, meet patient expectations, frame strategies for effective management, monitor health care performance of health plans and provide a benchmark across health care institutions (Al-Abri and Al-Balushi 2014).

In developing countries, surveys are being increasingly endorsed (Mpinganjira 2012) as a means of understanding health care service quality and the demand of health care services, as it is important to manage public expectations and resources

(Glick 2009). According to Hussain *et al.* (2019), carrying out patient satisfaction surveys in developing countries aids in comparing their health care facilities to those of the developed world.

Due to the increase in value of patient satisfaction, a large number of questionnaires have been developed to assess this, especially in well developed countries; however, these will not be suitable to implement in developing countries. Developing countries need to design their own patient satisfaction questionnaires and administer them to patients (Wei *et al.* 2015).

Patient satisfaction surveys are being promoted, as it is needed to understand the quality of health care services and the demand of these services in developing countries (Glick 2009).

In previous decades, studies evaluating health care services in developing countries was limited but now improved patient care has become a priority for all health care services, with an objective to achieve a high degree of patient satisfaction (Manzoor *et al.* 2019) It is becoming increasingly necessary to assess the performance of health care facilities in developing nations so it can be compared to the developed world, The way in which this can be done is by measuring patient satisfaction (Hussain *et al.* 2019).

Adhikary *et al.* (2018), revealed that the number of studies evaluating patient satisfaction in low and middle-income countries has increased.

The use of questionnaires in the health care environment has become common, as they aid in efficient data collection (Rattray *et al.* 2005) and are cost effective (Stenhammar *et al.* 2011). Questionnaires are frequently used in primary health care research to obtain information that is relevant to one or more pre-specified research questions (Zhang and Schuster 2018). In 2014, the Canadian Institute of Health Research initiated a pan-Canadian strategy to promote and support patient-oriented research.

Research carried out by Smith *et al.* (2015) found that high performance practices are more likely to conduct surveys on their patients and do it more frequently when compared to other practices. Thus, asking patients to complete questionnaires is a central approach for obtaining relevant input from patients (Zhang and Schuster 2018).



Al-Abri and Al-Balushi (2014) mention that there are two methods when evaluating patient satisfaction using surveys: one being quantitative and the other being a qualitative approach. They further state that the quantitative approach is known to provide accurate methods to measure patient satisfaction and that the most common assessment tool for conducting patient satisfaction studies are standardised questionnaires, which are either self-reported, interviewer-administrated or telephonic.

Bryman (2012: 35) defines quantitative research as “a research strategy that emphasises quantification on the collection and analysis of data”.

Rahman (2016) mentions three advantages of the quantitative research approach. Firstly, quantitative findings are likely to be generalised to a whole population or sub-population because they involve a large population that is randomly selected. Secondly, the data analysis involved in a quantitative study is less time consuming since the researcher can utilise statistical software, such as SPSS, Thirdly, quantitative research is based on a positivist paradigm of measuring variables.

There is a variation in questionnaires as instruments for measuring patient satisfaction. The spectrum consists of instruments provided by private vendors, which are normally not published and their validity and reliability are not clear. Publicly available and standardised instruments, such as the patient satisfaction questionnaire (PSQ-18) and the consumer assessment health plans (CAHPS), have the advantage of having good reliability; however, they offer limited scope of survey questions (Al-Abri and Al-Balushi 2014). It is further stated that internally developed instruments are mainly new questions that are generated from the beginning or imported questions from other existing standardised instruments.

Al-Abri and Al-Balushi (2014) mention a study that was carried out by Urden (2002), entitled Patient Satisfaction Measurement: Current Issues and Implications. The study included 16 academic medical centres across the United States of America and found that the majority of these facilities utilise internally developed instruments for out-patient satisfaction and a private vendor’s instrument for in-patient satisfaction. The author states that patient satisfaction tools need to be reliable and valid in order to reach their main goal of collecting patient feedback.

## 2.4 Chiropractic in South Africa

According to the Chiropractic Association of South Africa (CASA), South Africa is the only country within the African continent that offers chiropractic training. Within South Africa, there are two tertiary educational facilities that offer chiropractic programmes. The first is the Durban University of Technology (DUT), which introduced the chiropractic programme in the year 1989 (the institution was known as Natal Technikon at that time). The second institution is the University of Johannesburg (UJ), which has been running the chiropractic programme since 1993 (the institution was known as Witwatersrand Technikon at the time).

Chiropractic education and training in South Africa is spread over a course of six years. The first two years involve a solid grounding in the general sciences and thereafter students are introduced to clinically orientated subjects in the third, fourth and fifth years of study. During the fifth year of study, students are required to conduct a research project and write a dissertation. The fifth year also consists of the clinical practicum, when students start treating patients in teaching-based chiropractic clinics that are located on the university premises. Once the academic component is completed, there is a detailed internship programme which involves a variety of practical applications in both the public and private sector.

There are variations between chiropractic regulatory authority's accreditation standards, but there is one common standard and that is to produce graduates that are capable of making decisions which are in the best interest of their patients (Innes *et al.* 2018).

In order to practice as a chiropractor in South Africa, one needs to be registered with the Allied Health Professionals Council of South Africa. In South Africa, chiropractors are seen as primary contact practitioners who are capable of diagnosing and managing patients. The scope of practice tends to limit chiropractic interventions to benign musculoskeletal problems but they can contribute to broader health care management through appropriate referral (Myburgh and Mouton 2007).

Johl, Yelverton and Peterson (2017) state that South Africa is ready for chiropractic integration within health care due to three developments: the two institutions within the country offer a Master of Technology degree which includes a research programme and a stringent internship programme; a national continuing education

programme has been introduced; and international accreditation was awarded to DUT in 2009 and UJ in 2010.

The study shows that the chiropractic profession in South Africa is in a good position to advance into the 21<sup>st</sup> century health care system, but attention needs to be placed on the range and frequency of referrals and the fact that 61.2% of the country's population are likely to seek primary care from public sector doctors, clinics and hospitals because only 38.8% of the population have access to primary health care providers in the private sector (Johl, Yelverton and Peterson 2017).

According to Dizon *et al.* (2018), there is very little publicly available information on what Allied Health professionals do, whom and how they treat, the affordability and access within South Africa. Only some of the citizens have the advantage to gain knowledge of the Allied Health discipline and access, while others only have access to basic primary health.

## **2.5 The Durban University of Technology Chiropractic Day Clinic**

The Durban University of Technology (DUT) Chiropractic Day Clinic (CDC) is a teaching-based clinic where master's chiropractic students are able to put into practice the skills they have learned over the undergraduate period and gain clinical experience before graduating. A study by Schutte *et al.* (2018) reveals that teaching-based clinics contribute to learning by adding responsibility that the student has towards their patients; offers students authenticity whereby they are engaging with real patients and gaining real clinical practice; and it also allows the students to collaborate with supervising clinical instructors which motivates them and guides patient-centred learning.

According to the clinic director (Varatharajullu 2019), the DUT CDC operates from Monday to Friday from 08h00 to 18h00. Sixth-year master's chiropractic students attend to patients in the morning, from 08h00 to 12h30, managing both spinal and extremity complaints. Fifth-year master's chiropractic students attend to patients in the afternoon, from 12h30 to 18h00, managing spinal complaints until each extremity module is completed and passed throughout the year.

The initial consultation consists of a detailed case history, a physical examination, an orthopaedic examination of the relevant area and then appropriate management. Clinical instructors (qualified chiropractors with a minimum of three years practice experience) are present to supervise the students in the clinic. The students are required to consult with them after each aspect of the consultation with the patient is completed. This allows for the student to critically evaluate the case, ensuring the correct diagnosis is reached and the appropriate treatment is provided under the guidance of the clinical instructor. Prior to treatment, the various risk factors associated with the procedures are explained to the patient and, thereafter, the patient is requested to sign a consent form agreeing to each treatment modality being used in their treatment plan.

## **2.6 Studies Evaluating Patient Satisfaction**

### **2.6.1 Patient Satisfaction with Health Care**

Nunu and Munyewende (2017) carried out a patient satisfaction study in South Africa investigating patient satisfaction with delivery of primary health care services by nurses. The study highlighted that, in South Africa, research studies that focus on patient satisfaction, particularly at a primary care level, are limited. The survey was conducted on day patients who attended sample primary health care clinics in the municipal districts in the Free State and Gauteng provinces. Face-to-face interviews were done and questions were asked in three stages: firstly, while patients waited for their consultation, secondly, straight after the consultation and thirdly, prior to patients exiting the clinic.

Nine variables were used to assess patient satisfaction at the clinics; gender; how patients got to the clinic; time spent at the clinic; being listened to by the nurses; knowing the name of the nurse; having their privacy respected; being given information about their conditions; having medication prescribed; and being treated politely (Nunu and Munyewende 2017).

The results reveal that 87% of the participants in the Free State walked to the clinic and the rest spent an average of R1.00 on transport. In Gauteng, 65% of the participants walked to the clinic and the remaining spent an average of R3.36 on transport. In both provinces, there were more female participants: Gauteng had 393

females and 234 males, while the Free State had 311 females and 158 males. In the Free State, 92% of the participants and in Gauteng, 90% of the participants were satisfied with the clinics they attended. Additionally, in the Free State, five of the variables were significantly associated with the outcome of care at a  $p$ -value  $<0.05$ . The variables were: time spent at the clinic; having privacy maintained; information was given regarding patient's conditions; having medication being prescribed; and being treated politely.

In Gauteng, seven variables were found to be significantly associated with the outcome of care at a  $p$ -value  $<0.05$ . These were how patients got to the clinic; the time spent at the clinic; the patients were listened to by the nurses; knowing the name of the nurse; having their privacy respected; given information on conditions they have; and being treated politely.

It was concluded that high levels of satisfaction were experienced in both provinces, but there was room for improvement to increase satisfaction. Satisfied patients were found to be more adherent to treatment plans and had better health seeking behaviour which improved clinical outcomes; therefore, nurses need to continue to listen to patients, respect patients and be polite. Nurses also need to implement efficient work schedules to decrease patient wait time.

Olomi, Mboya and Manongi (2017) state that, traditionally, the quality of health care services were measured by means of professional standards, ignoring the importance of patient satisfaction. The level of patient satisfaction is important for improving the quality of care provided. In developed countries, patients are highly satisfied with the basic services provided at out-patient departments, where satisfaction levels ranged from 90% to 95%. In developing countries, it has been shown that patient satisfaction ranged from a low 50% to 95%.

Olomi, Mboya and Manongi (2017) evaluated the level of patient satisfaction with health care services at outpatient departments in Tanzania. The hospitals involved in the study were Mawenzi Referral Regional Hospital, Same District Hospital and Haruma Designated District Hospital. The population consisted of patients who gave consent and attended the out-patient departments at the hospitals; a total of 450 patients were systematically chosen from all three hospitals. The patients' level of satisfaction with quality of health care was focused on structure, process and

outcome. These three domains were fitted into the SERVQUAL tool dimensions, which are tangibles, reliability, responsiveness, assurance and empathy. The questionnaire was developed in English and then translated into Kiswahili, which is the local language in Tanzania.

The dependant variable in the study was patients' level of satisfaction, which was measured by looking at the gap between patients' expectations and perceptions in the structure and process domains, using a five-point Likert scale. The independent variables were sociodemographic factors (age, sex, religion, marital status, occupation, level of education, health insurance status, place of residence, the number of visits made to the hospital and the number of out-patient department stations visited); structure domain which includes tangibles and assurance (physical facilities, equipment and drugs, appearance of personnel and facility, confidence, competence, courtesy and credibility); and process domain, which includes reliability, responsiveness and empathy (patient-provider relationship, waiting time, confidentiality and affordability of service).

The results revealed that only 20% of the participants, in all three hospitals combined, were satisfied. The overall gap in health service provision in all three hospitals was -37.0, signifying overall dissatisfaction among patients with the health service provision. The study also finds that some of the patients' social demographic characteristics were important in determining their level of satisfaction; this included patient's age, place of residence and number of out-patient department sections that were visited.

Patients aged 45 years old or younger were found to be more satisfied with the health services received than those over the age of 45 years. This was also noted in other studies carried out in Tanzania and Ethiopia; the reason suggested was that the expectations between these two groups were different and the time spent during the process of care. Patients from rural areas were found to be more satisfied when compared to those from urban areas; this was said to be due to the geographical location of the hospitals, lack of awareness and limited alternate hospitals in rural areas. It was also mentioned that patients from rural areas were not aware of their rights regarding the quality of care and hence they may fail to distinguish between hospitals providing quality care and those providing poor care, as they not exposed to facilities providing quality care. The study also reveals that patients who visited

less than four out-patient department sections were more satisfied than those who visited more than four; this was said to be due to those visiting more sections had to spend a longer time at the hospital or were required to go back to the diagnosing doctors, all of which lead to dissatisfaction.

With regards to the dimensions of service quality, the gap score (discrepancy) between patients' expectations and perceptions in all three hospitals showed dissatisfaction (negative mean gap). This indicated that the patients' expectations were not met in all three hospitals.

**Table 2.1 Patients mean perception, expectation and gap score**

<b>Domain</b>	<b>Perception mean score</b>	<b>Expectation mean score</b>	<b>Mean gap score</b>
Tangibles	56.54	64.15	-7.61
Reliability	68.20	75.84	-7.64
Responsiveness	59.18	66.79	-7.61
Assurance	55.41	61.73	-6.32
Empathy	66.37	74.17	-7.8

The results of the study reveal that patients in all three hospitals were not satisfied with the health care services being provided. The service domains had negative gap scores, showing that to increase patient satisfaction, patients' expectations need to be met by improving patient-provider relationship, waiting time, appearance of physical facilities, the availability of equipment and drugs and the affordability of hospital bills.

A study evaluating patient satisfaction with inpatient orthopaedic physiotherapy services at a tertiary teaching hospital in Ghana was carried out by Ampiah, Ahenkorah and Karikari (2019). The study stated that patient satisfaction forms an essential part of quality assurance and is regarded as an important measure of quality of care by consumers and funders in health care. Patient satisfaction may improve compliance to advice, attending the facility again and benefit from therapy. The study was a cross-sectional survey that included male and female, adult in-patients who were receiving physiotherapy at the Trauma and Orthopaedic directorate of the Komfo Anokye Teaching Hospital in Ghana, with a length of admission of between two to 12 weeks and receiving treatment three to five times a

week. The questionnaire that was used comprised of 17 questions: 10 questions relating to the treatment process (including interpersonal factors), two questions pertaining to logistics, two pertaining to organisational care and the remaining three were general questions. There were 145 questionnaires distributed but with only 120 being returned.

The participants' response to physiotherapy services received is depicted in **Figure 2.1**.

Factor, N = 120	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Physiotherapists were good about explaining the reason for my physiotherapy	n (%): 54 (45.0); M (R): 2.0 (1-2)	58 (48.3)	6 (5.0)	1 (0.8)	1 (0.8)
I think the physiotherapist had materials and equipment needed to complete my care	n (%): 36 (30.0); M (R): 2.0 (1-3)	31 (25.8)	25 (20.8)	20 (16.7)	8 (6.7)
Physiotherapists always made me feel their diagnosis was correct	n (%): 45 (37.5); M (R): 2.0 (1-2)	69 (57.5)	6 (5.0)	–	–
The physiotherapists were thorough in treating and examining me	n (%): 31 (25.8); M (R): 2.0 (1-2)	70 (58.3)	16 (13.3)	3 (2.5)	–
I had easy access to the physiotherapists I needed regarding feedback on my physiotherapy procedures	n (%): 42 (35.3); M (R): 2.0 (1-2)	62 (52.1)	8 (6.7)	7 (5.9)	–
I didn't have to wait for a long period before being attended to by the physiotherapists after I was referred to them	n (%): 34 (28.3); M (R): 2.0 (1-2)	70 (58.3)	7 (5.8)	8 (6.7)	1 (0.8)
My physiotherapists treated me in a very friendly and courteous manner	n (%): 87 (72.5); M (R): 1.0 (1-2)	30 (25.0)	2 (1.7)	1 (0.8)	–
Those who provided my physiotherapy care always took their time when they treated me	n (%): 65 (54.2); M (R): 1.0 (1-2)	52 (43.3)	1 (0.8)	1 (0.8)	1 (0.8)
The physiotherapists always acknowledged what I told them	n (%): 33 (27.5); M (R): 2.0 (1-2)	61 (50.8)	22 (18.3)	3 (2.5)	1 (0.8)
I had no doubts about the ability of the physiotherapists who treated me	n (%): 45 (37.5); M (R): 2.0 (1-2)	65 (54.2)	6 (5.0)	2 (1.7)	2 (1.7)
I felt confident that I was receiving the physiotherapy I need without being setback financially	n (%): 71 (59.2); M (R): 1.0 (1-2)	46 (38.3)	1 (0.8)	–	2 (1.7)
The physiotherapists who treated me gave me respect	n (%): 79 (65.8); M (R): 1.0 (1-2)	39 (32.5)	2 (1.7)	–	–
During my physiotherapy I was allowed to say everything that I thought was important	n (%): 47 (39.2); M (R): 2.0 (1-2)	51 (42.5)	19 (15.8)	2 (1.7)	1 (0.8)
The physiotherapists who treated me had a genuine interest in me as a person	n (%): 30 (25.0); M (R): 2.0 (1.25-3)	50 (41.7)	33 (27.5)	6 (5.0)	1 (0.8)
I was very satisfied with the physiotherapy care I received	n(%): 65 (54.2); M (R): 1.0 (1-2)	50 (41.7)	4 (3.3)	1 (0.8)	–
I was fully compliant with the physiotherapy treatment I received	n(%): 41 (34.2); M (R): 2.0 (1-2)	69 (57.5)	7 (5.8)	2 (1.7)	1 (0.8)
Due to my level of satisfaction my compliance to the physiotherapy came naturally	n(%): 41 (34.2); M (R): 2.0 (1-2)	62 (51.7)	14 (11.7)	–	3 (2.5)

Abbreviations: %, percentage; n, number; M (R), Median (Range).

**Figure 2.1 Participants response to physiotherapy services received**

The results also revealed that age had a significant effect on patient satisfaction, as younger patients were more satisfied than elderly patients. The patients' level of education, employment and marital status were found to have no statistically significant effect on the level of satisfaction experienced. A statistically significant association between compliance and patient satisfaction was observed. Continuity of care had an influence on patient satisfaction; patients who saw the same therapist throughout the treatment were more satisfied. It was concluded that the majority of



the participants were satisfied with the various domains of physiotherapy services. The study states that a continuous evaluation of physiotherapy services in different settings and areas within Ghana is necessary for quality assurance and to determine other associated benefits of patient satisfaction (Ampiah, Ahenkorah and Karikari 2019).

According to Manzoor *et al.* (2019), patient satisfaction is a renowned standard to evaluate the effectiveness of health care services that are provided by hospitals. Patients' opinions are currently being considered a key factor in the decision of treatment and the delivery of health care services and, hence, the evaluation of health care delivery from a patient's viewpoint has received more attention. Assessing patient satisfaction is a valuable indicator to measure the success of service that is being provided, especially in public sector hospitals. Furthermore, a physicians' behaviour is a main component in patient satisfaction.

Manzoor *et al.* (2019) examined patient satisfaction with health care services in the public health sector of Khyber Pakhtunkhwa, Pakistan, with the physician's behaviour playing a moderating role. The three hospitals involved in the study were King Abdullah Hospital, Mansehra, Ayyub Teaching Hospital, Abbottabaa and Khyber Teaching Hopital, Peshwar. The study was based on five hypotheses, which were:

1. Laboratory and diagnostic care are positively associated with patient satisfaction.
2. Preventative care has a positive association with patient satisfaction.
3. Prenatal care has a positive correlation with patient satisfaction.
4. There is a positive relation between the physician's behaviour and patient satisfaction.
5. a. The physician's behaviour has a positive moderating relationship between laboratory and diagnostic care and patient satisfaction.  
b. The relationship of preventive health care and patient satisfaction is moderated by the physician's behaviour.  
c. The relationship of prenatal care and patient satisfaction is moderated by the physician's behaviour.

Self-administrated questionnaires were used. The questionnaire was developed in English and then translated into Urdu, the local language in Pakistan. Participation was voluntary; 350 questionnaires were handed out, 320 were returned and 30 questionnaires were excluded due to missing data.

The results of the study reveal that laboratory and diagnostic care, preventative care, prenatal care and the physician's behaviour has a positive correlation with patient satisfaction and the physician's behaviour moderated the effect of health care services on patient satisfaction. The findings also showed that patients were satisfied with the efficiency of the health care services provided. It was concluded that better health care services play a crucial role in patient satisfaction; physicians should treat patients with courtesy and respect and be polite, empathetic and show concern to their patients.

Chumbler *et al.* (2016) investigated satisfaction among older adult patients and their in-patient care experience. The study stated that patient satisfaction and their experiences in the hospital setting are the cornerstone in evaluating health care quality. The cross-sectional study was conducted by collecting data from 70 hospitals, which were members of the largest non-profit health system within the United States of America. The instrument used to conduct the survey was the Hospital Consumer Assessment of Health Care Providers and Systems (HCAHPS), survey, which was the first national, standardised data-base on patient experience, in short-term, acute care hospitals (Kutney *et al.* 2009). The data were collected through telephonic interviews. The independent variables used in the study were communication with nurses; communication with doctors; responsiveness of the hospital staff; communication about medicines; cleanliness; and quietness of the hospital setting. Additional variables included the patient's demographics, such as age, gender, race, educational attainment and self-perceived health status.

The results revealed that communication with doctors was the strongest influencing variable on overall satisfaction, and communication with nurses the second strongest variable to influence satisfaction. It was also revealed that older patients (aged between 75 to 79 years and 80 to 84 years) reported greater overall satisfaction when compared to patients aged between 65 to 69 years. The study found that patients combined their attribute reactions differently depending on their gender: the older male patients reported that communication with doctors greatly

influenced their overall satisfaction, while older female patients reported communication with nurses greatly influenced their overall satisfaction.

Greater educational attainment was found to be inversely related to overall satisfaction. Responsiveness of staff, communication about medicines, cleanliness and quietness of the hospital environment when evaluated against the gender of the patients, showed no statistically significant correlation regarding satisfaction. The study concluded that behavioural research has shown that older patients are less demanding and prone to resigning themselves to their fate and, therefore, have lower expectations and higher acceptance of their conditions, which influenced their overall satisfaction with hospital care.

### **2.6.2 Patient Satisfaction with Chiropractic Care**

According to Sawyer and Kassak (1993), Hertzmann-Miller *et al.* (2002) and Beliveau *et al.* (2017), satisfaction with chiropractic care is relatively high and sometimes superior to other forms of health care, particularly true in the treatment and management of low back pain.

Thoreson (2006) conducted a patient satisfaction study at the then named Durban Institute of Technology Chiropractic Day Clinic, consisting of 303 eligible participants. The questionnaire used in the study was taken from Sawyer and Kassak (1993) and was adapted to fit the study. The questionnaire was made up of two sections: section A included sociodemographic data and miscellaneous data such as past chiropractic interaction, area being treated, distance from clinic and medical aid status and section B included questions about general satisfaction, access to a student (convenience and appointments), finance and student conduct (competence, communication, humaneness and facilities).

The results revealed a high degree of satisfaction among all scales and subscales. Age had no significant effect on general patient satisfaction but it was found that older patients (over the age of 46 years) were slightly more dissatisfied with the finance, when compared to younger patients (equal to or below the age of 46 years). Men were found to be more satisfied with finance than women.

Patients who experienced a substantial or complete improvement in their condition were more satisfied than patients who did not experience improvement in general satisfaction, finance and student conduct. It was also observed that as perceived

health status decreases, general satisfaction and satisfaction with access to a student and finance also decreased. Medical aid reimbursement was a significant factor with regards to satisfaction in finance.

The study concluded that chiropractic is an effective intervention as the study revealed that 82% of the participants reported an average to complete improvement in their condition. Additionally, communication is linked to satisfaction as patients expressed great satisfaction with student communication.

Patient satisfaction was also evaluated at the Durban University of Technology satellite clinics, which are Marburg Haven Centre for the Aged (MHCA) and Narain Jeawon Vedic Centre (NJVC). The study by Rieder (2016) used 70% of patients whose files were considered active. A total of 69 patients participated in the study: 55 from the MHCA and 14 from the NJVC. The questionnaire that was used included questions about demographics, knowledge of the clinic, the environment, reception and waiting area, finance, the student doctor, the assessment, treatment, overall care and future care.

The results demonstrated that age, ethnicity, first time or subsequent visit, pain rating and previous treatment had no influence on satisfaction. Females tended to be more satisfied than males. There was a significant difference in satisfaction with regards to the study year the student was in. Patients who knew the students were either in their fifth or sixth year of study were shown to be more satisfied than the patients who were unaware of the student's year of study.

It was observed that patients who came with an ankle complaint were less satisfied and those with shoulder and arm complaints were most satisfied; this was said to be due to ankle conditions taking longer to respond due to weight bearing and the cases were chronic. With regards to shoulder and arm complaints, there is less weight bearing and inconvenience since patients can use the non-affected shoulder or arm. Another reason for that finding was that with movement and more pain in the ankles, more treatment sessions could have been needed which makes the recovery period seem longer.

Previous outcomes also influenced satisfaction, patients who worsened or were unaware of the outcome were less satisfied in comparison to those who got better and who did not regress in clinical symptoms. Income did not determine satisfaction.

Overall, patients were greatly satisfied with the clinic environment and the student doctors, as they reported the facilities were hygienic; it was easy to schedule appointments; and student doctors were on time and efficient in their assessment and treatment.

MacPherson *et al.* (2015) conducted a study in the United Kingdom to evaluate patient experiences and expectations of chiropractic care. A total of 1075 information sheets and questionnaires were sent out to 70 chiropractors. Questionnaires were emailed to 5167 patients who were registered with 36 care response member chiropractors. The Chiropractic Patients Association also informed its members of the survey. Through all the mentioned recruitment methods, a total of 544 patients responded. The results revealed that prior to treatment, 58% of the participants had limited knowledge on what chiropractic treatment involved, 41% were unsure of the benefits and 71% had little information of possible reactions to treatment. Among all the participants, 53% went for chiropractic care every other month, 25% no longer visited a chiropractor and 59% no longer needed chiropractic care.

The majority of the participants reported benefits from chiropractic care: 92% reported a reduction in pain (with 80% of those reporting improved mobility); 55% of the participants reported an ongoing effect that reduced future problems; and 53% reported that they were provided with information to allow them to understand their problem better. More than 90% of the participants' expectations and experiences corresponded well: 99% expected for their chiropractor to allow sufficient time for their consultation and 97% reported that this happened.

Generally, the study showed that patients experienced high levels of satisfaction with chiropractic care and their expectations were largely met. It was also revealed that any gap between expectation and the delivery of care was due to poor communication, which could lead to negative effects on treatment outcome and dissatisfaction. To close the gap, clinical skills need to improve, thereby resulting in improved delivery of care.

Hertzmann-Miller *et al.* (2002) evaluated the difference in satisfaction between patients receiving chiropractic care versus medical care for low back pain. The study included 672 participants, who were randomized to either receive chiropractic care

or medical care. The satisfaction scores were on a scale of 10 to 50, after four weeks of follow-up visits. The study proves the mean satisfaction score for chiropractic managed patients was greater than medically managed patients. It was also observed that self-care advice and an explanation of the treatment were the factors that influenced higher satisfaction with chiropractic care. Furthermore, patient satisfaction is an important component when evaluating care for low back pain, as objectively measurable outcomes are absent. It was also stated that among all the low back pain patients in the United States of America, approximately one third visit chiropractors, in comparison to medical doctors.

A similar study carried out on low back pain patients several years prior to this by Hurwitz (1994) found similar results. In that study, 103 patients sought chiropractic care for their pain and 187 patients sought medical care. It was found that the chiropractic managed patients were twice as more likely to perceive their treatment as a success, when compared to the medically managed patients.

Gemmel and Hayes (2001) assessed patient satisfaction with chiropractic physicians' in the Oklahoma Chiropractic Independent Physicians' Association. A visit-specific questionnaire was mailed to a random sample of 150 patients from health insurance claims filed in the first two months of the year 2000. There was a 44% return rate of completed questionnaires. **Table 2.2** shows the aspects of chiropractic management which was rated excellent, together with the respondent percentages.

**Table 2.2 Aspects rated excellent with percentages**

<b>Factor</b>	<b>Percentage</b>
Length of time to get an appointment	84.9%
Convenience of the office	57.7%
Access to the office by telephone	77.3%
Length of wait at the office	75.7%
Time spent with the provider	74.3%
Explanation of what was done during the visit	72.8%
Technical skills of the chiropractor	83.3%
Personal manner of the chiropractor	92.4%
The overall visit	83.3%

The study also revealed that 95.5% of the participants reported that they would recommend the provider to others, and therefore it was concluded that patients

experienced a high level of satisfaction with management by chiropractors in the Oklahoma State Chiropractic Independent Physicians' Association.

## **2.7 Summary**

With regards to the relevant literature, patient satisfaction is a multidimensional factor as there are numerous variables which influence it, from patient demographics; patients' internal expectations; and the actual process, structure and management of a health care facility. Patient satisfaction was previously limited in the developing world but in recent years, interest has increased greatly, especially in general health care.

There is a need to evaluate patient satisfaction at the DUT CDC, since such studies are limited in South Africa, and even in the world at large, particularly in teaching-based chiropractic clinics. Patient satisfaction was evaluated at the DUT CDC in 2006 but a follow-up study was required because there has been an upgrade to the facility, equipment and paper work systems since that last study. Furthermore, the questionnaire used in 2006 was an international tool which was developed for private chiropractic practices, and hence a study using a customised questionnaire which was developed at the DUT CDC, using patients' opinions and input, thus being suitable from a South African teach-based clinic context, was necessary.

# CHAPTER THREE

## METHODOLOGY

### 3.1 Introduction

This chapter includes an outline of the research methodology, the data collection and the statistical data collection process.

### 3.2 Study Design

The study used a quantitative, purposive, pre-validated, questionnaire-based survey, that evaluated the patient satisfaction of patients at the DUT CDC.

Quantitative research is defined as a research strategy that emphasises the quantification of the collection and an analysis of data (Bryman 2012).

Purposive sampling is the deliberate choice of an informant due to the qualities the informant has and it is a non-random technique that does not require underlying theories or a set number of informants; this suited the study as participants were patients who attended the DUT CDC and not random individuals, since it is only the current patients who possess the required experience of the DUT CDC to answer the satisfaction questions.

The questionnaire was pre-validated, meaning the designer of the questionnaire had carried out validity tests to ensure its validity, as this is vital according to Urden (2002: 194), who states that “patient satisfaction tools need to be reliable and valid in order to reach its main goal of collecting patient feedback”.

A questionnaire-based survey was the best suited design for the study as questionnaires are a survey tool that is good for gathering abstract data, such as opinions, attitudes and beliefs, as these are normally difficult to quantify (Artino *et al.* 2014). In this case, patient satisfaction is comprised of the patient’s opinion, attitude and belief of their experience.



### **3.3 Study Location**

The study was conducted at the DUT CDC. Permission to conduct the study was obtained from the research director at the DUT (Appendix A); the DUT CDC director (Appendix B), Dr Singh, to use the questionnaire she had developed (Appendix C); and the Institutional Research Ethics Committee (IREC) (Appendix D).

### **3.4 Study Population**

The study population included patients who were currently receiving treatment by master's chiropractic students at the DUT CDC. The population included new and returning patients.

#### **3.4.1 Sampling**

##### **3.4.1.1 Sample Size**

The sample size was based on the results from a previous study (Thoresen 2006), where the estimated overall satisfaction level mean was 1.59 and standard deviation 0.37. By the usage of that standard deviation, with a 95% confidence interval, half-width (precision) of 0.06 units, the required sample size was 149 (Esterhuizen 2020).

##### **3.4.1.2 Sample Method**

Sampling was done consecutively on patients who were attending the DUT CDC for treatment and met the inclusion criteria within the sampling period until the required sample size was reached (Esterhuizen 2020).

#### **3.4.2 Criteria for Participation in the Study**

Patients who met the inclusion criteria of the study were allowed to participate.

##### **3.4.2.1 Inclusion Criteria**

- Patients who were 18 years old or older.
- Patients who were currently receiving treatment at the DUT CDC.
- Patients who signed the letter of information and the informed consent were allowed to participate in the study.

#### **3.4.2.2 Exclusion Criteria**

- Patients who no longer wished to participate in the study were excluded.
- Patients who were chiropractic students studying at the DUT and recent chiropractic graduates were excluded from the study to avoid any bias in the results.

#### **3.4.3 Advertising**

No form of advertising was used in this study; patients were informed about the study by the reception staff upon arrival at the DUT CDC reception desk.

#### **3.4.4 Recruitment of Participants/Questionnaire Administration**

Patients were informed at the DUT CDC reception about the current research being carried out at the DUT CDC, which aimed to determine the level of patient satisfaction at the clinic. Patients who were interested in the study, agreed to participate and met the inclusion criteria were then handed a letter of information (Appendix E1/E2) and informed consent (Appendix F1/F2). After reading and understanding the letter of information, as well as reading, understanding and signing the informed consent, they were handed the questionnaire.

The researcher was present at the DUT CDC, to assist participants if they had any questions about the study or required any aspect of the study to be explained to them and clear any misunderstandings.

#### **3.4.5 Response Rate**

A total of 153 questionnaires were issued to patients attending the DUT CDC between June 2020 and September 2020, and the following was noted during the administration of the questionnaires:

- There were 150 valid questionnaires.
- Three questionnaires had to be excluded due to the participants either not fulfilling the inclusion criteria or being within the exclusion criteria.
- All the questionnaires that were handed out were returned.

## **3.5 Study Questionnaire**

### **3.5.1 Introduction**

The pre-validated questionnaire was developed at the DUT CDC by Singh (2017), using three steps. Firstly, a review of the literature on questionnaire design and conceptual framework was done. Secondly, the PSQ and another questionnaire (patient satisfaction rating questionnaire) were trialled to rate the significance of the questions in the PSQ with the expert group of the study. Thirdly, as the final step, the issuing of the PSQ and the rating questionnaire to the patients attending the DUT CDC was directed (Singh 2017).

With regards to the reliability and validity of the questionnaire, the Cronbach  $\alpha$  was 0.95 for internal factor and the Cronbach  $\alpha$  for the external factor was 0.90.

Permission to use the questionnaire was granted by Singh (Appendix C).

The references for the development of the questionnaire is as follows:

**Table 3.1 References for questionnaire development**

STATEMENTS	ADAPTED FROM
<b>A. Tangibles</b>	
1 The clinic facilities are visually appealing.	Beattie, Nelson and Murphy (2011).
2 The waiting area has enough seating.	Grogan, Conner, Norman, Willits and Porter (2000).
3 There is adequate parking.	Beattie, Nelson and Murphy (2011).
4 The clinic hours of operation are suitable.	Beattie, Nelson and Murphy (2011).
5 The clinic met my hygiene expectations.	Beattie, Nelson and Murphy (2011).
6 The clinic has facilities for disabled patients.	Grogan, Conner, Norman Willits and Porter (2000).
7 The waiting area at the clinic is comfortable.	Beattie, Nelson and Murphy (2011).
8 The clinic has adequate security.	Beattie, Nelson and Murphy (2011).
9 The clinic has appropriate toilet facilities.	Grogan, Conner, Norman Willits and Porter (2000).
<b>B. Reception staff</b>	
1 The reception staff are friendly and courteous.	Beattie, Nelson and Murphy (2011).
2 The reception staff are helpful in making an appointment over the phone.	Grogan, Conner, Norman, Willits and Porter (2000).
3 The reception staff attend to me promptly.	Grogan, Conner, Norman, Willits and Porter (2000).
4 The reception staff treat me with dignity and respect.	Beattie, Nelson and Murphy (2011).
5 The clinic staff inform me of potential delays in my appointment.	Grogan, Conner, Norman, Willits and Porter (2000).
6 The reception staff explained to me the possible time duration for my consultation.	Grogan, Conner, Norman, Willits and Porter (2000).
<b>C. Chiropractic intern</b>	
1 The student is polite.	Beattie, Nelson and Murphy (2011).
2 The student makes me feel at ease.	Grogan, Conner, Norman, Willits and Porter (2000).
3 The student is attentive.	Beattie, Nelson and Murphy (2011).
4 The student is thorough in examining me.	Beattie, Nelson and Murphy (2011).
5 The student explained my condition.	Talmage (2008).
6 The student explained my treatment plan.	Beattie, Nelson and Murphy (2011).
7 The student involves me in the decisions about my treatment and rehabilitation or exercise programme.	Beattie, Nelson and Murphy (2011).
8 The student gives me advice on exercise and nutrition.	Beattie, Nelson and Murphy (2011).
9 The student gives me advice on how to prevent health problems from recurring.	Beattie, Nelson and Murphy (2011).
10 The student is dressed neatly and professionally.	Talmage (2008).
11 The student is punctual.	Beattie, Nelson and Murphy (2011).
12 The student made me feel comfortable during the assessment.	Beattie, Nelson and Murphy (2011).
13 The student spent sufficient time with me during my treatment session.	Beattie, Nelson and Murphy (2011).
<b>D. Quality of care</b>	
1 The student is knowledgeable	Hojat, Louis, Maxwell, Markham, Wender and Joseph (2011).
2 The student is confident.	Hojat, Louis, Maxwell, Markham, Wender and Joseph (2011).
3 The care I received was of a high standard.	Grogan, Conner, Norman, Willits and Porter (2000).
4 Improvements in my condition took longer than I expected.	Beattie, Pinto, Nelson and Nelson (2002).
5 The quality of care I received met my expectations.	Grogan, Conner, Norman, Willits and Porter (2000).
6 The student ensured that I made an informed decision when agreeing to my treatment.	Hojat, Louis, Maxwell, Markham, Wender and Joseph (2011).
7 The student made me feel important at all times.	Beattie, Nelson and Murphy (2011).
<b>E. Finance</b>	
1 The medical attention I received is affordable.	Beattie, Pinto, Nelson and Nelson (2002)
2 Sometimes I do not seek treatment at the DUT CDC because I cannot afford the consultation fees.	Beattie, Pinto, Nelson and Nelson (2002).
3 The consultation fees are reasonable.	Beattie, Pinto, Nelson and Nelson (2002).
<b>F. Overall satisfaction</b>	
1 The health care issue that brought me to the DUT CDC was addressed to my satisfaction.	Beattie, Pinto, Nelson and Nelson (2002).
2 I would recommend this student to a friend or relative.	Beattie, Pinto, Nelson and Nelson (2002).
3 Overall, I was pleased with the service I received from the DUT CDC.	Beattie, Nelson and Murphy (2011).
4 The student answered all of my questions.	Beattie, Nelson and Murphy (2011).
5 I would recommend chiropractic treatment and the DUT CDC to a friend or relative.	Beattie, Pinto, Nelson and Nelson (2002).
6 I felt that the student did everything possible to help me.	Beattie, Pinto, Nelson and Nelson (2002).

### **3.5.2 Discussion of the Final Questionnaire**

#### **3.5.2.1 Section A**

Section A consisted of a table that required the demographics of the participant, such as age, gender, race and occupation. The participants were also required to state the area of complaint; if they were a new patient; if this was the first follow-up visit or if they had had numerous follow-up treatments; the year of the student they were seeing (fifth or sixth); their primary income; and if they had medical aid.

#### **3.5.2.2 Section B**

Section B involved answering questions used to determine the patients' satisfaction at the DUT CDC. The questions were categorised making it simple and efficient to answer.

The scales used were as follows:

- A. Tangibles - consisted of nine questions.
- B. Reception staff - six questions were developed to determine satisfaction with reception staff.
- C. Chiropractic student - consisted of fifteen questions.
- D. Quality of care - seven questions were used to determine quality of care.
- E. Finance - five questions were used to determine satisfaction with the financial aspect.
- F. Overall satisfaction - this component consisted of six questions.

At the end of the questionnaire, there was space given for patients to write down any additional comments they may have.

### **3.6 Research Procedure, Ethical Consideration and Data Analysis**

#### **3.6.1 Research Procedure**

Patients who attended the DUT CDC between the 22<sup>nd</sup> of June and the 4<sup>th</sup> of September 2020 were informed about the research study at the reception desk by the reception staff. Patients who were interested agreed to participate and who were within the inclusion criteria were handed a letter of information (Appendix E1/E2)

and an informed consent form (F1/F2) by the reception staff. The participant was required to read and understand the letter of information as well as read, understand and sign the consent form. The patient was then handed a questionnaire (Appendix G). The patient was given time after their consultation to complete the questionnaire. Once completed, the informed consent and questionnaire were placed into a file and due to the paperwork quarantine process, locked in an office room for 48 hours, as part of COVID-19 protocols.

The questionnaire was anonymous as it did not require the patient's name. After quarantine, the informed consent and questionnaire were placed in separate collection boxes by the DUT CDC administrator for the researcher to collect. Participation was voluntary without any coercion from the reception staff or researcher. If the participants lacked understanding or had questions about any aspect of the research study, the researcher was present at the DUT CDC to assist.

### **3.6.2 Ethical Consideration**

- Autonomy

Prior to participation in the study, all participants received a letter of information explaining the study. The questionnaires were kept separate from the informed consent forms to ensure the patients remained anonymous. All documentation was kept in secure locked boxes that were only accessed by the researcher. All data analysed and obtained from the study will be kept securely at the DUT Chiropractic Department for a period of five years and will be shredded thereafter.

- Beneficence

The researcher ensured that participants' identities were protected. The benefit from the study was that if patients are experiencing dissatisfaction, the DUT CDC can address the factors causing it and deliver a better service to patients.

- Non-maleficence

Patients were not harmed during the study; the questionnaire was considered to be of low risk.

- Justice

Participation in the study was completely voluntary and if any participant wished to withdraw from the study at any given time, they were allowed to do so. There was no discrimination towards participants.

- Prejudice

There was no prejudice during the study. Only patients who were 18 years or older were approached to participate in the study.

### **3.6.3 Data Analysis**

The data from the questionnaires were entered into a password protected Microsoft Excel spreadsheet and then imported into IBM SPSS version 27 for analysis. Descriptive analysis was done using mean, standard deviation and the range for continuous, normally distributed variables, and median and inter-quartile range for non-normal count variables. Categorical variables were summarised using frequency and percentage.

The scoring of the satisfaction questionnaire, items clustering within six domains specified on the questionnaire, was checked for internal consistency using Cronbach's alpha.

The domain scores were constructed by averaging the item scores within a domain. The item scores were scored with strongly agree as 1 and strongly disagree as 5. Therefore, the lower the score, the higher the level of agreement with the items in the score, and therefore the "better" or more positive the score. Higher scores were indicative of poor levels of satisfaction, while lower scores indicated higher levels of satisfaction.

An overall score was compiled from an average of all the six domain scores, giving equal weighting to each of the six domains. As with the individual domain score, the lower the overall score, the higher the level of satisfaction.

Any associations between demographics and the overall score were tested using non parametric tests, since overall score was not normally distributed. For categorical variables with two groups (e.g. gender), the Mann Whitney test was used. For categorical variables with more than two groups, e.g. primary source of income, the Kruskal-Wallis test was used. For continuous or discrete numerical variables, such as age of patient and number of follow-up visits, Spearman's rank correlation was used. A  $p$ -value  $<0.05$  indicated statistical significance (Esterhuizen 2020)



# CHAPTER FOUR

## RESULTS

### 4.1 Introduction

This chapter consists of the results obtained from the statistical analysis of the data collected from the study.

### 4.2 Sample Size and Response Rate

The required sample size for the study was 149, and the data from those participants who fulfilled the inclusion and exclusion criteria were analysed. A total of 153 questionnaires were handed out, but three questionnaires had to be excluded. Out of the three that were excluded, one failed to meet the inclusion criteria and two were a part of the exclusion criteria. The study included a total of 150 participants, giving the study a 100% response rate of the required sample size.

### 4.3 Results

IBM SPSS version 27 was used for analysis. Descriptive analysis was done using mean, standard deviation and range for continuous normally distributed variables, and median and inter-quartile range for non-normal count variables. Categorical variables were summarised using frequency and percentage. The scoring of the satisfaction questionnaire, items clustering within six domains specified on the questionnaire, was checked for internal consistency using Cronbach's alpha.

The domain scores were constructed by averaging the item scores within a domain. The item scores were scored with strongly agree as 1 and strongly disagree as 5 and therefore the lower the score, the higher the level of agreement with the items in the score and, therefore, the "better" or more positive the score. Higher scores were, therefore, indicative of poor levels of satisfaction, while lower scores indicated higher levels of satisfaction.

An overall score was compiled from an average of all the six domain scores, giving equal weighting to each of the six domains. As with the individual domain score, the lower the overall score, the higher the level of satisfaction (Esterhuizen 2020).

### 4.3.1 Patient Demographics

#### 4.3.1.1 Age

The mean age of the participants was 35.4 years old, with a standard deviation of 11 years and a range from 19 years to 65 years old (**Table 4.1**).

**Table 4.1 Age**

	Mean	Standard Deviation	Minimum	Maximum
Age in years	35.4	11.0	19	65

#### 4.3.1.2 Gender

The study consisted of 63 (42.0%) female participants and 87 (58.0%) male participants (**Table 4.2**).

**Table 4.2 Gender**

Gender	Count	Column N (%)
Female	63	42.0%
Male	87	58.0%

#### 4.3.1.3 Ethnicity

The participants were of various ethnic groups. The results show that 51 (34.0%) were Black, 12 (8.0%) were Coloured, 34 (22.7%) were Indian, 52 (34.7%) were White and 1 (0.7) answered Other particularly stating Malay (**Table 4.3**).

**Table 4.3 Ethnicity**

Ethnicity	Count	Column N (%)
Black	51	34.0%
Coloured	12	8.0%
Indian	34	22.7%
White	52	34.7%
Other	1	0.7%

**4.3.1.4 Occupation**

The participants of the study had various occupations which are displayed in **Table 4.4**.

**Table 4.4 Occupation**

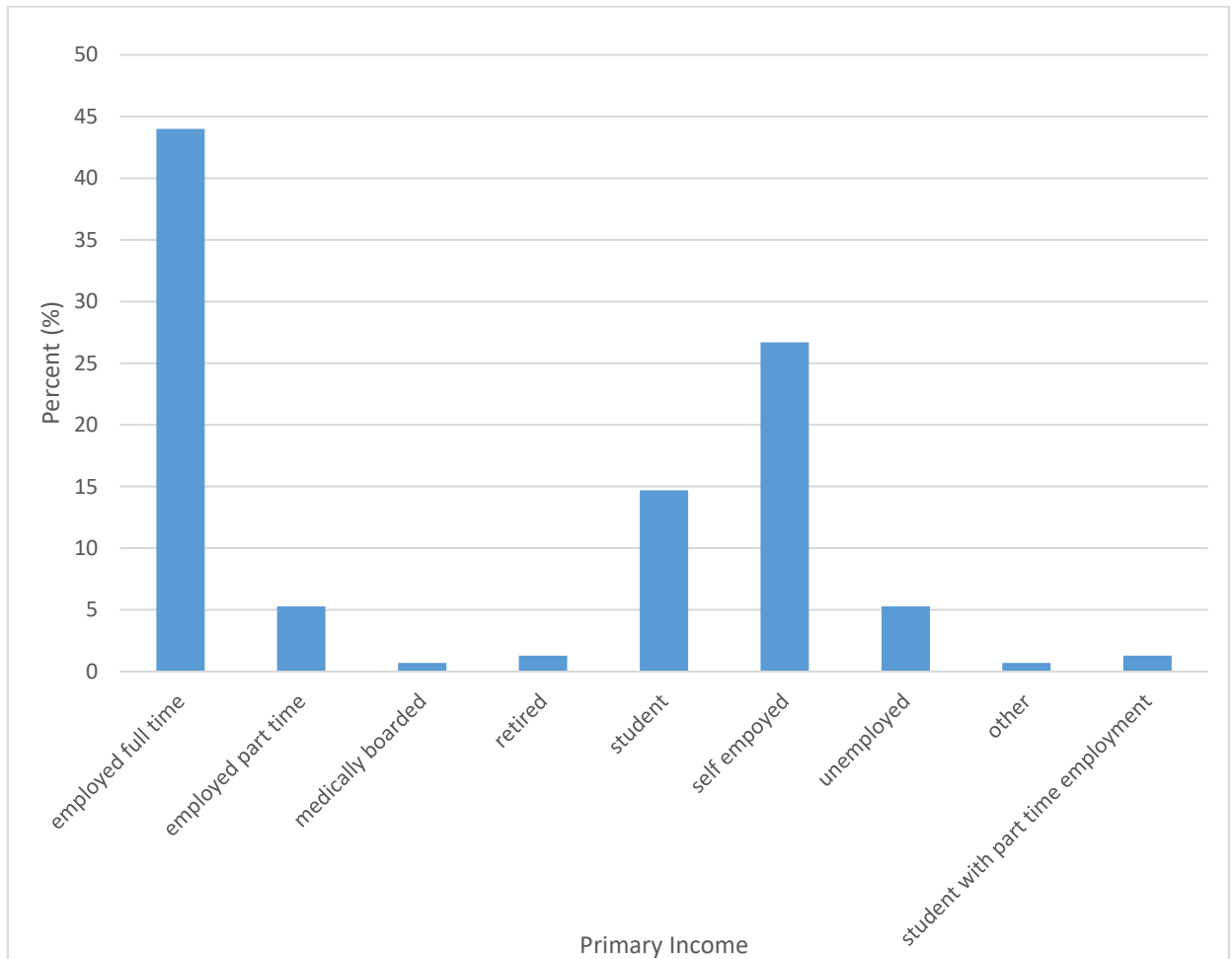
Occupation	Count	Column N (%)
Accounts assistant	1	0.7%
Admin	4	2.7%
Admin clerk	2	1.3%
Artist	1	0.7%
Auditor	1	0.7%
Automotive engineer	1	0.7%
Book keeper	1	0.7%
Business advisor	1	0.7%
Business owner	1	0.7%
Businesswoman	2	1.3%
Businessman	2	1.3%
Cashier	1	0.7%
Chartered accountant	1	0.7%
Chef	2	1.3%
CNC machinist	1	0.7%
Consultant	2	1.3%
Contractor	1	0.7%
Coordinator	1	0.7%
Dancer	1	0.7%
Design coordinator	1	0.7%
Designer	1	0.7%
Dive instructor	1	0.7%
Driver	1	0.7%
Educator	1	0.7%
Electrician	2	1.3%
Fin advisor	1	0.7%
Finance manager	1	0.7%
Financial manager	1	0.7%
Fire fighter	2	1.3%
Freelancer	1	0.7%
Home executive	1	0.7%
Horticulturist	1	0.7%
House wife	1	0.7%
Hse practitioner	1	0.7%
I.T.	1	0.7%
I.T. (software engineer)	1	0.7%

Industrial engineer	1	0.7%
Intermediate life support paramedic	1	0.7%
Kitchen designer	1	0.7%
Life coach	1	0.7%
Lighting technician	1	0.7%
Logistics manager	1	0.7%
Maintenance manager	1	0.7%
Maintenance	1	0.7%
Makeup artist	1	0.7%
Manager	3	2.0%
Marine engineer	1	0.7%
Medical agent	1	0.7%
Metro police	1	0.7%
None	1	0.7%
Occupational hygienist	1	0.7%
Operation coordinator	1	0.7%
Own businesses	1	0.7%
Pastry chef	1	0.7%
Pest control manager	1	0.7%
Photographer	1	0.7%
Police officer	1	0.7%
PR and marketing	1	0.7%
Press captain	1	0.7%
Product consultant	1	0.7%
Professional dancer	1	0.7%
Provincial manager	1	0.7%
Radiographer	1	0.7%
Receptionist	1	0.7%
Regional manager	2	1.3%
Residential sales agent	1	0.7%
Retired	2	1.3%
Rugby player	1	0.7%
Sales	5	3.3%
Sales manager	3	2.0%
Sales rep	2	1.3%
Sales-internal	1	0.7%
Seafarer	1	0.7%
Self employed	15	10.0%
Self-employed/sales	1	0.7%
Sign language interpreter	1	0.7%
Site supervisor	1	0.7%
Solar power technician	1	0.7%
Sports coach/personal trainer	1	0.7%
Stay at home mum	1	0.7%
Student	21	14.0%
Student athlete	1	0.7%
Summons officer	1	0.7%
System manager clothing	1	0.7%
Taxation student	1	0.7%
Teacher	1	0.7%
Technician	2	1.3%
Technologist	1	0.7%
Town planner	1	0.7%
Unemployed	5	3.3%

#### 4.3.1.5 Primary Income

The results of the participants' income status revealed 66 (44%) of the participants were employed full-time, 8 (5.3%) were employed part-time, 1 (0.7%) was medically boarded, 22 (14.7%) were students, 40 (26.7%) were self-employed, 8 (5.3) were

unemployed, 1 (0.7%) stated other, particularly stating supported by spouse, and 2 (1.3) were students with part-time employment (**Figure 2.1**).



**Figure 4.1 Primary income graph**

#### 4.3.1.5 Type of Visit

The participants of the study consisted of 72 (48.0) new patients and 78 (52.0%) follow-up patients (**Table 4.5**).

**Table 4.5 Type of visit**

	Number	Column N (%)
New patient	72	48.0
Follow-up	78	52.0

The median number of follow-up visits in the sample was 1, although participants had up to 17 follow up visits, but it was rare to have more than 2 follow up visits (Figure 4.2).

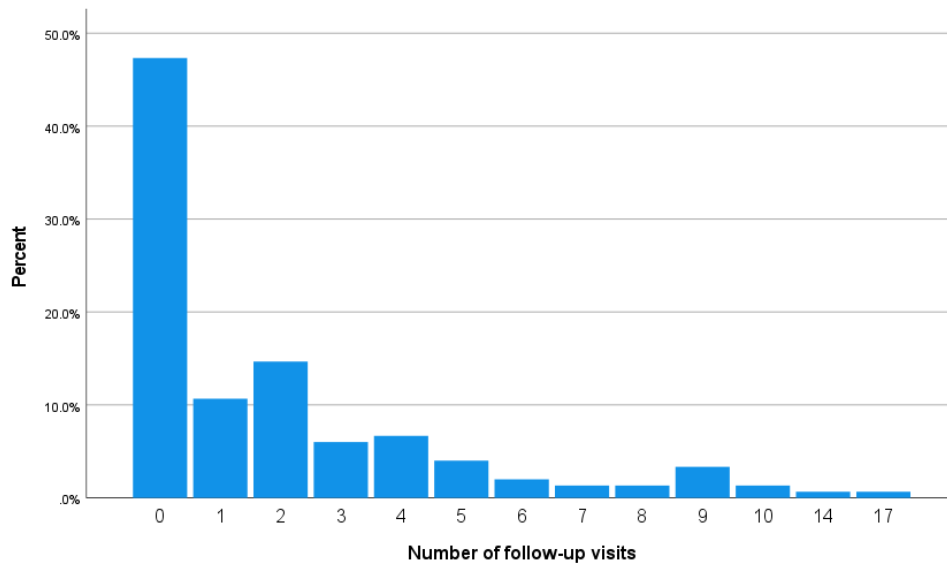


Figure 4.2 Number of follow-up graph

#### 4.3.1.6 Study Year of the Treating Student

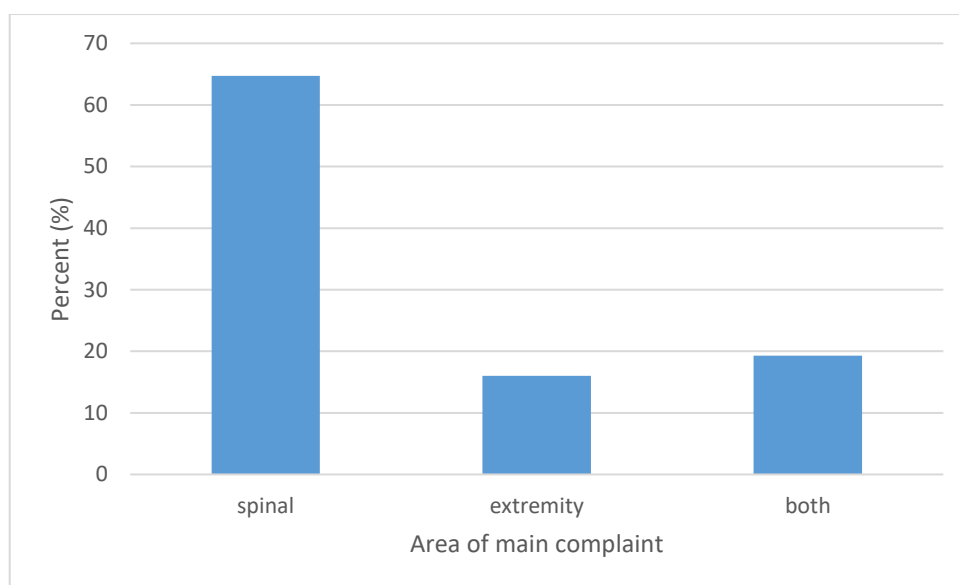
Patients at the DUT CDC are either treated by a fifth or sixth year Master’s Degree of Chiropractic student, depending on the time the patient booked an appointment and the region being treated. Within the study sample, 48 (32.0%) participants were treated by a fifth year student and 102 (68.0%) were treated by a sixth year student (Table 4.6).

Table 4.6 Study year of the treating student

Study year of the treating student	Number of participants	Column N (%)
5 <sup>th</sup> year	48	32.0%
6 <sup>th</sup> year	102	68.0%

### 4.3.1.7 Area of Main Complaint

Patients attending the DUT CDC either came in for complaints relating to the spine, extremities or both: 97 (64.7%) of the participants had spinal complaints, 24 (16.0%) had extremity complaints and 29 (19.3%) had both (**Figure 4.3**).



**Figure 4.3 Area of main complaint graph**

### 4.3.1.8 Medical Aid

Patients presenting to the DUT CDC are required to pay for treatment by cash or card. Those with medical aid receive a statement at the end of the month which they can use to claim if their medical aid covers chiropractic treatment. Among the participants, 72 (48.7%) had medical aid but 77 (51.3%) did not have medical aid (**Table 4.7**).

**Table 4.7 Medical aid**

Medical Aid	Number	Column N (%)
Yes	72	48.7%
No	77	51.3%

## 4.3.2 Level of Satisfaction that Patients Experienced at the DUT CDC

### 4.3.2.1 Response to Individual Items

The questionnaire comprised of 46 questions that were clustered into six domains, which were tangibles, reception staff, chiropractic student, quality of care, finance

and overall satisfaction. **Table 4.8** contains the responses to the individual questions.

**Table 4.8 Response to individual satisfaction questions**

	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%	n	%
The clinic facilities are visually appealing.	93	62.0%	47	31.3%	9	6.0%	0	0.0%	1	0.7%
The waiting area has enough seating.	104	69.3%	42	28.0%	2	1.3%	1	0.7%	1	0.7%
There is adequate parking.	89	59.3%	44	29.3%	11	7.3%	5	3.3%	1	0.7%
The clinic hours of operation are suitable.	94	62.7%	46	30.7%	7	4.7%	1	0.7%	2	1.3%
The clinic met my hygiene expectations.	113	75.3%	36	24.0%	0	0.0%	0	0.0%	1	0.7%
The clinic has facilities for disabled patients.	90	60.0%	40	26.7%	19	12.7%	0	0.0%	1	0.7%
The waiting area at the clinic is comfortable.	95	63.3%	46	30.7%	7	4.7%	1	0.7%	1	0.7%
The clinic has adequate security.	100	66.7%	42	28.0%	7	4.7%	0	0.0%	1	0.7%
The clinic has appropriate toilet facilities.	78	52.0%	46	30.7%	22	14.7%	3	2.0%	1	0.7%
The reception staff are friendly and courteous.	123	82.0%	24	16.0%	2	1.3%	0	0.0%	1	0.7%
The reception staff are helpful in making an appointment over the phone.	127	84.7%	19	12.7%	2	1.3%	1	0.7%	1	0.7%
The reception staff attend to me promptly.	125	83.3%	22	14.7%	1	0.7%	1	0.7%	1	0.7%
The reception staff treat me with dignity and respect.	132	88.0%	16	10.7%	1	0.7%	0	0.0%	1	0.7%
The clinic staff inform me of potential delays in my appointment.	102	68.0%	29	19.3%	18	12.0%	0	0.0%	1	0.7%
The reception staff explained to me the possible time duration for my consultation.	114	76.0%	26	17.3%	8	5.3%	0	0.0%	2	1.3%
The student is polite.	144	96.0%	6	4.0%	0	0.0%	0	0.0%	0	0.0%
The student makes me feel at ease.	144	96.0%	6	4.0%	0	0.0%	0	0.0%	0	0.0%
The student is attentive.	145	96.7%	5	3.3%	0	0.0%	0	0.0%	0	0.0%
The student is thorough in the examination.	143	95.3%	7	4.7%	0	0.0%	0	0.0%	0	0.0%
The student explained my condition.	137	91.3%	12	8.0%	1	0.7%	0	0.0%	0	0.0%
The student explained my treatment plan.	136	90.7%	13	8.7%	1	0.7%	0	0.0%	0	0.0%
The student involves me in the decisions about my treatment and rehabilitation or exercise programme.	137	91.3%	12	8.0%	1	0.7%	0	0.0%	0	0.0%
The student gives me advise on exercise and nutrition.	124	82.7%	19	12.7%	7	4.7%	0	0.0%	0	0.0%
The student gives me advise on how to prevent health problems from recurring.	124	82.7%	16	10.7%	10	6.7%	0	0.0%	0	0.0%
The student is dressed neatly and professionally.	138	93.2%	10	6.8%	0	0.0%	0	0.0%	0	0.0%



The student is punctual.	141	94.0%	9	6.0%	0	0.0%	0	0.0%	0	0.0%
The student made me feel comfortable during the assessment.	142	94.7%	8	5.3%	0	0.0%	0	0.0%	0	0.0%
The student spent sufficient time with me during my treatment session.	139	92.7%	11	7.3%	0	0.0%	0	0.0%	0	0.0%
I prefer a female student treating me.	61	40.7%	6	4.0%	78	52.0%	5	3.3%	0	0.0%
I prefer a male student treating me.	21	14.0%	6	4.0%	98	65.3%	13	8.7%	12	8.0%
The student is knowledgeable.	135	90.0%	12	8.0%	3	2.0%	0	0.0%	0	0.0%
The student is confident.	135	90.0%	13	8.7%	2	1.3%	0	0.0%	0	0.0%
The care I received was of a high standard.	133	88.7%	16	10.7%	1	0.7%	0	0.0%	0	0.0%
Improvements in my condition took longer than I expected.	30	20.0%	12	8.0%	73	48.7%	24	16.0%	11	7.3%
The quality of care I received met my expectations.	120	80.0%	26	17.3%	4	2.7%	0	0.0%	0	0.0%
The student ensured that I made an informed decision when agreeing to my treatment.	114	76.0%	29	19.3%	7	4.7%	0	0.0%	0	0.0%
The student made me feel important at all times.	123	82.0%	21	14.0%	6	4.0%	0	0.0%	0	0.0%
The medical attention I received is affordable.	133	88.7%	16	10.7%	1	0.7%	0	0.0%	0	0.0%
Sometimes I do not seek treatment at the DUT CDC because I cannot afford the consultation fees.	10	6.7%	7	4.7%	26	17.3%	45	30.0%	62	41.3%
The consultation fees are reasonable.	118	78.7%	27	18.0%	4	2.7%	0	0.0%	1	0.7%
My medical aid/insurance provides full coverage for the cost of my care.	13	8.7%	10	6.7%	58	38.7%	30	20.0%	39	26.0%
A fee reduction option was offered to me as I fulfilled the criteria for it.	20	13.3%	12	8.0%	59	39.3%	40	26.7%	19	12.7%
The health care issue that brought me to the DUT CDC was addressed to my satisfaction.	114	76.0%	33	22.0%	3	2.0%	0	0.0%	0	0.0%
I would recommend this student to a friend or relative.	133	88.7%	16	10.7%	1	0.7%	0	0.0%	0	0.0%
Overall, I was pleased with the service I received from the DUT CDC.	132	88.0%	17	11.3%	0	0.0%	1	0.7%	0	0.0%
The student answered all of my questions.	133	88.7%	16	10.7%	1	0.7%	0	0.0%	0	0.0%
I would recommend chiropractic treatment and the DUT CDC to a friend or relative.	139	92.7%	8	5.3%	3	2.0%	0	0.0%	0	0.0%
I felt that the student did everything possible to help me.	135	90.0%	14	9.3%	1	0.7%	0	0.0%	0	0.0%

### 4.3.2.2 Domain Scores

Each domain was evaluated using Cronbach's alpha, which is shown in **Table 4.9**.

**Table 4.9 Domain scores**

Domain name	Items	Cronbach's alpha
Tangibles	<p><b>9 items:</b>            The clinic facilities are visually appealing.            The waiting area has enough seating.            There is adequate parking.            The clinic hours of operation are suitable.            The clinic met my hygiene expectations.            The clinic has facilities for disabled patients.            The waiting area at the clinic is comfortable.            The clinic has adequate security.            The clinic has appropriate toilet facilities.</p>	0.913
Reception staff	<p><b>6 items:</b>            The reception staff are friendly and courteous.            The reception staff are helpful in making an appointment over the phone.            The reception staff attend to me promptly.            The reception staff treat me with dignity and respect.            The clinic staff inform me of potential delays in my appointment.            The reception staff explained to me the possible time duration for my consultation.</p>	0.890
Chiropractic student	<p><b>13 items:</b>            The student is polite.            The student makes me feel at ease.            The student is attentive.            The student is thorough in the examination.            The student explained my condition.            The student explained my treatment plan.            The student involves me in the decisions about my treatment and rehabilitation or exercise programme.            The student gives me advice on exercise and nutrition.            The student gives me advice on how to prevent health problems from recurring.            The student is dressed neatly and professionally.            The student is punctual.            The student made me feel comfortable during the assessment.            The student spent sufficient time with me during my treatment session.</p>	0.914
Quality of care	<p><b>7 items:</b>            The student is knowledgeable.            The student is confident.            The care I received was of a high standard.            Improvements in my condition took longer than I expected.            The quality of care I received met my expectations.</p>	0.695

	The student ensured that I made an informed decision when agreeing to my treatment. The student made me feel important at all times. <b>5 items:</b> The medical attention I received is affordable. Sometimes I do not seek treatment at the DUT CDC because I cannot afford the consultation fees.	
Finance	The consultation fees are reasonable. My medical aid/insurance provides full coverage for the cost of my care. A fee reduction option was offered to me as I fulfilled the criteria for it. <b>6 items:</b> The health care issue that brought me to the DUT CDC was addressed to my satisfaction. I would recommend this student to a friend or relative.	0.370
Overall satisfaction	Overall, I was pleased with the service that I received from the DUT CDC. The student answered all of my questions. I would recommend chiropractic treatment and the DUT CDC to a friend or relative. I felt that the student did everything possible to help me.	0.878

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#### 4.3.2.3 Overall Satisfaction Score

An overall score was calculated by averaging each of the six domain scores (**Table 4.10**). This method gave equal weighting to all of the six domains, and was not based on the number of items within a domain. Therefore, domains with fewer items had the same importance as domains with more items. The version of the overall score, which included the finance score, had a slightly lower alpha than the version that excluded the finance score. However, for completeness, it was decided to include the finance score.

**Table 4.10 Overall score**

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	<b>6 items:</b> Tangibles score. Reception staff score. Student score. Quality of care score. Finance score. Satisfaction score.	
Overall score		0.737

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The six domain scores and the overall score have been summarised in **Table 4.11**. The lower the score, the higher the level of satisfaction. Finance scores showed lower levels of satisfaction than the other domain scores, which ranged between 1 and 1.3, indicating very high levels of satisfaction. The finance score was on

average 2.6, which was between agree and neutral on the 5-point scale, indicating that there was a lower level of satisfaction with the financial aspects of the clinic. However, it should be borne in mind that there was low internal consistency between the items in the finance score so this scale proved to be unreliable. The overall score had an average of 1.44, which has also indicated high overall satisfaction.

**Table 4.11 Summary of domain scores**

	Median	Percentile 25	Percentile 75
Tangibles score	1.22	1.00	1.78
Reception staff score	1.00	1.00	1.33
Student score	1.00	1.00	1.00
Quality of care score	1.29	1.29	1.57
Finance score	2.60	2.40	3.00
Satisfaction score	1.00	1.00	1.17
Overall score	1.44	1.33	1.63

There were two items on the questionnaire which were excluded from the scores, which were items 14 and 15 of the chiropractic student scale. It can be seen that most respondents were neutral about both items overall, when evaluated against the patient's gender. The results of gender are shown in **Table 4.12**. Females preferred females treating them, while males were neutral about females treating them ( $p < 0.001$ ) (**Table 4.13**).

**Table 4.12 Cross tabulation of participants preferring to be treated by a female student**

		Crosstab					
		I prefer a female student treating me.					
		Strongly agree	Agree	Neutral	Disagree	Total	
Gender	Female	Count	39	4	18	2	63
		% within Gender	61.9%	6.3%	28.6%	3.2%	100.0%
	Male	Count	22	2	60	3	87
		% within Gender	25.3%	2.3%	69.0%	3.4%	100.0%
Total	Count	61	6	78	5	150	
	% within Gender	40.7%	4.0%	52.0%	3.3%	100.0%	

**Table 4.13 Chi-squared test of participants preferring to be treated by a female student**

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25.020 <sup>a</sup>	3	<0.001
N of Valid Cases	150		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.10.

Females tended to be neutral about males treating them, although a relatively high proportion strongly disagreed to preferring males to treat them (**Table 4.14**). Males were mostly neutral about males treating them ( $p=0.001$ ) (**Table 4.15**).

**Table 4.14 Cross tabulation of participants preferring to be treated by a male student**

		<b>Crosstab</b>						
		<b>I prefer a male student treating me.</b>					<b>Total</b>	
		strongly agree	agree	neutral	disagree	strongly disagree		
Gender	Female	Count	6	3	34	9	11	63
		% within Gender	9.5%	4.8%	54.0%	14.3%	17.5%	100.0%
	Male	Count	15	3	64	4	1	87
		% within Gender	17.2%	3.4%	73.6%	4.6%	1.1%	100.0%
Total	Count	21	6	98	13	12	150	
	% within Gender	14.0%	4.0%	65.3%	8.7%	8.0%	100.0%	

**Table 4.15 Chi-squared test of preferring to be treated by a male student**

<b>Chi-Square Tests</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.968 <sup>a</sup>	4	.001
a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.52.			

### **4.3.3 Relationship Between Patient Demographics (Age, Gender, Ethnicity and Occupation) and Level of Patient Satisfaction**

There were no differences between the medians of any of the groups in **Table 4.16** and, therefore, none of the patient demographics or treatment variables affected their satisfaction with the care they received. There was a slight trend for follow-up patients to be less satisfied than new patients but the *p*-value was 0.08.

**Table 4.16 Relationship between patient demographics and patient satisfaction**

		Overall score			p-value
		Median	Percentile 25	Percentile 75	
Gender	Female	1.45	1.35	1.62	0.635
	Male	1.44	1.31	1.64	
Race	Black	1.45	1.34	1.66	0.479
	Coloured	1.47	1.37	1.66	
	Indian	1.38	1.30	1.60	
New patient or follow-up	White	1.45	1.34	1.62	0.082
	Other	1.28	1.28	1.28	
Area of main complaint	New patient	1.41	1.30	1.61	0.513
	Follow up visit	1.46	1.36	1.66	
	Spinal	1.44	1.33	1.62	
Primary income	Extremity	1.40	1.31	1.66	0.445
	Both	1.47	1.42	1.60	
	Employed full time	1.44	1.34	1.61	
	Employed part time	1.47	1.39	1.68	
	Medically boarded	1.57	1.57	1.57	
	Retired	1.63	1.60	1.66	
	Student	1.45	1.31	1.69	
	Self employed	1.41	1.30	1.60	
Medical aid	Unemployed	1.47	1.33	1.55	0.285
	Other	1.40	1.40	1.40	
	Student with part time employment	1.75	1.67	1.83	
	Yes	1.45	1.35	1.65	
	No	1.42	1.31	1.59	

There was no correlation between a patients' age and the overall score

(rho = -0.143, p=0.080) or between number of follow-up visits and overall score

(rho = 0.109, p=0.186) (**Table 4.17**).

**Table 4.17 Correlation between patients' age and satisfaction**

			<b>Overall score</b>
Spearman's rho	Age in years	Correlation Coefficient	-.143
		Sig. (2-tailed)	.080
		N	150
	Number of follow-up visits	Correlation Coefficient	.109
		Sig. (2-tailed)	.186
		N	150

## **4.4 Patients' Comments**

At the end of the questionnaire, patients were given an option to add any additional comments about their experience at the DUT CDC. There were more positive comments than negative comments.

### **4.4.1 Positive Comments**

The following are some of the positive comments that were received:

- “Great service, will highly recommend the student.”
- “Student is very knowledgeable and I was very happy with the treatment received.”
- “Student is professional, informative and thorough! An excellent experience.”
- “I was highly impressed with both the student and the facility. I would gladly recommend DUT Chiropractic treatment to my friends and family. Staff is doing an amazing job.”
- “The service is excellent, equipment in good condition and clean, hygiene is 100%, cost is fair. Yes I will recommend a friend to DUT.”



#### **4.4.2 Negative Comments**

The following are some of the negative comments that were received:

- “Less the amount of time spent on paperwork.”
- “Too much time spent on paperwork, half the times goes by student doing paperwork.”
- “Long wait for clinician, otherwise good treatment.”
- “Hours not accessible to working individuals that are stuck behind a desk. Especially during Covid-19, we are not allowed time off.”

#### **4.5 Conclusion**

Patient satisfaction with all the domains were high, except for finance. Overall satisfaction was not related to any patient demographic or treatment factor.

# CHAPTER FIVE

## DISCUSSION

### 5.1 Introduction

This chapter will include a discussion of the study's results in comparison to similar studies. The discussion includes the sample size and response rate, patient demographics, the level of satisfaction patients experience at the DUT CDC and the relationship between patient demographics and the level of patient satisfaction.

### 5.2 Sample Size and Response Rate

The recommended sample size of the study was 149. The data of participants who fulfilled the inclusion and exclusion criteria were analysed. A total of 153 questionnaires were handed out, but three had to be excluded. Out of the three that were excluded, one failed to meet the inclusion criteria and two were part of the exclusion criteria. The study, therefore, included a total of 150 participants, giving the study a 100% response rate. The initial sample size of the study was 213 but it was reduced to 149 due to the 2020 COVID-19 pandemic. Patient numbers at the DUT CDC decreased and there was a time constraint for the completion of the study.

The sample size of this study was smaller than that of the study carried out by Thoreson (2006). Thoreson (2006) conducted a patient satisfaction study at the old DUT CDC, prior to the renovations and name change from DIT CDC to DUT CDC.

A patient satisfaction study carried out at the DUT chiropractic satellite clinics had a smaller sample size than this study, of 69 participants (Rieder 2016). This could be due to the satellite clinics having a smaller number of patients and the sample size was only based on the clinic's active files.

MacPherson *et al.* (2015) carried out research to evaluate patient's experience and expectation with chiropractic care in the United Kingdom, and the sample size was much larger than this study, with 544 participants but, in that study, questionnaires were sent to 70 chiropractic practices to be administered to their patients.

## 5.3 Patient Demographics

The association between patient demographics and patient satisfaction was measured using the overall satisfaction score, and for categorical variables the Mann Whitney and Kruskal Wallis tests were used. With regards to the numerical variables, the Spearman's rank correlation test was used. A  $p$ -value  $< 0.05$  indicated statistical significance.

### 5.3.1 Age

The age of the participants ranged from 19 to 65 years old; the mean age was 35.4 years old, with a standard deviation of 11 years. The results revealed that there was no correlation between the patients' age and their overall satisfaction with the DUT CDC Spearman's  $\rho = -0.143$ ,  $p=0.080$ . The findings of this study have not correlated with Ibraheem, Ibraheem and Bekibele (2014), who stated that older individuals were more satisfied with health care received in comparison to younger individuals.

Afzal *et al.* (2014) and Naseer *et al.* (2012) attributed that the reason for older individuals being more satisfied with health care is due to their low expectations at their old age, while Schoenfelder *et al.* (2011) stated that older individuals are more satisfied with health care as a result of being treated more gently due to their advanced age. However, the findings of this study revealed no association between age and patient satisfaction. This correlated with the results of Boudreux (2000) and Thoreson (2006), who found no relationship between patient age and satisfaction but does not correlate with the findings of Plitcha *et al.* (2018), who found older patients gave their physician higher ratings when compared to younger patients. Moret *et al.* (2007) found that patient age has a linear and positive correlation with satisfaction before the age of 65 years but a negative correlation after that age.

### 5.3.2 Gender

The study found that there was no correlation between gender and overall patient satisfaction. The median for females was 1.45 and the median for males was 1.44, with a  $p$ -value of 0.635. This finding correlated with Afzal *et al.* (2014), who found that females were comparatively more satisfied than males but the difference was not statistically significant. The study conducted by Ibraheem, Ibraheem and Bekibele (2014) has not correlated with these results, as they found females to be

more satisfied with health care in comparison to males. However, the above findings have not compared with Plitcha *et al.* (2018), who found male patients rate their physician with higher scores when compared to female patients. Thoresen (2006) found that females were less satisfied with the financial aspect at the DIT CDC when compared to their male counterparts.

### **5.3.3 Ethnicity**

A study carried out within South Africa by Jacobsen and Hasumi (2014), who conducted a weighted logistic regression analysis of the data collected from a national general household survey, administered by the South African Department of Health, found that there was a significant difference in health care satisfaction among the different ethnic groups, which was due to access, or lack of access, to private and public facilities.

This patient satisfaction study carried out at the DUT CDC, which is a teaching-based clinic, found that there is no correlation between a patient's race and their level of overall satisfaction. The median of the overall satisfaction score was 1.45 within Black participants, 1.47 within the Coloured participants, 1.38 within the Indian participants, 1.45 within the White participants and 1.28 with those participants who stated Other Race, with an overall  $p$ -value of 0.479.

This has not correlated with the study by Myburgh *et al.* (2005), who found that ethnicity and socio-economic status were significant predictors in satisfaction with health care received, as the results of their study revealed that White and high socio-economic respondents were 1.5 times more likely to rate health service as excellent when compared to Black and low socio-economic respondents.

### **5.3.4 Income**

Thind *et al.* (2010) stated that having a financial burden causes a negative impact on a patient's well-being and quality of care and, hence, those with a low income are found to be less satisfied. Kajala and Myshketa (2016) found that the poor were shown to be more satisfied with health care and treatment due to having less expectations than the rich. This study has found that there is no correlation between the patient's primary income and their overall satisfaction, as the  $p$ -value of all the primary income options were 0.445. Hence, it differs from Kalaja and Myshketa (2016).

### **5.3.5 Occupation**

The occupations of the participants had a wide range and therefore a correlation within this category could not be established. The patients' socioeconomic indicators were used, which was their primary income and whether they had medical aid or not. Having medical aid or not had no effect on the satisfaction with the care received at the DUT CDC. Those with medical aid had a median of 1.45 when assessed against overall satisfaction and those without medical had a median of 1.42, giving a *p*-value of 0.285.

Williems *et al.* (2005) and Verlinde *et al.* (2015) stated that individuals with high ranked occupations become a part of high social circles and those that are unemployed or have menial jobs are not part of these circles. Patients from high social circles tend to communicate better, which places those from lower income jobs at a disadvantage because the doctor may have a misconception in relation to their poor communication and interpret it as a lowered desire to know and be involved in their health care. Afzal *et al.* (2014) and Charokar and Jain (2015) both found that there was no correlation between patient occupation and level of satisfaction with health care.

## **5.4 Patient Satisfaction**

The questionnaire used to evaluate patient satisfaction at the DUT CDC comprised of 48 questions, that were separated into six domains. The domains were tangibles which included questions regarding the visual appeal of the facility, seating area, parking, hours of operation, hygiene, security, toilet facilities and disability facilities; reception staff, which consisted of questions regarding if they were polite and friendly, helpful in making an appointment and if they explained duration of the consultation and possible delays; the chiropractic treating student, which included questions regarding the student's conduct, whether they were polite, neat, punctual, attentive, thorough in their examination, explained the condition and treatment, gave advice, made the patient feel comfortable and spent sufficient time with the patient and whether they preferred being treated by a male or female student; the quality of care had questions on whether the student was knowledgeable, confident, the standard of care received, improvements in condition, whether expectations were

being met, making informed decisions and if the student made the patient feel important.

The finance domain consisted of questions regarding feasibility of the consultation fees, whether patients do not seek treatment at the CDC at times due to not being able to afford it, whether their medical aid covers the consult and if they were offered a fee reduction.

The overall satisfaction comprised of questions pertaining to whether the patient felt their health issue was addressed to their satisfaction, if they would recommend the DUT CDC or student to a friend and family, if the student answered all their questions and if they felt the student did everything they could to help.

A score was calculated for each domain by averaging the various items' score within the domain. The items within each domain were scored strongly agree as 1, agree as 2, neutral as 3, disagree as 4 and strongly disagree as 5, hence the lower the score, the higher the level of satisfaction with the items within that domain. Using the six domains, an overall score was calculated by averaging all the domains, giving equal weighting to each domain. With regards to this score as well, the lower the score, the higher the level of satisfaction.

#### **5.4.1 Tangibles**

Aliman and Mohamad (2016) stated that tangibility is one of the strongest predictors of customer satisfaction and, therefore, health care providers need to assure that their facility and equipment are modern and visually appealing. The tangibility domain in this study had a Cronbach alpha score of 0.9, with a median of 1.22, revealing that patients were highly satisfied with it.

According to Qadri *et al.* (2012), access and availability influences patients' overall satisfaction, as they found 76% of their study population was dissatisfied with the hospital's operational times; however, with respect to this study, 62.7% of the participants strongly agreed that the operating times of the DUT CDC are suitable of which 30.7% agreed, 4.7% were neutral, 0.7% disagreed and 1.3% strongly disagreed.

#### **5.4.2 Reception Staff**

The reception staff domain had a Cronbach alpha score of 0.9, with a median of 1.00, indicating a high level of satisfaction with this aspect of the DUT CDC. This domain consisted of questions regarding making an appointment, being informed about the duration of the consult and whether staff informed them of possible delays. These questions are vital, as Taneja *et al.* (2014) stated that easy access to make an appointment is a part of patient convenience and convenience is a driving factor in patient satisfaction. This study found that the majority of the participants strongly agreed that the reception staff were helpful in making appointments and responded to them promptly. If the waiting time should exceed patients' expectation, patients require the provider to acknowledge the delay and reveal it as an unwanted event and hence it is important to be informed of possible delays. Al-Harajin, Al Subaie and Elzubair (2019) mentioned that waiting time negatively affects patient satisfaction, as a long wait time affects the utilisation of services by decreasing willingness to return.

#### **5.4.3 The Chiropractic Treating Student**

This domain included questions regarding the treating student and their approach to the consultation. The Cronbach alpha of this domain was 0.9 with a median of 1.00, which indicates a very high level of satisfaction within this domain. Consultation time has an effect on patient satisfaction. Lemon and Smith (2014) stated that a long consult duration has a direct and positive influence on patient satisfaction.

It has been observed that physicians who spend a longer duration with patients incorporate advice on lifestyle and health promoting activities (Azraii, Kamaruddin and Ariffin 2017). This domain included questions on whether the student spent sufficient time with the patient, as well as provided nutritional and exercise advice. The domain also included questions on whether the student involved the patient in the decision-making process of treatment. Peck (2011) mentioned that a patient-centred approach in health care consists of the patient's desires and expectations being incorporated into the decision-making process. The physician and patient contribute to all decisions made with respect to the patient's health.

The preference of being treated by a male or female student was removed from the domain and analysed separately: females preferred females treating them, whereas males were neutral about females treating them ( $p < 0.001$ ). Females tended to be neutral about males treating them, although a relatively high proportion strongly disagreed to preferring males to treat them, while males were mostly neutral about males treating them ( $p = 0.001$ ). This finding has correlated with Derose *et al.* (2001), who found that women who were treated by a female physician were more satisfied but physician gender did not influence men's satisfaction with health care.

#### **5.4.4 Quality of Care**

The Cronbach alpha score of this domain was 0.7, with a median of 1.29, which has indicated moderate levels of satisfaction. The reason for a Cronbach alpha score of  $< 0.8$  was due to a problematic item within the domain, which was the question on whether improvements in the patient's condition took longer than expected; this was due to the question being negatively phrased (Esterhuizen 2020).

The other questions within the domain consisted of whether the student was knowledgeable and confident. Stepurko *et al.* (2016) stated that the technical quality of care relates to provider competence and, hence, the questions on knowledge and confidence were assessed.

With respect to the outcome of treatment, Alacon-Ruiz, Heredia and Randon (2019) stated that the greater the patient satisfaction was, then the better the outcome of treatment. Even though this study revealed that the majority of the participants (48.7%) were neutral about improvements in their condition taking longer than expected, a patient commented "The student is good at what she does. My recovery took shorter period than I expected. I, in awe."

Chimed-Ochir (2012) mentioned that there is a link between patient satisfaction and the above mentioned factors but service quality is predominant. The quality of service offered affects the demand of treatment: a patient is six times more likely to return if they are satisfied with the service provided (Wellay *et al.* 2018). The study revealed that professionalism also contributes to patients returning, as a comment stated "Thank you for the professionalism, I will definitely return should there be a need to."



#### **5.4.5 Finance**

The finance domain had a Cronbach alpha of 0.4 and a median of 2.60, which has indicated a poor level of satisfaction for this domain, even though there were positive comments regarding finance. Patients commented: “Great facility and value for money”, “Cost is fair” and “Good use of time and money”.

Finance score was on average 2.6, which was between agree and neutral on the 5-point scale, which has indicated that there was a lower level of satisfaction with the financial aspects of the clinic. However, it should be borne in mind that there was low internal consistency between the items in the finance score so this scale is unreliable. This correlates with Thoresen’s (2006) findings.

Zarei *et al.* (2015) revealed that patient perception of service cost has a great effect on overall satisfaction. The cost spent on treatment needs to be seen as worth the while for the patient and, hence, they need to be satisfied in other aspects of the consultation as well (Kim *et al.* 2017).

#### **5.4.6 Overall Satisfaction**

The overall satisfaction domain had a Cronbach alpha score of 0.9 and a median of 1.00, which has revealed that patients had a high level of overall satisfaction at the DUT CDC. This domain included questions regarding if their condition was addressed to their satisfaction and if they were pleased, if they would recommend the DUT CDC and student to others and if they felt the student did everything possible to help them.

Plantanova *et al.* (2008) reported that satisfied patients described their doctors as physicians who genuinely showed interest in their well-being, who gave a clear description of their illness and its consequence, as well as gave the patients time to speak during the consultation. This study found that majority of the participants strongly agreed that the student explained their condition and treatment plan to them, made them feel comfortable during the assessment, spent sufficient time with them and made them feel important at all times.

Ofei-doodoo (2019) investigated overall satisfaction and treatment outcomes in primary care facilities and it was revealed that patient satisfaction with overall care and treatment outcomes are significantly related.

#### **5.4.7 Overall Satisfaction Score**

Prakash (2010) stated that measuring patient satisfaction is clinically relevant as it is an indicator of the quality of care being rendered and, hence, an overall satisfaction score had to be calculated to reveal whether patients were satisfied with their overall experience at the DUT CDC. The evaluation of patient satisfaction leads to better patient experience and then better treatment outcomes which benefits both the patient and the clinician (Peltzer 2009; Ofei-Dodoo 2019). In this case, it benefits the DUT CDC and the treating student.

The Cronbach alpha of the overall score was 0.7, with a median of 1.44, which has indicated a high level of overall satisfaction.

Hekkert *et al.* (2009) found that gender had no effect on overall satisfaction but age did play a role as it was observed that older patients expressed higher levels of overall satisfaction than younger patients. This study has correlated with the gender aspect but disagreed with the age component, as it was revealed age had no effect on satisfaction levels

#### **5.5 Patients' Comments**

Patients were highly pleased with the service they had received at the DUT CDC, as the majority were happy with the facility and the manner in which students that treated them, since there were comments of recommending the facility and students, as well as stating that they would return if the need arose.

With respect to the negative comments concerning the amount of paperwork done and time spent with the clinical instructor, as a teaching-based clinic, this is essential and patients are notified about the duration of the consultation upon making an appointment. The paperwork must be detailed as it ensures all valuable information is received from the patient and all necessary examinations are conducted. Time spent with the clinical instructor is crucial, as the discussion between the student and clinical instructor helps guide the student to the correct diagnosis and appropriate treatment plan, as well as to send for any special investigations, if required.

With regards to the operating times of the clinic, 62.7% of the participants strongly agreed and 30.7% agreed that the hours of operation were suitable. The students at the clinic can only consult with patients during working hours which is 08h00 to 18h00 from Monday to Friday, as they also have an academic component to complete.

## **5.6 Conclusion**

Patient satisfaction with all the domains investigated was high, except for finance. The overall satisfaction experienced at the DUT CDC was not related to any patient demographics or treatment outcome.

## CHAPTER SIX

### LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

#### 6.1 Introduction

This chapter presents the limitations and recommendations of the study and it concludes the study.

#### 6.2 Limitations

There were three limitations in this study, the first being the reduced sample size due to the 2020 Covid-19 pandemic and its effect on the number of patients attending the DUT CDC. The second has been the satisfaction question regarding the gender of the treating student, as it was a question of preference and, therefore, may not be a true reflection of satisfaction with the treatment based on the student's gender. The third limitation was the question regarding improvements in the patients' condition taking longer than expected since this was the only negatively phrased question which made it a problematic item within its domain; even with reverse coding, it did not bring the alpha of that domain to  $>0.8$ .

#### 6.3 Recommendations

The recommendations of this study are as follows:

- The questionnaire used in this study should be translated into isiZulu and tested for its reliability and validity.
- The questionnaire should include a 'not applicable' column, as per a suggestion from the patients' comments at the end of the questionnaire.
- A similar study should be carried out at the University of Johannesburg Chiropractic clinic as it is the only other teaching-based chiropractic clinic within South Africa.

## **6.4 Conclusion**

Patient satisfaction is achieved when a patient's experience meets their expectation. There are several factors that play a role in achieving patient satisfaction. The tangibles associated with the health care facility (the support staff and then the actual aspects of the consults from time spent with physician to the physician's attitude, communication and interest in the patient) all play an essential part in contributing to patient satisfaction.

Patient demographics have been observed to influence satisfaction in some studies but some show it has no significant association.

With regards to the aim and objectives of this study, the results revealed that the patients attending the DUT CDC are satisfied with their overall experience (1.44) but are not satisfied with the financial aspect (2.60).

The study also revealed that there is no correlation between age, gender, ethnicity and income of a patient and their satisfaction experienced at the DUT CDC.

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# APPENDICES

## Appendix A: Gatekeeper's Permission



## Appendix B: Permission from the Clinic Director

### MEMORANDUM

To : Prof Adam  
Chair: IREC

From : Dr Laura O'Connor  
Head of Department: Chiropractic

Dr Desiree Varatharajulu  
Clinic Director: Chiropractic Day Clinic: Chiropractic

Date : 24.02.2020

Re : Request for permission to use the Chiropractic Day Clinic for research purposes

---

Permission is hereby granted to:

**Ms Mary Ann Ruthnam (Student Number: 21401425)**

**Research title:** "Patient satisfaction at the Durban University of Technology Chiropractic Day Clinic using a pre-validated survey".

Ms Ruthnam, is requested to submit a copy of her FRC/IREC approved proposal along with proof of her M.Tech: Chiropractic registration to the Clinic Administrator/s before she starts with her research in order that any special procedures with regards to her research can be implemented prior to the commencement of her seeing patients.

Thank you for your time.





Kind regards

Dr L O'Connor  
Head of Department:  
Chiropractic



Dr Desiree Varatharajulu  
Clinic Director: Chiropractic Day Clinic:  
Chiropractic



Cc: Mrs Linda Twiggs: Chiropractic Day Clinic  
Dr D. Varatharajulu: Supervisor

## Appendix C: Permission to Use Questionnaire

←    

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Permission to use PSQ  Inbox 

**Mary Ann Ruthnam** 2019/08/28    
to drashmindhersingh ▾



Good day Dr Singh  
I trust you are well

I am currently a 6th year master's chiropractic student at the Durban University of Technology and my proposed master's study is to determine the level of patient satisfaction at the Durban University of Technology Chiropractic Day Clinic, in doing so I would like to use the patient satisfaction questionnaire (PSQ) that you have developed for the clinic.

I look forward to a favourable response.

Kind Regards  
Mary Ann Ruthnam

---



**ashmindher singh** 2019/08/28    
to me ▾

Good day Mary Ann Ruthnam

Yes, of course you can.

[Show quoted text](#)

---

**Mary Ann Ruthnam** 2019/08/28    
to ashmindher ▾

Thank you Dr Singh

Kind Regards  
Mary Ann Ruthnam

## Appendix D: IREC Approval



Institutional Research Ethics Committee  
Research and Postgraduate Support Directorate  
2<sup>nd</sup> Floor, Benwyn Court  
Gate 1, Steve Biko Campus  
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375  
Email: [lawshad@dut.ac.za](mailto:lawshad@dut.ac.za)  
[http://www.dut.ac.za/research/institutional\\_research\\_ethics](http://www.dut.ac.za/research/institutional_research_ethics)

[www.dut.ac.za](http://www.dut.ac.za)

19 March 2020

Ms M A Ruthnam  
17 Road 729  
Montford  
Chatsworth  
4092

Dear Ms Ruthnam

**Patient satisfaction at the Durban University of Technology Chiropractic Day Clinic  
using a pre-validated survey  
Ethical Clearance number IREC 174/19**

The Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letters.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

Professor J K Adam  
Chairperson: IREC





## Appendix E1: Letter of Information in English



### LETTER OF INFORMATION

Dear participant. I wish to welcome you to my research study and thank you for your co-operation.

**Title of the Research Study:** Patient satisfaction at the Durban University of Technology Chiropractic Day Clinic using a pre-validated survey

**Principal Investigator/s/researcher:** Mary Ann Ruthnam, B. Tech: Chiropractic

**Co-Investigator/s/supervisor/s:** Dr. Desiree Varatharajullu, M. Tech: Chiropractic

**Brief Introduction and Purpose of the Study:** This study is being conducted to evaluate the level of satisfaction that you as a patient receive at the Durban University of Technology (DUT) Chiropractic Day Clinic (CDC) and to determine if any aspects of the clinic needs improvement.

**Outline of the Procedures:** Upon your arrival to the reception at the DUT CDC, the reception staff will notify you as the patient about the current research being done on patient satisfaction at the clinic. If you agree to participate in the study, you will be required to read the letter of information. Once you understand what the research consists of and are willing to continue to participate, you will be required to sign an informed consent form. Once you have signed the consent form, reception will hand you the questionnaire to answer. The questionnaire will be confidential and anonymous; it will take you approximately fifteen minutes to complete. If any misunderstandings arise while completing the questionnaire or if you require any aspect of the questionnaire to be explained, the researcher will be present at the clinic to assist you.

**Risks or Discomforts to the Participant:** There will be no risks involved.

**Benefits:** The results of the study will reveal the level of satisfaction you, as a patient experience at the DUT CDC and reveal areas that need to be improved.

**Reason/s why the Participant May Be Withdrawn from the Study:** You are free to withdraw from the study at any given time without any form of penalty/consequences.

**Remuneration:** Participation in the study is completely voluntary without any form of remuneration.

**Costs of the Study:** Participation in the study is free.

**Confidentiality:** The information obtained from the study will be dealt with by my supervisor and myself, in order to produce relevant results. The information will be securely stored at the university for five years and then destroyed by shredding.

**Research-related Injury:** No injuries are expected in the study.

**Persons to Contact in the Event of Any Problems or Queries:**

Please contact the researcher, Mary Ann Ruthnam on 031-3732205 or my supervisor, Dr. Desiree Varatharajullu on 031-3732288 or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof S Moyo on 031 373 2577 or [moyos@dut.ac.za](mailto:moyos@dut.ac.za)

## Appendix E2: Letter of Information in isiZulu



**Mbambiqhaza othandekayo:** Ngiyakwamukela kucwaningo lwami futh ngiyabonga ngokuhlanganyela kwakho.

**Isihloko socwaningo:** Ukwaneliseka kweziguli emtholampilo we-Kharoprathikhi oseNyuvesi yezoBuchwepheshe yaseThekwini ngokusebenzisa imibuzo yaphambilini eqinisekisiwe.

**Umphenyi Omkhulu/ Umcwaningi:** Mary Ann Ruthnam, B. Tech: Chiropractic

**Umsizi womphenyi/ umphathi:** Dkt. Desiree Varatharajulu M.Tech: Chiropractic.

**Isingeniso ngamafuphi kanye nenhloso yocwaningo:** Lolucwaningo lenziwele ukuhlolisisa izinga lokwaneliseka kweziguli ngosizo eziluthola emtholampilo waka-Kharoprathikhi eNyuvesi yezobuchwepheshe yaseThekwini kanye nokubheka izinto ezidinga ushintsho emtholampilo.

**Uhla lenqubomgomo:** Uma ufika emtholampilo wase Nyuvesi yezobuchwepheshe emtholampilo wakwa-kharoprathikhi, abasebenzi abase ndaweni yokwamukela bazobe sebekwazisa ngocwaningo ozobe lwenzeka olumayelana nokwaneliseka kweziguli emtholampilo. Uma uvuma ukubamba iqhaza kucwaningo, uzocelwa ukuba ufunde incwadi yolwazi. Ngemuva kokuqonda okuqukethwe ucwaningo futhi usafuna ukuqhubeka ukuzibandakanya kucwaningo, uzobe usucelwa ukuth usayinde incwadi yesivumelwano. Ngemuva kokusayinda incwadi yesivumelwano, abasebenzi basendaweni yokwamukela bazobe sebekunikeza uhla lwemibuzo ukuba uyiphendule. Izimpendulo ozinikezile zizohlala ziyimfihlo, kuzokuthatha imizuzu eyi-15 ukuphendula imibuzo. Uma kukhona ongakuqondisi ngenkathi uphendula uhla lwemibuzo noma kukhona odinga ukuchazeleka kuko, umcwaningi uzobe ekhona emtholampilo ukuba akusize.

**Ubungozi noma ukunganethezeki kombambiqhaza:** Abukho ubungozi obuphathelene nocwaningo.

**Inzuzo:** Imiphumela yocwaningo izokwembula izinga lokwaneliseka kwakho, njenge siguli emtholampilo wakwa-Kharoprathithi eNyuvesi yezobuchwepheshe yaseThekwini iphinde yembule izindawo ezidinga ukuthuthukiswa emtholampilo.

**Isizathu/izizathu ezingaholela umbambiqhaza ahoxe kucwaningo:** Uvumelekile ukuthi uhoxe kulolu cwano kunoma kwesiphi isigaba ngaphandle kwenhlawulo/komphumela omubi.

**Isinxephezelo:** Ukubamba iqhaza kulolu cwano akuphoqiwe futhi akukho isinxephezelo esizotholwa.

**Izindleko zocwaningo:** Ukubamba iqhaza kulolu cwano kumahhala.

**Ubumfihlo:** Ulwazi olutholakale ngesikhathi kwenziwa ucwaningo luzoba phakathi komcwaningi nomphathi wakhe, ukuze bayakwazi ukushicilela imiphumela ephathelene nocwaningo. Ulwazi luzogcinwa luphephile eNyuvesi iminyaka emihlanu bese lucikelwa phansi.

**Ubungozi obuphathelene nocwaningo:** Abukho ubungozi obulindelekile kulolu cwano.

**Abantu ongaxhumana nabo uma uhlangabezana nezinkinga noma unemibuzo:\**

Uyacelwa ukuba uthinte umcwaningi, u-Mary Ann Ruthnam ku- 031- 3732205 noma umphathi wami, Dkt. Desiree Varatharajulu ku- 031-3732288 noma isikhungo esiphathelene nocwaningo ku 031 3732375. Izikhalazo zingabikwa kuMqondisi: woCwaningo Kanye nokwesekwa kwasebepthole, uSolwazi S. Moyo ku 031 373 2577 noma moyos@dut.ac.za

## Appendix F1: Informed Consent in English



### CONSENT

#### Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, **Mary Ann Ruthnam** about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: **174/19**
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

\_\_\_\_\_  
**Full Name of Participant**    **Date**    **Time**    **Signature/Right Thumbprint**

I, \_\_\_\_\_(name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

\_\_\_\_\_  
**Full Name of Researcher**    **Date**    **Signature**

\_\_\_\_\_  
**Full Name of Witness (If applicable)**    **Date**    **Signature**

\_\_\_\_\_  
**Full Name of Legal Guardian (If applicable)**    **Date**    **Signature**

## Appendix F2: Informed Consent in isiZulu



### INCWADI YESIVUMELWANO

#### Isitatimende sesivumelwano yokuba ingxenye yocwaningo:

- Ngiaqinisekisa ukuthi ngazisiwe ngumcwaningi (igama lomcwaningi), **Mary Ann Ruthnam** ngesimo, ngenqubo, inzuzo kanye nobungozi bocwaningo – Inombolo yocwaningo: **174/19**
- Ngiphinde ngathola, ngafunda, ngaqondisisa ulwazi olubhalwe ngaphezulu (incwadi yolwazi) ephathelene nocwaningo.
- Ngiyazi ukuthi imiphumela yocwaningo, okubalwa imininingwane yami, ubulili, iminyaka, usuku lokuzalwa kanye nesimo sempilo yami kuzogcinwa kuyimfihlo.
- Ngokubona izidingo zocwaningo, ngiyavuma ukuthi ulwazi oluqoqiwe lingafakwa umcwaningi ohlelweni le-khompuyutha.
- Ngingayeka, noma kweliphi izinga, ngaphandle ngobungozi, ngihoxe ekuzibandakanyeni kwami kucwaningo.
- Ngibe nalo ithuba elanele lokubuza imibuzo (esuka kimi) ngiaqinisekisa ukuba ingxenye yocwaningo.
- Ngiaqonda ukuthi ulwazi olusha oluthuthukiswe ucwaningo luzokwenziwa ukuba lutholakale kimi.

\_\_\_\_\_  
**Igama lombambiqhaza**

\_\_\_\_\_  
**UsukuIsikhathi**

\_\_\_\_\_  
**Siginisha/Isithupha**

Mina, \_\_\_\_\_

(igama lomcwaningi eliphelele) ngiaqinisekisa ukuthi umbambiqhaza waziswe ngokugcwele ngesimo, nenqubo kanye nemithelela ephathelene nocwaningo.

\_\_\_\_\_  
**Igama lomcwaningi**

\_\_\_\_\_  
**Usuku**

\_\_\_\_\_  
**Isiginisha**

\_\_\_\_\_  
**Igama lafakazi**

\_\_\_\_\_  
**Usuku**

\_\_\_\_\_  
**Isiginisha**

\_\_\_\_\_  
**Igama lomzali**

\_\_\_\_\_  
**Usuku**

\_\_\_\_\_  
**Isiginisha**

## Appendix G: Patient Satisfaction Questionnaire



### CHIROPRACTIC DAY CLINIC

### PATIENT SATISFACTION QUESTIONNAIRE

#### Section A:

This section will provide the clinic with information on participants completing the survey. Please answer each question by placing a tick in the appropriate box where necessary.

Demographics								
1	Age (in years)							
2	Gender	Female		Male		Other		
3	Race	Black	Coloured	Indian	White	Other:		
4	Visit	New patient		Follow-up	Number of follow- up visits			
5	Area of main complaint	Spinal (e.g. neck, back)		Extremity (e.g. ankle, knee, elbow)		Both		
6	Occupation							
7	Year of student	5 <sup>th</sup> Year		6 <sup>th</sup> year				
8	Primary income	Employed full time	Employed part-time	Medically boarded	Retired	Student / Scholar	Self employed	Unemployed
		Other						
9	Medical Aid	Yes			No			

#### Section B:

Below are some statements about the DUT Chiropractic Day Clinic and the chiropractic care you have received. Please read each statement carefully thinking about the service level you **RECEIVED**.

Please indicate **how strongly you agree or disagree** with each statement by ticking the appropriate box in each row of each column.

If you change your mind, cross out your old response and make your new choice. We are interested in your opinions, whether positive or negative.

Please note that your responses will be kept strictly confidential. Thank you for your time.

STATEMENTS		A How do you rate the service level you RECEIVED?				
A. Tangibles		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The clinic facilities are visually appealing.					
2	The waiting area has enough seating.					
3	There is adequate parking.					
4	The clinic hours of operation are suitable.					
5	The clinic met my hygiene expectations.					
6	The clinic has facilities for disabled patients.					
7	The waiting area at the clinic is comfortable.					
8	The clinic has adequate security.					
9	The clinic has appropriate toilet facilities.					
B. Reception Staff		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The reception staff are friendly and courteous.					
2	The reception staff are helpful in making an appointment over the phone.					
3	The reception staff attend to me promptly.					
4	The reception staff treat me with dignity and respect.					
5	The clinic staff inform me of potential delays in my appointment.					
6	The reception staff explained to me the possible time duration for my consultation.					
C. Chiropractic student		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The student is polite.					
2	The student makes me feel at ease.					
3	The student is attentive.					
4	The student is thorough in the examination.					
5	The student explained my condition.					
6	The student explained my treatment plan.					
7	The student involves me in the decisions about my treatment and rehabilitation or exercise programme.					
8	The student gives me advice on exercise and nutrition.					
9	The student gives me advice on how to prevent health problems from recurring.					
10	The student is dressed neatly and professionally.					
11	The student is punctual.					
12	The student made me feel comfortable during the assessment.					
13	The student spent sufficient time with me during my treatment session.					
14	I prefer a female student treating me.					
15	I prefer a male student treating me.					
D. Quality of care		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The student is knowledgeable					
2	The student is confident.					
3	The care I received was of a high standard.					

4	Improvements in my condition took longer than I expected.					
5	The quality of care I received met my expectations.					
6	The student ensured that I made an informed decision when agreeing to my treatment.					
7	My student made me feel important at all times.					
<b>E. Finance</b>		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The medical attention I received is affordable.					
2	Sometimes I do not seek treatment at the DUT CDC because I cannot afford the consultation fees.					
3	The consultation fees are reasonable.					
4	My medical aid/insurance provides full coverage for the cost of my care.					
5	A fee reduction option was offered to me as I fulfilled the criteria for it.					
<b>F. Overall satisfaction</b>		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	The health care issue that brought me to the DUT CDC was addressed to my satisfaction.					
2	I would recommend this student to a friend or relative.					
3	Overall, I was pleased with the service that I received from the DUT CDC.					
4	The student answered all of my questions.					
5	I would recommend chiropractic treatment and the DUT CDC to a friend or relative.					
6	I felt that the student did everything possible to help me.					
Any additional comments:						

Thank you for your time.

## Appendix H: Editor's Certificate



**Helen Bond**

IMPELA EDITING SERVICES

impelaediting@gmail.com

079 395 5873

19 November 2020

### CERTIFICATE

Mary Ann Ruthnam

[ruthnam10@gmail.com](mailto:ruthnam10@gmail.com)

Dear Mary Ann

Thank you for using Impela Editing Services to proofread your Master's dissertation entitled, "Patient satisfaction at the Durban University of Technology Chiropractic Day Clinic using a pre-validated survey".

We have proofread for errors of grammar, punctuation, spelling, syntax and typing mistakes. We have formatted your work and checked the references according to the DUT Chiropractic Department and Harvard guidelines.

Please note that Impela Editing does not accept any fault for changes made to a document after emailing the final draft and issuing a certificate.

I wish you the very best with your submission and a promising career!

Kind regards

Helen Bond (Bachelor of Arts, HDE)