

CLINICAL EXPERIENCES OF FIRST-TIME REGISTERED MASTER'S CHIROPRACTIC STUDENTS DURING THEIR CLINICAL PRACTICUM

By

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

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Dedication

By the Grace of God, I dedicate this dissertation to my mother Sandhia Ganesh
for giving me roots and wings.

*“With all its sham, drudgery and broken dreams,
It is still a beautiful world.”*

DESIDERATA

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Abstract

BACKGROUND

The imperative of clinical education in chiropractic is to endow students with the clinical competencies and professional attributes necessary for independent practice. The clinical practicum exposes chiropractic students to the realities, demands and expectations of patient care through immersion into the clinical learning environment. Various authors emphasise the importance of obtaining a student's perspective of their experiences within this environment as it is essential to curriculum development and improvement, delivery of quality clinical education, and student satisfaction with their standard of education. Interestingly, unlike in other health professions' disciplines, the clinical experiences of chiropractic students who have commenced their clinical practicum have scarcely been described in international literature. This study is the first of its kind to record the clinical experiences of chiropractic students during their clinical practicum in South Africa.

AIM

The aim of this study was to explore and describe the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum component at the Durban University of Technology Chiropractic Day Clinic in 2016.

METHOD

A qualitative, exploratory, descriptive approach was utilised. A purposive sample of 15 first-time registered Master's chiropractic students was interviewed. Their clinical experiences during the clinical practicum were obtained through semi-structured interviews. Seven key questions, each relating to a specific aspect of

the clinical practicum, were used to stimulate discussion. The data were recorded electronically and thereafter transcribed. Thematic analysis was used to interpret the data.

RESULTS

Four main themes were identified, viz. *undergraduate education and pre-clinical preparation; experiences within the clinical learning environment; inter-personal relationships in a clinical learning environment, and appraisal of the clinical practicum*. Participants reported that the undergraduate and pre-clinical preparatory phase needed to be more practically orientated in order to provide relevance and cohesion to clinical learning. Significant experiences in the clinical learning environment included personal and professional growth and development, perceptions of preparedness for independent practice, perceptions of patient responses to chiropractic care, administrative duties and clinic infrastructure. The interpersonal relationships that contributed to the overall clinical experience were between students and their clinical supervisors, and students and the administrative staff. The appraisal of the clinical practicum included highlights and positive aspects that shaped the attitudes, values and philosophies of students, as well as the challenges and obstacles they encountered within the clinical learning environment.

CONCLUSION

This is the first South African study to document the clinical experiences of first-time registered Master's chiropractic students. These clinical experiences were based on a variety of organisational and curriculum-orientated factors, as well as interpersonal dynamics. While students acknowledged and appreciated the critical importance of clinical education, and valued the learning opportunities within the clinical setting, they also provided constructive feedback on matters needing improvement to enhance the overall clinical experience. The lack of

exposure to patient care prior to the commencement of the clinical practicum negatively impacted the clinical experiences. It is recommended that the findings of this study be utilised by the key stakeholders within chiropractic education to enhance chiropractic clinical education in South Africa.

KEYWORDS: Chiropractic students, clinical learning environment, clinical experiences, clinical practicum.

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LIST OF ABBREVIATIONS

AHPCSA:	Allied Health Professions Council South Africa
B.Tech: Chiro:	Bachelor in Technology: Chiropractic
CAM:	Complementary and alternative medicine
CASA:	Chiropractic Association of South Africa
CDC:	Chiropractic Day Clinic
CLE:	Clinical learning environment
COPD:	Chronic Obstructive Pulmonary Disease
CPD:	Continuing Professional Development
CPP:	Chiropractic Principles and Practice
DPR:	Doctor-patient relationship
DUT:	Durban University of Technology
ECE:	Early Clinical Exposure
LEQ:	Lecturer evaluation questionnaire
M.Tech: Chiro:	Master of Technology: Chiropractic
N.Dip: Chiro:	National Diploma: Chiropractic
OHS:	Occupational Health and Safety
PAIA:	Promotion of Access to Information Act
PCC:	Patient-centered care
POPI:	Protection of Private Information Act
SA:	South Africa
SEQ:	Subject evaluation questionnaire
SOAPE:	Subjective, objective, assessment, plan and education
SPLICE:	Structured peer-led introduction to clinical education
SWOT:	Strengths, weaknesses, opportunities and threats
UCT:	University of Cape Town
UJ:	University of Johannesburg
USA:	United States of America
viz.	Namely
WFC:	World Federation of Chiropractic

OPERATIONAL DEFINITIONS

Administrative staff

These are staff members involved in the administration and maintenance of the clinic. Administrative staff included the student administrator, clinic finance administrator, health and safety officer, and back office and reception staff.

Clinical component

This means any activities or initiatives that concern the practical application of clinical skills in context of patient care and includes the associated clinical responsibilities such as medical record keeping.

Clinical experiences

These experiences are the range of activities, learning opportunities, responsibilities, protocols and standard operating procedures that students participate in during the clinical practicum. Clinical experiences include the emotional undercurrents and overarching attitudes and perceptions associated with each clinical encounter.

Clinical exposure

This means the situations that create opportunities for students for authentic observation or contact with patients in a realistic clinical setting.

Clinical practicum

The formal clinical practice component which commences upon first-time registration into the Master's Chiropractic Programme at the Durban University of Technology. Chiropractic students are responsible for the diagnosis and management of patients within their scope of practice, under the supervision of qualified chiropractors. Students are also responsible for completing other clinical tasks (such as medical record keeping and clinical competencies), as well as administrative duties. The clinical practicum component encompasses various clinical activities, including treating participants of sports events, patients

presenting to the Inkosi Albert Luthuli Central Hospital Pain Clinic, and designated satellite community clinics. However, for the purposes of this study, the term clinical practicum applies exclusively to clinical activity at the on-site teaching clinic, the Durban University of Technology Chiropractic Day Clinic.

Clinical supervisor or clinician

This refers to qualified chiropractors who are responsible for clinical supervision of the students during the clinical practicum.

First-time registered Master's chiropractic student

A student who has initially and formally registered into the Master's in Technology: Chiropractic Programme, which extends from a minimum of one year to a maximum of three years.

Hospital visits

This is a pre-clinical initiative in which chiropractic students in the Bachelor in Technology Programme visit a government hospital and perform history-taking and physical examinations on patients.

Mainstream medical professions

These are the traditional health science disciplines such as medicine, dentistry, nursing and physiotherapy, or health disciplines not considered as complementary and alternative medicine or traditional medicine.

Master's in Technology: Chiropractic (also known as the Master's Chiropractic Programme)

This is the post-graduate component of the Chiropractic Programme that commences at a fifth-year level of study, upon successful completion of the Bachelor of Technology: Chiropractic Programme. The Master's Programme is constituted by a triad of requirements for the students, viz. the academic component, the clinical practicum component and the research component.

Mock-patient assessment

This assessment is a mandatory pre-clinical activity done at the end of the Bachelor of Technology: Chiropractic Programme which involves a student scheduling a patient and adhering to all clinic protocols pertaining to patient care. The student examines the patient as per normal examination procedure under the supervision of a clinician. Thereafter, a diagnosis is reached under the guidance of the clinician. There is no treatment of the patient, as these students are not authorised to do this. Rather, this initiative is used as an introduction and orientation to the clinic.

Observer programme

This is a mandatory, pre-clinical initiative that involves the Bachelor of Technology: Chiropractic Programme students observing the Master's students during patient care at the clinic. A specified number of clinical observations must be completed and signed by a clinician on an observer log sheet. The purpose of this initiative is to enable undergraduates to understand the process of patient care and orientate them to the clinic protocols and clinicians, as well as expose them to different techniques and practice styles.

Pre-clinical component

This refers to any activities or initiatives of an academic programme that precedes and prepares for formal clinical engagement (patient care). This includes observation programmes, mock-patient initiative, and hospital rounds.

Reception duty

This relates to general administrative duties, such as scheduling patients, drawing files, answering the telephone, and dealing with student or patient requests. First-time registered Master's chiropractic students are expected to complete compulsory reception duty shifts under the supervision of the reception staff.

Undergraduate education

This refers to the first four years of the Chiropractic Programme, viz. the National Diploma: Chiropractic, and Bachelor of Technology chiropractic qualifications respectively.

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CHAPTER ONE

OVERVIEW OF THE STUDY

1.1 BACKGROUND TO THE STUDY

There is a global movement towards the provision of quality clinical education in the health science fraternity. Clinical education is an indispensable component of the academic curricula of both mainstream and allied health professions. It is a process which involves student immersion into a realistic workplace environment, for variable periods of time, and is analogous to the constructs of work-integrated learning (Jackson 2015). It affords students the opportunity to blend conceptual, procedural, and pre-occupational knowledge in a manner conducive to developing professional competencies (Cantatore, Crane and Wilmoth 2016). The goals of clinical education include increasing students' knowledge and skills, refining clinical practices and techniques, promoting clinical independence and preparing students for optimal health outcomes with patients (Burns, Beauchesne, Ryan-Krause and Sawin 2006).

Clinical education components have traditionally been described by various terms, depending on the profession. These include preceptorships, clinical clerkships, internships and clinical practicums (Ralph, Walker and Wimmer 2008). While these practical components may be variable in structure, duration and content (Ohrling and Hallberg 2000; Lofmark and Wikblad 2001), the foundational premise to adequately prepare and expose students to the relevant and necessary clinical scenarios and responsibilities specific to a profession remains standard (Ralph *et al.* 2008). Clinical practice components have been recognised by students as the most important phase of their entire professional education (Ralph, Walker and Wimmer 2009). This could be attributed to the fact that these components not only endeavour to provide students with a platform to integrate previously acquired theoretical knowledge with practical clinical skills,

but also strive to entrench an ethos of professionalism, competence and quality service delivery (Hecimovich and Volet 2009), organisational acumen (Walker, Yong, Pang , Fullarton, Costa and Dunning 2012), evidence-based practices, and general socialisation into the profession (Spencer 2003).

Unlike didactic learning, which occurs predominantly in a classroom setting, clinical learning takes places within the complex social context of a clinical learning environment (CLE). This type of learning environment is constituted by physical, psychological and organisational factors (Bergland 2001). As such, a CLE has been described as a multidimensional entity which interconnects many different factors (Tomietto, Comparcini, Saarikoski, Simonetti and Cicolini 2014).

Chiropractic is a key complementary and alternative medicine (CAM) discipline globally. Quality clinical education is essential to producing excellent chiropractic graduates in order to maintain the high standard of competence required in private and public practice (Johnson 2007). Thus chiropractic students need to receive comprehensive clinical education opportunities (Kaser, Hawk and Anderson 2014). Wangler and Wiles (2011) raise some relevant questions regarding chiropractic clinical education, including whether chiropractic graduates are well prepared for evolving healthcare systems, which are characterised by integration, collaboration, evidence-based best practices, patient safety, accountability and a variety of practice environments. They also pose a question to chiropractic educators and institutions as to how these issues will be addressed in the clinical education curricula in order to achieve these important outcomes. One valuable method of evaluating the quality of clinical education is to obtain feedback from the students undertaking clinical education (Varma, Tiyyagi and Gupta 2005; Ralph *et al.* 2009; Palmgren and Bolander-Laksov 2015).

Since students' perceptions of their educational environment are idiosyncratic and vary appreciably on a year-to-year basis (Palmgren and Bolander-Laksov 2015), evaluation of student experiences at regular intervals, within their educational environment, is necessary to optimise learning opportunities and improve and enhance the quality of education. The clinical experiences of students encompass both positive and negative aspects of the clinical education component of the curriculum and provide greater insight to the challenges encountered by students during this phase. Some recurring themes pertaining to student experiences within their CLE include transition shock and theory-practice gaps (Boychuk Duchscher 2009); initial clinical anxiety and inexperience (Sharif and Masoumi 2005); negotiating interpersonal relationships in a clinical setting (Mabuda, Potgieter and Alberts 2008); quality of clinical supervision (Martin, Kumar, Lizarondo and VanErp 2015); clinical learning opportunities (Peterson and Betchel 2000) and the strengths, weaknesses and overall student perceptions of their clinical experience (Henzi, Davis, Jasinevicius and Hendricson 2006).

Students are central to all aspects of a curriculum and are one of the key stakeholders of the education system (Ralph *et al.* 2008). Their experiences become significant as it can result in or contribute to development, improvement or revision in clinical learning programmes that are beneficial to both the student and the institution (Genn 2001; Veerapen and McAleer 2010).

In 2012, Shetty, Shirahatti and Pawar reported on their investigation into the perceptions of dental students towards their clinical education. They found the following parameters to be valuable in obtaining a comprehensive perspective of clinical education:

- Institutional infrastructure.
- Teaching and learning programmes.

- Clinical experiences.
- Students perceived competence in conducting common clinical procedures.
- Administrative services.

This study endeavours to use the recommendations of Shetty *et al.* (2012), as well as other researchers (Palmgren and Chandratilake 2011; Palmgren and Bolander-Laksov 2015), to construct a framework and provide insight into student experiences of their chiropractic clinical practicum at the Durban University of Technology (DUT) Chiropractic Day Clinic (CDC) in Durban, South Africa (SA). As clinical education is such a broad topic with various factors and facets constituting and contributing to it, selected themes will be elaborated upon in Chapter Two.

1.2 CONTEXT OF THE STUDY

Traditionally, chiropractic education has been separate from the mainstream health professions' disciplines such as medicine and physiotherapy (Chapman-Smith 2000). In these disciplines, the CLE can vary considerably (e.g. teaching clinics, public sector hospitals and rural primary health care clinics). The variations in the CLEs, therefore, contribute significantly to these students' perceptions of their clinical experiences. Since the inception of the first Chiropractic Programme in SA in 1989, at the then Technikon Natal, the clinical practicum component has largely been provided at its teaching clinic, the DUT CDC. This means that the clinical learning environment is essentially singular for the chiropractic student at DUT. It is, therefore, hypothesised that there may be other factors in this insulated environment, besides those described for those of other healthcare disciplines, which can impact on these students' learning experiences.

The DUT chiropractic curriculum is currently under review and is set to be revised in compliance with changes in the South African national education framework (Korporaal 2017). Thus, it becomes increasingly pertinent to report on the chiropractic clinical education component in the context of the current curriculum, before changes are implemented, in order to provide a formal analysis.

The clinical practicum is a watershed in the academic careers of chiropractic students as it is their first formal engagement in chiropractic clinical practice. Chiropractic students are expected to use the clinical practicum as the basis to integrate theoretical knowledge with clinical competencies, and develop professional attitudes and values (Hecimovich and Volet 2009), while diagnosing, treating and managing patients within the scope of chiropractic practice. The clinical practicum commences upon registration for the Master's programme, after the completion of the National Diploma: Chiropractic (N. Dip: Chiro) and Bachelor in Technology: Chiropractic (B.Tech:Chiro) programmes. This differs considerably from other health professions disciplines such as physiotherapy, medicine and nursing, which introduce patient-based clinical learning much earlier in their programmes (Faure 2003; Bray 2013).

1.2.1 A brief background to the DUT CDC

Since the inception of the Chiropractic Programme, in 1989, the aim of the DUT CDC has been to train chiropractic students, whilst also providing a healthcare service for the public in the central and greater Durban areas. With the Faculty of Health Sciences initially being based in an old school complex acquired by the then Technikon Natal, it meant that although the DUT CDC was a functional health care delivery facility, it was not optimal for the delivery of chiropractic care, and not fully compliant with the more recent Occupational Health and Safety Acts (OHS) (Act 181 of 1993) and minimum standards for compliance of healthcare establishments (Korporaal 2017). Therefore, in 2012, the clinic underwent an

upgrade to improve the facility, thereby ensuring that it complied with the OHS Act and the minimum standards for clinic compliance, whilst enhancing the students' CLE.

Subsequently, in 2015, the DUT CDC underwent a partial merger with the Somatology, Homoeopathic and Dental clinics in order to improve interdisciplinary education and integration of care. As a result, the DUT CDC attracts patients from a wide spectrum of demographic and socio-economic profiles. The CDC also offers chiropractic care at a nominal rate when compared with the standard chiropractic fee charged by qualified chiropractors.

In this setting, chiropractic students are responsible for diagnosing, treating and managing patients within the scope of chiropractic care (Chiropractors, Homoeopathic and Allied Health Professions Act 63 of 1982 (as amended)) under the guidance and supervision of qualified chiropractors employed by the institution. The clinic works on an appointment basis, with the operational days and times being Monday to Friday from 08:00 to 18:00.

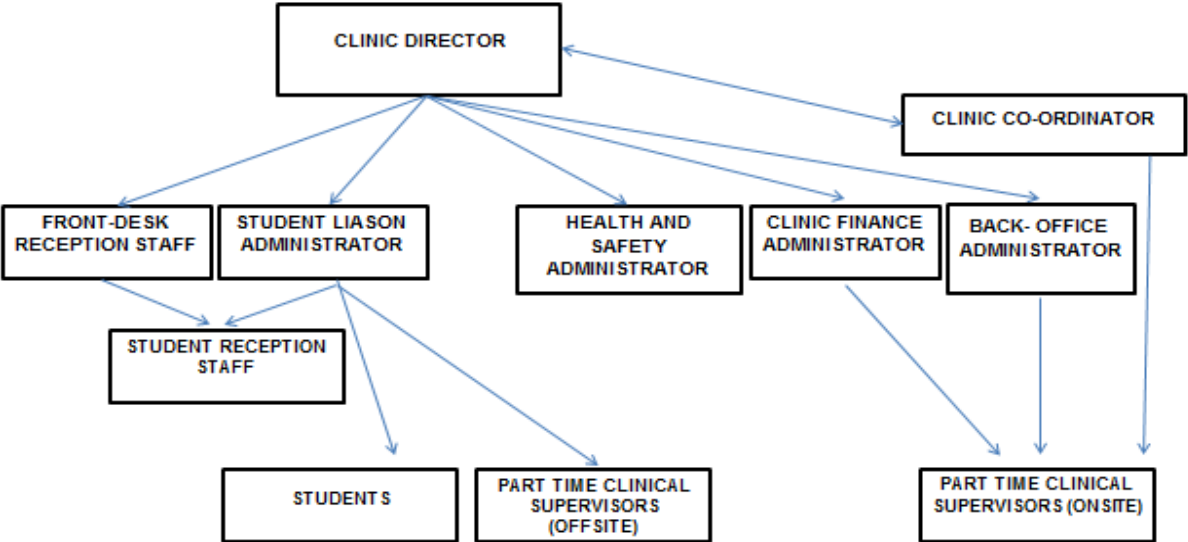
The aims of the clinical practicum at the DUT CDC are threefold (DUT CDC Clinic Manual 2015):

- It provides students and student interns with the opportunity of gaining initial clinical experience by facilitating primary contact, curative and rehabilitative healthcare teaching and subsequent quality chiropractic care and patient education.
- It provides a patient base for research studies.
- It provides a basis for students and student interns to obtain further clinical experience in terms of their statutory responsibilities.

1.2.2 Organisational structure of the DUT CDC

All aspects of clinical operations and management are overseen by the clinic director who reports to the faculty management. The setting-up of clinician meetings and administrative duties related to these (e.g. taking of minutes) are the responsibilities of the clinic co-coordinator. The administrative staff includes the finance administrator who manages the fiscal aspects of the clinic and the student liaison administrator, who is responsible for the planning of rosters, capturing patient numbers on the computer system and attending to student complaints and disciplinary issues. Data capture and attention to medical aid queries are the responsibilities of the back-office staff. The health and safety administrator is responsible for ensuring safety compliance, cleanliness of the clinic, and general maintenance. The front-desk reception staff is responsible for scheduling patients, managing payments, drawing patient files and doing clinic laundry. They are assisted by students who are employed to work at the front desk on a part-time basis.

Figure 1.1 Organisational structure of the DUT CDC



1.3 RESEARCH PROBLEM

Despite students' clinical experiences being well-documented across various health professions' disciplines, there is a paucity of literature in the context of the chiropractic profession. While the clinical training of chiropractic students in SA places emphasis on ensuring competence and professionalism of graduates, little attention has been attributed to their clinical educational experiences.

Having recently completed the clinical practicum component of the Chiropractic Programme, the researcher has gained first-hand experience of the duties, demands, expectations, realities and challenges of the CLE at the DUT CDC. The transition from a largely theoretical undergraduate curriculum, to a predominantly practical post-graduate one was both daunting and exciting. Since clinical educational environments differ in terms of instructional offerings, standard operating procedures, management protocols and educational objectives, the findings from previous studies cannot simply be extrapolated to the DUT CDC. Rather, there is a need for inquiry into the facets of clinical education and experiences specific to the DUT CDC. The intricate dynamics of this CLE, together with the need to re-evaluate and improve upon the quality of chiropractic clinical education, served as the impetus for this study.

1.4 AIM OF THE STUDY

The aim of this study was to explore and describe the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum component at the DUT CDC.

1.5 RESEARCH QUESTIONS

- 1) What are the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum component at the DUT CDC?
- 2) What are the expectations of these students undertaking experiential learning?
- 3) What are the challenges encountered by these students at the DUT CDC?

1.6 SCOPE OF THE STUDY

The clinical experiences, expectations and challenges encountered by 15 first-time registered Master's chiropractic students (for the year 2016) are described and presented in this dissertation. After obtaining informed consent, a semi-structured interview was conducted between the researcher and the participants. The interviews were recorded on a digital audio-recording device and the data were thereafter transcribed onto a Microsoft® Word document. Thematic analysis was then used to analyse the data.

1.7 STRUCTURE OF THE DISSERTATION

- Chapter 1: The background, context and research problem are described. The aim, research questions and the scope of the study are also presented in this chapter.
- Chapter 2: The relevant literature review pertaining to the topic is extensively described in this chapter.
- Chapter 3: The research methodology, the collection and analysis of the data are comprehensively described in this chapter. The chapter concludes with the ethical principles followed in this study.
- Chapter 4: The results of the data analyses are presented in this chapter in the manner relevant to qualitative research.

- Chapter 5: The results of the study are discussed and compared to previous studies that are relevant to this dissertation.
- Chapter 6: The overall conclusions and limitations of the study are presented. The chapter ends with recommendations arising from the findings of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the scholarly literature pertaining to the various facets of clinical education. It provides an appraisal of the common themes explored by researchers across health profession disciplines and highlights the paucity in the data in the context of chiropractic clinical education in SA.

2.2 CHIROPRACTIC AND ITS SCOPE OF PRACTICE

Chiropractic is a primary healthcare discipline concerned with the diagnosis, treatment, management and prevention of disorders affecting the musculoskeletal system and their effects on the nervous system and general health (World Federation of Chiropractic (WFC) 2001). Chiropractic places emphasis on the conservative management of neuro-musculoskeletal conditions through its principal therapeutic modality, viz. spinal manipulation. In addition, auxiliary therapeutic modalities may be employed by those who adopt the mixer philosophy. These include soft tissue therapy, electrotherapy (e.g. therapeutic ultrasound), rehabilitation exercises, patient education and lifestyle modification, orthotics and other supportive devices (WFC 2012).

2.3 A PRECIS OF CHIROPRACTIC PHILOSOPHY

Historically, chiropractic has struggled to identify and establish itself in the healthcare system (Chapman-Smith 2000). The conflict between the “straight” and “mixer” chiropractic philosophical approaches to diagnosis and patient management has resulted in a lack of unity and common identity in the profession (Keating 2005; Senzon 2014). Straight chiropractors believe that vertebral subluxations, which are the improper motions or positions of spinal

vertebrae, are the primary underlying risk factor for various diseases. As such, they are concerned only with detecting and correcting vertebral subluxations using spinal manipulation or adjustments in order to restore optimal functioning and health. In contrast, mixer chiropractors incorporate a range of diagnostic and therapeutic interventions (e.g. electromodalities and soft tissue therapy) to promote and maintain health and wellness (Keating 2005). In SA, it is the mixer philosophy that is entrenched in chiropractic education and practice.

2.4 CHIROPRACTIC LEGISLATION IN SA

Currently the legal status of chiropractic is variable amongst countries. Some countries, such as Denmark, China and certain states in the United States of America (USA), have a separate chiropractic act, while other countries, like Switzerland and the Cayman Islands, have a chiropractic act under the umbrella laws of mainstream health disciplines. In SA, chiropractic is recognised under the umbrella laws for CAM (WFC 2012). The profession is regulated by the Allied Health Professions Council of South Africa (AHPCSA) and is governed by the AHPCSA Act 63 of 1982. This Act does not prohibit members of allied health professions from entering the public healthcare system, however, the National Department of Health Policy does preclude them as stakeholders in public health systems (Mullinder 2017).

2.5 A SUMMARY OF THE CHALLENGES FACING CHIROPRACTIC IN HEALTHCARE GLOBALLY AND IN SA

From a historical perspective, the profession has been marginalised from mainstream medical professions and has faced considerable challenges in establishing itself in the public healthcare system. This includes the laws and regulations limiting its licensure, scope of practice and reimbursement (Cooper and McKee 2003), as well as competition with other physical therapy healthcare disciplines, to establish itself as a primary care discipline (Mior and Laporte

2007). Today, despite being the most well-established CAM discipline (WFC 2012), and gaining prominence and recognition within the healthcare fraternity, chiropractic's attempts to broaden its activities in the domain of alternative medicine still has inherent limitations (Cooper and McKee 2003). For example, chiropractors in SA are limited to private practice as the National Department of Health Policy prevents them from being incorporated into the public healthcare system. The justification for such limitation is unclear and poses a significant barrier to entry and expansion at various levels of the healthcare framework. There are also stringent laws on advertising, marketing and medical aid reimbursement that further disadvantage chiropractors (Chiropractic Association of South Africa (CASA) Competition Commission Report 2016).

2.6 CHIROPRACTIC EDUCATION IN SA

Common international standards in chiropractic education have been achieved through the collaboration of international accrediting agencies that are recognised by the World Health Organisation. Currently, there are 41 countries offering the chiropractic programme (WFC 2012). SA is the only country in Africa to offer qualifications in chiropractic. Two tertiary institutions in SA, the DUT, since 1989, and the University of Johannesburg (UJ), since 1994, offer a five-year, full-time, course-work Master's programme, inclusive of a clinical practicum at their onsite academic clinics, the DUT CDC and the UJ Chiropractic Clinic respectively.

The Chiropractic Programme at the DUT has been accredited internally by the Centre for Quality Promotion and Assurance (CQPA), nationally by the Council for Higher Education (CHE) and the AHPCSA, and internationally by the Councils on Chiropractic Education International (CCEI), through the European Council on Chiropractic Education (ECCE). This ensures that the Chiropractic Programme at the DUT meets the stringent standards of national and international accrediting bodies before being recognised by the statutory council, the AHPCSA (Korporaal

2017). The structure and delivery of the Chiropractic Programme at the DUT is described later in this chapter.

The qualifications obtained by South African chiropractic graduates are highly regarded and internationally-recognised (CASA Competition Commission Report 2016). An increasing trend toward healthcare accountability demands that chiropractors have the essential competencies to effectively and efficiently perform in competitive healthcare systems (Smith, Long, Henderson and Marchiori 2001). Moreover, it is the goal and responsibility of all educational institutions to ensure their faculties, programmes and students meet the criteria of quality control (Somenarain, Akkaraju and Gharbaran 2010). Therefore, there is a need to evaluate the quality of educational practices of chiropractic students in SA.

2.7 THE CHIROPRACTIC PROGRAMME AT THE DUT

The current Chiropractic Programme at the DUT is divided into three parts with a separate qualification for each (**Table 2.1**). Although a student successfully completes the National Diploma and Bachelor of Technology components, these qualifications are not officially awarded. The student registers for the Master's in Technology degree upon successful completion of the Bachelor of Technology. The only exit level in the current Chiropractic Programme in SA is upon successfully completing the academic, clinical and research requirements of the Master's in Technology qualification. This is in accordance with Professional Board requirements, Act 63 of 1982, with specific reference to Regulations R629, Government Gazette No 11221 of March 1988.

Table 2.1 The structure of the Chiropractic Programme at the DUT

Part	Year/s	Qualification
1	1 to 3	National Diploma: Chiropractic
2	4	Bachelor of Technology: Chiropractic
3	5	Master's in Technology: Chiropractic

Adapted from Department Rule Book (2017)

2.7.1 The course content of the Chiropractic Programme at the DUT

A summary of the course content and pre-clinical exposure of the entire chiropractic programme at the DUT is presented in **Table 2.2**. Several courses are divided into modules (not shown in the table). Examples of this include Anatomy I, which is comprised of gross anatomy and histology; Clinical Chiropractic IV which comprises of mechanical low back pain; pathological diseases of the spine and bone, and headache, cervical and thoracic spine modules.

2.7.2 A summary of the National Diploma: Chiropractic Programme

In the first and second years, students are taught subjects in pure science (e.g. physics and chemistry), basic medical science (e.g. biology, physiology and human anatomy) and chiropractic (philosophy and topographic anatomy). In the third and final year, there is a shift from the basic science subjects to more clinical ones (e.g. Diagnostics III and Systemic Pathology III). Chiropractic discipline-specific subjects, such as Chiropractic Principles and Practice III (CPP III), are also introduced. Spinal manipulation (or adjustments) techniques are taught within the CPP III course.

Therapies, auxiliary to spinal manipulation, are taught in the Auxiliary Therapeutics III course. Students learn and apply various therapeutic

interventions (e.g. therapeutic ultrasound, massage and cryotherapy) necessary for patient care. However, unlike the diagnostic and adjustments skills which are continued to be taught at the B.Tech level, skills learnt in Auxiliary Therapeutics are only utilised by students during the clinical practicum at the Master's level. This highlights a short-coming in the current curriculum design and needs to be addressed by the Chiropractic Programme in order to best prepare students for the clinical practicum. Moreover, the students do not receive any clinical learning in the N. Dip component of the Chiropractic Programme at the DUT. This is similar to the first two years of the medical programme of the King Saud University in Saudi Arabia, which is devoted to basic science education, which does not include patient-based learning (Alam 2011).

2.7.3 A summary of the Bachelor of Technology: Chiropractic Programme

The B. Tech Chiropractic Programme is one year and constitutes the pre-clinical phase of the chiropractic course. There is greater emphasis on the clinical skills of patient examination and reaching a diagnosis through the Diagnostics IV course. The adjustments, and rehabilitation techniques, are refined in the Chiropractic Principles and Practice IV (CPP IV) and Clinical Biomechanics IV courses. Non-specific low back pain, neck pain and headache (functional and pathological), as well as selected pathological disease of the spine and bone, and spinal orthopedics are covered in the Clinical Chiropractic IV course. Students are introduced to taking radiographs of the spine and extremities as part of the CPP IV course and are taught how to interpret musculoskeletal radiographs in the Radiology IV course. There are several initiatives that endeavour to introduce and orientate students to various aspects of clinical practice education. These include the hospital visits, case appraisal and assessment of patients, the observer programme and the mock patient assessment.

2.7.3.1 Hospital visits: case appraisals and assessment of patients

All B. Tech. students have to complete the appraisal and assessment of a minimum number of patients at a selected public hospital once a week. Students are required to take a history and examine in-patients at selected medical wards under the supervision of the relevant academic staff from the Chiropractic Programme who accompany the students. The hospital assessment also includes questions on management, patient education and further investigations. Students have to submit a portfolio of cases and complete two assessments on patients at the hospital; these count towards the duly performed or year-mark for Diagnostics IV. The hospital visits in the B.Tech programme differ from the traditional ward rounds of medical students. In their ward rounds, medical students work together with clinical staff to review diagnoses, formulate on-going management or discharge plans, request investigations, prescribe medication and share information with patients, their relatives or other healthcare professionals (Rowlands, Griffiths, Blencowe, Brown, Hollowood and Hornby *et al.* 2014).

While these hospital visits and patient assessments do expose the chiropractic students to a wide spectrum of pathology and patient profiles, not often seen at the DUT CDC, there are limitations. These include not being integrated with the public healthcare system (like medicine or physiotherapy) and not receiving the type and standard of training that medical students receive in hospital. For example, medical students receive training from professors and registrars from the hospitals, while there is no formal interaction between the hospital staff and the chiropractic students during the appraisals and assessment of patients; the majority of the cases seen are beyond the scope of chiropractic care or intervention; the chiropractic students work in groups which makes providing individual attention difficult; there is no rotation of the chiropractic students to specialty disciplines like orthopedics, radiology, rheumatology, pediatrics, and neurology, unlike in the USA, where it is believed that exposure to a large volume

and variety of patients is essential to chiropractic training. As a result, undergraduate hospital rotations in the USA entail chiropractic students working together with medical doctors in various specialty areas in order to gain exposure and experience in different areas of medicine and management (Wyatt, Perle, Murphy and Hyde 2005).

As in the chiropractic undergraduate programme, third year medical students at the University of Cape Town (UCT) are also required to find patients to practise history taking and other clinical skills on, in a hospital setting. These third year students reported that they struggled to find suitable patients (those with clinical signs but not too infectious or incoherent) and so they often resorted to examining patients with minor or no clinical signs in order to complete their portfolios. Some students even offered incentives such as magazines, soft drinks and chips to patients so that they would be allowed to examine them. However, it was found that the benefits and experience of interacting with real patients outweighed the challenges (Draper, Moller, Aubin, Edelstein and Weiss 2012).

2.7.3.2 Observer programme

The chiropractic observer programme commences at the beginning of the B.Tech year and extends until completion of the minimum requirement of observations (students must observe three new patients, ten spinal cases and three extremity cases). The B.Tech students observe Master's students throughout the patient consultation in order to gain exposure to clinic protocols and procedures, patient care and individual practice styles and techniques.

Clinical observation or shadowing is a valuable activity to introduce health science students to professional practices and communication skills essential for patient care (Phillips, Breakwell, MinJu and Faut-Callahan 2012). Alford and Currie (2004) introduced clinical observations to first year medical students.

These undergraduate students rated the programme as excellent as they learned about the process of becoming a doctor, the practices of medicine and the nature of real patients. Riva, Crombeen and Busse (2011) describe a three-step process of effective clinical observation originally proposed by Boud *et al.* (1985), which entails preparation before observations, active observation and reflecting, and debriefing during and after the observation. This process is not applied in the context of the DUT chiropractic observer programme. There is no formal introduction or reflection of the observer programme or any consolidation of the knowledge or skills learnt from it. Though students are expected to complete three case summaries on the new patients they observed, the feedback and guidance on these are variable amongst clinicians. Chuck (1996) highlights the role of shadowing or observer students as a typically passive one that is not designed to provide one-on-one patient interaction or involve students in problem-solving activities. Shenwai (2013) found that students who are actively engaged in learning activities learn more than those students who are passive recipients. The limitations of passive clinical experiences have been identified by some institutions and a movement toward more active engagement has been proposed (Chuck 1996; Lovecchio and Dundes 2002).

2.7.3.3 Mock patient assessments

At the end of the B.Tech year, chiropractic students are required to complete three case evaluations on “mock patients”. On their own accord, students bring in these mock patients who are often friends or family. As a result, the student may not have the experience of being faced with an unfamiliar patient, which is the case during the clinical years. A full case history, physical and orthopedic regional examinations are performed on the mock-patient. This lasts approximately two and a half to three hours. Despite the student periodically reporting to the on-duty clinician, there is little to no guidance or feedback on any of the tests and examinations performed. There is also no formal training for the mock patient assessments as students are expected to draw on their knowledge

and skills learnt through the observer programme in order to complete the relevant clinic paperwork and other requirements of the mock patient assessments.

2.7.4 A summary of the Master's in Technology: Chiropractic Programme

The first registration into the Master's Chiropractic Programme constitutes the first clinical year. Students are required to complete a triad of academic, clinical and research components. The academic programme encompasses lectures, practicals, assignments, tests and examinations; the clinical practicum component includes patient care at the DUT CDC, sport events, and satellite and community clinics, and the research component which requires the production of a dissertation. In the first year of the Master's programme, students attend lectures in the morning, throughout the week, and are rostered into afternoon clinic shifts every alternate day.

2.7.5 The significance of the first clinical year

The first clinical year has been described both as a major source of disappointment and delight (Kihara, Matsuo, Kamisako, Fukuda, Ashida, Takemura *et al.* 2003). During this year, students recognise and appreciate professional responsibilities by adopting the role of the novice therapist. Skovholt and Ronnestad (2003) describe the novice journey as arduous, as students have to cope with acute performance anxiety, stressful situations and unique challenges despite having glamorised expectations of the clinical experience.

Table 2.2: A summary of the course content and pre-clinical exposure of the Chiropractic Programme at the DUT

Year of study	Qualification	Subjects	Degree of pre-clinical exposure	Level
1	N. Dip: Chiro.	Anatomy I Biology I Physiology I Chemistry I Physics I Philosophy, History and Principles (Modules I and II)	First year students undergo physical examination by Master's students at the DUT CDC	Undergraduate
2	N. Dip: Chiro.	Anatomy II Biochemistry II Epidemiology II General Pathology II Medical Microbiology II Physiology II Social studies II	None	Undergraduate
3	N. Dip: Chiro.	Auxiliary Therapeutics III Diagnostics III Psychopathology II Chiropractic Principles and Practice III Systemic Pathology III	Observation of B. Tech. students' appraisal and assessment of patients in a public hospital	Undergraduate
4	B. Tech: Chiro.	Diagnostics IV Clinical Biomechanics and Kinesiology IV Clinical Chiropractic IV Chiropractic Principles and Practice IV Radiology IV Research Methods and Techniques I	Appraisal and assessment of patients in a public hospital Sport events (limited) Observer Programme Mock patient assessments	Undergraduate
5	M. Tech: Chiro.	Clinical Biomechanics and Kinesiology V Clinical Chiropractic V Chiropractic Principles and Practice V Research Project and Dissertation Practice Management and Jurisprudence V	Clinical practicum	Post-graduate

N. Dip Chiro. = National Diploma: Chiropractic; B. Tech Chiro. = Bachelor of Technology: Chiropractic; M. Tech Chiro. = Master's in Technology: Chiropractic; DUT = Durban University of Technology; CDC = Chiropractic Day Clinic

2.8 EXPERIENTIAL LEARNING AND THE CLINICAL PRACTICUM

Experiential learning is the process through which a student constructs, clarifies, consolidates and synthesises knowledge, skills and values from active engagement and direct experience (Sand, Elison-Bowers, Wing and Kendrick 2014). It is an educational tool which promotes growth, development and empowerment of individuals through greater access to and participation in practical forms of knowledge (Evans 1994). In his seminal work, Kolb (1984) espouses experiential learning as a transformative learning process through exposure to context-based situations. Kolb's cycle of experiential learning involves a step-wise process of gathering, transforming and applying knowledge and skills through experience.

The cycle commences with a concrete experience. This involves engaging in new situations, encounters or experiences. Thereafter, these experiences are reviewed and reflected upon (reflective observation) in order to draw conclusions. This gives rise to new ideas or the modification of existing abstract concepts (abstract conceptualisation). This new or transformed knowledge can then be put into practice and applied to real-world situations.

The clinical practicum is one of the most common forms of experiential learning (Eyler 2009). The clinical practicum is a course in education, particularly in context of a specialised field of study, which is designed with the intent of allowing student supervised practical application of previously acquired theoretical knowledge (American Heritage Dictionary 2011). It allows students an opportunity to grow in both personal and professional capacities (Mansor and Yusoff 2013) and it is a potentially effective and innovative way to facilitate a successful transition into clinical practice (Benson 2013). This encompasses acclimatising to the professional environment; establishing good interpersonal relationships; understanding and negotiating differences in etiquette, and learning routines and traditions, as well as acquiring new knowledge and skills to

meet the needs of different patients (Westerman, Teunissen, Fokkema, van der Vleuten, Scherpbier and Siegert *et al.* 2013). However, despite several benefits of clinical practice components, they can also be challenging, stressful and unpredictable (Baraz, Memarian and Vanaki 2015).

Despite the importance of the clinical practicum component, it has a number of short-comings (Ryan, Toohey and Hughes 1996). It is said to typically be characterised by definite strengths, which should be maintained and promoted, as well as chronic weaknesses which should be reduced or ameliorated (Ralph *et al.* 2009). Therefore, it is important to obtain a balanced perspective of students engaged in clinical practicums to evaluate both its positive and negative aspects.

2.9 CLINICAL EXPERIENCES

Clinical experiences are the range of planned and unplanned activities and initiatives that occur within a CLE. This includes experiences of the clinical placement, infrastructure and facilities, patient population, organisational management and learning opportunities.

The notion of student experiences has gained prominence in response to reforms in higher education systems, social development, technological trends and changing student cohorts (Benckendorff 2009). Clinical experiences are guided by partnerships through which various stakeholders such as students, academic and clinical staff, programme directors, share responsibility for student preparation. These co-constructed experiences form a learning cycle based on clinical practice with an emphasis on strategies that promote and enhance student academic and professional development (Heafner and Plaisance 2016).

It is recommended that clinical experiences be designed to promote sufficient depth, breadth, coherence, diversity and duration in order to ensure that students

demonstrate their developing effectiveness in the practice of their professional discipline (Council for the Accreditation of Education Preparation 2015). Various authors highlight the dimensions that impact the quality of students' clinical experiences. These include institutional factors such as curriculum, resources and infrastructure (Benckendorff 2009); approaches to teaching and learning (Williams and Decker 2009); attitudes of clinical staff (Williams, White, Klem, Wilson and Bartholomew 2006); quality of clinical experience of clinical educators (Palmer and Naccarato 2007), and the student's level of clinical competence (Benner 2004).

2.9.1 Research paradigms and instruments used to evaluate clinical experiences

Clinical education is the cornerstone of health science education (Conn, Lake, McConoll, Bilszta and Woodward-Kron 2012) as it serves as a platform to acquire, develop and refine both technical and non-technical skills (Grace and O'Neil 2014). Technical skills include history taking, physical examination, patient communication and professionalism (Spencer 2003), while non-technical skills include organisational acumen, social intelligence, teamwork, decision-making and socialisation into the professional environment (Walker *et al.* 2012; Agha, Fowler and Sevdalis 2015).

The CLE is an ideal setting for transferring knowledge from a classroom to the clinical context, addressing the theory-practice gaps and exposing students to authentic real-world clinical situations (Peterson and Betchel 2000). These are some of the reasons that interest researchers in studying student experiences within their CLE. Hart and Rothem (1995) described the characteristics of an effective CLE which are summarised in **Table 2.3**.

Table 2.3: Hart and Rothem's characteristics of an effective CLE

Characteristic	Description
Organisational support	The extent to which formal and informal policies, procedures and protocols facilitate clinical learning.
Supervisory support	The extent to which students are given appropriate support and guidance in performing their clinical duties.
Social support	The extent to which clinical staff co-operate with students in order to function as a team
Autonomy	The extent to which students are allowed to assume appropriate responsibility and authority in performing clinical duties.
Variety	The extent to which clinical learning opportunities are diversified.
Career perspective	The extent to which clinical education encourages students to remain in the profession.
Change	The extent to which clinical staff are able and willing to effect improvement in policy and practice.

In order to explore and evaluate the CLE, several pre-validated quantitative instruments have been developed (**Table 2.4**). Some are discipline-specific, whereas others can be applied generally to any health science CLE. The main purpose of these instruments is to evaluate various aspects of a CLE, in order to gain a better understanding of its constituents and quality. These instruments have been utilised by several studies that have aimed to investigate students' experiences within a CLE. Despite quantitative methods being the dominant mode of scientific inquiry (Rahman 2017), qualitative research provides a more holistic perspective on a phenomenon and allows for exploration and description that cannot be experienced through numerical data or statistical analysis (Matveev 2002). To date, there are only a few known international qualitative studies that have explored and evaluated the chiropractic clinical educational environment (Palmgren and Chandratilake 2011; Palmgren and Bolander-Laksov 2015).

Several studies have been conducted in mainstream health professions disciplines such as nursing (Sharif and Masoumi 2005; Cooper, Taft and Thelen 2005; Mabuda *et al.* 2008; Tomietto, Comparcini, Saarikoski, Simonetti and Cicolini 2014); dentistry (Henzi, Davis, Jasinevicius and Hendricson 2007); medicine (Cuesta-Briand, Auret, Johnson and Playford 2014) and physiotherapy (Delany and Bragge 2009, Ernstzen, Statham and Hanekom 2014). Despite chiropractic being a significant component of the healthcare in several countries, including SA, there is still a lack in the available data relating to the clinical and educational experiences of students in chiropractic educational institutions (Palmgren and Chandratilake 2011).

Table 2.4 Validated quantitative research instruments used to evaluate clinical educational environments

Instrument	Developer	Discipline	Parameters of investigation
Clinical Learning Environment Scale (CLES)	Dunn and Bernett (1995)	Nursing	<ul style="list-style-type: none"> • Student-staff relationships • Nurse manager commitment • Patient relationships • Interpersonal relationships • Student satisfaction
Dundee Ready Educational Environment Measure (DREEM)	Roff, McAleer, Harden, Al-Qahtani, Ahmed and Denza <i>et al.</i> (1997)	Health Science (general)	<p>Students perceptions of:</p> <ul style="list-style-type: none"> • Learning • Teachers • Atmosphere • Academic self • Social self
The Student Evaluation of Clinical Education Environment (SECEE)	Sand-Jecklin (2000)	Nursing	<ul style="list-style-type: none"> • Instructor facilitation of learning scale • Preceptor facilitation of learning scale • Learning opportunity scale
The Clinical Learning Environment Inventory (CLEI)	Chan (2001)	Nursing	<ul style="list-style-type: none"> • Individualisation • Innovation • Satisfaction • Involvement • Personalisation • Task-orientation
The Clinical Learning Evaluation Questionnaire (CLEQ)	AlHaqwi, Kuntze and van der Molen (2014)	Medicine	<ul style="list-style-type: none"> • Cases • Authenticity of clinical experiences • Supervision • Organisation of the doctor-patient encounter • Motivation to learn • Self-awareness

2.9.2 The significance of exploring students' perceptions and experiences of their clinical educational environment

Various authors advocate obtaining feedback from students regarding their perceptions and experiences of their CLE (Gall, Gall and Borg 2003; Habbal, El Mardi and Inuwa 2007; Eyal and Cohen 2009; Wenrich, Jackson, Scherpbier, Wolfhagen, Ramsey and Goldstein 2010; Bakhshialiabad, Bhakhshi and Hassanshahi 2015). Palmgren and Chandratilake (2011) have described students' views of their clinical educational environment as a "valuable asset" and an "untapped resource". It is important for educational institutions to conduct formal student evaluations of the curriculum on a regular basis (annually or biennially) (Eyal and Cohen 2009).

Since students encounter all facets of an academic programme (Ralph *et al.* 2008), it is recommended that educational practitioners, policy-makers, curriculum developers and researchers collaborate with the objective of actively seeking and incorporating students' views and experiences in order to enhance the delivery of quality programmes (Ralph *et al.* 2008). The basis for such collaboration is that students are able to provide a valuable narrative on the quality of teaching, learning and provision of healthcare services. Health science programmes can then implement measures to optimise clinical learning by reducing student anxiety, easing the transition between pre-clinical and clinical education, improving skills and maximising efficiency of learning and teaching (Wenrich *et al.* 2010; Bakhshialiabad *et al.* 2015).

By identifying and acknowledging the challenges encountered by students within the CLE, action can be taken to modify and improve clinical education, which can ultimately improve the quality of health services provided (Baraz *et al.* 2015). Interestingly, despite these assertions, Pearcey and Elliot (2004) noted that, while organisations tend to be good at obtaining student feedback, they are less effective in using it to implement measures to enhance quality of education.

Accordingly, students commonly complain that they do not see the effects and results of their feedback.

It would be negligent to disregard students' perspectives on the strengths and weaknesses of the programme, as it would be ignorant to assume the unquestionable merit of a curriculum without periodic re-evaluation. Evaluation of existing curricula through student feedback is important, not only to make alterations and correct mistakes, but also to maintain momentum in the curricula, and introduce and integrate current technologies and philosophies (Mrozek, Till, Taylor-Vaisey and Wickes 2006).

One of the aims of curriculum integration is to break down barriers between subject areas, thereby providing students with better learning opportunities (Atwa and Gouda 2014). This allows for the development of knowledge that is relevant and meaningful to clinical practice and endeavours to make information retrievable and contemporary. An integrated curriculum combines learning and teaching in a holistic way and is representative of the real world (Shoemaker *et al.* 1989).

2.9.2.1 Student evaluations of the Chiropractic Programme at the DUT

While student evaluations of the entire curriculum of the chiropractic programme at the DUT are not done, students do complete lecturer evaluation questionnaires (LEQs) and subject evaluation questionnaires (SEQs). The LEQs and SEQs are administered electronically to students across all the years of study, as a means of formal feedback on lecturer performance, the learning outcomes of subjects and satisfaction with chiropractic education (at the level of study they are registered for), on an annual basis. However, the effectiveness of this initiative is unclear as students are not usually debriefed once their feedback is processed or advised on any resultant changes or improvements. This is

based on the researcher's personal experience in the programme. Furthermore, the LEQ's and SEQ's are broad and do not focus on the specifics of the clinical practicum.

2.9.3 Student experiences within the CLE

Student experiences within the CLE can be perceived as either facilitative or obstructive (Lofmark and Wikblad 2001). This means that the type and quality of clinical experiences can either enhance or hinder learning. However, clinical experiences usually encompass both facilitative (positive) aspects and obstructive (negative) aspects. This is substantiated by the extensive body of research on students' clinical education experiences (Sharif and Masoumi 2005; Henzi, Davis, Jasinevicius and Hendricson 2006; Mabuda *et al.* (2008); Godefrooji, Diemers and Scherpier 2010; Hezaveh, Rafii and Seyedfatemi 2014; Cuesta-Briand, Auret, Johnson and Playford 2014; Palmgren and Bolander-Laksov 2015). The positive and negative aspects of clinical education will be discussed below.

2.9.3.1 Positive clinical experiences

The supportive relationships forged in a CLE have been highlighted as a positive aspect of clinical education. These include the relationships between students and their clinical supervisors, who help them grow and develop in personal and professional capacities; the relationship students have with their patients, as this enables them to develop technical and non-technical professional attributes, and the relationship between peers, to create a sense of camaraderie in the CLE (Ralph *et al.* 2008). Henzi *et al.* (2007) reported that students valued the opportunity to work with knowledgeable and experienced professionals during their clinical placements.

Palmgren and Bolander-Laksov (2015) reported on the transformative process of clinical education and how students use the demands and expectations to mature and develop. Students described how they learnt to balance and cope with various pressures (academic, clinical and personal) in the CLE. This is important as it is analogous to real-work practice, where practitioners have to contend with various demands and still function optimally. Their study also explained that a positive experience of clinical education was the socialisation and understanding of the profession, as students were able to develop their professional identity and felt a sense of belonging. Fleming, Zinn and Ferkins (2008) noted some positive aspects that are learnt through immersion in the CLE. These include:

- Developing interpersonal skills.
- A high work ethic.
- An appreciation of what it means to be a professional.
- An understanding of workplace culture.
- Developing time management skills.
- Treating others with respect.

2.9.3.2 Negative clinical experiences

It is known that students encounter a number of challenges within their CLEs. It is recommended that faculties acknowledge unsatisfactory situations that can potentially stifle student progress (Habbal, El Mardi and Inuwa 2007), so that action can be taken to modify or improve them in order to enhance professional development, learning opportunities and quality of education (Baraz *et al.* 2015). Corey, Corey and Callahan (2003) highlighted four problem areas in clinical education, which are summarised and described in **Table 2.5**.

Table 2.5: Problem areas in clinical education

Type of problem	Description
Professional	Pertains to quality of preparation to function in a CLE, awareness and acceptance of individual differences and varying sociocultural roles.
Consistent	Tolerance towards professional behaviors and attitudes, attitude to everyday work and challenging ethical situations.
Interventional	This involves challenges of patient care including coping with difficult patients and using clinical reasoning.
Training-specific	Pertains to the resources and facilities of a CLE, as well as issues relating to student roles and clinical supervision.

Beck and Srivastava (1991) highlighted some general challenges that students face during their clinical education component. These include, but are not limited to, a lack of clinical experience, difficult patients and fear of making mistakes, as well as being evaluated or assessed by faculty members. Other studies add to the ambit of challenges by including aspects such as deficits in professional knowledge, inadequate resources and facilities, insufficient practice of procedures before patient care, uncooperative staff members in the CLE, unavailability of clinical instructors and lack of motivation amongst students (Jahanmiri, Ghodsbin, Faseleh and Zaighami 2004; Hassan, Atash, Salehi, Ehsanpour and Hassanzadeh 2008; Delaram, Raeesi and Alidousti 2013).

2.9.4 The role of academic health clinics in clinical education

An academic teaching clinic or academic health center (AHC) is an outpatient facility based at a university that provides a public healthcare service to patients who present there. Palmgren and Bolander-Laksov (2015) reported that students viewed these outpatient clinics as a valuable, safe training environment, with learning conditions that have permitted them to work autonomously (albeit under supervision), and where they also had access to professional expertise that facilitated learning. Academic clinics are renowned for pioneering break-through research, and forging new diagnostic and therapeutic interventions of a profession, in addition to training future practitioners (Fuchs 2013).

Although academic and private healthcare settings both require careful attention to patient care, judicious time management and communication with other members of the health care team (Desch and Blayney 2006), the demographic profiles of patients presenting at academic clinics differ in comparison to those presenting at private facilities. Christmas, Durso and Wright (2010) explained that patients presenting at medical academic clinics are more complex, as they have multiple co-morbidities, greater immune suppression and more interaction of different disease processes, which complicate clinical decisions. Moreover, these clinics offer students unique educational opportunities, such as a more comprehensive observation of chronic disease and understanding of the psychological aspects of disease and closer relationships with clinical educators (McGee and Irby 1997).

Christmas *et al.* (2010) found that AHC allocate a significantly higher portion of time to patient care than private practices. The organisational resources of academic clinics also differ from those of private clinics, as a greater input of human resources such as clinic directors and clinic-coordinators, clinical supervisors and administrative personnel are necessary. Academic clinics offer a different patient care experience as compared to private practice. This is

attributed to distinctions in the missions, governance, fiscal structures, collegial relationships and reputations of academic and private clinics (Desch and Blayney 2006).

2.9.4.1 The DUT CDC as an example of an AHC

The DUT CDC is an example of an AHC which has a threefold mandate student education, patient care and research.

Education

The DUT CDC provides a CLE for students to contextualize and practise chiropractic. Being a teaching clinic, it is understood by patients that students have yet to master clinical and chiropractic skills and techniques and hence, require guidance, assistance and supervision from qualified chiropractors. Furthermore, consultation time may be prolonged given the high volume of students engaged in the practicum in relation to the clinician on duty.

Patient care

Clinical experiences that provide students with the opportunity to diagnose, treat and manage patients are an integral component of chiropractic clinical education (Kaeser, Hawk and Anderson 2014). Thus, patient care at the DUT CDC is central to the clinical practicum experience. The DUT CDC attracts a diverse range of patient profiles, offering chiropractic care to pediatric and geriatric patients, sportsmen and athletes, students, professionals and the general public. A spectrum of neuro-musculoskeletal conditions are diagnosed and treated conservatively at the clinic. Patients with non-musculoskeletal pathologies, or musculoskeletal conditions of a pathological origin, are referred to the appropriate healthcare provider.

Patients present to the reception staff, pay a nominal consultation fee and are then examined by the Master's students. For first-time registered Master's students, the consultations with patients are approximately two to three hours in duration. This is due to the students conducting comprehensive history taking, physical, neurological and orthopedic examinations before treating the patient. The student discusses each stage of the consultation with the supervising clinician, who also authorises the management of the patient. The consultation fee at the DUT CDC is less than that of private practice. This possibly contributes to patients seeking chiropractic care at the DUT CDC. The clinic also makes provision for fee reductions and concessions depending on a patient's socio-economic circumstances. To fulfill the requirements of the clinical practicum, students are obligated to treat a minimum of 35 new patients and 350 follow-up patients. Patient care is not exclusive to the DUT CDC (patient care is also provided at sports' events and satellite community clinics), however, students spend the most amount of time engaged in patient care at this clinic. Chiropractic students are responsible for the initiation and continuity of care of their patients in compliance with various clinical and legal protocols.

Research

Students in the DUT Master's Chiropractic Programme are required to produce a partial dissertation on topics relevant to the profession. Many students use the DUT CDC as a facility in which they conduct research, and some have even utilised specific demographic profiles of patients that normally present at the DUT CDC to achieve this. Research patients are exempt from consultation fees. The research activities at the CDC are in keeping with the research mandate of academic clinics which benefits both patients and society (Desch and Blayney 2006).

2.9.5 The role of basic medical sciences in clinical learning

Basic medical science subjects are important, as not only do they provide a basis for developing clinical reasoning skills and management abilities but also help to develop and support critical analysis of medical interventions (Grande 2009). A strong medical science background provides a conceptual framework against which new scientific and medical findings can be evaluated. Despite the value of these subjects, Attukorala and Atapattu (2014) found that 56.8% of medical students at a university in India felt that basic medical science teachings were not helpful in preparing them for their clinical component as these subjects lacked clinical significance. This was similar to the earlier report of Alam (2011), who explored the attitudes of medical students, who were in their clinical education component, towards the basic science subjects they were taught in the pre-clinical component. He assessed the applicability of these subjects to current clinical practice. The findings suggest that students have a negative opinion of their basic science courses and have difficulty retaining the previously acquired theoretical knowledge, as they felt it lacked relevance to their later clinical practice.

It would not be surprising if similar findings are observed if these studies are repeated for chiropractic students as the basic science curricula at most chiropractic educational institutions consist of courses that are taught in silos and stand-alone domains (Ward 2010). The compartmentalisation and lack of integration between basic science disciplines pose challenges to students in terms of understanding how the parts function as a whole, in order to apply this to solving clinical problems. As such, students experience difficulties when they enter their clinical component (Ward 2010). This calls for horizontal integration between basic science subjects to promote clinically relevant learning. This is supported by the study of He, La Rose and Zhang (2009) who designed a programme of cross-disciplinary integration in neuroscience. They combined various components such as neuroanatomy, neurophysiology, neuropathy and

neurogenetics into a single course within an established chiropractic curriculum at the Palmer College of Chiropractic in Florida, USA. This integrated programme achieved increases in students' confidence and ability to learn, and positive perceptions of neuroscience knowledge. While such programmes require significant efforts from administrators, curriculum committees and faculties, it is recommended that the challenges not dissuade educators from attempting them (Ward 2010).

2.10 IMPORTANT FEATURES OF CLINICAL EDUCATIONAL EXPERIENCES

Three important features of clinical education are clinical supervision, patient care, and administrative and clerical duties associated with clinical learning. An appraisal of each is provided below.

2.10.1 Clinical supervision

The relationship between students and their clinical supervisors has been acknowledged as the most influential factor of satisfaction with clinical education (Papastavrou, Dimitriadou, Tsangari and Andreuo 2016). Clinical supervision is central to integrating a programme's goals, missions and treatment philosophy with clinical theory and evidence-based practices. Clinical supervisors play an important role in supporting students to reach professional excellence (Sharif and Masoumi 2005).

2.10.1.1 Definition and scope of clinical supervision

Clinical education is achieved through collaborative efforts of the student, the lecturer and the clinical instructor (Cunningham, Wright and Baird 2015). There is considerable literature in clinical education research on clinical supervision, as it has been recognised as an indispensable component of the modern health care system (Milne 2007).

Clinical supervision refers to the professional interpersonal exchange between a qualified practitioner and a student (Hyrkas and Paunonen-Ilmonen 2001). The American Psychological Association (2014) provides a more detailed definition of clinical supervision, describing it as a distinct professional practice which initiates a collaborative relationship that extends over time, with the goal of not only enhancing the professional competence and evidence-based practice of the student, but also monitoring the quality of services rendered, protecting the public, and functioning as a gate-keeper for entry into a profession.

Additionally, the provision of monitoring, guidance and feedback on personal, professional and educational development in the context of patient care is attributed to the roles and responsibilities of clinical supervision (Kilminster and Jolly 2000). The domain of clinical supervision includes being an information provider, a facilitator, an assessor, a curriculum and course planner, and resource and material generator (Harden and Crosby 2000).

The methods of clinical supervision (Milne, Aylott, Fitzpatrick and Ellis 2008) include:

- Observing a student's performance in clinical procedures.
- Demonstrations by the clinician.
- Review discussions with students.
- Collaborating with other students or healthcare professionals to facilitate learning.
- Challenging students.

2.10.1.2 Clinical role-modelling

Clinical role-modeling describes the process by which a faculty member demonstrates clinical skills, models and articulates thought processes, and

manifests positive professional characteristics (Haider, Snead and Bari 2016). It is essential in medical education as it facilitates student learning and contributes to the development of professional identity, through observing the manner in which clinical supervisors behave and interact with patients, colleagues and others in the clinical setting (Brownell and Cote 2001). It has been suggested that professionalism is best learnt through clinical role models (Byszewski, Hendelman, McGuinty and Moineau 2012).

Curry, Cortland and Graham (2011) identified some exemplary behaviors exhibited by clinical supervisors which facilitated learning. These included teamwork, collegiality and respect. Positive humanistic values such as compassion, integrity and honesty were also rated as important characteristics (Jha, McLean, Gibbs and Sanders 2015). The attitudes, skills and knowledge that are closely associated with professionalism, and are congruent across health profession disciplines, include altruism, accountability, benevolence, ethical practice, excellence, honesty, integrity, respect for others, social responsibility and teamwork (Grus and Kaslow 2014). Effective communication skills have been recognised as an important characteristic of clinical role-models. This refers to the interactions between clinical supervisors and students (Haider *et al.* 2016) and the interactions between clinical role-models and patients (Curry *et al.* 2011; Butani, Paterniti, Tancredi and Li 2013). There is also a wealth of literature on students' perceptions of important and effective character traits in their clinical supervisors. Patience, confidence, and up-to date knowledge were found to be essential qualities of clinical supervisors (Dadgaran, Parvizi and Peyrovi 2012). Gray and Smith (2000) observed that being enthusiastic about teaching, and demonstrating understanding and a genuine interest in students were highly valued traits. Additionally, excellent interpersonal skills and the ability to make students feel safe and supported were also identified as important (Kilminster *et al.* 2007). High levels of professional competence and the positive attitudes of clinical supervisors were highly valued by students (Tang, Chou and Chiang 2005).

Understanding and acknowledging the attributes which are essential and desirable for clinical role models is important as it can help medical educators devise strategies to strengthen and reinforce these attributes within faculties and institutions (Haider *et al.* 2016). Furthermore, Ramani and Leinster (2008) stated that effective clinical leadership promotes a positive learning climate, which in turn sets the stage for successful learning and teaching.

In contrast to these positive qualities, clinical supervisors can also demonstrate ineffective supervisory behaviours (Watkins 1997; Gray and Smith 2000). These include:

- Rigid approaches to clinical teaching.
- Being hypercritical of weaknesses or knowledge deficits.
- Lack of praise or encouragement of students.
- Being unapproachable, intolerant, sexist or non-collegial.
- Intimidating students.
- Lack of knowledge and clinical expertise.

Considering that clinical supervision provides a platform to discuss patient care in a safe and supportive environment (Brunero and Stein-Parbury 2008), ineffective supervisory behaviours not only negatively impact the professional development of students but also patient care.

2.10.1.3 Qualifications and experience of clinical supervisors

Despite the assumption that all clinical supervisors are competent, both as professionals in a particular field and as clinical instructors (Fouad, Grus, Hatcher, Kaslow, Hutchings and Madson *et al.* 2009), there are a wide range of factors that impact and influence supervisory competence and quality. Although many licensed health professionals take up a leadership role as part of their

professional duties, simply being a qualified professional does not equate to effective clinical supervision. Higgs and McAllister (2005) were of the opinion that health professionals should not undertake the task of clinical supervision until they have gained enough professional experience. Similarly, Falender, Ellis and Burnes (2013) indicated that clinical supervision requires training to adequately prepare and develop the necessary attitudes, skills, knowledge and provisions in order to achieve supervisor competence.

Competence not only applies to performing one's professional role within the standards of practice, but also the ability to identify one's own inadequacies and short-comings within this role (Falender and Shafranske 2007). This emphasises the need for continued professional development (CPD) and critical reflection on the part of clinical supervisors in order to maintain supervisory competence. Positive personality traits, clinical acumen and teaching ability were rated as the most important factors to students when considering a competent clinical supervisor. On the other hand, research achievements and academic position were considered less important (Wright, Wong and Newill 1997). This indicates that clinical supervisors require an understanding of the factors and teaching methods associated with effective supervision as academic knowledge and practical skills alone are not enough.

There is no consensus on how many years of professional practice constitutes clinical experience. De Witt, Rothberg and Bruce (2015) found that 42% of clinical educators have less than three years of clinical experience and 16% had less than five years' experience. At the DUT CDC, it is a requirement that clinical supervisors have at least two years of clinical experience.

2.10.1.4 The importance of clinical supervisors' feedback to students

One of the duties of a clinical supervisor is to provide feedback to students on various clinical competencies. Feedback is an essential component of the supervision process as it assists students in fulfilling their educational objectives, through improving their professional knowledge, skills and behaviours (Burgess and Mellis 2015). Feedback should consist of opinion and judgment on clinical performance as well as exploring options to improve practice (Eraut 2006).

Since student confidence, self-esteem and motivation can be strengthened through the confirmation and acknowledgement they receive from their clinical supervisors, the manner in which feedback is delivered is important (Clynes and Raftery 2008). When providing negative or critical feedback to novice or junior practitioners, Dohrenwend (2001) recommended using the “sandwich technique”, which entails sandwiching negative feedback in between two positive remarks. Myrick and Yonge (2002) proposed that a gentle, sensitive approach, as opposed to a harsh one, is more effective in promoting student competence and confidence. Cantillon and Sargeant (2008) found that negative feedback, if not carefully relayed, could result in demotivation and deterioration in performance.

In one study, it was found that students appreciated their clinical supervisors allowing them independence and freedom in clinical decisions and procedures, while providing them with sufficient feedback to improve their performance (Pill and Pilli 2013). In another study, it was determined that in addition to taking the time to explain concepts and demonstrate techniques, students valued their supervisors engaging with them in discussions that were challenging and thought-provoking (Buccieri, Spivko and Olzenak 2013). De Witt *et al.* (2015) found that students sometimes feel disempowered in the clinical situation, as they were too afraid to challenge their clinical supervisors, as they felt it could be held against them.

2.10.1.5 Clinical confidence

Confidence is the belief in one's ability to perform tasks effectively and deal with situations successfully (Elzubeir and Rizk 2001). The importance of building and developing confidence in healthcare students cannot be underestimated because of its relationship with patient outcomes (Hecimovich and Volet 2009). Self-confidence in the clinical situation is one of the key factors that influences clinical decision-making (Hagbaghery, Salsali and Ahmadi 2004). This is based on the premise that if a practitioner possesses the skills to effectively assess a patient, and that assessment results in an improved quality of life, it is more likely to increase the confidence and effectiveness of the practitioner (Mason and Ellershaw 2004). Hagbaghery *et al.* (2004) determined that self-confidence is rooted in one's personal characteristics, level of knowledge, social and professional interactions.

Holland *et al.* (2012) found the following factors to have a positive impact of the development of self-confidence in South African occupational therapy students:

- Observing the methods and techniques of qualified practitioners.
- Sufficient time and opportunities to practice clinical skills.
- Achieving high marks for clinical skills assessments.
- Positive feedback from patients and clinical supervisors.
- Having clinical supervisors that inspire, develop and enhance confidence.

On the other hand, Kissinger (1998) cautioned against student over-confidence in the clinical situation. Over-confidence, without the corresponding level of knowledge and skill, increases the likelihood of clinical errors and poses risk to students themselves and their patients. Conversely, low levels of confidence can limit a student's involvement with practical skills and staff and patient interactions, thereby reducing the learning opportunities, and impeding the

potential of growth in self-confidence (Hoffman and Elwin 2004). In one study, it was found that 90.5% of nursing students in Malaysia were not confident in providing and managing care for patients; 18% were not confident in demonstrating clinical judgment and 39.9 % were not confident in evaluating and documenting outcomes of care (Panduragan, Abdullah, Hassan and Mat 2011). In another study, it was found that second-year nursing students in Turkey had high-levels of self-confidence (84.5%), which dropped to 76% in the fourth year but this was not statistically significant (Kukulu and Korukcu 2012).

One of the primary objectives of chiropractic education is to cultivate clinical confidence in novice practitioners (Boysen, Salsbury, Derby and Lawrence 2016). The building of confidence in clinical skills and patient communication begins early in tertiary education but develops significantly during the clinical practice component as confidence increases with clinical exposure and experience (Lai, Sivalingam and Ramesh 2007; Porter, Morphet and Raymond 2013). This is supported by the observations of Hecimovich and Volet (2012) who found that although chiropractic students appeared to be more confident in their patient communication skills, more than their clinical skills, before the start of their clinical practice component, both skills increased significantly throughout the duration of their clinical internship.

2.10.2 Patient care

The complex interaction between a patient and their healthcare provider is at the core of the therapeutic process and has a pronounced impact on patient health and recovery (Davis and Bove 2008). This relationship, formally known as patient-practitioner, or doctor-patient relationship (DPR), refers to an interpersonal exchange whereby a patient voluntarily approaches a health practitioner or doctor and becomes part of a contract in which they tend to abide by the doctor's instructions or recommendations (Chamsi-Pasha and Albar 2016).

It is reported that an ideal DPR has six components (Emanuel and Dubler 1995):

- Voluntary choice of patient in selecting a doctor.
- The doctor's competence in knowledge and skills.
- Effective communication between the doctor and patient.
- The doctor's empathy for the patient's suffering.
- Continuity of care.
- No conflict of interest between the doctor and patient.

A good DPR is beneficial to both patient and practitioner (Mahato and Suman 2013). Conversely, a poor DPR is a major obstacle in a healthcare setting and has a negative impact on the quality of healthcare delivered, patient-compliance and overall ability to cope with illness. Moreover, it can result in a patient 'doctor-shopping' by repeatedly changing health practitioners, resorting to non-scientific forms of treatment and an unwarranted increase in medical expenses (Shrivastava, Shrivastava and Ramasamy 2014).

From the doctor's perspective, a poor DPR may result in a decline in empathy and sensitivity, as well as an increase in unhealthy competition amongst practitioners (Werther 2010). Although the patient should always be the principal focus in the healthcare arena (Dworzanski, Dworzanski and Burdan 2012), there are various elements that influence the DPR and, consequently, the health and satisfaction of the patient. Some general examples of barriers in the DPR include poor communication skills of the doctor (Snyder 2008; Terpstra 2012), use of medical jargon by the doctor that is incomprehensible to the patient (Terpstra 2012), a doctor not listening to the patient's complaints (Snyder 2008; Jagosh, Boudreau, Steinert, Macdonald and Ingram 2011) and incongruences between the patient's expectations and the doctor's objectives (Pourette 2013).

For these reasons, open and clear communication between healthcare providers and their patients becomes particularly important. Effective communication and interpersonal skills not only allow the healthcare provider to gather information to facilitate accurate diagnosis, but also to appropriately counsel patients, provide therapeutic instructions and establish a caring relationship (Bredart, Bouleuc and Dolbeault 2005; van Zanten, Boulet, McKinley, DeChamplain and Jobe 2007). Moreover, effective communication also regulates patient emotions, facilitates comprehension of medical information and allows for better identification and clarification of patient's needs, perceptions and expectations (Bredart *et al.* 2005). Unsurprisingly, ineffective communication or miscommunication on the part of the practitioner has the potential to hinder a patient's understanding, expectations or involvement in treatment and decreases satisfaction with medical care (Baile, Buckman, Lenzi, Gloger, Beale and Kudelka 2000).

The DPR has historically been framed within a paternalistic model (Truog 2012), where the doctor was responsible for making all decisions pertaining to the patient's intervention, treatment and management, while the patient's autonomy in his/her management was reduced (Kaba and Sooriakumaran 2007). This system represented an inequitable distribution of power between patient and practitioner. In order to address the weaknesses of this model, the DPR dynamic has evolved to include implementation of consumer protection acts, clauses for professional misconduct and medical negligence, an expansion of mass and social media leading to increased awareness of healthcare in the general public and changes in the status of the doctor (Siebzenher, Balik and Matalon 2008; Oyer 2012). Thus, societal shifts have resulted in the empowerment of individuals (Truog 2012) and the evolution to a patient-centered care (PCC) model of health care.

The PCC model involves individualised patient care protocols based on specific information (Hobbs 2009), as opposed to an exclusive focus being placed on the

treatment and management of the disease (Saha, Beach and Cooper 2008; Berwick 2009). Patient centeredness aims towards a comprehensive healthcare approach where the practitioner endeavours to view illness from the patient's perspective, taking cognisance of the patient's needs and preferences during patient care (Tom 2010). Bower *et al.* (2014) emphasised the need for medical educators to actually teach students to provide PCC, as excellent clinical care alone no longer suffices as an indicator of performance and quality. Rather, the overall patient experience has become an important indicator in healthcare organisations (Wolf, Niederhauser, Marshburn and LaVela 2014).

Jamison (2001) was of the opinion that the intricacy of the patient-practitioner relationship in chiropractic distinguishes the profession from the rest of the medical community. This perhaps could be attributed to the fact that, unlike other disciplines such as medicine, where the DPR may terminate after just a single encounter, chiropractic professionals place emphasis on continual spinal care and so the therapeutic relationship may extend for many years, notwithstanding sporadic or intermittent encounters (Stahl and Forman 2005). Oths (1994) determined that the DPR in chiropractic is successful because chiropractors provided patients with comprehensible theoretical explanations, which clarify processes and problems within a structured and supportive environment.

2.10.2.1 Patient satisfaction with chiropractic care

Patient satisfaction with chiropractic care is a pre-requisite to successful clinical practice (Jamison 1996). A study by Gaumer (2006) determined that 83% of patients are satisfied with chiropractic treatment. Gemell and Hayes (2001) studied aspects of chiropractic care that contribute to patient satisfaction. These included the technical skills and personal manner of the chiropractor, length of time spent waiting for the consultation, the amount of time spent on treatment and the explanation of what was done during the treatment. In context of the

DUT CDC, it was found that patients reported a high degree of satisfaction with the chiropractic care they received (Thoresen 2006).

2.10.3 Administrative and clerical duties in a CLE

During their clinical practical component, students are required to complete various administrative and clinical duties in addition to their clinical tasks. Medical record keeping is an important facet of patient care.

2.10.3.1 Medical record keeping

Medical recording keeping is a standard operating procedure of healthcare systems globally. It is important for the evaluation of patient profiles and has a critical role in the domain of medical litigation and negligence allegations (Thomas 2009). Medical records provide a basis for planning treatment protocols and analysing treatment efficacy. They are also important from a medical insurance perspective as they are required to prove the patients' claim for medical expenses (Thomas 2009).

Precise, clear and systematised medical record keeping facilitates patient diagnosis and allows for communication and co-ordination between professional staff who share in patient care (Siamian, Ghafari and Aligolbandi 2000). Gutheil (2004) was of the view that medical records are the only enduring version of care as they evolve over time and serve as a reference work of value in emergency care, quality assurance and research.

Legal systems rely on documentary evidence in situations where medical negligence is alleged by patients (Thomas 2009). It is considered to be a serious breach of conduct and deviation from the standard of care should a practitioner fail to record relevant information obtained from a patient (Gutheil 2004). Generic

examples of clinical documentation that constitute medical records include (Thomas 2009):

- Medical history and clinical findings.
- Diagnostic test results (e.g. blood tests, radiographic reports).
- Pre-surgical care.
- Surgical notes.
- Post-surgical care.
- Medication history and details.
- Daily notes of patient progress.

Other documentations that are indirectly related to patient management, but are considered as medical records, include patient account records and billing, administrative records and service records of clinical staff.

Despite their legal obligation and procedural value, medical record keeping has been cited as contentious in medical literature. Alromaihi *et al.* (2011) highlighted the issue of time spent on clinical paperwork during patient care. They reported that a disproportionate amount of time is attributed to clinic paperwork compared to actual patient care: approximately 34 minutes were spent on reviewing and completing patient medical records whereas only 15 minutes were spent on patient care. Interestingly, regardless of its relevance in treatment, education and research, 54% of medical students had a negative attitude towards the completion of medical records (Siamian *et al.* 2008). Christino, Matson and Fadale (2013) found that 92% of medical students reported that clinical documentation obligations were excessive and compromised patient contact time.

2.10.3.2 Medical record keeping at the DUT CDC

There is a strong emphasis on accurate, consistent and timely completion of medical records at the DUT CDC. This is in compliance with various healthcare regulations, notably National Health Act (2003), Protection of Private Information Act (POPI 2014), Promotion of Access to Information Act (PAIA 2000), Patient Rights Charter (2008) and Occupational Health and Safety Act (OHAS 1993).

Patient files containing medical records are stored in archives at the clinic reception and they are only accessible by students involved in the provision of care of the patient, research students and clinic staff members. It is clinic protocol to obtain clinician consent and signatures on every document used in the clinic before proceeding with treatment or management of the patient. A student is required to have regular discussions with the on-duty clinician throughout the consultation with a patient. The consultation and corresponding clinical paperwork is divided into four parts: medical history taking, physical examination, orthopedic regional examination and patient management. Documentation for each segment of the consultation must be completed and signed. Failure to obtain the necessary signatures on clinical paperwork has both procedural (disciplinary hearing or tribunals) and legal ramifications.

The standard paperwork for new patients at the DUT CDC includes:

- Patient informed consent form.
- Medical history form.
- Physical examination form.
- Orthopaedic regional examination form.
- SOAPE (Subjective, Objective, Assessment, Plan, Education) note.
- Visit sheet, diagnostic and management coding.

- Additional paperwork, if required, includes blood work and biochemical marker forms, radiograph or other diagnostic imaging requisitions and referral letters.

Follow-up consultations usually involve less clinical paperwork compared to initial consults. The student does a brief evaluation of the patient and manages accordingly. The main documentations completed in follow-up visits are the SOAPE note and the capture of the diagnostic and management codes on the visit sheet.

2.11 A CALL FOR EARLY CLINICAL EXPOSURE

An interesting observation by Verma (2016) was that the physicians of tomorrow are being taught by the teachers of today using the curricula of yesterday. The fundamental assertion here is that there is a need to revise the structure, content and teaching methodology in medical education, in accordance with developments in medical knowledge, technology and practices. It is proposed that the rapid change in the pace of healthcare systems world-wide is giving rise to corresponding changes in the process and content of health science education, however, despite its importance, little discourse has emerged on this topic in a chiropractic context (Tayade, Bhimani, Kulkarni and Dandekar 2014).

Historically, there has been a division between pre-clinical and clinical education (Rawekar, Jagzape, Srivastava and Gotarkar 2016) which has been the status quo for more than a century (Dornan *et al.* 2006). Recently, there appears to be a paradigm shift to integrate clinical exposure early into education programmes (Tayade *et al.* 2014). Early clinical exposure (ECE) is a method of teaching and learning which promotes exposure of students to patients from their first year at an institution, in a clinical or social context, that enhances both the learning of health, illness and disease, as well as the role of the health care professional

(Verma 2016). It was observed that at the beginning of their academic medical career, students are not exposed to the interrelatedness of the social, scientific, interpersonal and professional elements of medical education (Bagot *et al.* 2005). However, in keeping with changes to the clinical environment, expectations of patients, accountability to stakeholders, and understanding of the theoretical basis of learning, new and effective approaches are warranted (Verma 2016).

Verma (2016) proposed three basic forms of ECE that could be incorporated into academic programmes (**Table 2.6**):

Table 2.6 A summary of ECE initiatives

ECE setting	Description	Objective
College or classroom	An uncomplicated and co-operative patient brought into the classroom and clinical teacher facilitates patient appraisal.	To enhance clinical skills and understanding of disease processes
Hospital, clinics or wards	Students are taught to understand the health care system. Facilitates identification and understanding of clinical protocols and disease patterns.	To enhance clinical skills and understanding of disease processes
Community centers or underserved populations	Supervised patient appraisal in a community based setting.	To contextualise basic sciences through integration with clinical dimension. Adds a societal perspective to academic learning as it fosters awareness about how people live and the bearing of socio-economic status on health. It also fosters understanding of disease prevention and health promotion.

Rawekar *et al.* (2016) found that students who spend their pre-clinical years in classrooms, dissection halls, and laboratories, struggle to relate to the concepts of pre-clinical subjects to clinical education, due to a lack of exposure to patients and their disease states. With this in mind, they introduced an ECE programme for first year medical students. They found that the students were more interested in their subjects and displayed a heightened motivation to learn after their ECE

programme. Earlier, Bray (2013) implemented an ECE programme for medical students in SA. It was concluded that ECE led to professional development through acquiring technical skills, becoming familiar with basic clinical terminology, and awareness of normal clinical findings, which prepared them for future clinical learning components. It also fostered a sense of vocation and made students feel like real doctors.

2.11.1 Examples of pre-clinical initiatives

There are few studies on pre-clinical initiatives in chiropractic education. One such study by Jamison (2002) described a health promotion assignment undertaken by third year, undergraduate chiropractic students. The purpose of this pre-clinical assignment was to teach undergraduate chiropractic students how to address health problems at a micro-level, and for students to experience the reality of interacting with a patient, and creating a management plan. It entailed gaining permission to perform a health status assessment on a patient and, thereafter, generating a management plan to reduce the risk of disease in the patient. It included screening for risk factors such as those of osteoporosis, diabetes and heart disease and educating patients on health actualising behaviors. This differs from pre-clinical initiatives at DUT, which do not permit undergraduate students to advise or educate patients before the clinical practicum. The health promotion assignment also included the preparation of a health management contract that identified the patient's current lifestyle choices in comparison to their current health status in order to set health goals.

At the University of Stellenbosch, an expanded clinical practice module was introduced into the second-year, undergraduate physiotherapy curriculum to support and facilitate the transition to patient care in third year. (Faure 2002). This structured peer-led introduction to clinical education (SPLICE) was undertaken concurrently with visits to primary, secondary and tertiary healthcare institutions in the undergraduate programme. The SPLICE module was a type of

mentorship programme in which senior students (third and fourth years) assisted second years with clinical tasks. Second year students were allowed to conduct patient interviews, observe and assist seniors with selected clinical procedures and teach patients home exercises. Senior students were responsible for facilitating patient consent on behalf of juniors, outlining the patient's condition, and providing feedback to the students. This module motivated students and created excitement and enthusiasm for clinical practice in the future.

2.12 THE TRANSITION FROM A PRE-CLINICAL TO CLINICAL EDUCATION

The transition from the B.Tech programme to the M.Tech programme marks the change from pre-clinical to clinical education components. The pre-clinical and clinical components are characterised by differences in the physical environment and atmosphere, curriculum and context, education methods and training, and student-teacher roles and relations (Kalaa, Sariyaka, Keklik and Glipnar 2016). The transition between these two components has been described as a turbulent period in students' academic careers.

2.12.1 Transition shock

The transition between pre-clinical and clinical education components has been recognised as the most stressful period of medical education (Godefrooji *et al.* 2010). Students have described entering the clinical arena to being “thrown into the deep end” (Dornan and Bundy 2004), due to differences in learning, application, demands and expectations. This experience of progression between educational components or phases is known as transition shock and has been reported by several researchers (Michau, Roberts, Williams and Boyle 2009; Boychuk Duchscher 2009; Godefrooji *et al.* 2010; Ajani and Moez 2011; Casey, Fink, Jaynes, Campbell, Cook and Wilson 2011; Monaghan 2015; Rawekar *et al.* 2016).

Transition shock describes the initial reaction of students to the notion of moving out of the protected environment of academia into the unfamiliar environment that contextualises professional practice. During this transition, students are required to make physical, intellectual, developmental and socio-cultural adjustments in order to cope with their new roles and responsibilities (Boychuk Duchscher 2001). The first clinical year, specifically, has been distinguished as the stage at which students undergo intense emotional experiences (Pitkala and Mantyranta 2003).

The challenges of transition shock include feelings of inadequacy while executing simple procedures, knowledge deficits and difficulty coping with the work load (Radcliffe and Lester 2003; Prince, Boshuizen, Van der Vleuten and Scherpbier 2005). Boychuk Duchscher (2009) found that students identify their initial professional adjustment in terms of feelings of inadequacy, insecurity, instability and anxiety. Initial clinical anxiety has been attributed to the fear of being unable to effectively establish a diagnosis for a patient and providing incorrect information (Sharif and Masoumi 2005). Beck and Srivastava (1991) investigated anxiety-producing situations during students' initial clinical experience. They found that the lack of clinical experience, the fear of making mistakes, difficult patients, and being evaluated by faculty members to be stimulants of anxiety. Interestingly, stress during the transition period can be considered as conducive to learning and not merely inhibitive. A certain degree of transition stress can actually serve as a powerful motivator to help students perform better (Morrison and Moffat 2001). This is consistent with the work of Quick, Nelson and Quick (1990), who found that if negotiated properly, stress can be stimulating and motivational to individuals to accomplish new things.

Incongruences in expectations and the skills requirements between pre-clinical training and clinical education were also found to be a major source of anxiety amongst students (Wenrich *et al.* 2010). Discrepancies between content of pre-

clinical education components, and what students actually experience in the real world of healthcare service, have been reported and are concerning (Boychuk Duchscher 2001). Eyal and Cohen (2006) found that 56% of students reported that their pre-clinical education lacked clinical relevance, 39% were of the opinion that they were not taught sufficient clinical skills in preparation for clinical practice, and 79% felt that the pre-clinical years should include clinical experience.

2.12.2 Theory-practice gap

The theory-practice gap phenomenon, sometimes referred to as the pre-clinical-clinical divide, is related to the concept of transition shock. It refers to the disparity between theoretical knowledge, acquired in a classroom setting, and practical application, in a clinical environment (Landers 2001). Although the assertion that knowledge and practice cannot be separated, as both are critical to any profession (Ajani and Moez 2011), is pragmatic, transition between didactic teaching and clinical training has been found to be challenging (Ladak, Hansan and de Gara 2006) and is supported by the existence of the theory-practice gap in various disciplines.

Steele (1991) emphasised the notion of the theory-practice gap by explaining that knowledge taught in a classroom can never truly resemble a real event and that full comprehension of a discipline's principles does not equate to effective application in practice. For example, Ajani and Moez (2011) observed that when nursing students faced real clinical situations, they were unable to apply their previously acquired theoretical knowledge. Monaghan (2015) reported that nurses felt unprepared for clinical practice and lacked confidence in their own abilities. They indicated that during their training, insufficient time was dedicated to the production of clinical skills. It was also ascertained that students felt that some aspects of their curriculum were only taught after they had been exposed to the clinical setting (Mabuda *et al.* 2008). This raises the concern of curriculum

integration and relevance of pre-clinical education to the realities experienced within the CLE. In a study on undergraduate paramedic education, Michau *et al.* (2009) found that for some second- and third-year paramedic students, the clinical learning component did not provide opportunities to consolidate theoretical knowledge or practise skills appropriate to their level or scope of education. A mismatch between learning objectives and exposure to clinical cases and practical skills was observed. In another study, it was found that occupational therapy students and recent graduates also reported that they felt they lacked technical interventional skills (Hodgetts, Hollis, Triska, Dennis, Mandill and Taylor 2007).

2.12.2.1 Initiatives to bridge the theory-practice gap in clinical education

Many health sciences faculties have implemented initiatives in an attempt to reduce the theory-practice gap. For example, Gercama, van Lankveld and Kusurkar (2014) identified that first year Master's medical students experienced difficulties in applying their medical knowledge during their clinical clerkship. A programme was developed with the objective of improving the students' clinical reasoning abilities and critical appraisal of clinical literature. Small groups of students attended weekly brain storming sessions on clinical problems which were facilitated by an experienced clinician. These sessions improved and enhanced the students' clinical abilities. In nursing education, it was observed that there was a need to develop knowledge and skills in palliative care; therefore, a fast-track training programme was set up by a specialist team. It consisted of an academic module for which students were credited, a four-week secondment in a palliative care setting (two weeks with a palliative care team, one week at a hospice and one week in a palliative care setting of choice) and a six-month project undertaken in the workplace to bring about changes in practice. It was reported that this initiative was an overwhelming success for students, as it increased students' confidence, understanding and proficiency of palliative care (Ward and Wright 2004). In another study, a short course consisting of three

workshops was introduced to third-year undergraduate radiography students in history taking and communication skills before interacting with real patients. Students rated this initiative as highly satisfactory (Halkett, McKay and Shaw 2011).

It has been suggested that the theory-practice gap increases in post-graduate education (Fairbrother and Ford 1998). McKenna and Ward (2004) stated that concentration on academia and research reduces the focus on practical training. Chiropractic academic curricula are traditional, i.e. they follow a set structure that progresses from basic sciences to para-clinical subjects to clinical subjects. Behar Horenstein *et al.* (2000) asserted that chiropractic education should move away from the traditional approach which places emphasis on didactic lectures, memorisation and laboratory demonstrations. However, movements toward innovative curricula or initiatives to integrate ECE or bridge the theory-practice gap could prove to be an arduous task, as the logistics, planning and preparation of such endeavours must be considered. For instance, to include these initiatives into the respective chiropractic programmes, regional special task forces consisting of relevant stakeholders would need to be established. This would take both time and resources.

Furthermore, curriculum development is a laborious process that requires assessment of needs, a review of the entire course or programme and its objectives, development of educational strategies, implementation and assessment, as well as evaluation of assessment data (Kern, Thomas and Hughes 2009). Additionally, approval from both institutional structures, such as university senate, and external structures, such as the statutory body (AHPCSA), or Department of Health, would be necessary.

2.12.2.2 Transition shock and theory-practice gaps in the context of chiropractic clinical education at DUT

The shock of transition into clinical practice, together with the theory-practice gap and early clinical exposure, are topical issues when evaluating clinical educational. First-time entry into the Master's level essentially equates to the first clinical year and represents the transition between pre-clinical and clinical education. In essence, chiropractic students at DUT transition from an undergraduate programme that does not include any treatment of patients, directly to a post-graduate programme that is orientated around patient care. Being a course-work Master's programme, students undertake their clinical practicum and academic component (lectures and practicals) concurrently. This means that despite being involved with patient care at the DUT CDC, students may not yet have completed certain clinical modules (especially those related to extremity conditions) pertinent to patient care.

2.13 PROFESSIONAL DEVELOPMENT THROUGH CLINICAL EXPERIENCE

Benner (1984) described the stages of professional development through clinical competence (**Table 2.7**). The journey from the novice to expert stage is fraught with both personal and professional development challenges. At the novice stage, the student is not expected to provide meaningful insight into clinical decision-making. It is at this stage that students experience the most anxiety and self-doubt and require the most guidance. With increasing exposure to clinical situations, and being given greater responsibilities of planning and executing clinical tasks, there is an appreciation and understanding of the demands of the profession. At the expert level, the individual has reached a stage where they can work independently, intuitively, skillfully and with a deep understanding of the clinical situation. These individuals can utilise their knowledge, skills and experience to guide the novice and beginner students to reach competent levels.

Table 2.7: Stages of professional development

Stage	Description
Novice	No experience in the clinical situation Lacks confidence Prolonged time to complete clinical tasks Undeveloped discretionary judgment
Advanced beginner	Prior experience in clinical situations Efficient and skillful in certain clinical tasks Knowledge is developing
Competent	2-3 years of clinical experience Co-ordinated and confident Planning and execution of clinical tasks based on considerable analytical and abstract contemplation of problems Completes clinical tasks in a suitable time frame
Proficient	Holistic understanding of situations Efficient decision-making Knows what to expect in a given situation
Expert	Has an intuitive grasp on clinical situations Highly skilled and proficient Has a deep understanding of the total situation without wasteful consideration of unfruitful differential diagnoses and solutions

2.14 WORK-READINESS AND PREPAREDNESS FOR INDEPENDENT CLINICAL PRACTICE

Work-readiness is a term that describes the extent to which students are perceived to possess the professional attitudes and attributes that prepare them for success in the work environment (Caballero and Walker 2010). The essential attributes, as indicators for work-readiness, include personal growth and development; professional maturity; organisational awareness; interpersonal skills; technical aptitude; adaptability; problem-solving skills and resilience (Caballero, Walker and Fuller-Tyszkiewicz 2011). Although it has been proposed that the knowledge base of clinical practice makes full preparation impossible (Goldacre, Taylor and Lambert 2010), researchers have historically been interested in students' perceived preparedness for independent clinical practice, as it is an important indicator to determine whether tertiary institutions are delivering a high standard of clinical education and also to ensure patient safety (Luciani, Cerritelli, Waters and Zegarra-Parodi 2014).

Research has been conducted to determine students' self-reported preparedness for independent practice. Palmgren and Chandratilake (2011) found that chiropractic students in Sweden perceived their clinical education to be sufficient in preparing them for working life. Lachish, Goldacre and Lambert (2012) reported that 70% of medical graduates in the United Kingdom agreed that they were well-prepared upon graduating from medical school. However, only 1.4% of the participants in that study felt that lack of preparedness for independent practice was a serious problem.

Other studies determined that perceptions of preparedness are not global but rather, are based on certain skills that may be lacking, but may be necessary to fulfil a professional duty (Bleakley and Brennan 2011; Tallentire, Smith, Wylde and Cameron 2011). Tallentire *et al.* (2011) found that medical graduates felt well prepared in consultation and communication skills, but less prepared in acute

care and prescribing skills. Talberg and Scott (2014) stated that physiotherapy students at the UCT were given adequate training and support in both academic and clinical arenas to enable them to perform competently during independent practice. Nursing students in Australia reported feeling prepared for practice though they could use additional support in certain areas, such as developing their professional identity and performing invasive procedures (Usher, Mills, West, Park and Woods 2015). Moodley (2016) found that paramedic students in SA were uncertain in their confidence to practise independently. The students felt that they did not have sufficient clinical experience upon graduating and were ill-equipped to deal with the pressures of independent practice. They were also of the opinion that there were gaps in their knowledge and practical skills that would be necessary for clinical practice.

2.15 CONCLUSION

This chapter examined the literature on clinical education amongst various health profession disciplines to construct a conceptual framework of the facets that constitute experiences within a clinical learning environment. Discourse on academic, organisational and procedural factors was provided, as well as data describing the successes and challenges of clinical education. An explanation of chiropractic education at the DUT was also provided. To date, there are only a few international studies describing chiropractic clinical education. There are no known studies pertaining specifically to the first clinical year in chiropractic education with an exploration of student experiences in SA. Thus, this study attempts to contribute to the limited body of literature in chiropractic clinical education.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the methodology used to design and execute this study. It clarifies various aspects of the research procedure, including sample size and population, ethics and research rigour, development of the research instrument and the process of data collection.

3.2 STUDY DESIGN

Qualitative research is a method of scientific enquiry which is primarily concerned with developing explanations of social phenomena (Hancock, Ockleford and Windridge 2007). The main aim of qualitative research is to facilitate understanding of social constructs and to allow for the exploration of subjective matter such as views, perceptions, opinions, attitudes and experiences. A qualitative paradigm using an exploratory and descriptive design was used for this study.

An exploratory design is applicable in instances where there is paucity in the existing literature pertaining to a topic, or when there are no earlier studies that can be used as references to predict an outcome (Streb 2010). The objective of an exploratory design is to gain insight into and familiarity with a topic which is still in the preliminary stages of investigation. Given that there is a scarcity of literature relating to chiropractic students' clinical experiences, it was fitting to use an exploratory design.

A descriptive design seeks to describe an experience or event and highlight certain aspects of it. It is useful when the researcher attempts to investigate the “who, what and where” of events and how these aspects relate to or influence the research topic (Sandelowski 2000). Since this study endeavoured to explore student attitudes, perceptions and opinions of their clinical experience in a specific clinical learning environment, a descriptive design was suitable for addressing the aim and key research questions of this study.

3.3 RESEARCH SETTING

This study was conducted at the DUT CDC. A clinic room was pre-booked for the interviews.

3.4 POPULATION, SAMPLE TECHNIQUE AND SAMPLE SIZE

The population of this study was first-time registered Master’s chiropractic students who met the inclusion criterion. Purposive sampling is a form of non-probability sampling which involves the deliberate selection of a sample population in order to fulfil a specific purpose (Tashakkori and Teddlie 2003), hence, it is ideal for qualitative research (Palys 2005). The premise of purposive sampling is to achieve representativeness and comparability by selecting a particular cohort (Teddlie and Yu 2007).

Unlike quantitative research, sample sizes in qualitative research cannot be determined through statistical extrapolation. There is a considerable lack of consensus pertaining to specific sample sizes in qualitative research (Creswell 2013).

It has, however, been established that sample sizes in qualitative studies are comparatively smaller than those of quantitative studies (Mason 2010). This

perhaps can be attributed to the fact that qualitative data is based on the principle of diminishing return, i.e. more data does not necessarily equate to more information (Ritchie, Lewis and Elam 2003). Moreover, the time consuming and labour-intensive nature of qualitative data analysis makes large sample sizes impractical (Mason 2010). Methodologists have deliberated the concept of theoretical saturation, where there is no new information being generated through the research instrument, as a marker of a sufficient sample size (Guest, Bunce and Johnson 2006). In 2016, there were 22 students registered for the first time in the Master's chiropractic programme at the DUT. Data was collected until a point of saturation was reached, resulting in a final sample of 15 participants. Two students were excluded as they participated in the pilot study.

3.5 INCLUSION AND EXCLUSION CRITERIA

Inclusion criterion

- First-time registered Master's chiropractic students in 2016.

Exclusion criteria

- Participants who refused or did not agree to sign the letter of information and informed consent (**Appendices E1 and E2**).
- First-time registered Master's students who participated in the pilot study.

3.6 PARTICIPANT RECRUITMENT

The researcher approached prospective participants and explained the nature and purpose of the study. An interview was arranged with those who expressed an interest in participating. Participation was purely voluntary and there was no incentive offered, as stipulated in the letters of information and informed consent (**Appendices E1 and E2**).

3.7 DATA COLLECTION PROCESS

Prior to commencing with the process of data collection, a pilot study was conducted. A brief description of the pilot study and the main study is provided below.

3.7.1 Pilot study

A pilot study or feasibility study is a pre-test technique which is used to develop and test the adequacy of the research instrument and to identify and correct any logistical issues which may occur during the actual test. It is used to determine whether the research protocol is realistic and workable (van Teijlingen and Hudley 2001).

A pilot study was conducted to improve the internal validity of the questions for the interview, i.e. whether any questions were unnecessary, difficult, ambiguous or needed to be re-worded or shortened; determine whether each question allowed for an adequate range of responses, and finally to record the time taken to complete the interview process (van Teijlingen and Hundley 2001). There were no changes made to the research instrument subsequent to conducting the pilot study as participants indicated that the questions were both relevant and comprehensible.

3.7.2 Main study

The researcher sent a text message reminder to each participant a day before the interview detailing the time and venue of the interview. Before formally commencing with the interview, the researcher reiterated the nature and purpose of the study to each participant. Participants were then provided with the letter of information and informed consent (**Appendices E1 and E2**) and were given an opportunity to read them. After obtaining informed consent, each participant was allocated a code which was used during the interview and transcription process

so as to uphold the principles of confidentiality. Only the researcher and the supervisors had access to the data obtained.

The participant was given a copy of the interview guide so they could follow the questions. Data was obtained through a one-on-one, semi-structured interview with each participant. Semi-structured interviews are a type of interviewing technique which requires respondents to answer pre-set, open-ended questions (Jamshed 2014), which are flexible in nature, and allows for elaboration and clarification of the information provided by the participant (Gill, Stewart, Treasure and Chadwick 2008).

The duration of the interview was variable, depending on the length of the participant's responses, but, on average, lasted approximately 20 minutes. All interviews were recorded on a pre-tested digital audio-recording device. The interviews were conducted at the end of the first clinical year (i.e. 11 months after commencing the clinical practicum).

3.8 RESEARCH INSTRUMENT

The research instrument used in this study was an interview guide.

3.8.1 Developing an original research instrument

It is recommended that pre-validated and published questionnaires or interview guides are used as research instruments as it saves time and resources (Boynton, Wood and Greenhalgh 2004). Artino, La Rochelle, Denzee and Gehlbach (2014) share similar sentiments that it is perhaps more effective to adapt on an existing questionnaire or interview guide as this enhances the validity of the study. On the other hand, Artino *et al.* (2014) also acknowledge that many medical researchers do in fact prefer to independently develop their

own set of research questions. Due to the fact that each clinical learning environment within the health science fraternity has its own unique instructional offering and standard operating procedures, it was decided that the researcher create an interview guide with questions relevant and specific to the experiences of DUT CDC. Therefore, for this study, no specific pre-existing interview guide was used or adapted in its entirety (**Appendix F**).

The line of questioning was evaluated to determine the applicability to the aims and key research questions of this study. In general, the lines of questioning used were similar to those of other studies pertaining to student experiences within their CLE (**Table 3.1**). A summary of questions used in the interview guide are provided in **Table 3.2**.

Table 3.1: Examples of key questions used previously in similar studies

Reference	Key questions
Sharif and Masoumi (2005)	<ul style="list-style-type: none">• Which clinical experiences did you find enjoyable?• Would you like to talk about those clinical experiences you found most anxiety producing?• What are your expectations of clinical experiences?• How do you think your clinical experience can be improved?
Mabuda <i>et al.</i> (2008)	<ul style="list-style-type: none">• Describe your clinical learning experiences during placement in a clinical learning environment.
Palmgren and Bolander-Laksov (2015)	<ul style="list-style-type: none">• How is the educational environment experienced at different points in time?• Which learning conditions are experienced as constituting facets of the educational environment?

Table 3.2: A summary of the seven main questions used in the interview guide

Question number	Facet of clinical experience	Question
Question 1	Perceptions of undergraduate training in preparation for the clinical practicum.	What are your views regarding undergraduate chiropractic training in preparing you for the demands of the fifth year clinical practicum?
Question 2	Patient care in the clinical learning environment	Please describe how your clinical experiences have contributed to or enriched your understanding of chiropractic in terms of knowledge, skills, clinical application and leadership, specifically referring to your capacity to diagnose, treat and manage patients.
Question 3	Highlights of the clinical practicum experience.	What has been the highlight of your experiences during the clinic practicum thus far?
Question 4	Challenges and obstacles encountered during the practicum.	Have you encountered any challenges or obstacles during your clinical practicum? Please elaborate.
Question 5	Student relationships with clinicians at the DUT CDC.	Describe the relationship you have with the clinicians.
Question 6	Student relationships with administrative staff at the DUT CDC.	Describe the relationship you have with the administrative staff at the chiropractic clinic.
Question 7	Suggestions to improve or enhance the clinical practicum experience for the future.	Highlight your views on any facets of the clinic practicum that could be enhanced or improved in order for chiropractic students to gain a deeper, richer experience.

3.9 DATA ANALYSIS

After the set of data was collected through audio recordings, the data was then transcribed *mutatis mutandis* on to a Microsoft® Word document. The data were then analysed using thematic analysis, which is a common method used to interpret data in qualitative research. It is used to identify, analyse and report patterns within a set of data (Braun and Clarke 2006).

There are six main phases in thematic analysis which were adhered to when analysing the data (Braun and Clarke 2006).

Phase 1: Familiarising oneself with the data

The researcher immersed herself in the data through repeated reading so as to understand the breadth and scope of the content.

Phase 2: Generating initial codes

Once the researcher was familiar with the data, an initial list of codes was generated. These were used to identify a feature of the data of particular interest to the researcher. Manual coding was used, whereby notes were written on the printed transcripts.

Phase 3: Searching for themes

After coding and collating the data, the researcher carefully scrutinised the codes to determine how different codes may combine to form an over-arching theme. The main themes and sub-themes were then identified.

Phase 4: Reviewing themes

Themes were consolidated and refined.

Phase 5: Defining and naming themes

The essence of each theme was extracted from the data and an appropriate narrative was provided for each theme.

Phase 6: Producing the report

The data were synthesised into a concise, coherent, logical and non-repetitive report.

3.10 ETHICAL CONSIDERATIONS

3.10.1 Ethical approval

Approval to conduct this study was obtained from the Institutional Research and Ethics Committee (IREC) of the DUT (Ethics Reference Number: 112/16) (**Appendix A**). Gatekeeper permission was obtained from the Clinic Director of the DUT CDC (**Appendices B1 and B2**), and the Head of the Chiropractic Programme (**Appendices C1 and C2**), and the Director of Research at the DUT (**Appendix D2**).

3.10.2 Autonomy

Autonomy refers to the freedom of participants to make independent decisions regarding the research process (Polit and Beck 2006). All participants were able to make their own decisions without influence or coercion and no form of enticement or incentive was offered in exchange for participation. Participants were at liberty to withdraw participation at any point before or during the interviews. The principles of autonomy were stipulated in the letter of information provided to each participant (**Appendix E1**).

3.10.3 Non-maleficence

Non-maleficence refers to the care and caution taken by the researcher to ensure no harm, risk or side effects would be suffered by the participants (Polit and Beck 2006). None of the participants were harmed during this study. This was highlighted to the participants in the letter of information (**Appendix E1**) and reiterated to each participant by the researcher before the commencement of the interviews.

3.10.4 Beneficence

Beneficence is the principle duty imposed on the researcher to maximise benefit and minimise harm to participants. It honours and upholds the physical, financial, social, emotional and legal well-being of participants (Polit and Beck 2006). Participants were reassured of their confidentiality before being interviewed and they acknowledged this by signing the informed consent form (**Appendix E2**). This study benefits future chiropractic students, and the Chiropractic Programme, as it provided insight into the experiences of chiropractic students during their clinical practicum, which could ultimately lead to positive changes and improvements in the current system where necessary.

3.10.5 Justice

Justice refers to the participant's right to privacy and fair treatment (Polit and Beck 2006). Every chiropractic student included in this study was given a fair and equal chance to express their views and opinions free from discrimination. To ensure privacy, the electronic data collected and transcription documents were stored on a password protected computer, only accessible by the researcher. No personal or identification details were made available on transcription documents and participants had the right to provide or withhold information.

3.11 TRUSTWORTHINESS OF THE RESEARCH PROCESS

Research rigour involves managing, analysing and presenting data accurately as it is experienced by participants. There are four criteria for establishing the trustworthiness of qualitative data: credibility, dependability, confirmability and transferability (Lincoln and Guba 1985).

3.11.1 Credibility

Credibility pertains to the confidence and truth of the data and its associated interpretations (Polit and Beck 2006). There are various techniques for improving and documenting the credibility of qualitative research, such as participant checks, validation or co-analysis, researcher reflexivity and member checks. Member checks were used to determine if the data obtained by the researcher were interpreted in alignment with the participant's view. The research co-supervisor conducted the member checks and no discrepancies were determined.

3.11.2 Dependability

Dependability pertains to the stability of data over time and situations (Polit and Beck 2006). Thus, the interviews are expected to be consistent and that the same questions need to be asked of each participant. A dependability audit can be done, whereby an external reviewer scrutinises the data and relevant supporting documents. The research co-supervisor served as an independent auditor who assessed and reviewed the data collection process documentation, transcripts and audio-recording, to ensure that the researcher was consistent throughout the research process and among the different participants.

3.11.3 Confirmability

Confirmability refers to the objectivity of the data. This means there should essentially be correspondence between two or more independent people regarding the accuracy and significance of the data (Polit and Beck 2006). An inquiry audit can be conducted where an external reviewer scrutinises the data and relevant supporting documents. To ensure confirmability in this study, the researcher's data analysis was reviewed by the research co-supervisor who acted as an autonomous coder. The themes and sub-themes identified by the researcher were compared to those of the research co-supervisor. No significant

differences or discrepancies were found between the analysis of the researcher and that of the research co-supervisor.

3.11.4 Transferability

Transferability refers to the extent to which the findings which emerge from the research investigation can be extrapolated to other situations or groups. It can be equated with generalisability (Polit and Beck 2006). The researcher ensured transferability of the results by providing a detailed description of the research setting and research processes. This confirmed the transferability and authenticity of the study, making it possible to build on these findings when performing further research. A rich and vigorous presentation of the findings, together with relevant quotations by participants from the interviews also enhanced transferability.

3.12 CONCLUSION

This chapter explained the research protocol used in this study and clarified how data was obtained and analysed. The next chapter presents the findings of the study.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

The results obtained from the thematic analysis of 15 semi-structured interviews performed on first-time registered Master's chiropractic students in 2016 are presented in this chapter.

The four main themes and associated subthemes that emerged from the interviews are presented in **Table 4.1** together with their synopsis. All themes are interrelated and collectively contribute to the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum. The narratives of the participants were transcribed verbatim.

Table 4.1: The main themes, sub-themes and their synopsis

THEME	SUB-THEME	SYNOPSIS
1. Undergraduate education and pre-clinical preparation.	<ul style="list-style-type: none"> ▪ Perceptions of undergraduate education. ▪ Theory-practice gap. ▪ Deficits in undergraduate practical training. ▪ Transition shock. ▪ Recommendations to ease the transition between pre-clinical and clinical components. 	<p>The undergraduate and pre-clinical preparatory phase forms the foundations of clinical education and training. It is the knowledge, skills, attitudes, values and competencies acquired in this phase that are extrapolated and applied in a clinical context. The themes encompassed within the domain of undergraduate and pre-clinical preparatory education have a direct bearing on the quality of clinical education experiences. First-time registered Master's chiropractic students transition between undergraduate education that does not include any chiropractic treatment and management of patients, to the post-graduate phase, which is largely orientated around patient care. It is thus relevant to explore undergraduate education in preparation for the clinical practicum.</p>
2. Experiences in the clinical learning environment.	<ul style="list-style-type: none"> ▪ Personal growth and development. ▪ Preparedness for independent clinical practice. ▪ Patient responses. ▪ Clinical and administrative duties. ▪ Perceptions of clinic infrastructure. 	<p>The CLE offers a diversity of experiences. Not only is a student expected to conduct himself with professionalism, but is also required to effectively negotiate through an array of interpersonal relationships, administrative tasks and clinical practices. These experiences impact and influence the personal and professional development of students. As such, it becomes necessary to examine these experiences to understand their impact on clinical learning.</p>
3. Inter-personal relationships in the clinical learning environment.	<ul style="list-style-type: none"> ▪ The clinical supervisory relationship. ▪ Expectations of clinical supervisors. ▪ Important character traits. ▪ Relationship dynamics with administrative staff. 	<p>Interpersonal relationships are central to the CLE. The quality of interpersonal interactions affects the tone and ambience of learning, as well as the overall clinical experience. The most notable relationships that emerged in this study were that of the student and clinical supervisor, and the relationship between students and the administrative staff. Various factors influence these relationships and it important to evaluate these relationships when constructing a holistic perception of clinical experiences.</p>
4. Appraisal of the clinical practicum.	<ul style="list-style-type: none"> ▪ Challenges. ▪ Highlights of the clinical practicum. 	<p>The clinical practicum was found to have both strengths and weaknesses. These were highlighted in the responses of participants and serve to showcase a realistic and truthful representation of the clinical education and training phase of the chiropractic programme at the DUT.</p>

4.2 GENDER, AGE, AND RACE OF THE PARTICIPANTS

The gender, age and race of the participants ($n = 15$) are presented in **Table 4.2**. The majority of participants were females ($n = 10$; 67%). Whites were the predominant race group ($n = 11$; 73%), followed by Indians ($n = 3$; 20%). There was only one Black participant. The mean age of the participants was 23.8 years and the range was 22-27 years.

Table 4.2: Gender, age and race of participants

Participant	Gender	Age	Race
1.	Female	23	White
2.	Male	24	Indian
3.	Male	23	White
4.	Female	23	White
5.	Female	22	White
6.	Female	27	White
7.	Male	24	White
8.	Female	23	White
9.	Male	26	Black
10.	Female	24	Indian
11.	Female	24	White
12.	Female	24	White
13.	Female	23	White
14.	Male	23	White
15.	Female	24	Indian

4.3 THEME ONE: UNDERGRADUATE EDUCATION AND PRE-CLINICAL PREPARATION

A range of questions was posed to participants to obtain a detailed perspective of their views regarding their undergraduate education, in relation to clinical preparation.

4.3.1 Perceptions of undergraduate education and pre-clinical preparation

Differing views were expressed by the participants about their undergraduate pre-clinical education. While some stated that they were satisfied with the quality of the theory component of the undergraduate programme, others felt that it had various deficiencies and could be improved to allow for a richer clinical practicum experience.

The following participants expressed positive views regarding the quality of undergraduate chiropractic education and reported that it did provide adequate foundations and sufficient introductions to clinical learning.

“I think the theoretical grounding we get is quite extensive. I think we do come through quite a rigorous system. I think the interaction with hospital patients in fourth year especially is very good. It’s very different to what you are going to see in the clinic. So you may not ever see those conditions again but it also is the start of the patient-doctor relationship or patient intern relationship.” (Participant 7)

“I think it’s quite good. Everything we get taught we sort of apply in the clinic... I think everything is well covered.” (Participant 3)

“I mean with our subjects - like having diagnostics. We do a lot of diagnostics. Having that foundation along with systemic pathology and pharmacology, all the theory stuff that we learn and spend so much time on really does help us in an actual patient setting. Knowing what the patient is talking about and even just as the patient’s talking to you - in your brain- the cogs are just turning and obviously just also having

the practical component since first year like topographic anatomy- all of that is an incredible foundation that we have and we've done so much of it that there really is no chance of failure with us!" (Participant 8)

Other participants however, stated that while the aspects of the current Chiropractic Programme at the DUT are well structured, the curriculum does need revising so as to bring more relevance and applicability to chiropractic clinical learning.

This participant described her views on the theoretical grounding delivered in the undergraduate programme as follows:

"I think we get taught a lot...While I think it is a very well rounded, very knowledgeable course that we come into, I sometimes find it is a bit too in depth for what we're actually doing. Sometimes there's a bit too much emphasis on medical things that we don't really need to delve into so deeply, whereas with other things, they are just touched on ... I personally feel it's something that could be worked on a bit. I think they are trying." (Participant 1)

One participant reported on both the positive and negative aspects of undergraduate and pre-clinical education as noted in the excerpt below:

"My views are quite positive. I think that there's a lot of things that are done very, very well in terms of preparing you for how you going to look at patients. I do feel though that there's place where there can be improvement... I also feel like in terms of the undergraduate training, it was quite difficult coming into clinic not knowing much about the shoulder or the extremities. Looking back now so many of my patients could have benefited from me at least having some sort of prior knowledge regarding it." (Participant 11)

Another participant acknowledged that the undergraduate programme does endeavour to provide an orientation to clinical learning, yet these initiatives also require attention in order to maximise the objectives of clinical preparation.

“I think it’s adequate. It’s not the best you could get; I think there are improvements that need to be done there. You do your mock patients which are three cases, and case summaries, and you do the observer programme and that too could be increased a little more because once you do your mock patients, you get thrown into the deep end. So I think it’s adequate but it does need some improving.” (Participant 2)

The first two years of the undergraduate programme was found by one participant to be incongruent with the subsequent chiropractic curriculum as it did not provide an inspiring or realistic perception of what chiropractic education actually entails. This is noted in the quote below:

“I would say the first and second year were a bit...like...lffy. Or they weren’t very specific which in my mind only if you sure you want to be a chiropractor – that’s the only way you going to carry on. If you are not sure, those two years are definitely going to make you change your mind!” (Participant 12)

4.3.2 Theory-practice gap

The theory-practice gap or pre-clinical-clinical divide, which describes the differences between didactic classroom-based learning and context-based clinical application in chiropractic education, was brought to light. The following responses reflect the disparities between undergraduate theoretical learning and post-graduate clinical learning.

These participants were of the opinion that whilst they valued their theoretical foundations, there was a distinct lack of practical focus in the undergraduate curriculum as observed on the excerpts below:

“So I think theoretically we have a good grounding but practically there’s a lack because we don’t really deal with patients and patient management before getting into clinic. So your first day of clinic you get a new patient and you are supposed to decide on a treatment plan yet you don’t really know how to go about treating patients. You spend four years and half of your fifth years actually learning the theory behind it but you don’t actually get practice in diagnosing people and developing treatment plans.” (Participant 13)

“I think it was actually quite good. They could have started some practical stuff sooner because I don’t think we get enough for the post-graduate phase. I think they focus too much on one side of the course then suddenly in the post- graduate phase there is so much work loaded onto us. I think there’s more practical stuff than can be incorporated into the undergraduate phase so we can build on that. There is too much irrelevant theory happening in the undergraduate phase.” (Participant 1)

“Okay, I could say from a practical perspective, in clinic I’ve learnt things that are acutely different from what I’ve been learning over the years. Actual practice is nothing like the practicals we do in class that are so easy and controlled. It’s unrealistic. Because different clinicians have different techniques and approaches to certain conditions so there’s so much more to practicals than we get exposed to. But obviously the theory is quite relevant as it gives you the necessary foundation ... I could say fifth year is the year that I have learnt what chiropractic really is. I think I spent 3, 4 years without even knowing what it is. So everything I know now about chiropractic and patient care came from this clinical component.” (Participant 9)

“I feel it does lack a little bit. In the sense that there’s not enough done in the practical component of it. I feel we are taught a little bit

like...they try giving us a tool box but they don't adequately explain how you put it all together. Even during 5th year, we are taught elements of a treatment plan but we are not taught how to bring it all together ... I know they can't teach us every little thing because then we would probably have like a 20 year degree here." (Participant 6)

One participant stated that certain aspects of the theory component, such as lecture notes and learning material, also need to be updated as noted in the following quote:

"Okay, so firstly I feel like our theory is good but majority of our theory is old and outdated stuff. Some of our lecturers have even said our notes have been there since their time. I feel it's more theory-based than practical-based. I feel we need to have more practicals in lectures in order to prepare us for clinic." (Participant 10)

This participant is of the view that clinical case simulations performed in class on peers during undergraduate training may not effectively prepare students for the reality of patient assessment in the clinical setting.

"I think getting into clinic you see a lot more patients as opposed to seeing people in class which is what you are used to, whereas when a patient walks in you have no idea what's happening with them. So maybe it's the first time we do see true positives and stuff that we have been taught in class. So that's an eye-opener to actually see the real thing." (Participant 3)

4.3.3 Deficits in undergraduate chiropractic practical training

Despite the expression of sentiments regarding having a more practically-orientated curriculum, the pre-clinical practical training components were not without contention. A re-occurring theme that emerged from responses was deficits in specific aspects of undergraduate chiropractic practical training. The introduction and teaching of therapeutic modalities and rehabilitation protocols

were identified as the main sources of dissatisfaction. Therapeutic modalities are taught in the final year of the N. Dip programme (i.e. third year). Students apply these modalities only in the clinical setting during the clinical practicum in the Master's year. Patient rehabilitation education begins in the B. Tech. programme (i.e. fourth year) and extends to the coursework component of the Master's programme, by which time students are already involved with the treatment and management of patients at the CDC.

4.3.3.1 Rehabilitation protocols

Shortcomings were reported by the majority of the participants on the comprehensiveness, specificity and practical application of rehabilitation protocols.

The participants stated that:

"They don't really teach you much at all regarding patient rehabilitation. Yes they teach you how to assess the patient but once I've assessed the patient, I'm like "now what?" Okay there is a muscle imbalance or something else but what do I actually do? So I don't feel like they teach you how to actually rehabilitate a patient but more like the basics behind it which I don't feel is enough." (Participant 4)

"I think we are given a general set and then expected to apply that to everyone. It's not really individualised to different conditions. Some conditions we have no idea what to do like for RA or chronic conditions. So it's not too great." (Participant 5)

"I felt like with rehabilitation, it is one subject if I could go back and do again, it would definitely be rehab. I feel like with the rehab protocols you get a very broad spectrum of an idea of how to do things such as RICE principles (Rest, Ice, Circulation, Elevation) and proprioceptive exercises. But applying it to each patient becomes a little bit trickier also feel like with things like muscles imbalances, I feel like there could have been a little bit more emphasis put on it. Because I have

not seen a single patient who does not have a muscle imbalance! So I feel like it is something that is so important, that ideally, I'd like more focus to be put on it...It would also be beneficial to get a bit more of a practical side of it. Like we do a lot of the exercises, but not really do a lot of the other stuff like how you pick it up because that's what I struggle with. I struggle with identifying is this muscle weak? Is it tight? Is it lengthened? That sort of thing is something that I'm still learning about and need to do a lot of reading on. So if we could focus more on that in rehab, it would have really helped coming into clinic."
(Participant 11)

This participant was of the opinion that certain aspects of the undergraduate rehabilitation module were not delivered effectively to prepare them for patient management in the clinic. Rather, more focus was placed on the rehabilitation component whilst the students were already engaged in the clinical practicum.

"I would say that you don't really get much rehab in your other years whereas fifth year you learn most of your rehab related to extremities. I feel like your lumbar stuff is not really done well. I think a lot of people forget about it by the time they get to clinic." (Participant 3)

Conversely, two participants considered the rehabilitation module to provide an adequate grounding for patient care.

"I think we got a decent background in rehab and where to start and how to progress from there." (Participant 14)

"With rehab I think we have a good enough understanding how to branch out from what we learn." (Participant 1)

4.3.3.2 Therapeutic modalities

When asked to comment on proficiency in utilising therapeutic modalities, responses reflected a discrepancy in the training-application process. Although students are deemed competent in using therapeutic modalities

before they commence with the clinical practicum, it is apparent that application of these modalities is truly learnt in the clinical setting. This is supported by the excerpts below:

“Modalities you learn in clinic on your own! I mean, you do it in class and then you exposed to it only for the test and for the practical session ... But you do learn a lot within the first few weeks of clinic, that’s from the older years or from the clinicians.” (Participant 2)

“With regards to modalities, we didn’t get taught them too well. It’s more like you find someone older than you to teach you how to do it...some of them we did get taught and some of them you got told would be taught later. That later never came.” (Participant 5)

“For modalities I had a general understanding of the theoretical aspects but the practical aspects I had to really learn it in clinic. I could say I had to learn from my colleagues during fifth year. It was just... you learn how to simulate these things on your classmates who don’t actually have anything wrong with them. Applying these to sick people or people in pain or disability is something else. They teach a one-size-fits-all model which is not good.” (Participant 9)

This participant commented on specific modalities which she feels she is not competent in using. This is attributed to not being taught how to operate the modalities in question.

“I definitely don’t know enough modalities! There’s some stuff that I still don’t know ... For instance I still don’t know how to use a laser. Or the Chattanooga machine – I’ve never been taught how to use this machine. And with traction - the traction bed - I still don’t know how to use it even though I might have been able to use it to help a patient.” (Participant 1)

The responses below illustrate some of the challenges that come with utilising therapeutic modalities:

“I think modalities for the first few weeks of clinic are a bit shaky. You still have to get used to using them on a person. Oftentimes in class everyone knows how to use it so they can help you whereas in clinic, a patient knows nothing so the onus is on you to make sure it’s correct and all set up with the right settings. Trying to remember all the settings can be challenging but you get used to it eventually.”

(Participant 3)

One participant commented on the difficulty of retaining the knowledge of therapeutic modalities due to the time lapse to when they are actually applied, as noted in the quote below:

“Auxiliary therapeutics we did in third year. I find it was taught so far away because you only start using and applying the modalities in fifth year but you learnt how to use them in third year. I had to go back to my notes to relearn the settings. I also find some of the modalities are outdated in this facility. Then we get an upgraded machine and not even the clinicians know how to use it!” (Participant 12)

Another participant appreciated the theoretical background to therapeutic modalities but feels that there could be improvements in learning to use them in a more practically relevant manner.

“I think the use of modalities in a theoretical sense we get taught everything. We can’t say we don’t have the grounding that we need. But I think using it in a more practical way would help a lot. It takes you a couple of months to really realize what modalities are used when and when they shouldn’t be used...so I think the actual use of modalities could increase in a practical way.” (Participant 7)

4.3.4 Transition shock

Participants expressed ambivalent mindsets upon entering the clinical learning environment for the first time. The facets of transition shock elucidated in this study are summarised in **Table 4.3**. There was consensus amongst participants regarding experiencing one or more facets of transition shock when commencing with the clinical practicum.

Table 4.3: Facets of transition shock

TRANSITION SHOCK	<ul style="list-style-type: none">• Initial clinical anxiety• Clinical inexperience• Feelings of incompetence• Self-doubt• Stress and fear• Academic learning versus clinical learning
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The following participants acknowledged that whilst there are measures put in place to orient students to clinical and practical application, this does little to mitigate the shock of actual clinical learning:

“When I finished fourth year I was just like how am I expected to go into the clinic now? I’m not ready. Not at all! How am I going to do this on a patient?” (Participant 4)

“Personally, at first clinic was a different ball game. You felt inadequate because you haven’t treated people before. You went to hospital that was only in diagnostics and you didn’t have actual application of your chiropractic skill. At first you feel inadequate like you not making a difference.” (Participant 2)

“That very first patient you treat in clinic - you very nervous because you don’t really know what’s going on. You are a bit afraid of the paperwork – you did do your mock patients – but that very first patient that is actually a paying patient you get very nervous with the paperwork.” (Participant 13)

“Coming into clinic, I was so nervous. I was like “I don’t know what to do with the patient. Needle? Adjust? Like what? How do I treat this patient?” And having experienced more and more, and dealing with patients, it has really taught me that each patient is so different. And that I can never go into a clinical setting again where I think okay this is what I need to do: A, B, C, D and E. That’s not how it works. Regardless if you’re treating 10 different patients each with the same condition, you’re going to need 10 different treatment protocols.”
(Participant 11)

“I was quite focused on learning academically as in theoretically. But when you come into the clinic, the learning is just so different. It’s a lot more hands-on. Its eye-opening because seeing a patient on paper and seeing a patient sitting right in front of you is completely different.”
(Participant 6)

“Going into clinic, you have learnt all the textbooks and all that but in clinic, when you’ve got a patient sitting right in front of you, it’s very different to learning from books.” (Participant 14)

4.3.4.1 Participant recommendations to ease the transition between the pre-clinical and clinical component

Participants provided suggestions that could ensure a smoother transition between the undergraduate pre-clinical training and the post-graduate clinical education component. The responses were diverse and emphasised various aspects that could facilitate effective transitions into the clinical practicum and help reduce transition shock and the pre-clinical-clinical divide.

An early introduction to patient care and clinic operations and procedures was popular amongst participants. This is substantiated by the following responses:

“I would say early introductions. Like how we did the hospital ward rounds in diagnostics. Maybe if the juniors could get time to observe

at an earlier stage so that they remember. I was talking earlier about the time it took me to adapt to the clinic. It took me 2 months to really get into the full clinic mode. Maybe early introductions to clinic-related things in the programme.” (Participant 9)

“I think we should be more exposed to clinic beforehand. Because, at the moment we just have 3 mock patients before we go into fifth year and that’s about as much clinical experience as we get. It’s scary when you have your first patient. You suddenly just get thrown into it and you’re expected to know everything.” (Participant 1)

“I think it would be nice if we got to treat those mock patients we see so at least before getting your first paying patient, you are more confident and you know maybe the clinicians could come in and help you along with those patients. Because it is quite daunting the first 4 or 5 patients to treat them full out when you’ve never actually treated someone in a clinical setting before.” (Participant 3)

The following response addressed the lack of motivation of a student for the mock patient assessments. Rather than recognising the importance of the mock patient, it was seen as a chore which could be done quickly.

“There should be more emphasis on the mock patients. Not just three patients and you done. It was kind of a rush - let’s get this paperwork done and leave. I feel like that should be within the curriculum. There needs to be a pre-clinic camp at the end of fourth year or beginning of fifth year with a whole week of just talking before you start so you not thrown in the deep end.” (Participant 12)

This participant reported that the patient appraisals at hospital undertaken in the B. Tech. year need to be more structured and interactive in order to enhance clinical learning:

“With regards to hospital training, I feel like we need to go out there and see those patients more often and things need to be more

structured. They just give us a list of questions where we have to go and ask patients, but things need to be more structured where we are able to interact more with the patient, find out more about their illness so we are more competent. And I also feel like we not getting enough guidance from the doctors. We need to get more guidance in order for us to be more competent in clinic, ...“Because here in the clinic, there’s not enough exposure to other medical professions. It’s just chiropractic, chiropractic, chiropractic. We need to go to hospitals, gain more exposure to other medical professions, see what other medical professions are doing, what they specialize in. We also need to be more exposed to illness and disease that we won’t find here in the clinic. We’re not going to get someone coming here with full blown TB very often. Whereas in the hospital, there are patients like that. We are not going to get people here that have gangrene coming in. We need to see those things so when we are in practice and those patients present to us, we know how to recognize it. We know who to refer to. We know how to treat it if we can.” (Participant 10)

The response of the following participant suggested that proper objectives and outcomes be developed for the observer programme and mock patient assessments at the CDC. The student was also not motivated when engaging in these pre-clinical initiatives.

“I think that some areas we can improve on in the clinical experience is more preparation beforehand rather than once you get here. I feel like they focus on you a lot once you are here but prior to when you come in, you have no experience within the clinic besides for the observer programme ... I think that the observer programme can also be improved on - the same with your mock patients. I feel if you had a better idea of them and it wasn’t so stressful and rushed at the end of the year, people would take them more seriously and it would help more. And also just focusing on the practical aspect of things. Our courses are very theoretical considering we are so practically based. And I think things like adjustments, rehab and treatment protocols-

you don't have an idea at all how to apply these. Even diagnostics - nobody knows how to diagnose a patient until you do your mock patients. The number of students I've seen doing their mock patients asking "what does this patient have?" it is an area that could be improved. You learn so much in mechanical low back pain about what things are but you don't really learn how to diagnose or treat them. I feel like there could be more inter-linking between the subjects especially subjects like orthopedics, rehab, adjustments and mechanical low back pain. If those 4 had more interlinking and spoke to each other. They constantly push us and tell us to interlink things. So if they could meet us halfway it would improve the clinical practicum experience." (Participant 11)

Completing clinical documentation and paperwork is a standard procedure at the clinic. This participant commented that detailed training on what is expected of students may help to reduce some of the uncertainty when commencing with the clinical practicum:

"We had to learn the paperwork from the older years. They never went through any of the paperwork with us. So maybe they could go through the paperwork in depth and explain what they want us to write next to each section." (Participant 4)

Another participant was of the opinion that being exposed to a variety of chiropractors in the undergraduate academic programme would be beneficial as it would enable students to understand the individualised nature of clinical practice.

"We should get a few different chiropractors to come in and do practical work with us. Because that gives you a kind of diversified sense of the technique. And they give you their experiences. Over here, we just listen to the guys in the department and then most of them haven't been in clinic or a clinical setting for a long time, they've just been in the DUT clinical setting. So that bringing in new people

that have been out there and they can give you a better view of your entire, kind of experience.” (Participant 2)

Despite several suggestions provided to ease the transition between pre-clinical education and the clinical practicum, it is interesting that two participants reported that there are already sufficient measures in place for this purpose as noted in the statements below:

“I think DUT has done as much as it can with us. I think a lot of it is just up to the students - like taking the observer programme seriously ... actually going to the older years and asking them. Even if it's not part of the observer programme, just to come and watch a patient if you got an interesting patient. So I think in those terms it's kinda just up to the students.” (Participant 8)

“I think there is quite a few things in place to help you transition. In fourth year, you are entitled to go to sports events. I think that definitely does help. So that is the student's responsibility - the opportunities are there, you have to go and put in the effort. I think there are quite a few things you can do. You are always welcome to observe in the clinic but the onus is you to actually come in and do it. It's always going to be a tricky transition going from theory-based learning to practical based learning and seeing your first patient. It's something I think every practitioner has to go through. I think DUT has done very well with that transition.” (Participant 7)

4.4 THEME TWO: EXPERIENCES IN THE CLE

Participants were asked to share their views on aspects that significantly impacted or gave meaning to their clinical practicum experience.

4.4.1 Personal and professional growth and development

An important aspect of engaging in clinical practice is the development of professional competence and confidence. When asked if they felt more confident in their capabilities as aspiring chiropractors after commencing with

the clinical practicum, there was overwhelming agreement amongst participants that clinical experience did develop and boost confidence and competence.

“After this year- definitely! Definitely. Before this year, I had a lot of doubts, but this clinical setting has put you at ease and gives you confidence.” (Participant 2)

“Yes definitely! Two hundred times more confident!” (Participant 7)

“Through experience in clinic, I feel that’s where most of my confidence and competence comes from in treating patients. Because when I look back at my first patient that I ever had compared to the patients I have now and I’m much more confident and competent now!” (Participant 10)

These participants asserted that though there had been an augmentation of professional confidence and competence, there were also personal limitations:

“Definitely. The practical component is definitely important. I still don’t feel competent enough. I don’t think I’ll ever feel 100% competent but I definitely need to be in the clinic practicing.” (Participant 5)

“I am more confident. Not confident to go out on my own just yet - but I am a lot more confident especially seeing patients. Like you’re not as nervous if you have a new patient. You not like “what’s happening with this patient? You become a lot more confident. You know what’s sort of happening. You can sort of make up your own management plan with the help of the clinicians but you feel just a lot more, like independent.” (Participant 8)

“I wouldn’t say I’m fully competent all the time because everyone’s case is different and you can’t treat everyone in the exact same way.” (Participant 15)

One participant had a differing opinion:

“If anything I think I’m a lot more scared because of just how much there is going on. You think when you get into fifth year you know so much but then you actually realize you just put your big toe into the water! You haven’t exactly figured everything out. So it’s a big scary world that you come into and there’s a lot more that still has to be learnt.” (Participant 1)

4.4.2 Clinical learning in preparation for independent practice

Perceptions of professional competence in the context of independent clinical practice are necessary to evaluate the efficacy of clinical training programmes. These perceptions provide insight on whether students feel they have had adequate learning opportunities which are comparable to real-life private practice. When asked if their chiropractic education prepared them adequately for private clinical practice, none of the participants proclaimed that their clinical practicum experiences were insufficient in preparing them for private practice, yet some noted that they still needed more time and engagement in the CLE before feeling confident enough to practise. This is noted in the excerpts below:

“Yes, because the clinic is so much cheaper for patients you literally get a whole array of patients. That helps you see so many different conditions, so many types of people, and so many stages of different illnesses that it really does build you up. I mean two years. You think you need a lot more than two years, but with this clinic you can see almost 10 years’ worth of experience. Just in this clinic!” (Participant 8)

“Somehow I think it has. I think it has because we learn different facets of professionalism ... the clinical experiences teaches you about patient care but also have finances, filing those things are also important.” (Participant 9)

The following participants indicated that they require more time in the CLE before they feel fully prepared to practise independently:

“Hmmm, to a degree, yes. I feel like you’re constantly going to be learning regardless. I feel like I have a good foundation going into private practice. Not yet!! I definitely need my extra year! But I do feel like it has given me a fantastic foundation to start with”.
(Participant 11)

“Yes I think with the number of patients you are required to see and with sports patients that you see as well as clinic patients - I’ve had to deal with quite a wide variety. Initially when I thought about chiropractic care I didn’t think about all the organic diseases. You kind of think you going to deal with sports people and rehabilitate them. There is a completely different side to that. I think with the patients that we see here, at sports events and at places like Sea Cow Lake, you get such a variety. I think I still need a good year more in the clinic seeing patients often. I think seeing patients are the most beneficial thing we could ever do as chiropractors. So I think once I leave, yes I will feel confident.” (Participant 7)

One participant was of the opinion that clinical training at the DUT CDC was incongruent with the realities of independent practice as highlighted in the following quote:

“Yes and no. Yes in the sense that you know what procedures to follow. And then no- there’s no practice where you are going to spend 3.5 hours with a patient. So, I know this is a learning institution and you first need to go through the basics to find out what the important stuff is, but when I go into practice when I’m finished, I don’t want to spend 3.5 hours with a new patient. How do you discern which is the most important points from doing a 3.5 hour assessment? And people don’t have 3.5 hours to sit there. So yes it does help for going through everything thoroughly but then no because you can’t spend that amount of time with a patient ...They need to maybe for the first 10

patients or 20 patients do that then after that have a shortened one which allows you to actually just go through the really necessary stuff. If there is something you pick up then you can investigate further rather than having to go through everything with every patient.”

(Participant 13)

Partnerships, clinical associates and locuming are some options available to qualified chiropractors who prefer to practise in collaboration with other chiropractors. This participant mentioned that she would opt for this instead of independent practice.

“I think it has. But I personally would not want to start my own private practice by myself. I’d want to go work with someone so they can still show me the ropes because I don’t think I know enough to go into private practice where you are thrown into the deep end.”

(Participant 1)

4.4.3 Patient response to treatment

Participants were asked to describe how their patients responded to the treatment they received at the DUT CDC. This was to ascertain how participants perceived their role and abilities as student primary care practitioners. The responses were based on the patients’ pain and functional responses to treatment, as well as anecdotal comments by the patients. All participants (15/15) reported that they had positive responses from their patients. Some participants acknowledged that they were unable to help every patient, while others explained that some patients were more difficult to treat than others.

“In general, it’s been really good. It’s really nice helping patients. Like a patient coming in and their pain rating has gone down from 8/10 to like a 4/10. So yes, I think it’s really helped all my patients or at least majority of my patients.” (Participant 8)

“Most have responded really well. I haven’t had a patient who came to me and said “It didn’t work at all.” (Participant 15)

“Overall quite good. They have improved quite a bit ... Having a patient come back to you that was in severe pain and they tell you they don’t have pain anymore. Or they weren’t able to walk and then when they came back to you, they are not walking with a walking stick or a crutch and you’ve helped them come so far.” (Participant 13)

“I think it’s been very positive. Obviously you are not going to be able to help every single patient. Out of the patients that I have seen, I’ve built up really wonderful relationships with a couple of them that I have been seeing since January and we’ve come through the year together. To treat patients like that and to move forward it has been incredible!” (Participant 7)

“So far I’ve had some difficult patients in the sense that a lot of them had chronic conditions. But in essence, a lot of them have responded very nicely. Some of them had slower responses... a lot of them have been for treatment at outside chiropractors and physiotherapists and have said that they really feel like my treatment is of the same standard.” (Participant 6)

“Fairly well to be honest! Which I say surprisingly because you do doubt yourself coming into clinic ... my patients do come back and say to me “Look this is working!”. They feel that I’ve communicated with really well with them in terms of saying you know what, 80% of the treatment is going to be me but 20% is you, doing your exercises at home, coming back when you supposed to come back etc. So I definitely feel I’ve had a good return... Patients can get extremely frustrated when treatment doesn’t work as they planned and they not getting better as quickly as they want so it has also taught me how to communicate with my patient upfront and be realistic with them, not give them empty promises.” (Participant 11)

“Actually helping patients, seeing how they respond to treatment. Because some patients, they come in really depressed and down and

then once you treat them, you get really good results and you feel good about yourself because you're helping people. So that's the most positive thing I've gotten from my clinical experience."

(Participant 10)

One participant explained that the quality of patient care is affected by the physical and mental state of the health care provider:

"Most of them have had favorable responses. I think there are some days where I personally haven't been feeling too well. I've been a bit sick. Those patients – I seem to get new patients when I'm not feeling the greatest. So I noticed that those patients haven't come back because I did not put my 110% into treatment. So that's a downfall but otherwise I think my patients respond well to my treatment."

(Participant 1)

Another participant stated that the quality of patient care he provided improved with clinical experience:

"I think the first few took a bit longer, like, on my side making sure everything's getting done properly... took a bit longer to get the patients to be where they needed to be. I find now that I've seen more patients and have a bit more clinical expertise, per say, and it's just a bit easier to see what patients need and what they require."

(Participant 3)

Interestingly, one participant asserted that patient's response to treatment is not always a true reflection of clinical abilities:

"I think that's the hard part of our profession or working here in the clinic: a lot of the time you measure yourself up on how good you are by how your patients respond which isn't always fair because some conditions you can't do too much for." (Participant 6)

4.4.4 Clinical and administrative duties

Clinical and administrative duties are part of the legal and procedural regulations at the DUT CDC. While participants reported that they were able to effectively manage their administrative responsibilities at the clinic, completion of clinical document and paperwork seemed to be a contentious for various reasons. Participants described completing of clinical paperwork during patient care to be an arduous and time-consuming task and stated that it needed to be updated and shortened. This is noted in the excerpts below:

“Paperwork can be a lot. Especially if you trying to treat two regions you have to start a whole new set of paperwork. If you want to treat the shoulder and cervical and thoracic spine, that’s three loads of paperwork so it does become a nightmare. And there’s a lot of duplication. Its very time consuming doing paperwork.” (Participant 5)

“It’s necessary for medico-legal aspects but it’s a nightmare and a headache to complete!” (Participant 2)

“You know what? I feel like the paperwork is a very big obstacle. Our paperwork is outdated. People have been using the same paperwork for a long time and there’s been years of students that have complained about the paperwork and nothing has been done about it. For example, the foot and ankle regional. It’s not clear cut at all. There are a lot of students that moan about that and even I found for myself – you can’t get much information from it. So what is the point of having a regional like that?” (Participant 10)

“I think the clinic has a lot of paperwork ... Also the extremity regionals are shocking! ... You spend so much time trying to understand what it’s asking of you than actually doing anything with your patient.” (Participant 8)

“It’s very long. There are some places where there is repetition but I think it’s good to go through a few that are very thorough then we need something shorter. And then with our clinical chiropractic module, they have reduced the number of orthopedic tests we do but they haven’t reduced the paperwork. So all of those tests are still on

the paperwork. You need to go through those but you don't have an idea what's going on there. Either they need to incorporate those again so that we learn about them or they need to take them out of the paperwork.” (Participant 13)

However, other participants had contrary opinions regarding clinical documentation and paperwork and in fact reported on its value and importance:

“We always complain and moan that there's so much paperwork but as you move on you realize that paperwork is really important and it guides you in the correct pathways so you don't make mistakes. It is there for a reason and as much as you want to fight it - it's been there for a long time and obviously works.” (Participant 7)

“I think the way our paperwork is structured for an in depth understanding of the patient's history and stuff. Though I might not use that long approach, at least it has helped me to understand fully how to get to the root cause of the patients' problem.” (Participant 9)

4.4.4.1 Reception duty

Few participants highlighted their grievances with the reception duty as noted below:

“I think with reception duty - I understand why we need to learn how to run a reception but I don't think it needs to be for a whole afternoon when we could be seeing patients. It's very irritating when you want to book a follow-up but then you have reception duty. I don't need to be folding laundry in the back.” (Participant 8)

“There are certain times when our reception duty can get a bit difficult. In the sense that if you have a consistent patient that you see weekly and then you have reception duty, to try and move it around especially if it's on a Thursday and you not in on the Friday so you can only accommodate them the following week. I think the fact that they have

changed things now so you can't get someone to do your reception duty shift while you see your patient also makes things quite difficult. But I do feel I have learnt to effectively manage it. In the beginning it was overwhelming" (Participant 11)

However, one participant reported on the benefits of reception and other administrative duties:

"Like we have the reception duty where I think the whole idea of that is in case you starting out and you don't have a receptionist – either way you have to have an understanding of that. Chiropractic is a business. So the clinical experiences teaches you about patient care but also have finances, filing etc. those things are also important." (Participant 9)

4.4.4.2 Suggestions to improve clinical and administrative duties

The participants' suggestions to improve clinical and administrative duties are tabulated in **Table 4.4**.

Table 4.4: Participants' suggestions to improve clinical and administrative duties

Table 4.4 Participants' suggestions to improve clinical and administrative duties

CLINICAL OR ADMINISTRATIVE DUTY	SUGGESTIONS BY PARTICIPANTS
Clinical documentation	<p>Periodic review and updating of clinical paperwork: <i>"The paperwork needs to be monitored. There needs to be a new one that comes into play every few years. We can't be using the same paperwork from 10 years ago."</i> (Participant 10)</p> <p>Implement a system to decrease paperwork based on experience in preparation for private practice: ... <i>"As you get to the senior levels you can sort of water that down as you are your own clinician who knows what way to go for each disease or condition. So we can sort of customize our own way to do it so that when we do get into private practice, we've already been practicing this method - our own style for a few months."</i> (Participant 3)</p>
Reception duty	<p>Decrease time allocated to reception duty: <i>"The reception duty doesn't have to span the whole afternoon for someone - that's too hectic!"</i> (Participant 9)</p> <p>In depth training of how to perform reception duties: <i>"They need to realize we only go in there once a month ... They need to train us more for that."</i> (Participant 1)</p>
Filing and software systems	<p>Keep up with technology: <i>"I think we are working a little bit behind. We a little bit in the Stone Age with what our systems offer and that's fine because it works. But I think it can be updated. Working with a system at DUT should be very similar to the system you would use in private practice. So that everything you do here correlates with the outside world. And it does correlate 90% of the time and you are set but if there's one thing in administration it would be an upgrade of the technology like data bases and stuff like that."</i> (Participant 7)</p> <p>Move towards electronic based paperwork and filing system: <i>"I understand the paper-based and written component of things; I think it's very out-dated. Because everyone has laptops. And with the environmental issues at the moment."</i> (Participant 11)</p> <p><i>"The filing system- Maybe there is a way to move away from paperwork to and go onto a paperless system."</i> (Participant 13)</p>

4.4.5 Perceptions of clinic infrastructure in creating a conducive learning environment

A major part of the clinical experience is the infrastructure in the CLE and its impact on patient care. Clinic infrastructure refers to the facilities, therapeutic modalities and other equipment at the DUT CDC. The participants' perceptions of their CLE were as follows:

"We've got incredible facilities for what patients are paying for. You get world-class treatment. I think what DUT offers is an incredible opportunity for those who can't afford to pay R500 plus to be treated by a qualified chiropractor in private practice ... it's not a Mickey Mouse clinic. It's a proper well-functioning, well organized and well run clinic." (Participant 7)

"I feel like everything that you need is here. What's also really nice is if you ever don't have anything, you can just go to the reception and buy what you need. I feel like all the equipment is really helpful especially the rehab room and things like that. I think things are great. There's not really anything I would improve on to be honest." (Participant 11)

One participant explained while she perceives the clinic in a positive manner, there may be an oversight in the planning of facilities to cater for disabled patients:

"Our clinic is brilliant. The upgrade is fantastic. At the moment though, I've got a patient in a wheel chair and I find the modality rooms are a bit narrow with the bed in there. It's a bit of a mission because I have to climb onto the bed to close the door. So something like that might have been overlooked." (Participant 6)

These participants provided further insight to students' perceptions of the DUT CDC:

"I think it's adequate. I think they have a fair amount of modalities to allow for good patient care." (Participant 9)

“We have a wide variety of modalities. I think they’ve just put in a new laser system as well, so we get a chance to try that. And we have a rehab room which is much more than some clinics can boast.”
(Participant 2)

“I think it is quite fine. They obviously don’t have the modern states of the art like shockwave therapy and all the new stuff that’s coming out at the moment but I think for a clinic it has everything a new practitioner, like, needs for the moment.” (Participant 3)

In contrast to the views of other participants, this participant’s perception of the clinic facilities was divergent:

“The rehab room is tatty. I think it needs an upgrade. I wouldn’t bring a patient to the rehab room. The modalities - I am actually quite worried that only one or two of the machines are working. It’s quite embarrassing to walk around the clinic with a patient to try find a working machine. The ablutions also need to be upgraded. There are signs saying things are broken - we are trying to promote our service and if we don’t have something simple like clean toilets with a working door it’s not nice.” (Participant 12)

The working order of therapeutic modalities seemed to be at issue when giving an appraisal of the clinic facilities, as noted in the statements below:

“With the new clinic, the facilities are adequate. We have enough rooms. Modality wise, we need to look at our ultrasound units because not all ultrasounds are functional. At the moment, I think we have only one working ultrasound and then if you have two students at one time having to use that then there’s quite a queue building up.” (Participant 13)

“It does have the facilities but there’s... I think there could be more. Like for instance, I think one of our ultrasounds we’ve got only one that works which is a bit irritating. So it’s like a first come first serve to

the ultrasound room. And you don't want to just sit around waiting for someone else to finish while your patient is waiting. So that's a little bit irritating. I think there are also some IFC machines that don't actually work. I think those need to, if you spending so much money on them, at least get them fixed." (Participant 8)

4.4.6 Recommendations to enhance the clinical practicum

Participants were asked to provide suggestions and recommendations to improve and enhance the clinical practicum. These are summarised in **Table 4.5**.

Table 4.5: Participant recommendations to enhance the clinical practicum at the DUT CDC

Recommendation	Explanation
1. Formal group discussion on clinical cases seen at the DUT CDC.	<p><i>"Having people come in and present their cases to the class. I mean even if it was a fifth year student presenting a case to the fourth years. I think you did that once or twice. I think that would be good. Sometimes we may only see mechanical things throughout our entire clinical years but sometimes someone sees something different - something that you won't usually see in clinic. Even if it's just 15-20 minutes once a week if you had an interesting patient, you could present the case - say what they came in with and how you went about treating them. This can hold everyone in good stead for the future if they potentially do see a patient like and what you can actually do for it. I mean, I saw a patient last week that I didn't expect to see - I think it would be good for the class to know about that and how I treated it."</i> (Participant 14)</p>
2. Mentorship and peer- assisted learning programme.	<p><i>"There are usually like 30 people in the clinician's office whether its morning or afternoon and there's only two clinicians so for them to split up amongst that many people is always difficult. I think if we could get an extra clinician in but there are obviously complications with cost and availability. Either that or implement a system where sixth years can gain hours by coming in for 2 or 3 hour sessions. They can relax in the communal area but if a student that's below them needs help - they can assist - not in the way clinicians do where you need signatures and stuff, but just general viewing and they can tell you if they can help you or if you need a clinician. I think that would benefit us greatly."</i> (Participant 7)</p>
3. Improving clinic infrastructure and equipment.	<p><i>"Maybe if we could incorporate the new sort of things in patient treatment like shock-wave therapy, getting more into kinesiotaping and the new strapping techniques that come out. Getting to practise those in clinic. Maybe also another modality room to just add a little bit extra because a lot the time you get there and there's a few people in the room it creates a backlog of patients. And maybe make the rooms a little bit bigger will be a bonus."</i> (Participant 3)</p>
4. Financial incentives.	<p><i>"So even if we get paid something you get some kind of incentive. We don't have a graduation until you complete your Master's. So you don't graduate with a diploma or your B.Tech. - you have to get your Master's to have a graduation ceremony."</i> (Participant 2)</p> <p>Interviewer: "So you are saying that incentivizing the clinical practicum would make it better for students and boost their motivation?"</p> <p><i>"It would make it a lot easier. An incentive would go a long way in helping students."</i> (Participant 2)</p>

4.5 THEME THREE: INTERPERSONAL RELATIONSHIPS IN THE CLE

4.5.1 Clinical supervision

Participants were probed on various aspects of the relationship dynamic with their clinical supervisors. Their responses are presented below.

4.5.1.1. Descriptions of the student-supervisor relationship

When asked to describe their relationship with the clinicians at the DUT CDC, participants expressed a range of views pertaining to the student-clinician relationship dynamic. While it was acknowledged that the clinicians provide invaluable support and guidance to students and assist them to develop greater clinical insights, competencies and cognitive faculties, the clinical supervisory relationship was not without conflict. Some of the main issues of this relationship include time spent on clinical discussion, delivery of criticism on the part of the clinician, and incongruences in practice philosophy between student and clinician.

The following responses emphasised the positive aspects of the student-supervisor relationship:

“I feel like the relationship with clinicians is varied amongst the clinicians obviously because they are all very different. I think that I have quite a good relationship with a lot of the clinicians. I feel like it’s quite a professional relationship yet I feel like they don’t always necessarily treat us like students but rather as colleagues which I really enjoy. They don’t just give us the answers. They’re like “okay let’s think about this. How can we do this? What can we do here? How can we alter that? What do you think here? I really do enjoy that. I think it’s a really good relationship. There isn’t really a clinician that I don’t feel like I have a positive relationship with or I’m not learning something from. Generally, it’s a very good relationship.” (Participant 11)

“I think it’s very good. Obviously, each clinician has a different personality so that contributes to how you interact with them. You lean towards the more experienced clinicians and take their advice a lot more than those with fewer years of experience. And they do provide you with the knowledge that you can only gain from interacting with them - you can’t get it from a textbook or by sitting in a classroom.”
(Participant 3)

“Majority of the clinicians, especially the new clinicians that have just come in, are really wonderful. You are able to learn a lot from them. They are so knowledgeable and they make you feel confident in helping your patient because they so confident in teaching you. I feel like those clinicians I’ve had a really good relationship with. However, there are one or two clinicians where you do feel a little bit scared to go to.” (Participant 10)

“Most of them are very friendly and always willing to help. I haven’t had any disputes with them. I appreciate that certain clinicians are always willing to teach you something new whereas others say they have faith in your capabilities to do things on your own.” (Participant 15)

One participant explains the development of the supervisory relationship:

“The relationship with the clinicians builds up as the year progresses. When you first come in in fifth year you don’t have to prove yourself but you have to show you have mutual respect and you are here to learn. If you do get quite a stern comment back saying listen you have made a mistake here, you have to take it on the nose and move on. They here to do a job and they are here to set certain standards,” ... “there’s no clinician I would consider having a bad relationship with. Just some you get on better with than others.” (Participant 7)

Clinical supervisors are responsible for providing feedback and constructive criticism to students in order to help them develop their clinical aptitudes. This participant commented on the manner in which feedback is delivered:

“Some of them are really amazing! Some of them you know are here to teach. You get a lot from them and you feel open enough to – if you have free time - to go up to them and get advice. And some of them you avoid during clinic duty. You just know you don’t go to them for certain things ...I get that they have this knowledge which they trying to impart but sometimes the way they do it is not constructive. It makes you feel like you’re inadequate and shouldn’t be here.”
(Participant 5)

One of the participants reported that she experienced difficulty in finding balance in differing opinions amongst different clinicians regarding management of the same case. This is noted in the excerpt below:

“A lot of the clinicians you won’t agree with. Like one clinician will adjust this patient and another will be like don’t adjust. So it’s quite difficult to keep a level head because you know you can treat this patient but they are saying you shouldn’t or can’t. There are some clinicians that I really do enjoy - you can talk to them and they will listen to you. Other ones will give you a really hard time and make you feel really stupid.” (Participant 8)

These participants explained how differences in the practice philosophy between students and clinicians affect the supervisory relationship:

“There is one clinician that just makes my hair stand up. It’s gotten to a point where I just try not to book patients on the day he’s there. That for me is a philosophy obstacle - he’s pretty much a straight chiropractor whereas I am a mixer and I just feel that I’m here to express my philosophy. To get experience in what I want to do. I’ve done things his way and it has worked but also looking at it from the

patient's perspective, the patient wasn't very impressed with me following his way which is doing an adjustment without soft tissue work when she had a massive spasm. The patient was in great discomfort. I feel sometimes you get pushed to do it their way."

(Participant 6)

"What was difficult though was when you have a set reasoning for why you want to treat a patient. Then sometimes you have to alter that to fit the clinician on duties preference or style because they don't fall into their category of treatment ... It was challenging some days you altered your treatment protocol for the patient because a specific clinician was on duty."

(Participant 13)

"Certain clinicians have a favourite treatment protocol. So if you know that clinician is going to be there, he's not going to want you to put a patient on a machine, he's going to want you to adjust!"

(Participant 12)

4.5.1.2 Expectations of clinical supervisors

Participants were asked to indicate what they expected from their clinical supervisors during patient care. The general expectations were predictable: guidance, clarity and support with clinical decisions, as well as respectful feedback and professional dialogue and debate. Participants appreciated when clinicians brought their personal experiences and techniques into the teaching arena as observed in the excerpts below:

"I think I expect them to help me think out of the box. I expect them to maybe challenge me a little bit on what I'm saying and why I'm doing it. So ask me why do you think this is the best way to go about treating this patient? Why are you using IFC instead of ultrasound? Why are you using ischemic compression instead of dry needling? I think I expect them to help me look at things from a different point of view and also to help me understand why I'm doing the things I'm doing - which I don't always understand."

(Participant 11)

"I expect guidance with my treatment plan and for them to tell me - sometimes you not quite sure so you ask them what they would do and then they would elaborate on what they would do in their private practice which is quite good because then you can learn from their clinical experience. And what works for them and what did not work for them. But then if you ask another clinician about the same patient they have a different story so then you can see which one works for you. So guidance with treating patients as well as technique wise."

(Participant 13)

"I expect the clinicians to be helpful, expect them to guide us onto the right path and not scare us or make us feel less confident in what we are doing." (Participant 10)

The following participants expected professional courtesy from the clinicians:

"You want a level of professionalism from them. You want them to treat your patient as if they were treating their own patient in private practice. You not just another person walking through the door asking for a signature." (Participant 7)

"I just want them to guide me in the correct way and not be lazy. I was quite upset the other day - I needed a signature and the clinician just left and said "no I'm not signing this" and I had to wait 20 minutes for the next clinician to arrive." (Participant 12)

"I would expect their correction and guidance in a more respectful manner rather than in a humiliating manner. Because, at the end of the day, we are all going to be colleagues." (Participant 9)

One participant expected clarity on practice philosophy so that patient care could be a collaborative effort, as opposed to a clash between contrasting approaches.

"I expect a little bit of dialogue: what is their philosophy and what is my philosophy. I do know that ultimately we are practicing under their

practice number so you expect them to have the final say. But sometimes I just feel I can't get my point across. I feel spoken down to. I feel that it's an order rather than a conversation. With one clinician I can't even finish my presentation before being interrupted. It's quite sad actually because he has great knowledge. He has fantastic knowledge. But unfortunately we just clash. It's sad because it's a missed opportunity to learn from someone who's quite brilliant." (Participant 6)

Similarly, this participant expected clinical supervisors not to force their practice philosophy onto students:

"I expect unbiased advice and direction. The ability to direct you without pushing or forcing you in their particular direction, so they kind of guide you through patient care fairly." (Participant 2)

The response of this participant indicated the expectation of clinical experience:

"I'd expect or at least hope that clinicians would have the required certain amount of clinical background. So they've been in practice for a certain amount of time to be able to give you the sort of knowledge you need. I'd expect or hope that the clinicians would have a practical background or certain amount of years." (Participant 14)

4.5.1.3 Determining whether expectations of clinical supervisors had been met

Participants were asked to indicate whether their expectations of the clinical supervisors had been met. There was agreement between participants that their expectations had been met. A sample of responses is provided below:

"Oh yes definitely! With majority of the clinicians my expectations have been met." (Participant 10)

“Yes, for sure. The clinicians here are doing an incredible job.”
(Participant 7)

“There’s not a clinician I feel, that has not met my expectations or that I’m not happy with.” (Participant 11)

This participant commented that expectations had been met with some clinicians but not others:

“With some of them -yes. But individuals differ.” (Participant 9)

Another participant explained why her expectations of clinical supervisors had not been met:

“No, just because some of them will just flat out say no, they will not help you to adjust your patient. They can also be quite like - if a patient is quite an unhealthy patient and has many co-morbidities - then they don’t really care because they feel that this is the least of the patient’s problems. And that’s just like a little bit irritating because it’s still your patient. So yes I don’t really think my expectations have been met.” (Participant 8)

4.5.1.4 Sought-after traits of clinical supervisors

A summary of the sought-after character traits of clinical supervisors is presented in **Table 4.6**.

Table 4.6: Sought-after character traits of clinical supervisors at the DUT CDC

Character Traits	Patience
	Understanding
	Clinical experience
	Confidence

Passionate Open-minded Approachable Challenging and stimulates clinical reasoning Provides constructive feedback in a respectful manner

The following statements substantiate the points provided in **Table 4.6:**

“I think that patience is one of the biggest things. I feel like clinicians often can be a little bit impatient in the sense that they’re like “why do you not know this?” whereas everyone is so different and people focus on different things throughout the course that you might really not know something. Or the clinicians have been taught something one way and you’ve been taught a little bit differently. And instead of just being like “you could do it like this” they sort of be like “no that’s wrong!”. Also, just not rushing you through. Like if a student has a lot of questions, for them to be there and sit and not just rush through things and not think about them but sign the paperwork anyway and go off.” (Participant 11)

“Patience is number one. And just general understanding - we can’t know everything. We still fresh - we haven’t had any practical experience.” (Participant 5)

“I feel that a clinician needs to definitely be confident in teaching their students. They need to be knowledgeable definitely. They need to have good clinical experience. Because I feel like a clinician that’s only been in practice for one year or six months or doesn’t even have their own practice is not going to give us good advice because they haven’t been out there long enough, so how are they going to help us? So they definitely need to have good clinical experience and acumen as well. And also, clinicians need to be more understanding. They need to have good background knowledge of chiropractic and how to treat patients. They must have a passion to teach because, I feel like a lot of clinicians come here and they not passionate about

teaching us - how do I explain it? They just here to teach but you can feel that they not passionate about it so it doesn't make you feel very passionate.” (Participant 10)

“They have to be experienced in how they are going about certain things. They have to be approachable. Some clinicians are more approachable than others so you lean towards them. You seem to book more patients in the days that they'll be in and you seem to approach them with your tougher patients. They need to be open towards our opinions because we are our own clinicians so we also just coming up with our own ideas and ways that we want to teach our patients. Being open-minded and accepting the ways we want to treat our patients is also a good trait.” (Participant 3)

“I think they need to have clinical experience. Clinical experience is very important. They need to be able to relate to the students being in the situation where we are now being fresh out of the academic side. So you don't really know everything they know so please don't be under the impression that I know what everything they know. They need to be there to challenge me and teach me something but please don't make me feel stupid. Just be there- guide me. Don't...what's the word? Don't be diminutive. I know I'm only a fifth year but I'm still here to learn.” (Participant 13)

4.5.1.5 Description of students' relationship with the clinic administrative staff

The relationship between participants and the clinic administrative staff was reported generally as antagonistic. The administrative staff refers to staff who deal with student administration issues at the clinic and the reception staff at the front desk. Many participants expressed unfavourable views about the reception staff due to perceived deficiency in professional conduct and poor attitudes and demeanor.

Unpleasant ambience, lack of urgency and poor attitude and demeanor of reception staff were highlighted by the following statements:

“When I come into clinic I’m happy to be here because I’m happy to help my patients and treat my patients and see my patients. But the minute I enter here, there’s like this heaviness. That sounds really silly but there’s this heaviness when I go to reception. Because I greet them with smiles and I’m like “hello, please can I have the register?” and then I just get... some of the staff just sit there on their cell phones. When you ask for something it’s like you are burdening them for asking for that even if it’s like a regional or anything. There’s no urgency in the reception area where they ready to help, they willing to get the modality, they up and running. It’s not like that. And there are a lot of them that have an attitude problem. It’s really depressing to come here when you so excited to treat your patient and then you go to the reception and people have an attitude problem with you.”
(Participant 10)

“With certain administrative staff members at the clinic, I have a fantastic relationship. I feel like they’re very patient, very understanding, very obliging. Whereas there are certain administrative staff members at the clinic that make my life a bit tougher. Just in the sense that they could be a lot friendlier. So you’ll go up to them and be like “hello, how are you? Would you mind doing this for me?” and they just completely ignore you. This is frustrating because you come in with a positive attitude. You need to have a good attitude with your patients regardless of how you feeling that day so it would be nice to actually see that in practice with the administrative staff especially considering the fact that they are your first - they are the first point of contact between you and your patient. So when your patient comes in, the first person they have to deal with is the administrative staff. And I feel like sometimes that can put the patient off because it isn’t as friendly or as nice as they expect it to be.” (Participant 11)

“I think the admin staff need to be friendlier towards patients because patients have noticed that they are pulled up and not always willing to

help them out. And I think for an institution or any place of business, it needs people who are going to be friendly and willing to assist you especially for patients who come in for medical care.” (Participant 15)

“I had some problems at the beginning of the year with one of the ladies at reception. Just because I find her incredibly unfriendly and quite rude. Especially if someone is at the front desk greeting patients - they should be bubbly and friendly but she was miserable.” (Participant 8)

On the other hand, the following minority of responses offered an alternative perspective on the relational dynamic between participants and administrative staff.

“It’s a good relationship. They do an incredible amount of work for us. I think there’s a lot we don’t realize because it’s behind the scenes and we don’t deal with them as much as we do with the clinicians. So I think with them - a lot of them have been here for years and years and they doing an incredible job for us. Personally I’ve got a good relationship with them and sometimes it gets heated and very, very busy at times. You’ve got to understand they are also human.” (Participant 7)

“I never really had any problems personally. Reception can be a bit slow sometimes and so on but other than that, I can’t say I’ve had any specific problems. I can’t fault anything from my side and I can’t speak for anyone else.” (Participant 12)

4.5.1.6 Factors that contribute to and influence the relationship dynamic

The factors that contribute to or influence the relationship dynamic between participants and the administrative staff were also documented to provide greater insight and perspective. Interestingly, mutual respect, understanding

and positive attitude of the participants were said to be important in creating a reciprocal relationship with administrative staff.

The excerpts below illustrate this:

“If you treat them with the respect they deserve, they generally treat you with the respect you deserve. Give them a smile, ask how they are - I think that goes along way and they remain happy.”
(Participant 14)

“Attitude and demeanor because I mean I have a good attitude - I expect someone to treat me the same way... And I think respect is a big thing as well.” (Participant 10)

“I think my outlook as well. So if you go to them and you happy and friendly, they usually repay that whereas if you are grumpy and nasty they will treat you in the same way. So I think if you’re nice and pleasant you would probably get that in return.” (Participant 13)

“Friendliness, willingness to help and communication. If someone’s having a bad day and they don’t want to see all these people and they don’t want the students being like where this patient’s file is or where’s that? – Just explain it to them – say just wait a minute I’m just busy with something. Communication is key because otherwise that’s where problems start.” (Participant 8)

“They are important and they need to feel important so being nice to them can really cheer things up.” (Participant 1)

“If you need something from them and they don’t have patience with you or they’re in a bad mood and stuff. That affects the relationship negatively.” (Participant 2)

4.6 THEME FOUR: APPRAISAL OF THE CLINICAL PRACTICUM

The appraisal of the clinical practicum entailed commentary on the positive experiences and highlights of participants, as well as an explanation of the challenges they encountered.

4.6.1 Positive aspects of the clinical practicum

Participants were asked to stipulate the positive aspects of the clinical practicum that would hold them in good stead for their future chiropractic endeavours. A range of positive aspects was provided, including having the guidance and experience of clinicians to build up a repertoire of skills, clinical perspectives from different clinicians, networking relationships with other chiropractors and rigorous clinical protocols.

The statements below support these positive aspects:

“I think the clinicians hold quite a high standard. When you get in there sometimes, you get put on a straight line which is good when treating patients. Once you leave here, you don’t have that person to go to and say listen I’m a bit stuck. So I think the level the clinicians expect from us is a very positive thing.” (Participant 7)

“The positive aspects would be the numerous clinicians that we have. So it gives you a broad spectrum idea of so many different ways to treat. You come into clinic thinking there is only one way and there really isn’t. And I feel like the fact that we have so many different clinicians that we see so differently really does give you an idea of all the options that are available in chiropractic care.” (Participant 11)

“Building personal relationships with future chiropractors and current chiropractors and our clinicians and staff - so if the need ever arises where I do need help from them, I already have built good relationships and that holds me in good stead to like further that cause.” (Participant 2)

“All the paperwork and stuff - If you take a short cut that’s on your own accord but there is no room for short cuts. So one day going into practice, you should be able to do a full history, physical and so on based on what the clinic has given you because they don’t miss out on anything.” (Participant 14)

4.6.2 Patient care as a highlight of the clinical practicum

The rewards of patient care emerged as a prominent theme. There was consensus amongst participants regarding the rewards of patient care, particularly boosting the confidence of participants in their abilities. Patients' positive feedback also gave participants reassurance and a sense of purpose.

These participants described the effect of positive patient feedback:

"I had one who told me he's never going back for treatment to anyone else. He was seeing like a sports masseuse and he was like "I'm never going back there again!" So just hearing those little words like "this is the best treatment I've ever received" or "I'm not going to anyone else" makes you feel better about yourself. Like you really making a difference." (Participant 8)

"It's mainly my patient's response to me. There are so many of them that come back and say I've been treated so well by you and no other doctor took the time and effort to do this. And some of my patients – even though they are better and don't need to come back to me they still want to come." (Participant 15)

Another participant described how his management of a patient with a debilitating condition provided a sense of professional gratification:

"I've built up an incredible relationship with a patient of mine who suffers from arthritis mutilans. Just seeing him for the first time and how he was struggling. I think just him putting his trust in me as the person who is going to help him and my input and his input and my effort and his effort just came together so nicely. I think out of this year, if I look back, he's definitely a very memorable - an awesome memory and definitely someone who has proven to me that what we are doing is going to help people." (Participant 7)

The curative aspect of patient care was a highlight for this participant:

“I think my highlight is when I have a patient that came in with such severe pain and goes away with less pain.” (Participant 6)

Obviously, patient care involves exposure to a spectrum of clinical conditions and pathological presentations. This participant explained that her highlight of the clinical practicum was gaining exposure and first-hand experience with clinical conditions:

“My highlight would be... seeing the conditions come to life. For example, I had a patient with a bursitis. Reading about a bursitis and like learning how to identify it absolutely nothing compared to actually identifying and finding a bursitis. So I think my highlight really has been actually going from learning about these things and trying to sort of picture and imagine how they would present, to actually seeing them present.” (Participant 11)

4.6.3 Challenges encountered by participants during the clinical practicum

Since the participants were engaged in the clinical practicum for eleven months at the time of data collection, they were able to provide insight into the initial challenges they faced when they commenced with the clinical practicum, as well as the on-going challenges they experience.

4.6.3.1 Challenges encountered at the start of the clinical practicum

Participants experienced the following challenges at the beginning of their first clinical year:

- Adjusting to the demands and routines of clinic.
- Physical and mental fatigue.
- Managing the multiple responsibilities of a course-work Master's programme.
- Anxiety from clinical inexperience.
- Slow start to obtaining patients.
- Completing clinical paperwork.

The responses below give credence to each of the aforementioned points respectively:

“Just getting into the routine of being at clinic. You are so tired after that first day. You not used to sitting here treating patients. In private practice you see 5 to 7 to 10 patients a day and you’re fine. Here, you see one patient a day and you’re so tired. I think it’s just getting physically and mentally ready for being in practice. You not used to that. So just getting used to being ready for practice.” (Participant 13)

“Just getting organised and having a plan of how you going to approach the patient and how you going treat them because at the beginning you were running around like a headless chicken. You didn’t know what led to what and how to take it from there.” (Participant 3)

“I mean barring in fifth year having to juggle research, clinic and exams, I mean a lot of the time when you have patients coming in you are exhausted and don’t feel like seeing the patient. I believe every patient should have 100% of your attention. Sometimes it is tough to give them 100% of your attention when you are mentally exhausted.” (Participant 14)

“Probably just nervousness and doubting yourself. Thinking you know all this stuff but how do you do this? What are you going to do? Are you going to kill this patient? So there’s a lot of doubt just because you haven’t treated patients before.” (Participant 8)

“At the start I’d say I struggled the most with patient numbers to be honest with you. I remember starting off so slow. Just waiting for patients and doing nothing during clinic time. It might be really beneficial if perhaps you don’t really know the clinicians starting off so you don’t really have a relationship with them where you can just go up to them and be like I don’t have a patient do you mind showing me a couple of adjustments, do you mind helping me with this?” (Participant 11)

“The paperwork was a new thing to deal with because you haven’t dealt with it before.” (Participant 2)

Interestingly, one participant claimed not having encountered any challenges or obstacles at the start of the clinical practicum as evidenced in the quote below:

“No actually I did not experience any challenges or obstacles.”
(Participant 15)

4.6.3.2 On-going challenges encountered during the clinical practicum

The spectrum of on-going challenges included physical barriers to treatment, dealing with ethical dilemmas, and time management during patient care, difficult clinical cases, and personality clashes with clinical supervisors, conflicting clinical practices between clinical supervisors and the unpredictable nature of clinical practice.

One participant described the physical challenges of patient care:

“My biggest challenge or obstacle is my adjustments. So like I said earlier, patients come in and you can’t always do your standard lumbar role. I had a patient come in and he has severe COPD. He’s got numerous thoracic fixations and I can’t adjust him lying down at all neither supine nor prone. All my adjustments have to be done seated. And this is a 154kg man that I now have to adjust in a seated position which is extremely difficult because I can’t even get my arms around him. So I’ve really had to adapt and learn and I feel like I could’ve - it would have been nice if I had at least a slightly better idea of how to go about dealing with these patients.” (Participant 11)

Another participant illustrated how ethical issues may be challenging to deal with during patient care:

“Everyone is different and some people you won’t relate to. Like a friend of mine is treating a patient who I find quite creepy. If I see him - because I’m treating his wife - he’ll hug me and I don’t like it. So obviously you’re dealing with a lot of people and sometimes you have to be firm with them and learn to say no. Also having older patients that you really struggle to get information out of. So those are obstacles that are very challenging but it also helps you become a better chiropractor and a better person.” (Participant 8)

Time management during patient care and conflicting practices between clinical supervisors were reported by another participant:

“Obviously one of the big challenges is if it gets busy here, to keep to time. Especially if you’re waiting for 20 minutes for a clinician’s signature... There is a lot of contradiction between some of the clinicians. Some will tell you go ahead and adjust that whereas others will freak out and tell you that’s not how it should be done. I was taught that you can’t dry needle a patient on warfarin. When I went to

the clinician, he asked why I am not dry-needling and I said because the patient is on warfarin. He said "Do you seriously think he's going to bleed out from a dry needle? Go ahead and needle him."
(Participant 6)

The unpredictability of clinical cases and deficits in clinical learning were also cited as a challenge.

"Yes there have been challenges and obstacles. For example, something that we weren't taught much about in class and a patient comes presenting with that illness. That is a challenge definitely but then there are clinicians to help us so that's good as well and you're learning as well ... With like regards to the staff here, that's also an obstacle because some of our personalities clash with their personalities and then you feel a bit threatened to go discuss a case with them. You feel scared. That's also a little bit of a challenge."
(Participant 10)

"I think every day in the clinic is a challenge. Every patient that comes in is something totally new. You have to rack your brain in different aspects - no patients present the same. In class you learn these are the signs and symptoms for a condition but when a patient comes in they present very differently to what you learnt." (Participant 4)

4.7 CONCLUSION

This chapter presented the findings of the study. A narrative was constructed using excerpts to substantiate each theme and associated sub-themes. The following chapter entails a discussion of these findings in relation to the results of similar studies within the corpus of literature.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 INTRODUCTION

This chapter discusses and interprets the findings of the study in context of the existing literature on clinical education. It has been established that there is a paucity of empirical data investigating chiropractic education in general. Despite the fact that Adams and Gatterman (1997) highlighted that investigation of the chiropractic education process is critical to the future practices of the profession, it has received little attention, with only a few international studies providing an appraisal of certain facets of chiropractic education. Chiropractic clinical education, specifically chiropractic students' clinical education experiences, remains largely unexplored in the literature. Predictably, constructing a comparative critique of other studies pertaining to chiropractic clinical education proved to be challenging. As such, the literature used in this discussion was extrapolated from various studies in other health profession disciplines.

5.2 OVERVIEW OF THE RESEARCH DISCUSSION

The aim of this study was to explore and describe the clinical experiences of first- time registered Master's chiropractic students during their clinical practicum at the DUT CDC in 2016. Four main themes were identified:

Theme 1: Undergraduate education and pre-clinical preparation.

Theme 2: Experiences within the clinical learning environment.

Theme 3: Interpersonal relationships in the clinical learning environment.

Theme 4: Appraisal of the clinical practicum.

The themes and associated sub-themes are discussed and interpreted below and they are substantiated by relevant literature.

5.3 THEME ONE: UNDERGRADUATE EDUCATION AND PRE-CLINICAL PREPARATION

It is important to obtain students' perspectives of their undergraduate pre-clinical education component, in order to determine how effective it is in preparing them for the clinical practice component. Participants were asked a range of questions to explore the congruence between undergraduate and post-graduate education components. Their responses brought to the fore some issues that have scarcely been described in the context of chiropractic clinical education. In general, participants were satisfied with their chiropractic undergraduate education, describing it as a, "very well-rounded, knowledgeable course" and a "rigorous system" with "extensive theoretical grounding". However, some curriculum-based, structural and content related problems were also highlighted.

5.3.1 Perceptions of the undergraduate theory and practical components

There were differing views of the undergraduate theory component. Some participants reported that the undergraduate theory provided them with the necessary foundations for post-graduate clinical practice. These participants were satisfied with the undergraduate theory component as they found it to be analogous to the knowledge constructs needed for clinical practice.

Other participants felt that the current undergraduate chiropractic curriculum is too theory-orientated with insufficient practical-based initiatives, on actual patients, embedded within it. This is an unsurprising finding due to the dearth of practical assessments on actual patients at the N. Dip and B. Tech programmes at the DUT. The practical components of the courses embedded within these two programmes (**Table 2.2**) primarily involve students practicing their palpatory, diagnostic, auxiliary therapeutic and spinal manipulation skills on each other. The feeling that students were overloaded with theory, but lacked practical experience was a common complaint, and one that has been reported in various medical programmes (Rotthoff, Schneider, Ritz-Timme and Windoff 2015).

The findings of this study are also in agreement with those of Morgan and Morgan (2006) and Palmgren and Chandratilake (2011). Morgan and Morgan (2006) identified a trend in chiropractic training colleges where the didactic component of the curriculum outpaces the clinical practical portion of a student's education. This academic disparity potentially leaves students with an abundance of factual knowledge yet limited experience in its actual practical application. Similarly, Palmgren and Chandratilake (2011) found that the chiropractic curriculum in general tends to place a disproportionate amount of attention on the retention of facts as compared with the attainment of practical skills.

It was also found that the design of the current chiropractic curriculum also poses a challenge to students in the sense that certain modules (e.g. auxiliary therapeutics) were undertaken in the undergraduate component, but only applied in a clinical context in the post-graduate component. As such, students had to relearn or revise the theoretical underpinnings and practical application of various therapeutic modalities at the start of the clinical practicum. The concept of retention interval, which is the amount of time that elapses between learning a concept and applying it, has been highlighted by Bruno, Ongaro and Fraser (2007). They acknowledge that the retention interval has scarcely been studied in chiropractic education. However, they propose that institutions attempt to revisit and explore the material taught in undergraduate education in subsequent years in order to reinforce the information. Since the application of therapeutic modalities form an integral aspect of patient care at the DUT CDC, it is recommended that more efforts be made to revise or re-test therapeutic modalities in the B.Tech year.

It was also found that the first two years of the N.Dip programme, which consist primarily of basic science subjects, do not provide a clear or realistic reflection of what chiropractic actually entails, and inspires little passion for the profession. This correlates with the findings of Ward (2010), who indicated that at most chiropractic colleges, basic science curricula are taught in

isolation and lack integration with the rest of the curriculum. This presents a dilemma for students, who rely on understanding how parts function together as an integrated whole, and use this in clinical problem solving. Similarly, it was found that some subjects undertaken in the basic science years, such as physics and chemistry, had little or no relevance to clinical learning and practice (Eyal and Cohen 2006).

Participants appeared to be generally dissatisfied with the practical element of the undergraduate programme. Though it was unspecified which modules specifically endeavour to be more practically-orientated, the consensus was that more practical initiatives could be implemented in the undergraduate phase in order to promote clinical orientation. This is consistent with the findings of Eyal and Cohen (2006), who found that students felt that more practical-based clinical experiences should be included in pre-clinical years.

Various universities have developed and incorporated practical skills learning modules into undergraduate education (Jamison 2002; Faure 2002; Scott 2005; Gercama *et al.* 2014). Taking this into consideration, it would be valuable to interview undergraduate chiropractic students on their perceptions of the practical aspects of the undergraduate programme to gain insight to which aspects are adequate in preparing them for clinical practice education, which aspects can be improved on and how. Although this would require time, resources and curriculum modifications, Ward (2010) advised educational institutions not to be dissuaded in its attempt to strive towards improvement.

5.3.2. Theory-practice gap in chiropractic clinical education

Researchers have described the disparity between theoretical knowledge and practical application in various clinical contexts, including nursing education (Maben, Latter and Clark 2006), medicine (Habbal *et al.* 2007), emergency health and paramedic education (Michau *et al.* 2009), and dental hygiene education (Wilkinson, Smallidge, Boyd and Giblin 2015). The theory-practice

gap phenomenon is significant as it can affect professional competence and contribute to difficulties in progression from a student to a novice practitioner, as was shown by van Hell, Kuks, Schonrock-Adema, Van Lohuizen and Cohen-Schotanus (2008). In this regard, this study identified the theory-practice gap as an obstacle in chiropractic clinical education.

5.3.3 Pre-clinical initiatives

Despite the fact that chiropractic students are introduced to components of clinical education before commencing with the clinical practicum through pre-clinical initiatives, such as hospital visits with case appraisal and assessments, the observer programme and mock patient assessment, these initiatives were not sufficient in equipping most students to effectively function in the CLE. Unlike the pre-clinical initiatives at other institutions, that promoted ECE and enhanced clinical competence and understanding of the CLE (Faure 2002; Jamison 2002; Ward and Wright 2004; Gercama *et al.* 2014), the pre-clinical initiatives at the DUT (hospital visits, observer programme and mock patient assessments) were found to be of limited value in the context of the clinical practicum experience.

Although these initiatives do contribute to clinical learning and practice, they appeared not to allow for sufficient deep and meaningful immersion in the clinical setting. Consequently, most participants did not feel confident in terms of preparation for the realities and expectations of the clinical practicum. For example, participants did not know how to complete clinic paperwork, or effectively diagnose patients at the start of the clinical practicum. These findings are supported by Prince *et al.* (2005), who found that medical students did not know how to conduct themselves in the CLE during their clerkships because they did not know what was expected of them.

Hospital visits and case appraisals

This study found that while the hospital visits allowed students access to patient pathology profiles, that were previously learnt in a two-dimensional manner from textbooks and paper-based cases, the demographic profiles of patients presenting at the public hospital were considerably different to the population that would typically present at the DUT CDC. The DUT CDC is an out-patient facility that deals specifically with neuro-musculoskeletal complaints, whereas in hospitals, the in-patient profiles range from pediatric pathologies, pre- and post-surgical cases, psychiatric illnesses, metabolic, endocrine and vascular conditions, to name but a few. The majority of these patients are beyond the scope of chiropractic care. However, participants reported that the hospital visits provided them with the opportunity to understand and initiate a DPR with the patients at the hospital.

Participants were of the view that the hospital visits lacked structure and supervision. The limitations of the hospital visits were described previously Chapter Two. Peduzzi, Norman, Germani, da Silva and de Souza (2013) reported that there is a need for interdisciplinary approaches to healthcare education. With this in mind, it is proposed that the hospital visits be well-structured and with greater input from the doctors and nurses in the respective wards.

Observer programme

The clinic observer programme allowed participants to gain exposure to clinic protocols and procedures, patient care and individual practice styles and techniques. It also provided them with the opportunity to observe how other students interacted with patients and practise chiropractic. Based on the responses of the participants, it appeared the majority viewed the observer programme as just another requirement to be completed prior to the commencement of the clinical practicum instead of actually using it as an appropriate introduction to the CLE. It would be beneficial for the Chiropractic Programme at the DUT to apply the three-step process of effective clinical

observation proposed by Boud *et al.* (1985) to enhance the learning opportunities of the observer programme.

Mock patient assessment

As with the observer programme, the majority of the participants completed these assessments as a requirement to be fulfilled, instead of utilising its full value for clinical learning. Participants reported that the mock patient assessments were left until the end of the year and they were done in a rushed manner. Furthermore, participants explained that they were not given enough support or guidance about the correct procedures during patient care or filling out clinical paperwork and actually reaching a diagnosis for the patient. Notably, the lack of chiropractic treatment and management of the mock patients also seemed to be a problem as participants felt that these would make the experience richer and more realistic.

5.3.4 Transition shock

Transition shock is expected when there is a change in the educational climate of students. Participants in this study acknowledged the radical differences between classroom learning and clinical learning. The reported fear and apprehension stemmed from having no prior experience of being independently responsible for the chiropractic care of patients. The findings of this study were consistent with descriptions of transition shock throughout the health science fraternity, as was found in the studies by Godefrooji *et al.* (2010), Dornan and Bundy (2004), Pitkala and Mantyranta (2003) and Boychuk Duchscher (2001).

5.3.4.1 Deficits in clinical knowledge

Participants reported that there were deficits in their knowledge and skills at the start of the clinical practicum. Proficiency in utilising therapeutic modalities and rehabilitation were particularly problematic, deficient areas. These skills are necessary for patient care. While there is a paucity in the

literature pertaining specifically to chiropractic students, proficiency in utilising therapeutic modalities and performing physical rehabilitation, Moodley (2016) also found that paramedic students in the Western Cape felt they had gaps in their knowledge and practical skills that were needed for patient care.

Therapeutic modalities

Participants unanimously stated that although therapeutic modalities were taught to them, it lacked relevance at the time it was taught. This perhaps can be attributed to the considerable time lapse between acquiring the theoretical knowledge and practical competence, and thereafter only applying it two years later. Technically, upon entering the CLE as first-time registered Master's chiropractic students, it is assumed and expected that students are fully competent in the theoretical underpinning and practical application of therapeutic modalities, since they would have passed this module in the third year in order to progress to the B.Tech programme. However, based on responses, it appears that this assumption is inaccurate, as many participants indicated that they had to re-learn therapeutic modalities from senior students upon initial entry to the clinic. Participants also acknowledged that much of their learning of therapeutic modalities was self-directed in the clinical setting.

Rehabilitation protocols

Participants voiced their opinions regarding the adequacy of patient rehabilitation protocol training. They found this module to be unfulfilling as they reported that it equips them with generic rehabilitation protocols that cannot always be adapted and applied to every patient. Similarly, physical therapy practitioners in a rehabilitation facility in the Western Cape felt that they were not knowledgeable enough to deal with patients with different disabilities as they did not have expertise in all domains of patient rehabilitation (Kumurenz, Goliath, Mji, Mlenzana and Joseph *et al.* 2015). The understanding of the rehabilitation processes and protocols was sub-optimal,

as participants learnt theoretical frameworks but not the subsequent application and management on real patients.

5.4 THEME TWO: EXPERIENCES WITHIN THE CLINICAL LEARNING ENVIRONMENT

A range of personal, professional and institutional factors was recognised in giving meaning to the clinical experience. The subthemes discussed in this section are: personal and professional development in the CLE, clinical learning in preparation for independent practice, patient responses to participant's treatment, clinical and administrative duties and perceptions of clinic infrastructure.

5.4.1 Personal and professional growth and development

The consensus amongst participants was that the clinical practicum experience was invaluable in developing their confidence and competence as novice practitioners. This is in alignment with the findings of Porter, Morphet and Raymond (2013), who determined that students' confidence increased with clinical exposure throughout the duration of their clinical practice component.

Through immersion in the clinical practicum, participants were able to overcome their initial clinical anxiety and developed a more insightful grasp on the realities of patient care. This is consistent with the stages of professional development described by Benner (1984), as participants progressed from the novice stage to the advanced beginner stage through clinical experience.

5.4.2 Self-reported preparedness for independent practice

This study found that the participants were ambivalent about their preparedness for independent practice after the first year of the clinical practicum. While participants highlighted various aspects of the clinical practicum that would hold them in good stead for independent practice, such as rigorous paperwork; administrative task preparation; exposure to a wide

variety of patient profiles, and practicing chiropractic under the guidance of the clinical supervisors, they found that their clinical training was not analogous to real-world practice. This could be attributed to the lack of sufficient pre-clinical exposure, and other challenges they experienced, which are described later in this chapter. Moreover, the participants deemed the time allocated to patient care (approximately two and a half to three hours) at the DUT CDC was unrealistic as it was not keeping with the patient consultation times in private practice. This is contrary to the findings of Christmas *et al.* (2010), which indicated that medical students viewed the greater amount of time allocated to patient care at academic clinics as a luxury. It should, however, be noted that considerable time is spent by the chiropractic students on completing the relevant paperwork and consulting with the on-duty clinicians during patient consultations.

The findings of this study are similar to those of Moodley (2016), who observed that paramedic students in SA felt that they were ill-equipped to confront the pressures of independent practice upon graduating due to a lack of sufficient clinical experience and gaps in their knowledge and practical skills that are necessary for clinical practice. An earlier study by Tallentire *et al.* (2011) found that medical students were of the opinion that they were well-prepared for consultation and communication skills, but less prepared in acute care and prescribing skills. On the other hand, the findings of this study differ from those of Palmgren and Chandratilake (2011) and Talberg and Scott (2014). Chiropractic students in Sweden perceived their clinical education to be sufficient in preparing them for independent practice (Palmgren and Chandratilake 2011). Similarly, physiotherapy students felt adequately prepared for independent practice and their clinical practice education was congruent with real-work practice (Talberg and Scott 2014).

Based on the findings of this study, it could, therefore, be surmised that at the end of their first clinical year, participants have not yet sufficiently acquired the essential attributes for work-readiness, i.e. personal growth and development;

professional maturity; organisational awareness; interpersonal skills; technical aptitude; adaptability; problem-solving skills and resilience described by Caballero, Walker and Fuller-Tyszkiewicz (2011). It should, however, be noted that the knowledge base of clinical practice makes full preparation impossible (Goldacre, Taylor and Lambert 2010). Participants appreciated that they were still in a learning process and still experienced doubts in their abilities to effectively and accurately diagnose and treat patients (Sharif and Masoumi 2005). These findings also highlight the need for more pre-clinical and clinical exposure for the chiropractic students at the DUT, as some reported that they still needed another year of clinical experience to feel ready for practice. This is supported by the findings of Hodgetts *et al.* (2007) who reported that it can take up to two years of clinical practice for practitioners to feel clinically competent.

5.4.3 The perception of the participants to patient responses to chiropractic care provided at the DUT CDC

Positive feedback from patients has been cited as a determinant of professional confidence (Brown *et al.* 2003). Performance feedback benefits students by boosting their confidence, motivation and self-esteem, as well as improving their clinical practice (Clynes and Raftery 2008). This was found to be true in the context of this study as participants felt confident in their ability to treat their patients based on the positive responses they received from their patients. Janiere (2010) found that when patients acknowledged students effort in treatment, it served as positive reinforcement of their professional role and abilities.

The question posed to students was:

“How have your patients responded to your treatment?”

There was an overwhelming agreement amongst participants regarding their positive impact on patients. Participants observed that patients reported decreased pain and increased functionality and general well-being. Despite

this, participants did note that not all patients benefited from chiropractic care or that the very nature of some patients' conditions makes them difficult to treat. Nonetheless, it is encouraging to note that the findings of this study are in keeping with a study conducted a decade ago. In 2006, Thoresen reported that patients attending the CDC reported a high degree of satisfaction with the quality of care they received.

Evaluation of patient satisfaction helps practitioners determine the extent to which their service meets the needs of the public (Avis, Bond and Arthur 1995). Taking into cognisance the findings of this study, it is recommended that the Chiropractic Programme conducts formal patient surveys on the standard of care received at the DUT CDC on a regular basis. These findings could be relayed to students in a constructive manner, not only to build confidence, but to also strive for improvement in patient care.

5.4.4. Clinical paperwork

Clinical and legal protocol dictates that students must complete clinical paperwork as a routine component of patient care (Thomas 2009). This study found that chiropractic students perceived the completing of clinical documentation in a negative light. Participants voiced strong sentiments about clinical paperwork, labeling it to be an "obstacle" and a "nightmare" This is consistent with other studies which investigated the attitude of students towards their clinical paperwork (Siamian *et al.* 2008; Alromaihi *et al.* 2011; Christino *et al.* 2013).

Not only did participants find completing clinic paperwork to be a time-consuming and laborious task, they were also frustrated at the content of the documents as they reported some sections to be repetitive, whereas others were seen to be vague. The lack of clarity and specificity impacts patient care as participants spend considerable time trying to decipher what is expected in

certain clinical documents when they could use that time to focus on their patient.

Participants reported that they were not adequately taught to interpret and complete clinic paperwork. This highlights the issue of learning about clinical paperwork prior to commencing with the clinical practicum. Some important questions emerge such as, “are students effectively taught how to complete clinical documentation” and “do students understand the limitations of clinical paperwork?” Seo, Kong and Oh (2016) identified difficulties with students completing clinical paperwork. They found that students omitted to sign their clinical paperwork and inappropriately documented the findings of physical examinations they conducted. Moreover, they found that 4% of students failed to record patient information and 3% did not date their clinical documents. Since medical recording is important from a medico legal perspective (Gutheil 2004; Thomas 2009), it is important to develop an education and assessment programme for complete and accurate record keeping (Seo *et al.* 2016). One recommendation provided by the participants of this study was to periodically review and update the relevant clinic paperwork in order to improve and enhance the clinical practicum experience. Another recommendation was implementing a system that decreases clinical paperwork as clinical experience increases.

In contrast to the general negative perceptions of clinical paperwork, two participants reported on its merit and value in clinical education. They stated that clinical paperwork was an important guide to understanding the patient’s problems and was there to safeguard against omissions and mistakes during patient care. These views are encouraging, as they underline the students’ understanding of the importance of clinical documentation as it is a breach of and deviation from the standard of care if relevant information obtained from a patient is not appropriately recorded (Gutheil 2004).

5.4.5 Clinic Infrastructure

The CLE encompasses various factors that surround students such as the physical environment, clinical equipment, patients, clinical supervisors and staff (Papp *et al.* 2003). In experiential learning theory, it is accepted that the environment plays a key role in learning (Kolb, Boyatzis and Mainemelis 2002). Flott and Linden (2015) stipulated that a CLE consists of four components, viz. the physical space, organisational culture, psychosocial and interaction factors and teaching and learning components. Accordingly, it is of relevance when constructing a perspective of clinical experiences to ask students about their physical environment and clinic infrastructure, as this provides insight as to whether a CLE is conducive to learning and the provision of patient care. This study determined that chiropractic students had positive perceptions of the clinic infrastructure and believed that the facilities at the DUT CDC were sufficient for patient care. Descriptions ranged from “adequate” to “brilliant” to “world-class”. Participants were of the opinion that patients get their money’s worth for the facilities offered at the clinic.

However, not all participants shared this positive perception. Some brought to light issues with the clinic’s equipment and structural design that are yet to be addressed. For example, the working order of some of the therapeutic modalities was brought into question. Participants mentioned that therapeutic modality machines were out of order but still remained in the clinic. This impacted patient care in two ways: firstly seeking out equipment that was actually properly functioning was time-consuming and if many students needed the same working machine, it created a back-log that could increase patient consultation time. Secondly, if non-functional clinical equipment is used on patients, it raises the question of efficacy and quality of treatment rendered at the clinic. In a study by Eygelaar and Stellenberg (2012), it was established that 92% of nurses at state clinics reported that clinic equipment is not always in working condition. At two different clinics, it was reported by 79% and 90% of participants respectively that maintenance of clinic equipment was not done on a regular basis. This appears to coincide with the findings at the DUT CDC. While there are measures in place at the DUT CDC

to monitor and maintain clinic equipment, it is evident that this is either not being done or not being done enough. It was not established whether participants reported these issues through formal channels to in order for them to be resolved. One participant identified the physical space of the clinic modality rooms to be a problem when dealing with physically disabled patients in wheelchairs.

5.5 THEME THREE: INTERPERSONAL RELATIONSHIPS IN THE CLINICAL ENVIRONMENT

The relationship of students with their clinical supervisors and that between students and the administrative staff at the DUT CDC were identified as key relationships in context of the clinical experience. This perhaps can be attributed to the intimate, daily interactions between students and their clinical supervisors and administrative (front-desk reception) staff. In fact, chiropractic students actually depend on these key role players to accomplish the objectives of the clinical practicum.

5.5.1 Interpersonal dynamics between students and their clinical supervisors

Clinical supervision was recognised in this study as an indispensable component of the chiropractic clinical experience. The participants appreciated the role that clinical supervisors play in their academic, personal and professional development. This is congruent with the findings of Sharif and Masoumi (2005), Milne (2007), Falender *et al.* (2014) and Papastavrou *et al.* (2016).

The findings of this study emphasise the role of the clinical supervisors in guiding chiropractic students upon initial entry into the clinical setting. At the DUT CDC, all aspects of patient care are overseen by clinical supervisors. A student is not allowed to treat a patient without the consenting signature of their clinical supervisor. This was found to create a safety-net for

inexperienced and novice student practitioners as they were able to seek continuous clarity and direction from their clinical supervisors.

The participants found that the variety of clinicians enhanced their clinical exposure and socialisation into the profession, as each clinician brought a unique practice philosophy and techniques. However, while some participants appreciated the differences in the techniques and practice philosophy amongst clinicians, as this contributed to them developing their own set of clinical principles, others found that this created a degree of confusion and uncertainty in the approach to patient management. Differences in practice philosophies and approaches resulted in inconsistencies and contradictions amongst clinical supervisors. For instance, one clinician approved a participant's treatment plan, while another disapproved and made alterations to the same treatment plan. This left the student confused and not knowing what was "the right thing to do" and contributed to a decrease in clinical confidence. This was consistent with the findings of Henzi *et al.* (2006) and Bray (2013) who observed that a negative aspect of clinical learning is the inconsistency and variability of teaching content and practical techniques taught by various clinical tutors, as they employ differing teaching strategies.

Another contentious area of clinical supervision was the discordance of the practice philosophy between participants and clinicians. Due to a large degree of subjectivity in approaching cases, intra-professional reliability can be difficult to ascertain. As such, patient management, though theoretically regulated by evidence-base practices, is open to interpretation by the practitioner. Some participants stipulated that their practice philosophy and that of the clinician on duty differed considerably. As a result, the clinician would disapprove of the participant's treatment protocol and would expect them to amend it accordingly. Participants felt that it was inappropriate for their clinical supervisors to force their practice philosophy onto students as it may not necessarily be what is best for the patient. This is supported by McGregor, Puhi, Reinhart, Injeyan and Soave (2014) who found that differing

intraprofessional paradigms with a healthcare discipline risk confusion amongst students, patients, referring providers and policy-makers. It is important that chiropractic students in their first clinical year be aware that they have not yet attained sufficient clinical experience in order to decide “what’s best for the patient” and to engage with their clinical supervisors on their practice philosophies so that a common ground is achieved.

The findings of this study reiterated the sought-after and valued qualities of clinical supervisors that have been described previously (Gray and Smith 2000; Kilminster *et al.* 2007; Dadgaran *et al.* 2012). Patience and clinical experience were the most highly sought after character traits. Some students wanted to be challenged by their clinical supervisors. This was in agreement with the findings of Buccieri *et al.* (2013). They reported that students valued their supervisors engaging with them in discussion that was challenging and thought-provoking.

Since student confidence, self-esteem and motivation can be strengthened through the confirmation and acknowledgement they receive from their clinical supervisors, the manner in which feedback is delivered is important (Clynes and Raftery 2008). The participants of this study expected their clinical supervisors to provide them with feedback that was constructive and motivating. However, this was not always the case, as certain clinical supervisors delivered feedback in a demeaning manner which made participants feel “foolish”. This approach by clinical supervisors could be detrimental to the clinical learning of students, as negative feedback, if not carefully relayed, could result in demotivation and deterioration in performance (Cantillon and Sergeant 2008). Similarly Henzi *et al.* (2006) found that many students described situations in which feedback was delivered in a condescending or abrupt manner that embarrassed students. A gentle, sensitive approach, as opposed to a harsh one, is more effective in promoting student competence and confidence (Myrick and Yonge 2008). It is advised that the clinical supervisors at the DUT CDC adopt the “sandwich

technique” described by Dohrenwend (2001) when providing negative or critical feedback to the students. Some clinical supervisors at the DUT CDC need to adapt their teaching methods as academic knowledge and practical skills alone are not enough (Wright *et al.* 1997).

5.5.2 Interpersonal dynamics with the front-desk administrative staff

There were two views of the front-desk administrative staff expressed by the participants. The majority perceived the reception staff attitude and demeanor unfavourably. Front-desk reception staff were reported to display a lack of urgency when responding to students requests such as drawing of patient files, handing of therapeutic modalities to them and attending to other queries. They were also unfriendly and had a negative attitude to students. One participant found that some staff, who engaged with their cell phones quite often, were usually unfriendly and unaccommodating towards the students.

On the other hand, some participants did not experience any problems in their interaction with the front-desk administrative staff. They appreciated the efforts and contributions of the staff in coping with the high volume work, in a stressful environment such as the DUT CDC, especially since reception staff attended to three groups of students concurrently (chiropractic, homeopathy and somatology). They also stipulated that it was important for students to foster good relations with the reception staff who would reciprocate the gesture. However, the majority of the participants reported that despite their positive approach and amiable demeanour when engaging with the front-desk reception staff, it was often not reciprocated.

The negative findings related to the front-desk administrative staff are consistent with the view of Hewitt, McCloughan and McKinstry (2009), who found that the communicative styles of medical receptionists are often perceived as negative. Earlier, Henzi *et al.* (2006) reported that dentistry students found that there was a lack of organisation and poor communication

with the reception staff at their academic clinic. The dentistry students perceived these negative attitudes to have an unfavourable impact on patient care as reception staff are the initial interface between patients and participants. They were concerned that the attitude and demeanour of the administrative staff would create a poor reflection of the patient's clinical experience. Van de Ven (2014) observed that the courtesy of clinic staff towards patients is a significant factor in a patient's evaluation of their care experience and a powerful predictor of patient satisfaction.

The administrative staff of universities play a central and critical role in higher education by contributing to fulfilling the missions of education, research advancement and public service (Kuo 2009). Healthcare receptionists are the frontline personnel who provide direct clinical services to patients and practitioners (Pyke and Butterill 2001). The reception administrative staff at the DUT CDC do contribute to the effective functioning of the clinic. Not only do they have to attend to various patient concerns, such as scheduling appointments, processing payments and data capturing, they also have to attend to student requests and queries, including the administering of patient files and clinical equipment, relaying messages and dispensing with other student issues relating to patient care. It is not surprising that this stressful environment does occasionally contribute to their perceived negative attitudes toward the students. Poor communication, inappropriate responses, unreasonable expectations and personal problems interfering with professional work were some of the triggers of conflict in the healthcare environment (Ramsay 2001). Panduragan *et al.* (2012) recommended that clinical administrative staff be made aware of factors that may impede effective clinical practice. At the DUT CDC, this could be addressed through dialogue between the Clinic Director and the administrative staff and by sending these staff to appropriate courses which are related to administration and reception.

5.6 THEME FOUR: APPRAISAL OF THE CLINICAL PRACTICUM

This theme discusses the positive aspects and highlights of the clinical practicum, as well as the challenges that chiropractic students encountered at the start and throughout the duration of the clinical practicum.

5.6.1 Positive aspects and highlights

Participants reported various aspects of the clinical practicum which they believed would hold them in good stead for future private practice. Exposure to different clinicians offered participants new and diverse perspectives on chiropractic techniques and clinical practices. This correlated with the findings of other researchers. Ralph *et al.* (2008) observed that students value the supportive relationships that they build with their clinical supervisors. Students valued the opportunity to work with knowledgeable and experienced professionals during their clinical placements (Henzi *et al.* 2007). The self-confidence of occupational therapy students increased when they observed the methods and techniques of qualified practitioners (Holland *et al.* 2012). This study also found that the fostering of collegial relationships during the clinical practicum was a positive aspect, as establishing good relationships with peers and clinicians was said to lay the foundations for professional networking in the future.

Interestingly, one participant reported that the thoroughness required in completing the extensive clinical paperwork was an important facet of the clinical experience as it contributed to developing good clinical practices for the future.

The majority of the participants reported that the highlight of the clinical practicum was to be exposed to clinical conditions covered in classes and to be able to treat patients. Treating patients and watching them recover and progress served as a positive reinforcement in the participants' clinical abilities and afforded them a sense of professional satisfaction. This is in alignment

with Ralph *et al.* (2008) who found that real-life application of clinical skills to be a positive aspect of the clinical experience. Similarly, Janiere (2010) found that positive aspects of the clinical practicum for nursing students in the Western Cape to be connecting with patients and taking ownership of a professional role.

5.6.2 Challenges at the start of the clinical practicum

It is understood that clinical practice education is challenging and stressful. This study found that chiropractic students experienced many challenges at the commencement of the clinical practicum. The participants struggled to adjust physically and mentally to the demands of clinical practice. They also experienced difficulties in establishing a routine during patient care that would allow them to work through cases and procedures methodically.

Balancing the responsibilities of the first year of the Master's programme was also challenging. These findings are consistent with those of Kihara *et al.* (2003) who found that medical students felt pressured by the multiple demands of the first year of the clinical clerkship and, consequently, were often physically fatigued. This is not surprising since prior to commencing their clinic shifts, the participants attended lectures or practical sessions from 08:00 until 12:00. Expectably, the participants of the current study reported anxiety, feelings of incompetence and self-doubt as a challenge at the beginning of the clinical practicum; this is expected when students make the transition from pre-clinical to clinical education components (Dornan and Bundy 2004; Godefrooji *et al.* 2010).

The participants also reported that it was difficult to obtain patients to treat at the start of the practicum. It is recommended that the Chiropractic Programme at the DUT play a more active role in recruiting patients for the students so that they meet the considerable minimum requirement of clinical practicum in terms of patient numbers (i.e. 35 new patients and 350 follow-ups). It is also

recommended that the Chiropractic Programme devise strategies for the students to engage in stimulating clinical activities (e.g. observing clinicians' techniques, discussing radiographs with clinicians and presenting cases to colleagues) which would address the restlessness and uncertainty while waiting for patients. Students should also be counseled on time management and study skills, and the importance of a good diet and regular exercise in keeping the body and mind healthy and alert. Wenrich *et al.* (2010) noted that the development of common expectations between students and the faculty is a pathway to ease the transition into clinical practice, reduce student anxiety, and maximise efficient skills preparation.

Completing the relevant clinical paperwork was challenging for most students. This is alignment with the findings of Tryssenaar and Perkins (2001) and Henzi *et al.* (2006). The challenges of clinical paperwork have been discussed previously.

5.6.3 On-going challenges during the clinical practicum

Some participants reported that they occasionally struggled to manipulate patients with a large morphological status. Another participant stated that she experienced difficulty in manipulating patients who presented with COPD. As chiropractic is a physical and practical-based profession, it is expected that students must be able to manipulate patients of different body types effectively. While students do practise on colleagues with different body types during practical lessons, little attention has been given to the challenges that students face when manipulating patients with medical conditions that require modification of manipulative techniques. This challenge should be addressed by the clinical instructors of the manipulation classes with a view to increasing confidence of the students, as Hynes, Callender, Gran and Hynes (2016) found that students entering the clinical practicum lacked confidence in their manipulative skills.

Some participants reported that managing time effectively during patient consultation was challenging due to the wait involved in obtaining a clinician's signature before proceeding with treatment. Since students cannot proceed with treating any patient prior to obtaining the authoring signature, it is important for the students to explain to their patients about the standard operating procedures of the DUT CDC. The clinical supervisors may be busy with assisting students with patient assessments and management and may not always be available when a student presents to the clinician's office. Other contributing factors to delays include completing additional paperwork, and retrieving therapeutic modalities from the front-desk staff. This finding is in keeping with delays experienced in academic teaching clinics. Dentistry students reported that considerable time was spent "jumping through hoops" during consultation with patients. A considerable time was spent on seeking assistance, procuring instruments, equipment and materials and waiting for their instructors to provide guidance and authorise treatment (Henzi *et al.* 2006).

Sexual harassment and inappropriate patient behavior is a serious ethical issue faced by healthcare workers in the clinical setting. Sexual harassment not only involves unwelcome verbal or physical conduct of a sexual nature, but also includes suggestive comments, inappropriate jokes and being touched by patients (Lockhart 2016). One participant stated that she felt uncomfortable when a male patient insisted on hugging her after treatment. She felt that she needed to create a firm boundary between her and the patient. This draws attention for the need for chiropractic students to be formally briefed on how to appropriately respond to these ethical issues when they arise at the DUT CDC. Lockhart (2016) recommended that all clinical personnel be educated about overt and subtle forms of inappropriate patient behaviour.

The unpredictability of clinical cases that present at the DUT CDC posed a challenge to some participants. This, however, is the nature of academic

teaching clinics. It is encouraging that the students reported that the clinical supervisors assisted them in such cases. Nonetheless, self-directed learning strategies for students should be emphasised as not all clinical conditions and patient profiles can be taught in the classroom setting.

5.7 CONCLUSION

This chapter discussed the results of the study to illustrate the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum at the DUT CDC. While some findings appeared to be consistent with general recurring themes in studies pertaining to clinical education and experiences, this study also provided deeper insights into the perceptions, recommendations, challenges and highlights of chiropractic students in SA. The discussion also reiterated the paucity of data on chiropractic clinical education. The next chapter summarises the aims, findings and discussion to conclude this research report.

CHAPTER SIX

SUMMARY, STRENGTHS AND LIMITATIONS OF THE STUDY, RESEARCHER'S REFLECTIONS, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

This chapter summarises the purpose of this study and addresses the research questions set out at the commencement of the study. The study's strengths and limitations, as well as the researcher's reflections are also presented. The chapter concludes with recommendations for the stakeholders at the DUT CDC and for further research in chiropractic clinical education.

6.2 SUMMARY OF THIS STUDY

The aim of this study was to explore and describe the clinical experiences of first-time registered Master's chiropractic students during their clinical practicum at the DUT CDC. The responses to the research questions demonstrate how the research aim was met.

6.2.1 Research question 1: What are the clinical experiences of first-time registered Master's chiropractic students?

Participants described a diverse range of clinical experiences during their clinical practicum. They expressed concerns about the deficiencies of the pre-clinical initiatives in their undergraduate years and how this impacted on their experiences within the CLE. The key clinical experiences were related to personal and professional development; valuable context-based learning opportunities; self-reflection on clinical competencies and preparedness for independent practice; patient care; inter-personal dynamics with clinic staff; and completing clerical duties and clinical paperwork.

6.2.2 Research question 2: What are the expectations of the students undertaking experiential learning?

Participants expected an academic curriculum that provided cohesion between pre-clinical and clinical learning components. They expected more opportunities to effectively prepare them for the realities and demands of the clinical practicum. Professionalism, patience, passion for teaching, and open and thought-provoking dialogue during patient consultation, that challenged and developed participants' clinical acumen, were traits they expected from their clinical supervisors. Participants also expected administrative staff to have a positive attitude and pleasant demeanour towards them and their patients.

6.2.3 Research question 3: What are the challenges encountered by these students at the DUT CDC?

The challenges students experienced could be divided into two parts, viz. initial clinical challenges, which were encountered at the start of the clinical practicum, and on-going challenges and obstacles that students faced on a daily basis at the CDC. The initial challenges were physical and mental acclimatisation to the clinical environment, obtaining patients to treat and initial clinical anxiety and feelings of being clinically incompetent. On-going challenges included dealing with difficult clinical cases and ethical dilemmas, completing clinic paperwork and managing administrative duties and dealing with the different personalities of clinic staff.

6.3 STRENGTHS OF THE STUDY

This qualitative study contributes to the scientific literature on chiropractic students' clinical experiences in SA. The researcher was able to gain rich and detailed responses on various aspects of the clinical practicum. While this study incorporated some standard parameters of investigation of the CLE, it also touched on some unique issues specific to chiropractic clinical education at the DUT. Furthermore, the cohort used in this study was unique compared with other studies using chiropractic students.

6.4 LIMITATIONS OF THE STUDY

This study took place at the DUT CDC and focused on a specific population, which were first-time registered Master's chiropractic students in 2016. As all academically-affiliated clinics have their own standard operating procedures and instructional offerings, the experiences of chiropractic students at other chiropractic clinics or institutions may differ. Although caution is advised against generalising the findings of this study to other chiropractic institutions due to the small sample size and a specific cohort, aspects of the findings could be utilised as guidelines for curriculum review and clinical teaching in the broader context. Furthermore, the research findings are exclusive to the sample population as the clinical experiences of chiropractic students registered for their second or third clinical year may be different.

6.5 RESEARCHER'S REFLECTIONS

The researcher's reflections provide a subjective appraisal of the thoughts and feelings of the researcher throughout the research process. The researcher was excited to conduct and present this study in the domain of scientific literature as the study is the first of its kind in SA. Participant recruitment was unproblematic and the data collection process was smooth. Every participant adhered to their interview appointment and shared their views openly. For this, the researcher is grateful to the participants. Despite the fact that a clinic room was pre-arranged and pre-booked for the purposes of conducting interviews, unforeseen circumstances at the clinic led to the researcher being asked to relocate to a different room in the clinic. This proved to be frustrating but did not impact the interview process. The research process enabled the researcher to develop interviewing skills. For this, the researcher was very appreciative. The researcher experienced difficulty in obtaining information related to chiropractic clinical education at the DUT and the regulations and protocols of the DUT CDC as there is limited published information in this regard.

6.6 RECOMMENDATIONS

It is the responsibility of the educational institution and stakeholders of chiropractic education to address the deficiencies, problems and challenges encountered by chiropractic students engaged in the clinical practicum at the DUT CDC. The recommendations to improve and enhance the clinical practicum component are described below.

6.6.1 Recommendations for the Chiropractic Department at DUT

- The findings of this study should be presented to the Chiropractic Department at DUT who should take cognisance of the findings of this study in the form of an organised meeting, to bring attention to the various aspects highlighted by this study, so that these can be utilised in light of any curriculum revisions. A clinic advisory panel, consisting of the head of the chiropractic programme, the clinical director, clinic co-ordinator, relevant administrative staff, student representatives, and clinicians should be set up to discuss and address clinic related matters every three months.
- The clinical observer programme and mock-patient assessments should be restructured to bring more relevance to and understanding of clinic protocols and procedures. This could include actual treatment of mock patients whilst being observed and evaluated by a clinician, which may help to ameliorate some of the uncertainty of patient care and clinic protocols before commencing with the clinical practicum.
- It is recommended that students be taught how to interpret and complete clinic paperwork in a formal workshop before they enter the CLE. Although this is done during the clinic orientation workshop, this cursory attempt appears to be insufficient. Furthermore, clinical paperwork should be periodically reviewed by academics and clinicians to ensure it does not include redundant or unclear information.
- The therapeutic modalities module should be incorporated into the B.Tech year so that it is applied in context of patient care in a more cohesive manner. It is also recommended that a bi-weekly assessment of the

functional status of all therapeutic modalities in the clinic be conducted and any problems rectified. In keeping with technological advancement, new therapeutic modalities should also be included into the gamut available at the DUT CDC.

- A formal mentorship or peer-assisted learning programme should be implemented to ease the transition into the first clinical year. This would essentially entail senior chiropractic students (sixth year onwards) overseeing their junior counterparts and helping them to adjust to the demands of the clinical environment, facilitating clinical reasoning skills development and refining clinical skills and competencies.
- A “journal club” is also recommended as an extra-curricular clinical activity. Participation would be voluntary to interested individuals and directed by a clinician. This would be an open forum to share interesting or challenging clinical cases, develop insights into the profession and facilitate professional dialogue between clinicians and colleagues.
- The findings of this study should be presented at a clinician’s meeting at the DUT CDC. Showcasing these findings to clinicians should create awareness and prompt discussion on strategies to improve clinical supervision and enhance clinical education. Furthermore, clinicians should be required to undergo an annual teaching workshop to develop and refine their skills of teaching in a clinical environment.
- Administrative staff should undertake team-building workshops to enhance their communication skills and the manner in which they relate to patients and students.

6.6.2 Recommendations for further research

It is recommended that follow-up research be done regularly to assess the changes and developments made in clinical education at the DUT CDC. Since the Chiropractic Programme is currently undergoing revision and restructuring, with a new curriculum to be implemented in the near future, it is strongly recommended that this study be conducted again after the curriculum changes, as a comparison between the curricula.

Future research into chiropractic education could be undertaken to triangulate the findings of this study, for example, studies done to explore and describe the perceptions of patients/clinicians/administrative staff regarding chiropractic students in their first clinical year at the DUT CDC. A similar study could be conducted at the chiropractic clinic at the University of Johannesburg to determine similarities and differences to the findings of this study. The findings of both studies could contribute to enhancing chiropractic education and training in SA. There are also various pre-validated instruments that have been created to assess various aspects of a clinical educational environment. Some of these have been highlighted in Chapter Two. It is recommended that studies be conducted at the DUT CDC using relevant pre-validated instruments.

6.7 CONCLUSION

This qualitative study explored the clinical experiences of chiropractic students during their first clinical year at the DUT CDC. The findings indicate that chiropractic students undergo considerable personal growth, professional development and maturity during their clinical practicum and value the experience of treating patients, developing their professional identity and learning under experienced clinicians.

The challenges and difficulties that chiropractic students encountered during their first year of clinical practicum was also brought to the fore. The highlights and positive aspects of the clinical practicum were also described. Overall, chiropractic students were positive about their clinical learning experiences and appreciated the learning opportunities afforded to them at the DUT CDC.

This is one of few the qualitative studies pertaining to chiropractic clinical education and associated student experiences. While many of the findings of this study were congruent with previous studies in the literature, very few were actually done in context of chiropractic. As such, this study adds a valuable

perspective for the chiropractic profession. However, there is a need for further investigation into various aspects of chiropractic education, curriculum, structure, content and CLE and the impact of these on students' learning opportunities and experiences.

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APPENDICES

Appendix A: Institutional Research Ethics Committee Clearance Certificate



10 November 2016

IREC Reference Number: **REC 112/16**

Ms N Ganesh
20 Umhangane Road
Avoca
Durban
4051

Dear Ms Ganesh

Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum

The Institutional Research Ethics Committee acknowledges receipt of your notification regarding the piloting of your data collection tool.

Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the IREC acknowledges receipt of your gatekeeper permission letter.

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

Yours Sincerely,



Professor J K Adam
Chairperson: IREC



Appendix B1: Permission letter to the Clinic Director

Dear Dr. Korporaal

I hereby request permission to conduct research at the Durban University of Technology Chiropractic Day Clinic. The title of the research study is: Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum. This studies aims to explore and describe the clinical experiences of fifth year chiropractic students during their practicum component.

Please find attached a copy of the research proposal. Should you require further information about this study, please do not hesitate to contact me.

Kind regards

Nivida Ganesh

Student Number 21112535

Cell Number 0731984723

Email: Nivida_ganesh@hotmail.com

Appendix B2: Permission from Clinic Director

MEMORANDUM

To : Prof Ross
Chair : RHDC

Prof Adam
Chair : IREC

From : Dr Charmaine Korpersal
Clinic Director : FoHS Clinic

Date : 04.08.2016

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

Permission is hereby granted to :

Ms Nivida Ganesh (Student Number: 21112535)

Research title: "Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum."

It is requested that Ms Ganesh submit a copy of her RHDC / IREC approved proposal to the Clinic Administrators 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 Charmaine Korpersal
Clinic Director : FoHS Clinic

CC: Mrs Linda Twiggs : Chiropractic Day Clinic
Dr L O'Connor : Research co-ordinator
Dr D Vanatharajulu / Prof N Sibiyi : Research supervisors

Appendix C1: Permission letter to the Head of Programme Chiropractic

Dear Dr. Docrat

I hereby request permission to conduct research at the Durban University of Technology Chiropractic Day Clinic. The title of the research study is: Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum. This studies aims to explore and describe the clinical experiences of fifth year chiropractic students during their practicum component.

Please find attached a copy of the research proposal. Should you require further information about this study, please do not hesitate to contact me.

Kind regards

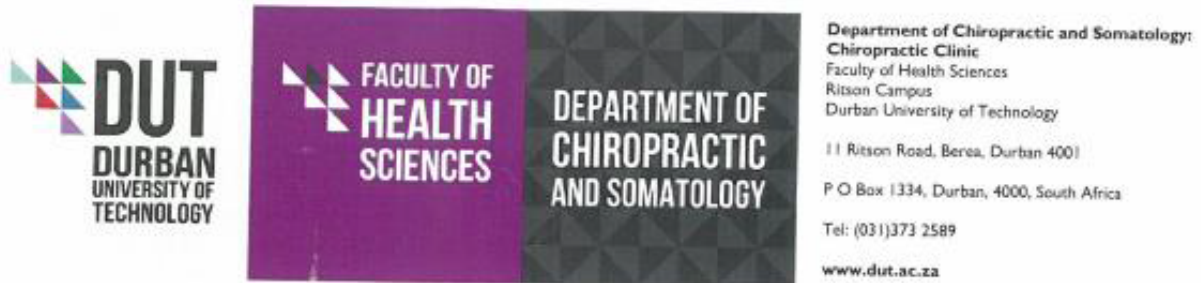
Nivida Ganesh

Student Number 21112535

Cell Number 0731984723

Email: Nivida_ganesh@hotmail.com

Appendix C2: Permission letter from Head of Programme Chiropractic



7th November 2016

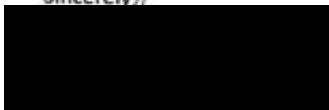
To: Miss Nivida Ganesh
From: Dr A Docrat, Head of Program Chiropractic

Dear Miss Ganesh,

I hereby grant you permission to interview chiropractic students on the premises of the Chiropractic Day Clinic as per the IREC requirements of your research proposal.

I wish you well in your study.

Sincerely,



Dr A Docrat
Head of Programme: Date: 7 November 2016

Appendix D1: Permission letter to the Research Director

Dear Professor Moyo

I hereby request permission to conduct research at the Durban University of Technology Chiropractic Day Clinic. The title of the research study is: Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum. This studies aims to explore and describe the clinical experiences of fifth year chiropractic students during their practicum component.

Please find attached a copy of the research proposal. Should you require further information about this study, please do not hesitate to contact me.

Kind regards

Nivida Ganesh

Student Number 21112535

Cell Number 0731984723

Email: Nivida_ganesh@hotmail.com

Appendix D2: Permission letter from Research Director



Directorate for Research and Postgraduate Support
Durban University of Technology
Trompsburg, Steve Biko Campus
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7th November 2018

Ms Nivida Ganesh
c/o Department of Chiropractic and Somatology
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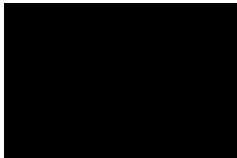
Dear Ms Ganesh

PERMISSION TO CONDUCT RESEARCH AT THE DUT

Your email correspondence in respect of the above refers. I am pleased to inform you that the Institutional Research Committee (IRC) has granted full permission for you to conduct your research "Clinical experiences of first-time registered Masters Chiropractic students during their clinical practicum" at the Durban University of Technology.

We would be grateful if a summary of your key research findings can be submitted to the IRC on completion of your studies.

Kindest regards.
Yours sincerely



PROF. S. MOYO
DIRECTOR: RESEARCH AND POSTGRADUATE SUPPORT

Appendix E1: Letter of information



Dear Participant,

I would like to welcome you to my research study and thank you for your interest and participation.

Title of the Research Study: Clinical experiences of first-time registered Masters chiropractic students during their clinical practicum.

Principal Investigator/s/researcher: Nivida Ganesh, B.Tech Chiropractic

Co-Investigator/s/supervisor/s: Dr. D. Varatharajulu, M.Tech Chiropractic; Prof M.N. Sibiya, D.Tech Nursing

Brief Introduction and Purpose of the Study: This study will identify, explore and describe the clinical experiences of first-time registered Masters chiropractic students during their practicum component of the chiropractic programme. Students will be interviewed on various aspects of their practicum in order to gain a robust understanding of their attitudes, opinions, perceptions and expectations of the many facets that collectively constitute clinical experiences. The data will be collected via digital audio recording during the interview session. The interview will be approximately 30 minutes in duration. The participant is simply required to provide answers to the interview questions. Any fifth year student will be eligible to participate in this study provided it is their first-time entry to the Masters component of the Chiropractic Programme.

Outline of the Procedures: If you are willing and have signed the letter of informed consent, an interview will be set up at your convenience. It will be approximately 30minutes in duration and will take place at the Chiropractic Day Clinic.

Risks or Discomforts to the Participant: There are no risks/discomforts involved from your participation in this study.

Benefits: This study will be useful to the Chiropractic Department as the findings may result in the modification and improvement in the current curriculum. This could enhance chiropractic students' experience of their clinical practicum.

Remuneration: Participation in this research study is voluntary and no remuneration will be awarded.

Costs of the Study: Participants will not incur any costs by participating in this research study.

Confidentiality: The details and information obtained through the interview process will be treated with utmost confidence. With the exception of the letter of information, no

personal identification details are required. The identity of participants will only be known by the researcher and supervisors. You may withdraw your participation of this study at any time.

If you have any further queries, please do not hesitate to contact me or my supervisors. Your time, opinions and assistance in this study is invaluable and greatly appreciated.

Persons to Contact in the Event of Any Problems or Queries

Please contact the researcher Nivida Ganesh on 0731984723, my supervisors Dr. D. Varatharajulu on 031 373 25833, Prof. N. Sibiya on 031-3732606 or the Institutional Research Ethics Administrator on 031 373 2900. Complaints can be reported to the Director: Research and Postgraduate Support, Prof. S. Moyo on 031 373 2577 or emailed to moyos@dut.ac.za

Appendix E2: Informed Consent



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, _____ (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- 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 computerised 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 Thumbprint	Date	Time	Signature/Right

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 F: Interview Guide



1. What are your views regarding formative chiropractic training in preparing you for the demands of the fifth year clinical practicum?

Probes: Comment on your theoretical grounding and practical application, proficiency in utilizing modalities, understanding and proficiency of rehabilitation protocols, competence in treatments and procedures, what measures can be taken to ease the transition between your pre-clinical training and clinical practicum?

2. Please describe how your clinical experiences have contributed to or enriched your understanding of chiropractic in terms of knowledge, skills, clinical application and leadership, specifically referring to your capacity to diagnose, treat and manage patients?

Probes: How have your patients responded to your treatment? Are you more confident in your capabilities as an aspiring chiropractor? Do you feel the clinic has the necessary facilities and modalities for patient care? Do you feel your chiropractic training has prepared you for private practice once you complete the requirements for this qualification?

3. What has been the highlight of your experiences during the clinic practicum thus far?

Probes: What are the positives aspects of the clinical practicum that will hold you in good stead for your future chiropractic endeavours?

4. Have you encountered any challenges or obstacles during your clinical practicum? Please elaborate.

Probes: Did you encounter any challenges at the start of the practicum?

5. Describe the relationship you have with the clinicians.

Probes: What do you expect from the clinicians during patient care? Have your expectations been met? What do you think are the most important character traits of a clinician at DUT?

6. Describe the relationship you have with the administrative staff at the chiropractic clinic.

Probes: What factors influence these relationships? Are the clinician's assistance and guidance effective in helping you to gain a greater insight to patient management? Are you able to effectively manage the administrative duties that come with patient care?

7. Highlight your views on any facets of the clinic practicum that could be enhanced or improved in order for chiropractic students to gain a deeper, richer experience?

Appendix G: Exemplar Transcript

TRANSCRIPT 11 (P11)

1. What are your views regarding undergraduate chiropractic training in preparing you for the demands of the fifth year clinical practicum?

Participant 11: My views are quite positive. I think that there's a lot of things that are done very, very well in terms of preparing you for how you sort of going to look at patients. I do feel though that there's place where there can be improvement. I think specifically with adjustments. I think, that especially- you start adjustments quite early which is nice in third year, but I do feel that they're quite limiting in how they teach you. There's a right and a wrong way. Whereas when you get to clinic, you find out you've got to modify your adjustments so much depending on how your patients come, which I wasn't really prepared for. I also feel like in terms of the undergraduate training, it was quite difficult coming into clinic not knowing much about the shoulder, the extremities. When looking back now so many of my patients could have benefited from me at least having some sort of prior knowledge regarding it. but in terms of everything else like modalities were great! I felt very confident in my use of the modalities, I felt very confident with my use of the dry needling as well as with even acupuncture, and I felt quite confident. Um, it was just really things like strapping which of course you don't really have knowledge of. And adjustments were, I feel, they could have been a bit of improvement.

Comment on your proficiency in utilizing modalities, understanding and proficiency of rehabilitation protocols

Participant 11: I felt like with rehab, it is one subject if I could go back and do again, it would definitely be rehab. Um I feel like with the rehab protocols you get a very broad spectrum of an idea of how to do things. RICE, this, proprioceptive exercises. But applying it to each patient becomes a little bit trickier. I also feel like with things like muscles imbalances, I feel like there could have been a little bit more emphasis put on it. Because I have not seen a single patient who does not have a muscle imbalance! So I feel like it is something that is so important, that ideally, I'd like more focus to be put on it. I mean we had one lecture, like one double lecture last year, a little bit more emphasis to be put on it. And also, getting a bit more of a practical side of it. Like we do a lot of the exercises, but not really do a lot of the... Okay this is how you pick it up. Because that's what I struggle with. I struggle with identifying is this muscle weak? Is it tight? Is it lengthened? That sort of thing is something that I'm still learning about and need to do a lot of reading on. So if we could focus more on that in rehab, it would have really helped coming into clinic.

What measures can be taken to ease the transition between your pre-clinical training and clinical practicum?

Participant 11: That's a good question. Um, I think it would have been very helpful if we'd been taught by more than one lecturer regarding practical things. I know it is a very difficult thing to do and to implement, but I do feel if it had been a case that we'd had maybe a

Monday lecture with Dr. K on adjustments, and then a Wednesday lecture with Dr. O'Connor on adjustments and then our Friday lecture with someone else and then they all sat in when marking us so that it was, so that there was a bit of grounding when it actually did come to testing us. I feel like that would have really helped us. Um and with rehab, I think, like I said, it would have been really great if we'd gotten more of a... Instead of just focusing on how to do a dumbbell lift or a push up correctly, as important as that is and as much as I want to know that, also more, going a step further, going back to like basics and foundations: How do I identify this? How do I do that? So to have more of that practical aspect put into the course would be very helpful.

2. Please describe how your clinical experiences have contributed to or enriched your understanding of chiropractic in terms of knowledge, skills, clinical application and leadership, specifically referring to your capacity to diagnose, treat and manage patients?

Participant 11: It has helped me in the sense that I've seen a lot of different patients, both ethically, religiously, age differences, personality differences which is really fantastic because it has put me in positions where I'm not necessarily comfortable but where I've had to adapt and learn. Having the clinicians here as well has been amazing because it does at least give you some sort of idea how to go about things when you're extremely lost. So I find that that's really great. But it also managed to boost my confidence. Coming into clinic, I was so nervous. I was like "I don't know what to do with the patient. Needle? Adjust? Like what? How do I treat this patient?" And having experienced more and more, and dealing with patients, it has really taught me that each patient is so different. And that I can never go into a clinical setting again where I think okay this is what I need to do: A, B, C, D and E. That's not how it works. Regardless if you're treating 10 different patients each with the same condition, you're going to need 10 different treatment protocols. So it's really helped me in that aspect of understanding that each patient is going to come in differently. Also putting me in difficult situations so that I can actually learn how to respond to patients. Patients can get extremely frustrated when treatment doesn't work as they planned and they not getting better as quickly as they want so it has also taught me how to communicate with my patient upfront and be realistic with them, not give them empty promises.

So on that point, how would you say, how have your patients responded to your treatment?

Participant 11: fairly well to be honest! Which I say surprisingly because you do doubt yourself coming into clinic. And I've really found that my patients have responded quite well. There is one patient that really comes to mind with this. A patient that I had, that came in with a rotator cuff calcification. And I had to see him quite a lot. And mid-way through, we actually decided to change our treatment protocol, which was quite rare and very different trying to explain this to him- he did get very frustrated. Um but besides that, I feel like all of my patients have responded really, really well, very positively. I find that one of the things that differ with me as opposed to a lot of people in my class is that my follow ups are quite high. So like my new patients are quite low but I tend to have quite a high follow up! So, and that's something I actually really like because my patients do come back. They say to me "Look this is working!" They feel that I've communicated with really well with them in terms of

saying you know what, 80% of the treatment is going to be me but 20% is you, doing your exercises at home, coming back when you supposed to come back etc. I definitely feel I've had a good return.

Would you say you feel more confident in your capabilities as an aspiring chiropractor?

Participant 11: Definitely! Without a doubt.

Do you feel the clinic has the necessary facilities and modalities for patient care?

Participant 11: I do, I feel like everything that you need is here. What's also really nice is if you ever don't have anything, you can just go to the reception and buy what you need. Um, I feel like all the equipment is really helpful especially the rehab room and things like that. I think things are great. There's not really anything I would improve on to be honest.

Do you feel your chiropractic clinical training has prepared you for private practice once you complete the requirements for this qualification?

Participant 11: Hmmm, to a degree, yes. I feel like you're constantly going to be learning regardless. So I feel like, um, I feel like I have a good foundation going into private practice. Not yet!! I definitely need my extra year! But I do feel like it has given me a fantastic foundation to start with.

3. What has been the highlight of your experiences during the clinic practicum thus far?

Participant 11: Hmm... My highlight would be... seeing the conditions come to life. So it's very easy- for example, I had a patient with a bursitis. Seeing, reading about a bursitis and like learning how to identify it ABSOLUTELY NOTHING compared to actually identifying and finding it a bursitis. So I think my highlight really has been actually going from learning about these things and trying to sort of picture and imagine how they would present, to actually seeing them present.

What are the positive aspects of the clinical practicum that will hold you in good stead for your future chiropractic endeavours?

Participant 11: I think the positive aspects would be the numerous clinicians that we have. So it gives you a broad spectrum idea of so many different ways to treat. You come into clinic thinking there is only one way and there really isn't. And I feel like the fact that we have so many different clinicians that we see so differently really does give you an idea of all the options that are available in chiropractic care.

4. Have you encountered any challenges or obstacles during your clinical practicum? Please elaborate.

Participant 11: I have. My biggest challenge or obstacle is my adjustments. So like I said earlier, patients come in and you can't always do your standard lumbar role. I had a patient come in and he has severe COPD. He's got numerous thoracic fixations and I can't adjust him lying down at all neither supine nor prone. All my adjustments have to be done seated. And this is a 154 kg man that I now have to adjust in a seated position which is extremely

difficult because I can't even get my arms around him. So I've really had to adapt and learn and I feel like I could've- it would have been nice if I had at least a slightly better idea of how to go about dealing with these patients.

Did you encounter any challenges at the start of the clinical practicum? If so, please elaborate on how you negotiated and overcame these challenges.

At the start I'd say I struggled the most with patient numbers to be honest with you. I remember starting off so slow. Just waiting for patients and doing nothing during clinic time. It might be really beneficial if perhaps-you don't really know the clinicians starting off so you don't really have a relationship with them where you can just go up to them and be like I don't have a patient do you mind showing me a couple of adjustments, do you mind helping me with this? So it might actually be nice to have an orientation with the clinicians before you start clinic so you can sort of have an idea of who they are and what their general vibe is. What is acceptable with them and what isn't. For them maybe to sit in on our clinic orientation workshop for an hour or 2 if they are free. To be welcomed to ask them questions. Because when you first come in you are scared, you are nervous. You don't know these people but you want to impress them. So it was very difficult trying to find something to do in the beginning when we didn't have patient numbers.

5. Describe the relationship you have with the clinicians.

Participant 11: I feel like the relationship with clinicians is varied amongst the clinicians obviously because they are all very different. I think that I have quite a good relationship with a lot of the clinicians. I feel like it's quite a professional relationship which I really enjoy. I feel like they don't always necessarily treat us like students but rather as colleagues which I really enjoy. They don't just give us the answers. They're like "okay let's think about this. How can we do this? What can we do here? How can we alter that? What do you think here? I really do enjoy that. I think it's a really good relationship. There isn't really a clinician that I don't feel like I have a positive relationship with or I'm not learning something from. So I'd say all in all very very good.

What do you expect from the clinicians during patient care?

Participant 11: Hmm. I think I expect them to help me think out of the box. I expect them to maybe challenge me a little bit on what I'm saying and why I'm doing it. So ask me why do you think this is the best way to go about treating this patient? Why are you using IFC instead of ultrasound? Why are you using ischemic compression instead of dry needling? I think I expect them to help me look at things from a different point of view and also to help me understand why I'm doing the things I'm doing- which you don't always understand.

Have your expectations been met?

Participant 11: With certain clinicians I would say they have. Over and beyond. There are clinicians I feel that take a more relaxed stance. They prefer to sit back more and let you do your own thing which is fantastic as well but they sort of want you to learn on your own and expect that if you get lost then consult with them rather than forcing themselves upon you which is also fantastic. So I'd say that my expectations have changed depending on the

clinician but they've all met my expectations. There's not a clinician I feel, that has not met my expectations or that I'm not happy with.

What do you think are the most important character traits of a clinician?

Patience. I think that patience is one of the biggest things. I feel like clinicians often can be a little bit impatient in the sense that they're like "why do you not know this?" whereas everyone is so different and people focus on different things throughout the course that you might really not know something. Or the clinicians have been taught something one way and you've been taught a little bit differently. And instead of just being like "you could do it like this" they sort of be like "no that's wrong!" So I think that patience is quite important and also just not rushing you through. Like if a student has a lot of questions, for them to be there and sit and not just rush through things and not think about them but sign the paperwork anyway and go off. So I definitely think patience is one of the biggest things.

6. Describe the relationship you have with the administrative staff at the chiropractic clinic.

Participant 11: Hmmm.. I feel like again this question is very specific. I feel like with certain administrative staff members at the clinic, I have a FANTASTIC relationship. I feel like they're very patient, very understanding, very obliging. Whereas there are certain administrative staff members at the clinic that make my life a bit tougher. Just in the sense that they could be a lot friendlier. So you'll go up to them and be like "hello, how are you? Would you mind doing this for me?" and they just completely ignore you. Which is frustrating because you come in with a positive attitude. You need to have a good attitude with your patients regardless of how you feeling that day so it would be nice to actually see that in practice with the administrative staff especially considering the fact that they are your first- they are the first point of contact between you and your patient. So when your patient comes in, the first person they have to deal with is the administrative staff. And I feel like sometimes that can put the patient off because it isn't as friendly or as nice as they expect it to be

Are you able to effectively manage the administrative duties that come with patient care?

Participant 11: I think I am. The paperwork is quite intense in fifth year in the sense that with doing your case summaries which have to be done within a month and other things. For example during certain times of the year you are so busy. There are certain times when our reception duty can get a bit difficult. In the sense that if you have a consistent patient that you see weekly and then you have reception duty, to try and move it around especially if it's on a Thursday and you not in on the Friday so you can only accommodate them the following week. I think the fact that they have changed things now so you can't get someone to do your reception duty shift while you see your patient also makes things quite difficult. But I do feel I have learnt to effectively manage it. In the beginning it was overwhelming but as time goes by and you get more into a routine of things, I do feel like you are able to manage it.

Are there any areas of administrative management that can be improved upon?

Participant 11: I think the admin staff attitude is a big thing. I think by them a bit more of a positive attitude will help. I completely feel like it's a two-way street. But I do feel if the student comes in with a positive attitude or the patient comes in with a positive attitude, I'd expect it to be reciprocated. So I do think that's something that can be improved upon and I also feel as much as I love the- like I understand the paper-based and written component of things, I think it's very out-dated. Because everyone has laptops. And with the environmental issues at the moment. The paperwork can get lost- they lose track of how many patients you've seen which can be very frustrating . so they tell you to collect a list at the end of the year which I've done and there were 4 patients that I've been seeing that they didn't even have on record! I got the files and the case summaries were all there yet it was not on the system which was frustrating. So I do feel like there is room for improvement there. Besides that I feel like its run quite effectively.

7. Highlight your views on any facets of the clinic practicum that could be enhanced or improved in order for chiropractic students to gain a deeper, richer experience?

Participant 11: I think that some areas we can improve on in the clinical experience are more preparation. Rather than once you get here. I feel like they focus on you a lot once you are here but prior to when you come in, you have no experience within the clinic besides for the observer programme. So I feel like the, pushing you more to come and see patients or get free treatment is helpful. I think that the observer programme can also be improved on- the same with your mock patients. I feel if you had a better idea of them and it wasn't so stressful and rushed at the end of the year, people would take them more seriously and it would help more. So that's definitely where they could improve. And also just focusing on the practical aspect of things. Our courses are very theoretical considering we are so practically based. And I think things like adjustments, rehab and treatment protocols- you don't have an idea at all how to apply these. Even diagnostics- nobody knows how to diagnose a patient until you do your mock patients. The number of students I've seen doing their mock patients asking "what does this patient have?" it is an area that could be improved. You learn so much in mechanical low back pain about what things are but you don't really learn how to diagnose or treat them. I feel like there could be more inter-linking between the subjects especially subjects like orthopedics, rehab, adjustments and mechanical low back pain. If those 4 had more interlinking and spoke to each other. They constantly push us and tell us to interlink things. So if they could meet us halfway it would improve the clinical practicum experience.

Appendix H: Editor's certificate



IMPELA EDITING SERVICES

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19 June 2017

Nivida Ganesh
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CERTIFICATE

Dear Nivida

Thank you for using Impela Editing Services, work commencing 14 June 2017, and ending 20 June 2017.

We have completed proofreading your dissertation, including checking for spelling, agreement, and punctuation, verb tense, and typing errors.

PROOFREADING includes a comprehensive edit of:

- Basic grammar to remove all errors in spelling, agreement, and punctuation (proofreading);
- Structural coherence in regards to paragraphing;
- Overall coherence and style and voice (edit of idiomatic language, clichés, colloquialisms, etc.), and
- Formatting (line spacing, font size, margins, consistency in labelling and headings etc.) and digital tables of contents and figures.

The proofreader will not make changes or suggestions regarding content. All editing is done using the 'track changes' function in Word. It is unethical for an editor to make changes to a document without the author's knowledge or permission. It is the author's responsibility to either accept or reject the changes proposed by Impela Editing Services.

This dissertation is, to the best of our knowledge, ready for printing and submission.

Regards



Helen Bond