PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHYSIOTHERAPY STUDENTS, SOUTH AFRICA

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STUDENT DECLARATION

I, Laeeqa Sujee (student number: 838811) am a post-graduate student registered for the degree Master of Public Health, at Wits School of Public Health. I declare that this research project on the Perceptions and Experiences of chronic pain in clinical practice among University of the Witwatersrand Physiotherapy students is my own original work. I am submitting this research report to the School of Public Health at the University of the Witwatersrand, Johannesburg, for the Degree Master of Public Health in Social and Behaviour Change Communication. Any work by other authors quoted or used in this report has been cited appropriately. This research report has not been submitted for assessment at this or any other institution.

Signature:

Laeeqa Sujee Date: 23 November 2022

Dedication

To all those suffering with chronic pain, may this be a positive move towards effective treatment for chronic pain.

"For all the happiness mankind can gain, Is not in pleasure, but in rest from pain." —John Dryden (1631-1700)

To my parents without whom, I would not have had the courage to complete let alone embark on this journey and to my sister, Nabeela, whose perseverance during her personal journey with chronic pain continues to astound me.

Abstract

Chronic pain poses a challenge to the health and well-being of people globally. A biopsychosocial approach is recommended for the management of chronic pain but the extent to which it is implemented in clinical practice is not well-understood. The aim of this study was to explore the perceptions and experiences of physiotherapy students in their clinical years regarding chronic pain. Physiotherapy students were selected purposively and through snowball sampling. In-depth interviews were conducted over Microsoft Teams using a semi-structured interview guide. Thematic analysis was used to analyse the data.

Students had clear theoretical knowledge of the biopsychosocial approach but relied on a biomedical approach in clinical practice. Management techniques were described in terms of traditional physiotherapy techniques and good communication skills with patients. Referrals to other professionals were vaguely described with no report of interdisciplinary teams in practice. Challenges experienced included difficulty in understanding causes and prognosis, choosing a management approach and concern over effectiveness of treatment. Personal experience with pain and professional factors such as training received and clinical experiences influenced the approach to patients.

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- This Master's Degree was commenced and completed during the COVID-19 pandemic while I worked as a front-line healthcare worker. Thus, I would not have been able to complete it without the support, motivation and encouragement of my parents, sister and other family members.

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List of acronyms

ADLs	Activities of Daily Living
CHBAH	Chris Hani Baragwanath Academic Hospital
CLBP	Chronic Lower Back Pain
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
CNS	Central Nervous System
CPD	Continuous Professional Development
F	Female
FABQ	Fear Avoidance Beliefs Questionnaire
GP	Gauteng Province
HCPs	Healthcare Professionals
HJH	Helen Joseph Hospital
HREC	Human Research Ethics Committee
LP	Limpopo Province
M	Male
NMS/ortho	Neuromusculoskeletal/orthopaedics
NPS	Numerical Pain Scale
OMT	Orthopaedic Manipulative Therapy
PNE	Pain Neuroscience Education
PSEQ	Pain Self Efficacy Questionnaire
SASP	South African Society of Physiotherapy
TMH	Tambo Memorial Hospital
TMRH	Thelle Mogoerane Regional Hospital
UK	United Kingdom
USA	United States of America
VAS	Visual Analogue Scale

Definition of terms

- **Biopsychosocial Approach**- An approach which focuses on the complicated interactions between biological, psychological and social factors which influence health, illness and the delivery of health services (1).
- **Chronic Pain**- Pain that lasts for longer than three months or recurs for longer than three months (2,3).
- **Chronic Persistent Pain**- Intermittent occurrences of pain with some pain-free stages ranging over months or years (3).
- **Nocebo effect**- This occurs when a patient develops side-effects, symptoms or negative outcomes because the patient believes they may occur (4).
- **Pain**- "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage" (3,5,6).
- **Pain Catastrophizing**- The affinity to describe the experience of pain in a more exaggerated manner than the average person, to think about it continuously (rumination) and/or to feel helpless in this pain experience (7).
- **Pain Neuroscience Education**- An approach used to educate patients about their pain, teaching them to rethink the manner in which they view this pain and develop pain coping strategies. It uses several analogies, metaphors and/or stories to assist patients in contextualising their pain experience. PNE utilises pain science to teach patients about the biopsychosocial nature of their chronic pain experience (8).
- **Physiotherapist**- A healthcare professional who aims to improve the quality of life, function and mobility of people affected by pain, injury, illness or disability. Physiotherapists also focus on health prevention and health promotion and help to decrease the risk of injury, illness or disability. It requires a holistic approach where individuals are empowered to take charge of their own health (9,10).
- **Placebo**- A meaning response represented by one's expectations of the outcome from a substance or procedure provided for treatment (11).
- **Somatosensory**- A sensation that can occur anywhere in the body opposed to sensations which can only be found in a sense organ such as taste or sight. The somatosensory system is a system of neural pathways and sensory neurons (12).
- **Yellow Flags**- Yellow flags is the term used to describe psychosocial factors mainly by physiotherapists. Yellow flags suggest an increased risk of developing chronicity, long-term suffering and disability. They were initially created for assessing acute lower back pain (13).

Chapter One: Introduction

1.1 Background

Chronic pain, which refers to recurring or persisting pain for a period of more than three months, is one of the key reasons for visiting a Healthcare Professional (HCP) (14). It is one of the most common conditions treated by HCPs (15), yet it is not prioritised in their education (16). Chronic pain is often viewed by HCPs as a rare condition due to the minimal emphasis in undergraduate curricular on its assessment and treatment within a holistic framework (16). However, each year approximately 10% of the global adult population are newly diagnosed with chronic pain (17) with 20% of the European population suffering from chronic pain (5). In South Africa, the prevalence of chronic pain in a large, nationally representative study was found to be 18.3% (18).

Chronic pain is associated with impaired physical function, cognitive deficits and psychological suffering, thus decreasing quality of life (19–21). The functional limitations and emotional distress associated with chronic pain can limit an individual's ability to remain economically active (20–22). This can lead to people living with chronic pain becoming a financial burden to their family, their employer and/or the state (23). Empirical evidence suggests that pain is not just a physical phenomenon and that psychological, social and contextual factors can mediate the individual experience of pain (1). The multifaceted nature of chronic pain signifies the importance of viewing it through a public health lens (17). Given the burden of chronic pain in the population, there is a need to prioritise resource allocation towards the management of chronic pain and to ensure that there are appropriate public policies to guide practice. Thus, in order to better understand pain and to develop strategies which alleviate the consequences of chronic pain that is experienced in South Africa and globally; a biopsychosocial approach which recognises the impact of the Social Determinants of Health on chronic pain is warranted (24,25).

However, chronic pain has been greatly understood within a biomedical framework (17) with chronic pain being treated on the basis of a physical injury and/or tissue damage (26). The framework focuses on biological factors alone and omits psychological, social and environmental factors as contributing factors to chronic pain. As such, the management of chronic pain then focuses on locating the exact injury or tissue damage and treating this as the source of pain (26). However, due to the multidimensional nature of pain this approach is not optimal for recovery (27).

The biopsychosocial model has shown to be the most holistic approach towards the assessment and treatment of chronic pain (1,24,25,27). The model provides the foundation for a patient-centred, comprehensive pain management programme (28). It is made up of biological (excessive load, tissue pathology, system dysfunction, nociception, inflammation and genetics), psychological (beliefs,

thoughts, knowledge, predictions, feelings, actions) and social (family, friends, colleagues, access to care, community, culture and society) factors (29). The model provides an argument that health or illness is not because of one factor but an interplay between various elements in an individual's life (24). The interaction between these three factors influence the causes, manifestation, and outcomes of health and well-being (30).

Research has shown that interdisciplinary pain management (31) based on the biopsychosocial model is key to addressing the multidimensional nature of pain (32,33). This means that each team member should work towards a common goal opposed to a team under the directive of one person who makes the decisions (34). Strides in chronic pain-related research have been made, but vast gaps exist between the research produced and clinical practice (1,16). This may be due to poor understanding of concepts and difficulty with implementation of the approach in clinical practice (16,27,35). In addition, the experiences and perceptions of individuals regarding chronic pain influence their management approach (1,27).

Physiotherapists aim to promote, maintain and restore the health of their patients through comprehensive assessment, diagnosis, patient education and various other treatment strategies (10). They are often visited by patients with the expectation of receiving pain relief and an explanation regarding the source of pain (1,13). As such, physiotherapists are important members of interdisciplinary pain management teams (32,33). However, many physiotherapists feel ill-equipped to effectively treat patients with chronic pain (27). Studies (13,36,37) have noted that physiotherapists have difficulty correctly identifying psychosocial factors, known as yellow flags, among patients with chronic pain. A 2020 meta-analysis illustrated that physiotherapists feel inadequately trained and lacking in confidence to deal with these psychosocial factors (37). The reasons behind this lack of confidence and feelings of inadequate training must be explored to ensure the creation of robust pain curricular.

Research on the experiences of patients with pain has illustrated that the patients have concerns regarding the lack of empathy by treating physicians and therapists (38).The way chronic pain is taught to students including how to compassionately assess and treat people experiencing chronic pain must be investigated (39,40). The curriculum at the University of the Witwatersrand has clear learning objectives related to pain (Table 1 below). However, there is limited evidence on the extent to which physiotherapy students use the biopsychosocial approach when assessing and treating patients with chronic pain in their clinical practice. An understanding of the perceptions and experiences of the students regarding chronic pain will assist with improving the methods of teaching chronic pain to students, improve the effectiveness of physiotherapists within interdisciplinary pain management teams and improve chronic pain management overall.

1.1.1 Physiotherapy pain curriculum

The physiotherapy undergraduate curriculum at the University of the Witwatersrand focus the first two years of study on theory, where students are taught theoretical assessment and treatment techniques. The last two years of study combine theory and clinical skills; which means that there are lectures covering concepts and skills as well as practical learning in a clinical setting where students treat patients under the supervision of qualified physiotherapists. Table 1 below shows the student objectives specific to the study of pain, as described in the physiotherapy curriculum.

Table 1: Objectives from the student handbook (41)

Objectives:	
1st year	**Introduction to pain management**: • Provide an overview of the nervous system • Define and understand pain • Classify pain • Assess pain • Provide an overview of pain management using a biopsychosocial approach
2nd year	• Explain the theories of pain • Discuss pain physiology (ascending & descending pathways; substantia Gelatinosa) • Discuss the various dimensions of pain (body-self neuromatrix)
3rd year	• Discuss pain mechanisms (nociceptive pain, neuropathic pain and central sensitisation) • Apply pain management programmes: acute and chronic pain
4th year	• Critically evaluate pain management programmes

In their third year of study, the students have six clinical blocks of four weeks' duration where students are placed at various clinical sites from 07:30 to 12:00, Monday to Friday. During this time, they assess and manage patients related to that specific block and have clinical supervision from both the onsite supervisor and a supervisor based at the university (may or may not be a permanent lecturer at the university). The onsite supervisor, who is a qualified physiotherapist working at the clinical site, provides guidance and teaching to the students as they manage patients. Supervision from the university differs according to the clinical area, but in general a qualified physiotherapist who is external to the clinical site, will visit the students once a week to provide additional guidance and teaching. The context is similar for fourth year physiotherapy students but their clinical hours are from 07:30 to 15:30. Students are allocated patients by the onsite supervisor and have guidance which is specific to the clinical site and/or supervisor (41,42).

1.2 Literature Review

Towards a biopsychosocial understanding of pain

In 1664, Renee Descartes developed the Cartesian Dualism Theory of Pain where nerves were thought to be hollow tubes with threads that had physical properties (24,43). During this time pain was thought to be equal to the amount of tissue damage present. Thus, the sensation of pain had to have a physical source (29). Treatment regimens focused on tissue healing, analgesia and surgery (24). Failure of the treatment resulted in the conclusion that the pain was in the person's mind. However, this model did not account for pain that lasted for longer than the proposed healing period (chronic pain), phantom limb pain and pain in the absence of actual tissue damage (44,45).

In 1965, Melzack and Wall recognised that pain was not a simple one-way system and proposed the introduction of psychophysiological interactions which contribute to the pain response (45,46). They realised that pain is not only affected by the intensity of a stimulus, but also by competing stimuli and descending impulses from the brain (24). This was termed the Gate Control Theory and introduced other treatment mechanisms. However, this theory does not adequately explain the numerous interactions which occur in the perception of and responses to pain, ongoing pain (chronic pain) nor pain that occurs without actual tissue damage (47). In 1999, Melzack recognised that pain is a higher order somatosensory construct and that it has evaluative, affective, sensory and behavioural dimensions which are influenced by multiple factors (46). He realised that pain responds to a threat and this in turn drives behaviour (44). Science has moved beyond the belief that yellow flags (psychosocial factors) are a set of factors external to the condition towards an understanding of the interconnectedness (34,36). Thus, treatment moved towards patient education and patient empowerment with an increased emphasis on the biopsychosocial approach (1).

Perceptions of students and HCPs towards patients experiencing chronic pain

An understanding of the neuroanatomy and neurophysiology of pain influences HCPs attitudes and beliefs regarding pain (48). This in turn informs their perceptions of chronic pain which influences the management of patients with chronic pain (38). Final year therapeutic sciences students from the University of the Witwatersrand had poor knowledge regarding Chronic Low Back Pain (CLBP) which negatively influenced their attitudes and beliefs towards patients with CLBP. In addition, males were shown to have greater knowledge of pain compared to their female peers while the latter were noted to have more positive attitudes towards people with chronic pain compared to males (35). Students believed that chronic pain was a disability and provided advice which focused on aspects based on a biomedical approach (35).

Physiotherapists and medical students in Switzerland, the United Kingdom (UK) and United States of America (USA) were found to have difficulties identifying psychological factors among patients (13,49). Furthermore, physiotherapists tended to stigmatise patients with chronic pain while also feeling unprepared to manage CLBP patients with dominant psychological factors (49,50). Physiotherapists perceived patients with CLBP as demotivated, taxing and attention-seeking. In addition some physiotherapists held the belief that due to poverty, patients with chronic pain chose to be ill (51). These perceptions indicate a poor understanding of pain catastrophizing which, if patients present with, may result in problematic recovery. Pain catastrophizing occurs when patients describe the experience of pain in a more exaggerated manner than the average person, think about it continuously (rumination) and/or to feel helpless in this pain experience (7). A 2017 systematic review demonstrated that physiotherapists have low self-efficacy to treat patients with CLBP. Many held the belief that the assessment of psychosocial factors is not in their scope of practice (15,36). This highlighted the gap in psychosocial training which then influenced clinical practice (50).

A 2021 Brazilian study, which investigated the beliefs and attitudes of final year physiotherapy students towards CLBP, showed that physiotherapists have the most pain content in their curriculum but they still had uncertainty regarding the association between CLBP and disability. Many did not follow treatment recommendations through a biopsychosocial approach with more than half of the students in the study not using evidence-based treatments as their first line of treatment (52). Evidence based medicine refers to the meticulous and reasonable use of evidence in making clinical decisions about the care of patients. It includes clinical experience and the values of the patient with the best available research information to provide effective care to patients (53). The complex and multidimensional nature of pain emphasises the need to follow evidence-based medicine to ensure that patients receive effective treatment.

In keeping with the aforementioned studies, Corrigan et al., 2011 conducted a qualitative study with medical students by transcribing their reflective diaries. They found that students experienced increased anxiety, distress and exhaustion when treating patients with chronic pain (39). Negative perceptions regarding chronic pain exceeded the positive. Negative perceptions included frustration, scepticism and a lack of trust in the patient. Students experienced difficulty in discriminating “true pain” from a “drug seeker” which resulted in confusion and cynicism (16,39). Canadian nursing students have also reported poor pain knowledge and negative attitudes towards patients suffering with pain (54).

Furthermore, perceptions influenced by gender norms impacted on HCPs’ management of patients with chronic pain (55). For example, male practitioners recommended pain medication while female practitioners recommended psychological treatments (56). HCPs often brought their own judgements

and biases to their work resulting in maladaptive perceptions influencing the management of their patients (56,57).

Terminology, its related meanings and communication used to explain chronic pain

The use of medical words, metaphors, analogies and reassurance from the HCP have been shown to influence the participation of the patient in their own care (58). The relationship between the HCP and the patient plays an important role in the recovery process (59). Chronic pain is often about care opposed to cure thus it requires empathy where the HCP attempts to place themselves in the position of their patient to better understand the patient's suffering (38). Furthermore, chronic pain often requires the HCP to simply be there for the patient opposed to doing something actively (39). Placebo analgesia, or meaning responses are optimised through the use of effective, ethical communication strategies (34).

Communication refers to the transfer of information and feelings from a sender to a receiver in a manner which is understood by all parties. Meaningful communication is fundamental to good clinical practice and has been associated with positive therapeutic relationships (34,40). Interpersonal communication refers to both verbal and non-verbal face to face exchange of information among people. Effective interpersonal communication assists the healthcare system by increasing efficiency, cost-effectiveness and ultimately results in healthier populations (60). Interpersonal communication is made up of verbal (oral and written language), non-verbal (gesture, posture, movement and appearance) and paraverbal (tone, voice, rhythm and verbal flow) forms (61). This communication is important during any patient interaction, especially when educating patients on their condition.

Pain Neuroscience Education (PNE) has shown to be beneficial when explaining pain to patients. PNE utilises pain science to teach patients about the biopsychosocial nature of their chronic pain experience (62,63). It is an approach which educates patients about their pain with the aim of making them rethink the manner in which they view this pain and develop pain coping strategies. PNE uses analogies, stories and metaphors to assist patients in contextualising their pain experience (64). The use of analogies has become beneficial in explaining chronic pain to patients opposed to the use of anatomical and physiological terminology and images (28,65,66). The terminology used to explain chronic pain is crucial towards preventing the chronicity of pain and in the outcomes achieved (58).

Pain-related words have an influence on the Central Nervous System (CNS) and can contribute to the patient's fear or perceived threat associated with their experience of pain (67). Fear refers to an emotional reaction to a threat and may protect the individual from impending danger (68). The Fear-Avoidance Model provides a possible explanation as to why chronic pain problems and associated disability develop among the population suffering with pain. People can follow two pathways; they

can either continue without negative beliefs regarding their pain or the pain is misinterpreted in a catastrophizing manner. This pain-related fear results in disuse and disability (69). Fear must be challenged and mediated to encourage physical activity, ultimately aiding in recovery. Thus, terminology used when speaking to patients must aim to decrease fear which in turn prevents fear avoidance beliefs from developing.

The use of medical jargon has shown to decrease the patient's attention resulting in poor understanding of their condition (58). Eck et al., 2011 demonstrated an activation in brain regions associated with affective and sensory-discriminative dimensions of pain when pain-related words were processed in patients experiencing migraines. The recruitment of these regions is enhanced in patients experiencing chronic pain (67). This demonstrates the importance of terminology used when explaining pain to patients.

The patient-clinician interaction has shown to influence outcomes through placebo-nocebo effects (70). This means that a positive relationship between the patient and clinician is more likely to result in positive outcomes through the placebo effect (71). This includes the words used by the clinician, the tone of voice and the trust developed between the patient and clinician (70). Patients' feelings of warmth from surgeons prior to wisdom teeth extraction increased trust and decreased acute pain post-operatively (72). Another important feature of this interaction is how the condition, diagnosis and treatment options are presented to the patient. The terminology used as well as the disclosure and framing effects can change treatment efficacy expectations and influence the anxiety levels of the patient (71). In keeping with this, a 2019 study found that treatment specific expectations of analgesic massage changed as a result of the way information was framed. Treatment messages can influence participants' expectations of treatment efficacy (73).

Experiences with patients experiencing chronic pain

Physiotherapists in Switzerland reported that their competence in managing patients decreased when patients reported higher distress (49). Medical students noted that they had difficulty in caring for the patient when they could not cure them (39). The demand to be empathetic and to interact by "being" instead of "doing" was challenging. In keeping with this, physiotherapists who focused on the biomedical approach reported a similar challenge (49). In an attempt to get through the session and assist the patient experiencing chronic pain speedily, students and qualified therapists often focus on treatment without a thorough assessment being conducted (74). This often results in important aspects of the patient's case which would contribute to an effective management plan being left out.
HCPs noted that their experiences with chronic pain were difficult, frustrating, confusing and distressing as they often felt unable to help these patients (35,49). They described a return to familiarity, choosing treatment options which they were used to and which appeared to be in line with

the patient's expectations (37). Patients with dominant psychological factors contributing to pain were often passed on to mental health professionals with the belief that treating these patients were out of their scope of practice (50).

A 2019 mixed-methods study conducted with Australian physiotherapy new graduates found that new graduates reported the treatment of patients with chronic pain challenging (75). They noted that it was easier to treat acute pain patients opposed to chronic pain patients and were unsure of how to explain chronic pain to patients. In addition, the study found that they learnt the theory but were unable to apply this knowledge practically and were unsure of how to convince patients of their treatments. In addition, they were unsure of how to use pain questionnaires/outcome measures appropriately. Lastly, these students noted that lack of exposure to certain medical conditions limited their ability to treat these patients effectively (75).

Factors influencing the management of chronic pain

Mukoka, Olivier & Ravat (2019) found a poor uptake of the biopsychosocial approach among final year therapeutic sciences students in South Africa which was due to negative attitudes towards patients with CLBP, a greater emphasis being placed on the importance of biomedical factors and patient perceptions of their own pain. Beliefs and attitudes of HCPs regarding pain influence the recommendations provided to patients with chronic pain (76). Individuals who focus on a biomedical approach have demonstrated maladaptive beliefs towards chronic pain, such as the belief that movement should be avoided or that the "spine" is fragile, thus provide inadequate activity recommendations (27). These beliefs about pain and disability by HCPs can contribute to chronicity of pain and disability among their patients (15).

Management through a biomedical approach has been associated with a delay in return to work, decreased physical activity, fear avoidance and the belief that activity is a threat increased sick days taken (15,77). Physiotherapists' beliefs and attitudes about health influence their management of patients. The patient's outcome expectations (78), perceived passivity of the patient (15) and the desire of the physiotherapist to maintain a therapeutic relationship (58,79) influenced the management approach. In addition, the perceived lack of time, the clinician's own perceptions, perceived benefits and perceived barriers (80) of using the biopsychosocial approach all influenced their management of patients with chronic pain.

A 2011 study conducted in Spain noted that the recommendations provided to patients by HCPs improved significantly among those taught to use a biopsychosocial approach (27). The management of chronic pain is influenced by the manner in which students are taught during their undergraduate years (13). Students have noted that some clinical supervisors view chronic pain patients to be of little

educational value, thus shielded them from being involved in the management of these patients (38). In keeping with this, medical students have decreased knowledge regarding pain due to their pain curricular. Curricular tend to note pain as a symptom of various conditions thus it is spread over various modules. The management of pain is often emphasised in this setting with increased focus on pharmaceutical management (81).

A deficit regarding pain neurophysiology and pain neuroscience education has been found among physiotherapists which points to the need for pain curricular to be reviewed (74). However, increased knowledge regarding pain neurophysiology (34) and the biopsychosocial approach is insufficient to influence the management of chronic pain (27). Perceptions, attitudes and beliefs must be modified in order to modify behaviour which will result in optimal chronic pain management (27). The perception of pain as an additional module within the curriculum as opposed to a core module has been shown to be a barrier to successful curriculum change thus it must be noted and included as an essential stand-alone module (82).

1.3 Statement of the Problem

Chronic pain is a public health problem which is often poorly managed and ultimately has a ripple effect on other aspects of an individual's daily life (20). Chronic pain should be assessed and treated within a biopsychosocial approach (24) to achieve optimal results. Physiotherapy curricular in South Africa include a biopsychosocial approach in teaching chronic pain but the gap between theoretical teaching and the implementation of the approach in clinical practice is unclear.

1.4 Justification

Chronic pain is complex and the interaction between the patient and the physiotherapist influences the outcome of treatment (9). It is essential to understand the implementation of the biopsychosocial approach within physiotherapists' clinical practice (20). The factors which facilitate and impede the implementation of this approach could assist in improving curricular both at undergraduate and postgraduate levels (10). Many students have minimal clinical experience with chronic pain but when entering their community service year, they are likely to treat patients experiencing chronic pain regardless of their knowledge and experience in the area. Often, newly qualified physiotherapists have no mentors and supervisors to guide them during this year (83,84). It is important to understand the perceptions and experiences of students' regarding chronic pain in clinical practice as this will assist in adapting curricular to better prepare them to manage chronic pain patients independently.

There is limited literature especially in South Africa regarding how students perceive and experience the management of chronic pain in clinical practice. Most of the studies conducted utilised pain specific questionnaires to quantitatively assess the students' theoretical knowledge regarding chronic

pain opposed to their lived experiences with patients experiencing chronic pain (39). This interpersonal dimension is missed in quantitative studies. This study utilised a qualitative approach as it provided a richer understanding of individual perceptions and experiences regarding chronic pain within their undergraduate clinical years. This will inform pain curricular which in turn aims to improve chronic pain management overall.

1.5 Research Question

What are the perceptions and experiences of physiotherapy students in their clinical years, studying at the University of the Witwatersrand regarding chronic pain within their clinical practice in South Africa in 2021?

1.6 Study aims and objectives

Aim of the Study

To explore the perceptions and experiences of physiotherapy students in their clinical years, studying at the University of the Witwatersrand regarding chronic pain within their clinical practice in South Africa in 2021.

Specific Objectives

1. To describe the terminology and related meanings used by physiotherapy students studying at the University of the Witwatersrand to explain chronic pain to their patients in 2021.
2. To explore the perceptions and experiences of physiotherapy students studying at the University of the Witwatersrand when consulting with patients experiencing chronic pain.
3. To explore the personal and professional factors which influence the management of chronic pain by physiotherapy students studying at the University of the Witwatersrand.
4. To explore the role of interpersonal communication in chronic pain management among physiotherapy students studying at the University of the Witwatersrand.

Chapter Two: Methodology

This chapter describes the methodological approach during this study. It covers the study design, study setting, study population and sampling method. The data collection process and analysis are described. Furthermore, ethical considerations, researcher reflexivity and positionality of the researcher are presented.

2.1 Study Design

A case study approach, utilising qualitative methods, was used to explore the perceptions and experiences of physiotherapy students in their clinical years regarding chronic pain within their clinical practice at one university in South Africa. Case studies have been used to explain, describe or explore a wide array of phenomena in its real life-context (85). Thus, the approach assisted in understanding and explaining various patterns observed in the data collected (85).The approach, located in an interpretive paradigm was appropriate for this study due to its exploratory nature. The approach assisted in gaining an understanding of perceptions regarding the phenomena mentioned above (86).

2.2 Study Setting

The study was conducted within the University of the Witwatersrand physiotherapy department. Physiotherapy students are exposed to patients with chronic pain from their third year of study and the study of pain is included in their curriculum from their first year of study (42). The department had a final year cohort of 55 students which allowed for purposive selection of participants. In addition, the department has also recently created a Master of Science degree in Physiotherapeutic Musculoskeletal Pain Management (87), thus were open to studies regarding chronic pain.

2.3 Study Population and sampling

The study population were all 55 final year physiotherapy students from the 2021 cohort, who were completing their degree at the University of the Witwatersrand. The rationale for selecting final year students was that they have both the theoretical and clinical knowledge regarding patients with chronic pain as this is part of their objectives for the year. According to the clinical objectives in third year, students should treat patients with osteoarthritis (42). Final year students must treat patients with neck and back pain thus have a high likelihood of being exposed to chronic pain within their clinical practice (42). In addition, this study population allowed for an understanding of the experiences of students before they enter their community service year thus it could contribute to future improvements to the pain curricular. Participants were included if they had completed their neuromusculoskeletal clinical block in third year achieving the objectives of treating patients with chronic pain conditions.

A combination of purposive and snowball sampling was used to select participants from the final year physiotherapy cohort to participate in the study. As a result of the introduction of Protection of Personal Information Act (POPIA) (88), I was unable to receive the students' contact details directly from the course co-ordinator. For reasons already mentioned, the study was conducted at the end of the clinical year which meant that the students were no longer coming into the university for classes or exams, thus I could not speak to the entire final year cohort to obtain their contact details directly from them. As such, an email which included an infographic (Appendix B) and all study information was sent out by the co-ordinator to the students asking them to contact the co-ordinator should they be willing to allow their details to be provided to me. The email was sent out after the students wrote their final exam.

The first three students who met the inclusion criteria, were included after they replied to the email and agreed to have their contact details provided to me. The participants who contacted me directly then contacted other potential participants via alternate contact details inviting them to participate in the study. Once potential participants contacted me directly, they were sampled purposively to ensure maximum variation (89). Focus was placed on including participants of different ages, genders, cultures, and socio-economic status. The main study aimed for 15-20 participants or until data saturation occurred. Data saturation was reached after 12 participants thus the data collection period was stopped. The data was considered saturated when no new information emerged during subsequent interviews (89).

2.4 Data Collection

Participant Recruitment

Participants were recruited through communication with the final year clinical co-ordinator as described in 2.3 after an ethics approval certificate was obtained from the University of the Witwatersrand Human Research Ethics Committee (HREC) (Appendix I.1). In addition, participants assisted with subsequent recruitment by reaching out to their peers.

Data collection method and tools

The data collection period occurred after final examinations which allowed for rich data to be collected as the students had experience regarding the phenomenon being studied. However, it must be noted that the study took place during the COVID-19 pandemic, thus these students experienced changes to their theoretical and clinical training as a result.

I conducted in-depth interviews using a semi-structured interview guide created for the study (Appendix C). In-depth interviews allowed the participants to provide personal, rich, detailed

accounts of their perceptions and experiences (51,89). The in-depth interviews allowed me to ask open-ended questions during in-depth one-on-one interviews, which provided an understanding of the students' experiences, perceptions, challenges, influencing factors and approach towards patients suffering with chronic pain.

The interviews were conducted in English, virtually via Microsoft Teams video-calling/audio calling during the period of 15 November 2021 to 08 December 2021. The participants were allowed to choose if they preferred to be audio-recorded or audio-and-video recorded. This method of conducting interviews was chosen to account for COVID-19 related concerns and because some students may have had difficulty travelling for face-to-face interviews. Students were provided with 1GB of data once informed consent was obtained to cover the costs of the virtual interview. This is the estimated amount of data required for 60-90-minute video interviews over Microsoft Teams. The interviews lasted between 30-80 minutes depending on the participant.

Prior to scheduling an appointment for the interview, I explained the study, the informed consent process and voluntary participation to the participant (Appendix D, E and F respectively). The consent forms were signed electronically prior to the interview via REDCap which is a platform for creating and sending out online surveys. Participants were provided with the opportunity to ask me any questions related to the study via telephonic conversation, WhatsApp messenger, or email. A demographic questionnaire (age, gender, religion, socio-economic status, other degrees obtained, work experience and personal experience with chronic pain- appendix G) was filled out by each participant prior to the interview to provide background to the participant. This was also completed via REDCap. Once this was completed, a link to the virtual meeting was sent to the participant.

The interview began with a short introductory conversation to build rapport between the interviewer and the participant. This aimed to encourage the participant to speak freely throughout the interview. Participants were reminded about voluntary participation and were asked if they wished to continue throughout the interview. The interviews were recorded with informed consent provided by the participant.

At the conclusion of each interview, I documented observations such as tone of voice, facial expressions, hesitancy and other important factors observed in the participant's demeanour, actions and speech. These field notes assisted me during the analysis as they provided further insight into the participant's answers. These thoughts and impressions which were observed during the interviews improved the analysis.

Key concepts explored

The interview guide (Appendix C) explored the perceptions and experiences of final year physiotherapy students regarding chronic pain within clinical practice; various terminology used by the students to explain chronic pain to their patients as well the meanings of these terminology; factors influencing their perceptions about chronic pain as well as patients experiencing chronic pain were explored. Aspects in the participants' lives which influenced their approach to chronic pain such as having family members living with chronic pain and their theoretical and clinical training regarding chronic pain were also explored. The biopsychosocial approach as described in chapter one was used as a conceptual framework to guide the interviews, data collection and data analysis process.

2.5 Pilot Study

A pilot study which is an investigation to test the logistics of the study was conducted to test the data collection tools and the feasibility of the study (90). Three third year physiotherapy students were included in the pilot study which aimed to provide feedback on the effectiveness, efficiency and quality of the interview guide (91). The pilot study aimed for diversity of voices thus included a white male, black female and white female third year physiotherapy students who were willing and available to participate in the pilot study. Permission was obtained from the third-year physiotherapy co-ordinator, and he was made aware of when the interviews would be conducted. The procedures that were implanted for the main study were piloted as well.

On completion of the pilot study, the data was analysed and feedback from the participants on their experience led to adjustments to the main study procedures (91). These were about the feasibility, methodological quality, data collection tools or any additional concerns that were made to improve the main study procedure.

Adaptations made:

- The consent form was edited to avoid ambiguity relating to audio versus video recording.
- The demographic questionnaire was adapted to add the reason for requesting personal information such as contact numbers and email addresses. This was done so that the Microsoft Teams link to the interview, additional information and follow up information could be sent to their most convenient contact details. In addition, post-graduation, their student email addresses would be disabled so it was essential to obtain alternate contact details.
- The demographic questionnaire was adapted to include the participant's mobile network so that the 1GB of data could be sent straight to their mobile devices.

- The interview guide was adapted to remove repetitive questions, highlight the questions that provided the richest data and add an additional question to ensure that all research objectives were achieved.
- I learnt to monitor all responses to experiences shared by participants. The usage of words to show interest and stimulate further discussion were also introduced to develop rapport with the participant before asking the key questions.
- The Microsoft Teams link was sent to students' email addresses, preferred email addresses and via WhatsApp Messenger as different students used different devices for Microsoft Teams.
- Load-shedding schedules were considered with each participant when conducting the interviews to ensure that there were no connectivity challenges.

Additional comments by participants:

- The information sheet, consent forms and demographic questionnaires were easy to read, understand and complete.
- The virtual interviews were better as it allowed flexibility of time, were convenient and financially effective.
- The interview process was conversational opposed to academic which removed any prior fear in participating in the interview.

The participants in the pilot study had all treated patients with chronic pain and had valuable insights regarding this phenomenon. As such, after discussion with my supervisors the three pilot interviews were included in the analysis for the main study.

2.6. Data processing methods and analysis

Data preparation

All interviews were either audio-recorded or audio and video-recorded depending on the participant's preference. The recorded interviews and transcripts were stored on my password-protected laptop and were also uploaded to my OneDrive account. Data was organised into various folders with appropriate headings to ensure that information is easily accessible. All folders are password protected. My supervisors and I have access to the de-identified data.

The interviews were transcribed (verbatim transcription) using software, the *OtterApp*, as well as the transcription via Microsoft Teams. This verbatim transcription was then edited and corrected using the audio recording to ensure accuracy of the transcript. Each transcript was thoroughly examined to ensure that the participants' responses to questions were accurately transcribed, the transcript was

edited for any errors and words that may not be understood by everyone were clarified. Any additional notes regarding the participant's demeanour such as facial expressions and tone of voice which were noted were added to the transcripts. The process of memoing (92) with first impressions began at this stage and continued throughout the data analysis process. Memoing refers to reflective notes made by the researcher as they learn about the data which assists the researcher when interpreting the data (79). Reflective memos about each participant were included with each transcript and prepared for analysis.

Data Analysis

The process of conducting a thematic analysis began with reading through the transcripts and including reflective memos for each transcript. An initial codebook of deductive codes was created from the research objectives and relevant literature. Definitions for these codes were added. After this process, additional themes were identified inductively which allowed for the creation of sub-themes and additional themes. These inductive codes were developed when re-reading the transcripts. The codebook was finalised and transcripts were imported into *QDA Miner*, a free qualitative data analysis software, and an initial set of transcripts were coded. The codebook and transcripts were shared with my supervisors who then coded a few of the transcripts using the codebook. After independently reviewing the codebook there was a discussion to ascertain the level of inter-coder agreement. The discussion led to further refinement of codes and a couple of additional codes were identified. The finalised codebook is attached as Appendix H.

After all the transcripts were coded, mindmaps were created to visualise the data and establish relationships between themes and patterns in the data. The mindmaps, which were visual representations of the data, and the memos contributed to the dependability and conformability of the study (92). The mindmap was used to identify patterns in the data and to look at co-occurring themes.

Trustworthiness in qualitative research is often described in terms of credibility, dependability, conformability and transferability (93). In order for data to be accepted as trustworthy, data analysis must be conducted consistently, precisely and in an exhaustive manner. The analysis must be disclosed comprehensively so that the reader can determine the credibility of the process (94).

Credibility

Credibility refers to confidence in the data and the degree to which the results are believable (94). Credibility was ensured by the use of a detailed interview guide which was developed based on the aim and objectives of the study. In addition, clear recordings and verbatim transcriptions were conducted for each interview. Inter-coder agreement was also ensured by having frequent sessions

with research supervisors to discuss the codebook. Furthermore, coded transcripts were discussed to ensure agreement and were modified as necessary.

Dependability

Dependability generally refers to the stability and consistency of the research process over the study period (94). Dependability was ensured as the interview guide was followed during data collection. The interviews were all conducted over Microsoft Teams and the data collection process was described fully so that this can be replicated by future researchers.

Transferability

Transferability refers to the ability to generalise the findings to other contexts (94). In qualitative research, generalisation can be limited. In this research study, I achieved transferability through purposive sampling. This sampling method allowed participants who were able to provide specific information related to the research question to be included in the study. A description of participant characteristics has been included.

Conformability

Conformability in qualitative research refers to the objectivity of the data (94). In order to achieve conformability, I was guided by the interview guide, was non-judgemental during the interview process, conducted verbatim transcription, used direct quotations from participants when presenting data and obtained input from supervisors throughout the data collection and analysis process.

2.7. Ethical Considerations

Ethics approval and permissions

Ethics approval to conduct the study was obtained from the University of the Witwatersrand Human Resource Ethics Committee (HREC) (M210833) (Appendix I.1) and permission to conduct the study was obtained from the Head of the School of Therapeutic Sciences (Appendix I.2), the Acting Head of the physiotherapy department (Appendix I.3) and the University's deputy registrar (Appendix I.4). The physiotherapy third- and fourth-year co-ordinators were made aware that the study would be taking place. The final year co-ordinator was contacted and provided with all information of the study as well as an infographic (Appendix B) which allowed the information to be easily conveyed. This was sent out via email to all final year physiotherapy students asking them to contact the co-ordinator should they be willing to allow their details to be provided to me.

Each participant was provided with an information sheet and an opportunity to ask questions about the study. A separate consent form was obtained for video-and-audio recording or audio-recording alone.

Participants were informed that other people such as my supervisors may view the transcripts, but all transcripts would be de-identified. I had access to the participant's name, contact details and email addresses for the purposes of conducting virtual interviews, sending documents electronically and providing the participant with the 1GB of data. Once this was received, the demographic questionnaires were matched to the transcripts and all documents were de-identified and labelled with a unique identification number. All documents were saved on my password-protected laptop and OneDrive account as a back-up. All data collected including research were stored and will be destroyed two-years after publication or five-years after the completion of the study.

There was no direct benefit for the students who participated in this study, but it aims to assist in the revision of future undergraduate and postgraduate curricular, thus may have indirect benefits to the university. The study posed no risks to participants. Participants were informed that they could discontinue the interview at any point. The study did not have any repercussions to their assessments and was conducted upon the completion of their examinations.

2.8 Researcher reflexivity and positionality

Positionality refers to an individual's world view or 'where the researcher is coming from' as well as the position that they adopt about the research and its social and political context (95). This relates to ontological assumptions which refers to beliefs about the nature of social reality, epistemological assumptions which refers to beliefs about the nature of knowledge and assumptions about human nature and agency which refers to assumptions about the way we interact and relate to the environment. As such, positionality describes the position that the researcher has adopted within the study and it influences the manner in which the research is conducted, the results of the study and the analysis of the data collected (95,96). This section reflects on my own assumptions and perceptions regarding the phenomenon studied.

I qualified as a physiotherapist (with distinction) from the University of the Witwatersrand in 2017. I then graduated with a Postgraduate Diploma in Interdisciplinary Pain Management (with distinction) from the University of Cape Town. Currently, I work clinically as a physiotherapist and a clinical supervisor for physiotherapy students in their public health block. As such, the qualitative nature of my study required me to be cognisant of my training and views of the research topic.

During my four years of undergraduate study, the phenomenon of pain in general was something that I dealt with on a daily basis. I always believed that I treated patients holistically and using a biopsychosocial approach as taught to us theoretically. I asked all the questions as printed on our assessment forms and believed that this covered all points of importance. However, when confronted

with a complicated patient living with chronic pain, I was completely rattled and unprepared to manage the patient effectively. In cases like this, I would go to my clinical supervisor who would often say “this is a yellow flag patient, send them to psych”. This shattered me as I could not fathom passing on someone who was suffering so much to another professional without attempting to help in some way. At this point I began to think that those “yellow flags” that we were asking about were not just there to gain an understanding of who the patient is but that these factors may actually have a direct effect on pain. Unfortunately, I did not have enough resources to understand this better or understand where to search to find these answers.

After graduation, I pursued my dream to work in a rural setting and completed my community service at a small district hospital in rural Mpumalanga. This experience improved my skills as a physiotherapist in many ways but further emphasised my poor understanding of pain and in specific chronic pain. I will describe two examples from this year which prompted my postgraduate studies in pain. The first example refers to a woman who suffered with pain in her dominant hand and arm for five-years post injury. She was now unemployed and poverty stricken. I tried my best with whatever training I had but could not help her. I referred her to the clinical psychologist but he was away for the entire year of my employment. I then referred her to the occupational therapist who could also not help her. This situation shattered me and I felt like an imposter- all those awards now meant nothing.

The second example refers to a group of elderly women from the community who were all recently unemployed due to severe osteoarthritis of the knees and hips. At that point, this seemed like an obvious situation to me as I thought “in this poor rural community, surgeries for bone fractures take up to a year to get done, as patients have to wait for an opening at the nearest regional hospital, so there is no chance that these women would get knee or hip replacements that they may need”. Thus, I knew that I was their last hope. I started a group which quickly became three separate groups as more and more women heard about it and joined in. I focused on many aspects of osteoarthritis and created booklets in English and SiSwati for them to take home. I was so proud of this achievement but when I looked at it recently, I realised that my booklet was predominantly biomedical. It focused on some aspects of the biopsychosocial approach but it was written by someone who did not understand the complicated and multidimensional nature of pain. The group was a success especially in terms of the social aspect, the importance of which I only understood after my postgraduate studies. Unfortunately, the group was disbanded when I left and the women were back at square one. I had not empowered them and had made them dependent on me as a physiotherapist and the group.

In 2019, the year post my community service, I completed a postgraduate diploma in interdisciplinary pain management which completely changed my understanding regarding the management of patients with pain. I was finally able to approach complicated chronic pain patients with realistic goals in

mind. During this diploma, I kept thinking of the public health implications of chronic pain and the systemic issue that this is. Thus, in 2020 I began my Master of Public Health.

I think back to the scenario of the elderly women now and I am embarrassed that I thought surgery was the only option for them. I am embarrassed that I could not delve deeper into their psychosocial factors. I wish that I understood that a major contributor to the success of my group was the support that the women received from each other. I am saddened that in a resource deprived setting with a severe shortage of healthcare professionals, I was untrained to help them optimally. I am distraught that in a setting where there was no clinical psychologist, I could not empower them and assist with the basics which could have aided in their rehabilitation. I am concerned that numerous other physiotherapists will enter these settings and be in my exact situation and years later after postgraduate studies come to my realisation. Who then helps these patients effectively if the people who are available to treat them are not yet trained to treat chronic pain holistically and sustainably?

I currently work at a private hospital and I also treat patients on an out-patient basis from both the private and public sector. Many of these patients, if not all tell me that people do not believe their pain, that people including HCPs speak to them as if they are pretending to be in pain. They tell me that they feel lonely, that no one understands them and that any relief that they receive is temporary. I am also a clinical supervisor for physiotherapy students during the public health block. During this time, students have often described their experiences with chronic pain which is in keeping with my own experiences at that point. We need to change this dynamic. We need healthcare professionals who understand pain, who treat patients compassionately and who manage pain in a way that allows them to be empowered in their daily life.

During the data collection period, I was aware of how my training and personal experiences influenced my position as a researcher. I was curious about the students' experiences. During the interviews I set aside my ideas to really listen to the students' experiences. I was very conscious of not leading the participants into providing specific answers. Oftentimes I was taken aback by the participants' openness to their theoretical and clinical training without me asking any questions related to this. The participants' understanding of me as a physiotherapy graduate of the university they are studying at and also as a student pursuing further studies, allowed them to be frank and open, believing that I would understand their challenges.

I began this research with my own understanding of pain and my own experiences as a student of the same department. However, I was pleasantly surprised by some of the participants' confidence in their ability to treat patients with chronic pain, their ability to create therapeutic relationships, their understanding of the importance of good communication skills and their ability to accept that they are

still learning and that further clinical experience will make them better physiotherapists. These findings challenged my views and assumptions about how prepared students were to manage chronic pain. As a result, I adjusted the way I viewed the participants, my interviewing strategy and the method for analysing and presenting the data. I was able to code the data based not only on the deductive but also inductively to capture the unexpected findings.

My experience as a student, clinician and clinical supervisor meant that I had to remain non-judgemental during this data collection period. The pilot study assisted me in becoming more mindful of how I asked questions to ensure I was not leading them to provide the responses that I expected. In addition, I learnt to provide the same responses to answers that I found jarring as I would to answers that resonated with me. I also clarified to the participants that this was not an assessment and that I did not want academic answers. I wanted their opinions, perceptions and experiences from one student to another.

Chapter Three: Results

3.1 Participant Overview

A total of 15 students who had experiences treating patients with chronic pain participated in the study. Of the three students who were part of the pilot study, one was male and two were female. Of the remaining 12 participants, four were male and eight were female. The physiotherapy class had majority female students. The study included six White participants, six Black participants and three Indian participants.

Out of the 15 participants, eight attended public schools and seven private schools. Majority of the participants (12) were from Gauteng while three were from Limpopo Province. Only one participant had an additional qualification. Six participants had other work experience but none were in clinical settings (Table 2).

All participants had professional experience with chronic pain. A few students noted that they did not have professional/clinical experience with chronic pain but when probed further it was observed that they did in fact have experience with chronic pain, they had just misunderstood the meaning of chronic pain. Only four of the fifteen participants had personal experience with chronic pain but all participants had personal experience with acute pain.

In terms of third year clinical placements for their NMS/orthopaedics clinical block, which was when they saw most of their patients with chronic pain, one student was placed at Helen Joseph Hospital (HJH), six at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), six at Tambo Memorial Hospital (TMH) and two at Thelle Mogoerane Regional Hospital (TMRH) out of a total of 15 students. Out of a total of 12 participants for their fourth year NMS/orthopaedics placements, four were placed at Chris Hani Baragwanath Academic Hospital (CHBAH), seven at TMRH and one at CMJAH. The fire at CMJAH affected the students' clinical placements which resulted in them being placed at various other sites (Table 2).

This study took place in the context of the COVID-19 pandemic. The COVID-19 pandemic impacted on the students' learning in various ways. Lectures were moved to an online format which students described as less informative due to the limited ability to ask questions and practice techniques effectively. At the clinical sites, students described having limited experience with various clinical conditions as patients were not coming into the hospital for physiotherapy sessions as frequently as they used to prior to the pandemic. This resulted in students treating patients together limiting independent learning.

Table 2: Participant sociodemographic characteristics

P	M/F	Age	Race/ethnicity	High School	Province of high school	Year one of degree	Work experience	3rd year placement	4th year placement	Personal experience with chronic pain
1	F	21	White	Private	GP	2019	-	TMRH	N/A	-
2	F	22	Black	Public	GP	2018	-	TMH	N/A	Yes- personal and family
3	M	21	White	Private	GP	2019	Private security	TMRH	N/A	Yes
4	M	22	Black	Public	LP	2017	Cashier	CMJAH	TMRH	-
5	F	22	White	Private	GP	2018	-	CMJAH	TMRH	Yes- chronic neck pain
6	M	23	Black	Public	LP	2017	-	TMH	CMJAH	-
7	F	22	Indian	Public	GP	2018	-	TMH	CHBAH	-
8	F	25	White	Private	GP	2018	Au pairing	CMJAH	CHBAH	-
9	F	21	White	Private	GP	2018	Tutoring, waitressing, House-sitting	HJH	CHBAH	Yes Chronic neck pain Headaches
10	F	22	Indian	Public	GP	2018	-	CMJAH	TMRH	-
11	F	21	Indian	Public	GP	2018	Tutoring	CMJAH	TMRH	-
12	M	22	Black	Public	LP	2018	-	TMH	TMRH	-
13	M	21	Black	Public	GP	2018	Sales assistant, house and pet sitting	TMH	TMRH	-
14	F	22	White	Private	GP	2018	-	TMH	CHBAH	-
15	F	22	Black	Private	GP	2018	-	CMJAH	TMRH	-

CHBAH- Chris Hani Baragwanath Academic Hospital;
CMJAH- Charlotte Maxeke Johannesburg Academic Hospital;
F- Female; GP- Gauteng Province; HJH- Helen Joseph Hospital;
LP- Limpopo Province;
M- Male; TMH- Tambo Memorial Hospital
TMRH- Thelle Mogoerane Regional Hospital

3.2 Terminology used and understanding of chronic pain

3.2.1 Defining and understanding chronic pain

Participants had different but overlapping understandings of chronic pain. When asked broadly what they thought of when they hear the term “chronic pain”, majority of the participants described it as constant, long-lasting pain or pain that has been there for longer than a particular period or expected period of time. Many participants also described it in terms of pain intensity, noting that patients had fluctuating levels of pain that did not make sense to them. They noted that often their aim as a clinician would be to reduce the pain, bearing in mind that it may never completely disappear. Some participants described it as pain that went beyond normal healing and was never-ending. Majority of participants described it as pain which did not appear to have an obvious cause and did not respond to various treatments from different HCPs.

> “It's something that's a constant, almost irritant. It doesn't really change over a very long period of time and it's been a couple of months. [I've] been trying to sort it out, but nothing is really changing. It's still persistent. No one is really getting to the bottom of it. And yeah, I think probably along those lines…”-P1 (female)

Many participants described the subjective nature of chronic pain by describing that it is unique to the individual and is influenced by various factors. They described patients with chronic pain as being ambiguous in their presentation. It was described as ambiguous as there was no set plan of what to assess and no distinct protocol to treat the finding. They found that these were not straightforward cases and they were unsure of how to go about managing these patients optimally. This was emphasised by the point made by one participant who said that every physiotherapist has their own subjective manner of approaching patients with chronic pain. This was often compared to their Intensive Care Unit (ICU) block which they found to be structured and protocol-based.

The term “yellow flags” was often the first term used by participants when speaking about chronic pain and describing patients experiencing chronic pain. This term is used synonymously with the term “psychosocial factors” as described earlier. There were opposing opinions regarding how psychosocial factors affected a person’s pain experience. Some participants used these terms negatively with the belief that the patient would be challenging because of a multitude of factors influencing the pain. Others expressed some empathy for patients when psychosocial factors were present.

> “I think for me, with chronic pain, it's an association of this being a very difficult patient. You see a chronic pain patient and people start saying yellow flags. It's a yellow flag patient. Before even meeting them, it’s just said, this is a yellow flag patient.”-P7 (female)

Some participants were doubtful about whether patients who fit the criteria of chronic pain in terms of a timeline (pain for longer than three months) truly had pain of this severity or whether it was a just an outlet for the various psychosocial challenges in their lives. However, others mentioned that psychosocial factors were a trademark of those experiencing chronic pain and aggravated the pain experienced.

3.2.2 Causes of chronic pain

Participants' understanding of the underlying cause of a patient's chronic pain was a hindrance to assessment, treatment overall and management. Majority of the participants used a biomedical description of the possible causes of chronic pain, for example, poor ergonomics, such as sitting in an incorrect position in front of the laptop while working. Others thought the underlying cause was from injury which resulted in tissue damage or overuse injuries such as continuously lifting heavy boxes at work. Some participants noted psychosocial elements such as stress but were unsure of the exact relation to chronic pain.

> "For this one patient who was lifting the meat off the floor, I told him that 'you are using your lower back muscles to do heavy lifting and then you're doing it repetitively. The muscles are not really assigned to do that job. You can't take so much weight and then the pain that you are getting is because you're getting spasms, muscle spasms on your lower back. You should rather use this and this and that'"-P4 (male)

In addition, a few participants attempted to describe the cause of pain which lasted for a prolonged period as a result of a dysregulated nervous system. However, they were unsure of how to describe this and reported that they did not understand the mechanism of chronic pain extensively. Thus, it was simply described as pain caused by an incorrect interpretation by the brain. This description as a cause of chronic pain often came about when participants described how they would explain the cause of chronic pain to their patients.

> "I would try to explain that the brain is misinterpreting it and thinking that this is something that is new and wrong… and then there may not be anything wrong but the brain is misinterpreting the pain. I would do it like that "- P8 (female)

Psychosocial factors were mentioned by some participants as an important contributor to chronic pain. Some participants made a link between pain and psychosocial experiences but did not understand the inter-relationship between psychosocial factors and pain and instead, displayed cynicism towards their patients. Some participants had difficulty identifying psychosocial factors, while others did not actively attempt to identify these issues. Those participants only paid attention to psychosocial factors when it was flagged by the patient. Only a few participants mentioned that it was easy for them to identify these issues. It was observed that participants with greater interpersonal skills were better able

to identify and deal with these issues. Participants described that they asked their clinical supervisors (the qualified physiotherapists at the clinical placement) how to probe for more information but most of the time just accepted the information provided by the patient and then moved on. However, all of the participants said that if a patient presented with many psychosocial factors, the assessment and treatment became more challenging, and the cause of the pain was unclear.

> "I found it really challenging, especially when there was heavy stuff going on in the family and it's almost like you feel the best you can do is refer them [the patient] to the social worker, but the social worker, no matter where I've been, is never there. I found it quite challenging because I didn't feel like I had the skills to help the patient in those aspects. I think that's why you have a social worker because they are trained in that stuff. It's challenging, like I am still in my 20s and now I have a 60-year-old telling me that their grandchild is abusing them. It's like what do you do you, now? So yeah, I think the best I felt I could do was just refer them to the social worker and just hope one of these days that she would be around."- P1 (female)

3.2.3 Consequences of chronic pain

Participants had several understandings of the consequences of chronic pain such as mood, relationships, general functionality and emotions. Chronic pain was described as influencing an individual's mood such as increased frustration, irritability and losing hope in ever living a pain-free life. It also resulted in decreased trust in HCPs and their ability to help the patient.

Participants described how chronic pain influenced emotional regulation, reporting that patients cried more often, displayed heightened temper or a lack of enthusiasm for social gatherings. Some participants noted that chronic pain influences relationships with others, providing examples from patients who were unable to socialise, and experienced strained emotional relationships with friends, family members and colleagues.

> "Others don't know that the pain causes the mood changes as well. So I think, that's the first thing-if they [the patient] could deal with the pain they would be way friendlier. People would be so happy to be around them, especially the people they live with. I always think of that."- P2 (female)

Some participants observed that chronic pain impacted on their patients' function, including ADLs and work-related tasks. ADLs such as standing for long periods while ironing or washing dishes and work-related tasks that required intensive physical labour, such as lifting heavy boxes or repetitive movements such as chopping meat in a butchery were difficult to do with the chronic pain that they were experiencing.

Some participants perceived that there were negative consequences for patients who are in a constant state of awareness of their pain to both their function and quality of life. It was observed that if patients constantly thought about the pain, it left little room for other activities resulting in decreased quality of life.

> "So that's the other thing then, if you're always aware of the pain, it might actually affect your function and also your quality of life. So that's the other thing, when she said she had 15 out 10 pain, then that's when those kind of things came to my mind. If the pain is this high, then it means she cannot actually ignore it when it comes. Those are the kind of thoughts that I had"- P6 (male)

3.3 Perceptions of factors influencing chronic pain

3.3.1 Easing Factors

All participants described factors which they believed influenced experiences of chronic pain. Some of these factors were perceived to make it easier for patients to deal with their pain and in some instances even decreased their pain. Factors which eased pain included understanding the cause of the pain, having an effective support system, and having access to pain medication. HCPs also had a role in easing chronic pain, especially when they were supportive, trustworthy and when they provided a comprehensive explanation that included causes, consequences and prognosis.

Participants described a lack of experience in working within a team for the treatment of chronic pain patients. Based on their training, most participants held the view that psychology could be helpful with patients who presented with psychosocial factors influencing pain. However, only a few participants referred to psychology, and none of the participants worked with a psychologist, which points towards a gap between theory and practice. Some participants were unsure of how to appropriately refer or did not attempt to refer their patients to members of the interdisciplinary pain management team, such as a psychologist, social worker, dietitian and/or occupational therapist. Those who did refer, had no success in working in an interdisciplinary team, due to the lack of availability of team members appropriate to the patient.

An easing factor was noted when participants observed a positive influence on treatment compliance and pain reduction when including activities patients enjoyed, such as dancing:

> "So I tried to make it a lot of fun for her… I tried to link it to dancing because I knew that she loved dancing so we made the movements linked to dancing. I think she really enjoyed that. After I implemented those then I saw that she attended all the sessions happily. I could see by the way that she could recall all the exercises I had given her that she was actually doing them unlike when I asked about previous treatment sessions, she couldn't remember what they had given her."-P4 (male)

In addition, one participant explained that a positive mind-set and a sense of motivation on the part of the patient was an easing factor:

> "I feel like if the patients are more motivated and don't think that the pain is going to kill them, then it is better."- P6 (male)

In some instances, previous experiences with pain or physiotherapy sessions were noted to be either an easing or aggravating factor depending on the patients' experience. In keeping with this, some noted that weekly physiotherapy sessions and a belief in physiotherapy treatment as well as trust in the therapist were easing factors. Lastly, it was noted that those who were financially stable and had minimal negative psychosocial factors were better able to handle their chronic pain.

3.3.2 Aggravating factors

Participants described factors which hindered patients' progress or increased their pain. Participants theoretical knowledge of these issues was detailed and included those related to movement, functional activities and psychosocial factors. Activities that were perceived to worsen the pain included overuse injuries, repetitive physical movements, pushing through activities regardless of pain, physical work hazards, fear of movement, non-compliance to an exercise programme and/or incorrectly performing the exercises prescribed. Patients who were fearful and avoided movement, required participants to provide more encouragement and support. Participants described varying levels of success in motivating patients to comply to these programmes. Many participants were then discouraged if they failed in encouraging the patient to move.

> "I feel like the most challenging thing is the patients being reluctant to move. They do not want to move. They would rather be in one position all the time because when they start moving, it is painful. You have to encourage them, so much of encouragement is needed. Sometimes you manage to encourage them to move, sometimes you don't win. And yeah, then you have to look for other ways to treat. Most of them with chronic pain, yoh, yoh, moving was a challenge". -P12 (male)

Depression, anxiety, a negative mind-set, lack of motivation, rumination about the pain and passivity during physio sessions (just going through the motions) were perceived as aggravating factors or factors which increased the pain experience. Previous or bad experiences with injury, pain or physiotherapy were perceived as aggravating factors.

> "In their mind they feel like they'll never get better so nothing helps the pain. I don't know if it is demotivation, but they are demotivated and they keep telling themselves that they are not ok and are in pain constantly …So obviously your mind is going to keep upregulating, nothing is downregulating the pain so obviously the pain is going to continue. I just really believe in mind over matter."-P11 (female)

Other psychological factors which were mentioned included the patients' emotions and attitudes towards their pain. Participants observed that patients who constantly thought about the pain and had negative connotations about their pain were unlikely to respond well to treatment. In addition, when participants had difficulty isolating the cause of pain, treating the patient effectively and did not see improvement, they often blamed the patient believing that it may have to do with the patient's lack of effort in the treatment programme.

> "I think sometimes they feel like it's their fault. A lot of it has to do with their attitudes towards the pain. I feel like psychologically how the patient is thinking about the pain has an influence. For instance, if the patient believes that the pain is going to kill them, it is easy for them to get agitated. If they tell themselves something like, 'I'm going to get better' then it is easy. I feel like it is more the brain rather than the pain intensity" -P6 (male)

Participants also reflected on how HCPs, such as physiotherapists, through their choice of words and tone of voice, can aggravate chronic pain. They reflected on how the manner in which they described or explained concepts and treatments to the patient, may have had an effect on the patients' response to the physiotherapist as well as their response to the management.

> "[As physiotherapists] we play a part in terms of the patient's progress. [This is reflected in] how we explained the pain to them and definitely using words that [the patients] don't understand. If we start off by saying [to a patient], 'so, you have a nerve impingement', [and the patient] has no medical knowledge, their mind goes to crazy places. If they Google [nerve impingement], they will be seeing these pictures with the disc coming out here and the nerve coming there and they show like red spikes. I think the words [physios] use can affect how we treat and go about the pain. If we use positive words it could make it better. If we use negative words, it could make it worse."- P5 (female)

Social and occupational tasks that were demanding on patients aggravated their pain. For example, patients who are the sole breadwinner of the family, were expected to continue working regardless of the pain. Other factors in the external environment, such as a lack of social support or the negative attitude of HCPs worsened the experience of living with chronic pain. Participants mentioned the lack of understanding of their pain by family members and being dismissed by HCPs as factors which hinder progress. A gap that was noted in the discussions was how to deal with these factors in practice.

3.4 Perceptions of students regarding patients with chronic pain

3.4.1 Attitudes

Participants with personal experiences with chronic pain could empathise with patients more easily. Those who developed a strong understanding of the consequences of chronic pain, for example,

decreased concentration and sitting upright in front of a laptop while suffering chronic neck pain, were able to empathise with their patients. These participants displayed a positive attitude towards the management of their patients and encouraged the adoption of a biopsychosocial approach in their assessment and management.

Participants observed that patients with chronic pain often felt frustrated and defeated which resulted in them approaching patients with caution and sympathy. It also resulted in them delving deeper to understand the patients and their experiences which then influenced the way patients were approached as they were more empathetic and compassionate towards them.

> "I myself don't suffer from chronic pain, but if I were to try and understand it… I can understand how people could lose hope in ever getting better or lose hope in physio itself if it's not improving their pain levels." P10 (female)

Participants who took the time to get to know people's life stories, personal challenges and stressors demonstrated the ability to sympathise with their patients. For example, one participant described how she developed her observation skills even when browsing through shopping malls. She observed and reflected on peoples' job tasks, the challenges they may face doing these tasks and the factors that influence their mood. In this way, she develops empathy (understanding and compassion) for ordinary people, which she then applies to patients she treats, especially those with chronic pain.

> "People who work in retail, we just think that they are having a bad day or they are very rude, but what if they are in so much pain? You can just see with their posture so I just want to say, 'go see a physio and you'll be way better'… So that's the first thing-if they could deal with the pain they would be way friendlier. People would be so happy to be around them, especially the people they live with."-P2 (female)

However, some participants could not fathom what patients with chronic pain were experiencing thus became sceptical of the patients' perceptions and experiences of pain. Their negative attitudes towards patients with chronic pain carried over to their management and were reinforced when they were unable to help the patient. Participants became frustrated when they did not see any improvement in the patient's condition, despite attempting to isolate the cause and trying various treatments to help the patient.

> "I thought, 'Oh no, I really want to try and help this person and why is he not getting better?' … then you hear that other things are going on behind the scenes. In terms of our physio management we were struggling and we were just trying to isolate the different issues that he may have had"-P13 (male)

Patients with chronic pain were often described as confusing and difficult both in their presentation and the management of the condition. In some instances, the nature of the patient's pain and their physical symptoms rendered the participants perplexed about the assessment and management approach; while in other instances it was the psychological aspect which resulted in them classifying these patients as difficult and puzzling.

> "Uhm, difficult [description of a patient with chronic pain]. Like a difficult, very confusing patient. During the subjective assessment, it's someone who is quite confusing and not simple. You can do a lot with them, but they are confusing."-P8 (female)

Some participants were cynical and doubted the patient's description of their chronic pain. They communicated that they were concerned about whether patients would follow through with a treatment regimen or not. Often, participants had a belief that patients would not follow through with the treatment regimen especially exercise programmes which resulted in negative attitudes towards patients. No improvement or minimal improvement in the patient's condition led some of them to a sense of defeat and concern while others concluded that the patient was non- compliant.

> "I had a lot of experiences like this where any [treatment administered], the [patient feels] like nothing helps. You asked the [patient] if there is anything that eases their pain and [they respond by saying] nothing. I wonder if the patient is telling me there's nothing that helps you or is it in [the patient's] mind? You get those patients who say they have to take painkillers three times a day. It's bad, is that a life that you can live? A lot of the time what I noticed is [patients] say, 'you gave me those exercises, but they don't work'…but [is the patient] doing the [exercises]? So that's what I felt was very different, very challenging"- P11 (female)

On the contrary, some participants believed it was their responsibility as the physiotherapist, to ensure that patients understood their condition, the treatment regimen and enjoyed the exercises/programme provided. They believed that this positive attitude towards the management of patients with chronic pain would improve compliance to the treatment regimen thus decrease the pain experienced by the patient.

> "I think we do play a role in making sure patients get quality treatment. I think if we give a lot [effort and time to the patient], then they will also feel they must do the exercises and they [patients] will have a responsibility to do those exercises, come to physio sessions diligently and also bring a positive attitude towards their own treatment and treatment goals. I think if we work together like that that, we could greatly impact how well they do."-P15 (female)

Participants often associated chronic pain with the elderly and with chronic conditions such as arthritis. Some participants assumed that all these patients, in specific, the elderly patients who were diagnosed with arthritis were emotional, experiencing many psychological problems and hold the

belief that nothing will be able to assist them in decreasing the pain. In addition, patients with chronic pain were often viewed in the light of having mental health challenges. This often resulted in preconceived ideas about the patient which influenced their treatment.

> "Most of my granny patients that I have seen have been very dramatic and emotional and everything is just wrong in their life. They are always frustrated. I'm not saying all [of the elderly patients] but a lot of them just like start crying and you know it's not a pretty picture"-P11(female)

Negative attitudes extended to the reasons that patients agreed to attend physiotherapy sessions where participants made assumptions that people only came because the doctor referred them to a physiotherapist. Participants described these patients as passive participants during the sessions. Some wondered if these patients were motivated to attend physiotherapy in order to obtain a letter written to their employers requesting light work or a day off from work, rather than improving their health. Some participants had negative attitudes towards patients who ruminated about their pain and could not envision a life beyond the pain that they experienced.

> "The way they [patients] speak about their pain, it is like the world is coming to an end. That's when you know. You ask them if they have been to physio before and what are you doing and they're like, yeah, I put a heat pack on but it doesn't help. Then you know, nothing helps, just nothing helps… Why does nothing help?... Then they will say things like, "at work they expect me to carry heavy boxes and I've been applying for lightweight work". Then you know they are here for a reason [to get out of doing work]."-P11 (female)

Majority of participants believed the patient's pain experiences but some found difficulty in understanding the patients' description of the intensity of the pain, especially if the patient was walking, talking and independent in all ADLs. There was also an assumption of the pain being in the patient's mind if they describe their pain to be above the maximum number of 10. These patients were described as requiring compassion and care. Some participants were overwhelmed when patients described high pain levels and rendered these emergency situations with the belief that something must be physically damaged.

> "I think the patient should be screaming at that point. They shouldn't even be calm and just be like 12 out of 10 pain, they should be screaming. Their facial expressions should show that they are in pain and it is like it an emergency. I don't think someone with a 12 out of 10 pain would just be so calm to walk into OPD. You know they would really need to go to casualty or something because they are really in pain and they need meds [medication for pain relief] just to reduce the pain before we can do anything. 12 out of 10 [pain level] is just so high."-P12 (male)

3.4.2 Feelings about managing patients with chronic pain

The management of patients with chronic pain was often accompanied by strong feelings including fear, anxiety, pity, concern as well as pride, motivation and excitement. Participants experienced fear about whether or not they were treating the patient appropriately or whether they would make the pain worse. Participants were fearful of harming the patient by doing an assessment or treatment technique which would injure the patient and increase the pain. They described feeling overwhelmed by patients with chronic pain as they were uncertain about what needed to be done and how the patient should be approached. This then resulted in feelings of guilt as they wondered if they were qualified to treat these patients effectively. Feelings of guilt crippled them as they were concerned over whether the patient would have received better treatment from a qualified/senior physiotherapist.

> "I felt like… I felt kind of guilty, especially [because as] students treating these patients, we are not quite sure what is going on. I felt like it is unfair to be honest"- P8 (female)

These feelings seemed to stem from a lack of confidence in their abilities and minimal independent experience with patients with chronic pain. Many participants noted that their lack of experience was because of their clinical training, i.e clinical placement, supervision, clinical conditions seen at the clinical placement, exposure to these conditions and opportunity to treat these patients independently. This in turn was influenced by some external factors such as the COVID-19 pandemic resulting in less patients attending sessions at the out-patient physiotherapy department.

> "I think with NMS [Neuro-musculoskeletal conditions], the whole year I saw like no shoulders [patients with shoulder pathology], maybe one. I mean, there's just like a lack of exposure to things [various clinical conditions]. In my ortho [orthopaedics] block, I saw no hip replacements, just 2 knee replacements. I know it's not anyone's fault and it's COVID, but there is definitely a lack of exposure to certain conditions. Some students will see lots of some things [clinical conditions] and then others will see lots of other things [clinical conditions] … and they won't see the same thing"- P8 (female)

Participants described feelings of anxiety over treating patients with chronic pain to the extent that it influenced where they applied to do their community service post-graduation. Fear of being a physiotherapist in a clinic with a high out-patient workload, minimal supervision and few senior physiotherapists resulted in students not applying to clinical placements with these conditions such as community clinics. Some participants did not have pleasant experiences during the clinical block where they treated patients with chronic pain which resulted in negative feelings towards treating patients with chronic pain.

> "I chose no clinic or anything like that because number one, I wouldn't know what I was doing and I don't normally enjoy it… but I think I don't really enjoy it because thanks to

> COVID [we did not have much experience] and because I don't have much experience, I wasn't able to enjoy it"- P8 (female)

Participants described feelings of pity and concern for patients with chronic pain and they wondered if they could help these patients in any way. They felt defeated when they were unable to optimally help patients with chronic pain. Feelings of confusion, uncertainty and frustration were associated with the management of patients with chronic pain especially when the cause was unknown and the patient did not appear to be improving. Participants were perplexed about what to do when patients were treated by numerous qualified physiotherapists over many years and had also visited many doctors to no avail. They were uncertain about what they could do differently to assist the patient.

> "I find it hard to think about chronic pain because I am not sure I can get a patient to that point where they do not feel that pain any longer. Of course the best thing for a patient is to be discharged from physio but with someone with chronic pain and when you hear that they have being coming to physio for two years or something, it's hard and kind of dampens how I feel."-P7 (female)

In keeping with this, participants noted feeling despondent and frustrated over an inability to find the cause of the pain, an explanation of what was resulting in this pain and being unable to decrease their pain. They described always feeling inadequate and wondering if they would make a difference to the patient's pain experience.

> "Sometimes you just feel defeated because you think 'am I even going to help this person at all?' I think that was challenging. I won't lie especially with that lower back pain. It just felt like I am not even helping."-P11 (female)

Participants felt a sense of pride and happiness when they were able to help patients with chronic pain. They also felt a sense of motivation and excitement to intervene and assist the patient when they knew what the problem was, saw improvements and had an idea of what needed to be done. They noted that this was the rewarding aspect of becoming a physiotherapist and provided them with the drive to continue in their pursuit of being a physiotherapist.

> "I felt like I wanted to help. I was actually very motivated. I was excited to intervene. I was excited to tell him about what I believe in, what I learnt."-P5 (female)

In addition, patients who were compliant with the treatment regimen motivated them and made them feel successful in their management of the patient. They were sceptical of whether patients complied to the treatment programme or not but when it was evident that patients did, they felt a sense of pride. Furthermore, it gave them hope that they would be able to help these patients.

> "So this lady… I've never had a patient like that. She was so diligent and with most patients I feel like they do not do their exercises but she was so diligent. On her phone she had an alarm, she showed me that she had an alarm for her to do her exercises. I was so impressed, like what a great patient to end with"-P15 (female)

3.5 Experiences with patients with chronic pain

3.5.1 Clinical conditions and clinical placement

The most common clinical conditions treated by participants included chronic lower back pain, neck pain and arthritis. Majority of the patients treated were elderly. Some patients worked in occupations that were physical in nature such as lifting meat in a butchery or making beds and transferring patients in the instance of a hospital nurse. Participants complained about the limited variety of clinical conditions that they were exposed to and their opportunity to treat these patients independently. Instead, many were assigned to treat clinical conditions which were meant for third year physiotherapy students, such as peripheral joints, instead of more complex conditions that are normally assigned to fourth year students, such as spinal injuries. This was consequence of the COVID-19 pandemic where fewer patients were coming into the hospital for their physiotherapy sessions.

> "Lower back pain. It was quite prevalent in OPD. We also saw people suffering from chronic headaches or they had an accident like two years ago and they are still not 100%. Whiplash injuries. Knee injuries- I saw a couple of them because there weren't a lot of 4th year patients. We also saw some third year patients [patients who presented with clinical conditions that are seen at a third year physiotherapy student level] as a result"-P10 (female)

The clinical placement also influenced the exposure to a variety of clinical conditions, influencing their experiences of assessment and management of patients. Different placements also determined the clinical supervision participants received, the support system that they had and the ability to treat patients independently.

> "There were four of us placed there so I would see only one patient by myself a day. I think it is also because the block is split in two- we had NMS/outpatients from 08:00-10:00 so then sometimes you have one patient who comes in at like 08:30 till 09:30 so then you only see one patient. If you're lucky, you see the one patient by yourself, but generally it was altogether."-P8 (female)

Different clinical placements had different protocols in place, thus participants at one placement were not allowed to treat complicated chronic pain patients as the senior physiotherapists managed these patients. At some clinical placements, the qualified physiotherapists were inundated with a busy workload thus were unable to provide adequate supervision and guidance to the students at that

placement. This resulted in some participants having a poor support system from their on-site supervisors. To cope with the clinical block, some participants established a support system made up of friends and colleagues.

> "I was there for NMS/ortho and I never got any help at all. You had to basically beg for help, no one would assist you. If you ask a question it's almost like you're asking something rude, almost like how dare you [the student] ask that question? You [the student] supposed to know this. I know it's a huge hospital and everyone has their own patient load but they were really nasty… the supervisors… so I never enjoyed it at all."-P11 (female)

3.5.2 Assessment of patients with chronic pain

Participants experienced difficulties in choosing the correct assessment techniques for the patient. Despite a wide array of assessment techniques to choose from, participants were unsure which assessment techniques would be most effective in the time allocated to them per patient and which techniques would not increase the patient's pain. This affected their ability to identify the cause of the pain which in turn led to difficulties in choosing appropriate treatment techniques. Some participants described difficulty in knowing what questions to ask to determine a comprehensive patient history. They relied on clinical supervisors who guided them towards choosing the correct assessment techniques or questions to be asked in the interview.

> "The [subjective] assessment was very difficult. I did not know what to ask exactly [patient history] and the physical tests were hard. You do the tests and then like most of the tests are positive and you just do not know what the diagnosis is. To diagnose the patient was a major challenge"- P6 (male)

Participants were open about their difficulty in conducting a comprehensive subjective assessment that moved beyond just a physical cause with a biomedical focus. One participant explained that she would "really have to dig into the subjective exam" (P5-female) and appeared apprehensive about this. She added that "sometimes patients are reluctant to tell you much about their social history" (P5-female), and this required time, or multiple sessions to uncover.

The assessment of patients with chronic pain included biomedical questions relating to the nature and pattern of the pain as well as biomedical contributing factors to the pain. Participants may have asked questions about work and home, but it related to the physical environment such as posture, ergonomics and activities completed in the day. Work issues were always described biomedically in terms of physical strain on the body without alluding to the psychosocial factors present in the work environment. It was observed that participants asked questions regarding work, compensation and family life but found it more challenging to ask questions related to attitudes, beliefs and emotions.

> "In the subjective, you have to focus on what happened, what actually happened to them [the patient], why are they here. I also think getting their background, their ergonomics, how they do things [is important]. Having this knowledge, for instance the person tells you they do this [some activity or movement], maybe at work they are sitting like this [neck leaning forward and straining oneself] in front of the computer the whole day. How are they working in front of the computer? Those kind of things will give you an idea of OK, maybe this is also a contributing factor. This is what contributed, but what's important is what caused them to come? What caused them to come to physio?"-P12 (male)

Participants described that the subjective assessment should include an assessment of yellow flags which focuses on psychosocial questions related to the attitudes, beliefs, emotions of the patient, their understanding of their diagnosis, financial compensation challenges as well as family and work related issues. However, some participants relayed that they either did not ask questions related to psychosocial factors directly or if they did, they asked it as a formality based on their assessment forms.

The assessment form used for patients with chronic pain included information related to yellow flags but participants reported difficulty in directly asking these questions. Instead, they described it as "picking up" on these issues during interaction with the patients. Conscious effort to ascertain psychosocial factors which contribute to the pain experience was not done. Participants focused on an understanding of physical factors which contributed to the pain. When asked about the type of questions they ask their patients regarding psychosocial factors, it was described theoretically in terms of what they would do in future.

> "I would ask," how did the event change your life?" or "how does your injury make you feel?" or "how does the pain make you feel?" Stuff like that I guess… I have not done it. I'm probably going to ask more questions about how they feel and what makes the pain better. I will also ask what aggravates it and go into more depth in terms of the pain."-P14 (female)

In keeping with this, yellow flags were also used to describe difficult/challenging/confusing patients who participants were unsure how to manage optimally. Patients who displayed strong emotions were experienced as overwhelming for students, and they asked their superiors for assistance. Participants described feeling ill-equipped to deal with psychosocial factors, especially those related to the emotions of the patient.

> "When I did and if I thought of something, I would immediately go to my supervisor, give them like a quick history and sort of give them an idea of what I think is an issue and maybe I think I should refer them to psychology or the social worker. I never ever spoke to the patient or brought up psychosocial issues with the patient. Sometimes they just brought it up in the

conversation but I would never even try to elicit anything. Sometimes they would say this is x,y,z happening at home. Yeah, I wouldn't ask."-P13 (male)

Despite describing the importance of yellow flags and looking at the patient holistically, when describing a patient encounter and what was done, most of the focus was placed on an understanding of the biomedical aspect with the psychosocial included as part of a routine assessment on an assessment form as mentioned above. Participants identified that it was easier to conduct a comprehensive assessment that included biopsychosocial elements when treating patients in the out-patient setting opposed to treating patients who were hospitalised, because there was more time. However, in the public health block, when there was limited time and many patients to assess, the assessment was limited and narrowed down to a physical exam, where yellow flag issues emerged during the treatment phase.

"I think I went through them [psychosocial factors] a lot more in my OPD block because I think at that stage we followed that assessment form [neuromusculoskeletal assessment form] to the t [comprehensively] and we had a lot of time… but now in public health, because we had so many patients, you don't really have time to go into everything, and so I would often find that I would almost find out those yellow flags while I was busy treating them already. I think if I had a bit more time I would have done them."-P1 (female)

Participants failed to ask direct questions related to the patients' challenges in terms of function and quality of life. Major focus was placed on understanding the nature, severity, intensity and 24-hour pattern of the pain instead. A few participants mentioned that focus on psychosocial factors, such as feelings, was required but were unsure of how to translate these findings into their treatment programmes. However, this was described theoretically opposed to what was done practically with a patient. When asked hypothetically about the assessment of patients with chronic pain, participants mentioned psychosocial factors and a holistic approach to management which was not reflected when describing a patient encounter. This further indicated a gap between theory and practice.

"To be honest, this is the first time I've actually thought about it this way [in terms of psychosocial factors]. When I've seen patients with chronic pain, I don't even ever jump to these ideas. I always want to see what is going on physically first."-P10 (female)

3.5.3 Management of patients with chronic pain

The management of patients with chronic pain included heat therapy, soft tissue release which refers to the release of muscle spasm, joint mobilisations which refers to movements of the joints in a manner which cannot be done by the patient themselves, exercise therapy and education which centred around ergonomics and biomechanics of the body. Participants experienced difficulty when choosing the correct treatment techniques which they described as increasingly complicated if the

prognosis was unclear. They also described that treatment appeared to provide temporary relief where the patient returned the following week with minimal to no change noted. The quote below describes treatment techniques used with patients as described during a patient encounter.

> "I did soft tissue release, gave her a heat pack and then gave her exercises, like cat and cow [type of exercise] and then the other one, she's on all fours and then she had to lift her one arm up and then do each limb 10 times. In the 4th session, I did the same thing- Soft tissue release, heat pack but then this time her cause [cause of her pain] was not [directly as a result of] her back. I felt that it was more a strength thing and her glutes were very weak so we did exercises for glutes strengthening."-P15 (female)

Most participants understood the domino effect that pain had on a person's life in terms of employment, family life, mood, relationship with others and general quality of life in theory. They also noticed the effect chronic pain had on their ability to work which subsequently resulted in a change in their emotions. Participants found these aspects difficult to mediate. Psychosocial factors which were more challenging to deal with were the attitudes and beliefs of the patients regarding the pain that they experienced. Participants described that they either did not know how to identify them and if they did (which often was coincidental), they were unsure how to address it.

> "I don't know what I would do if a patient had an attitude or belief system like saying the pain is there because they were cursed or something. Honestly, I would leave it at that and just write in the file that patient believes pain is from witchcraft or whatever, but my treatment wouldn't change. How I go about the treatment and management of the patient in general would not change."-P15 (female)

Many participants described difficulty in deciding on the prognosis of the patient in terms of what to expect as the end goal, when to stop physiotherapy treatment and how to set patient-therapist expectations. Furthermore, finding a balance between empowering patients and increasing dependence on physiotherapy proved to be a gruelling task.

> "Just finding out what is going on and seeing the end for these patients [was difficult]. At what point would you [the patient] not need to come in and see a physio anymore? …For me, that is the major challenge… trying to figure out a treatment plan. By plan, I mean like week one, week two, or like how many treatment sessions [do they have to attend] before I can say, 'you can go'"-P15 (female)

3.5.3.1 Patient Education

It was widely understood that education on the patient's condition, the assessment and treatment techniques done including lifestyle modification as well as any possible contributing factors was an important part of the management approach. Education on the patient's condition included general

biomedical education on the possible diagnosis and general education on chronic pain in terms of its definition. Education on the treatment techniques included explaining the reason behind each treatment, the importance of exercise therapy, pain relief techniques to be used and the importance of compliance to a treatment regimen. Education on lifestyle modification mainly focused on ergonomics/occupational health, weight-loss and increasing physical activity. Most education that was provided focused on being curative instead of preventative in nature. The education had a greater focus on the biomedical predisposing and contributing factors to pain instead of a biopsychosocial approach.

> "The education had more to do with posture, so I explained to her how she arches her back and puts pressure on L4/L5, that is where her pain is and it is almost causing like compression on those bones. I told her that if she stands properly and trains those muscles to lift her and keep her erect instead of arching her back, the pain would be less. We then did some pelvic tilting so she could know how it feels to just correct herself. She corrected herself in the mirror and then I gave her glutes exercises but more simple ones that she can do."-P15 (female)

It was observed that participants who educated their patients more broadly, allowed the patient to talk freely and explained what was been done had better outcomes with patients pleased with physiotherapy services provided. Participants observed that patients were more receptive to them if they showed a genuine interest in them and explained the process of assessment, treatment and the way forward comprehensively.

> "I definitely think that the education made a difference, because I can just imagine that if I went there and just started moving her [the patient's] knees, she was going to say that her knees are painful or say, "you are coming here, you just want to move my knees". She is in pain at the same time so I don't think she's going to be receptive to understand, 'OK, actually this is helping, it's doing more good than harm'. I think I made her understand that. I told her that this movement and all these treatments that we're doing, is actually going to help. It's not that we just want them to move and don't want them to lie in the bed the whole time. She was more receptive and I feel like if we can paint a picture of what's happening then it makes it easier for the patient to understand."-P12 (male)

The education of pain provided to patients was mainly biomedical in nature in terms of physical causes of pain and physical contributing factors opposed to a biopsychosocial approach. Some participants were able to link increased emotional factors or stress as worsening the pain but were unsure of how to explain this to the patient. As such, education focused on a biomedical description of the causes of pain.

> "I gave her a lot of education with regards to arthritis. I realised that, even though she had it for a really long time, she didn't really know what it was. I explained to her about the bone to bone, the cartilage degeneration and the different stages."-P2 (female)

In addition, pain and chronic pain itself was rarely explained. Participants noted that this was vaguely alluded to by some clinical supervisors which was when they made more of an effort to attempt explaining this. Majority of the participants had never attempted to explain chronic pain to their patients but when they did, it was described as being unique to each individual and was often described in terms of its formal definition. When asked how they would explain chronic pain to a patient, it was described theoretically as they had not attempted this practically:

> "I think words that I would use is that "you may have flare-ups", "rises and dips and plateaus". Chronic pain management is sort of unique from a person to person case. I would also talk to them about their mental state, how they manage things like stress? Things like anxiety are also the way that the brain can impact on your actual physical body… that's the best I can think of."-P13 (male)

A few participants mentioned elements of PNE, as described in chapter one, but not to its full extent. It was mentioned when pain was influenced by other factors such as stress or when students told their patients about taking control over their own bodies, being as active and functional as possible and not allowing pain to take over their lives. However, they did not use the term PNE nor describe its importance in the management approach. Participants observed that the effectiveness of their management of chronic pain was often influenced by the way the treatment was described. For example, if the treatment in question was described as having remarkable outcomes on pain management, it was more likely to be beneficial to that patient.

> "Pain is very, very subjective. It's amazing to see the placebo effect that a lot of stuff can have on the pain. Telling a patient that at a TENS machine is absolutely magic, every patient then gets better."-P3 (male)

As mentioned earlier, education provided to patients was focused on explaining the importance of weight-loss, correcting posture, adapting movements at work and increasing general physical activity. A few participants attempted to explain the importance of general movement and independence in functional activities to their patients. However, they did not explain the importance of functionality nor how to grade their exercises or physical activity so that it would aid in pain relief opposed to "pushing through the pain".

> "Educating her about the pain, there is pain but you can be functional with the pain. You know that function is the most important thing but because there's pain here you can't do

anything. I know there is pain but we can try to minimise it as much as possible and then you can still be functional."-P12 (male)

During the course of the interview, participants often described how they would improve their management of patients with chronic pain or what they would do differently in future. This showed that through experience, participants learnt what would be useful to optimally treat their patients with chronic pain. They often described the importance of educating the patient thoroughly on chronic pain. They noted that even though they did not know how to do it at present, they would learn how to. They also described the importance of comprehensively explaining lifestyle modification and independence in functional activities, thus increasing compliance to the treatment regimen.

> "In future, I think I will definitely have to explain to them, before anything else, what is chronic pain. They need to understand what is chronic pain, give them basic knowledge about the anatomy of the body, what's happening in their body, and how the body works… also not lying to them and telling them it's going to go away… but we can try to manage it and reduce it as much as possible. There are ways to manage it, to reduce the pain and you can live with chronic pain."-P12 (male)

A few participants emphasised the importance of the treatment techniques, especially exercises provided, being enjoyable for the patient. In addition, the need to include exercises into patients' daily lives and hobbies was highlighted as important for compliance. A few participants mentioned how distraction techniques and an emphasis on improving mood influences pain and tried to include this in their treatment sessions. Thus education on the benefits of certain treatment techniques was noted to be important to increase compliance.

> "I brought in the type of treatment that we would focus on. I would explain that you need to get serotonin and all the good hormones so I would explain how bringing joy is a good aspect to treatment. I would say listen to music. I would ask what their hobbies are and they would say going to church… then we would speak about support groups as well."-P14 (female)

3.5.3.2 Skills

Participants mentioned communication skills and physical skills as the most important skills when treating patients with chronic pain. Communication skills were described in terms of actively listening to the patient, responding appropriately to the patient, mutual respect and providing patient education in a simple manner. Physical skills included handling and observation, hands on assessment skills and hands on treatment techniques. Participants noted that all physical skills worked hand in hand with communication skills as physical techniques required constant communication with patients to ensure that they are coping well with the treatment provided and to prevent harm. Hands on techniques such

as Orthopaedic Manipulative Therapy (OMT), heat therapy and soft tissue release were noted as important hands on skills for patients with chronic pain.

> "Also, just in my patient handling I'm a quiet person usually so now here I was being more vocal and having a constant conversation with the patient, constantly checking in with them and making sure that they are still fine and all of that. It was also learning to be more gentle and doing more general movements and myofascial release."-P13 (male)

The importance of communication skills was emphasised when speaking about ways in which to increase patients' compliance to treatment. Participants described building rapport with a patient and allowing them time to understand what was being said, as important elements towards recovery and compliance. Educating patients on their body, condition and the assessment and treatment techniques proposed had a positive influence on recovery.

> "Getting the people to buy in on the treatment [was difficult]. A lot of people are very sceptical in the first treatment. My favourite line that I use is "what can make you 100% better, give you more energy, fix this and that?" They are expecting you to say a pill and then you say exercise and you can just see the shock on their face and they don't exactly buy into it. But the minute patients actually come and you ask them to show you the exercise programme and they perform a proper full exercise programme, they start feeling better. Once they buy into the treatment, buy into what you are selling them, that's generally when you really see a functional recovery in these patients."-P3 (male)

Communication skills also included the language and terminology used with patients in terms of education and the general choice of words throughout the sessions. Participants observed that patients can respond either positively or negatively depending on the manner in which they were spoken to. A few participants noticed that the words used and the manner in which things were said influenced how receptive patients were to them, thus influenced their recovery.

> "Your choice of words, I guess you know, like the way you talk to them, the things you say. If you're going to say you're in pain and this and that, you are going to make them feel more pain. You have to be careful with them. Sometimes you also think what do other physios say to the patients because then they [the patients] come and they [say what the other physio told them], I am just thinking, 'but why did why did she tell you that?' I think the words you use, the communication, the things you tell them really is important."-P11(female)

Participants mentioned that medical jargon must be avoided when explaining chronic pain to patients but it was used with colleagues and superiors. In keeping with the words and terminology used, medical jargon was noted as increasing confusion and fear among patients thus should be avoided. Some participants avoided the use of words like "nerve impingement" and "dislocation" so as to

minimise fear among patients. However, others found that they had to use these words as they were unsure of how to explain it in any other way. This resulted in participants using layman's terms which were biomedical in nature when educating patients, with some using terms like "bone one bone" to explain chronic pain resulting from arthritis.

> "I think it would differ in terms of specifics like describing the type of pain. So now with learning that, it could be a nerve, it could be bone on bone. I think it would be defining and describing the type of pain, also in the sense of it going away."-P2 (female)

> "Even though I struggle to describe chronic pain to them, I can describe the pathology. So if it's saying like "oh, hey, you can't see the injury on the surface but you can try to imagine that there's two things, and I know it's not exactly correct, but rubbing together. It's the easiest way to explain it"-P3 (male)

It was mentioned that understanding the patient, their clinical conditions and circumstances assists with the physical assessment and treatment techniques chosen for the patient. Participants described effective assessment skills as important towards understanding causes, diagnosis, prognosis and selecting correct treatment techniques. It was noted that if a comprehensive subjective assessment was not conducted, it became increasingly difficult to treat patients optimally.

> "I think in future it would be to definitely work on having a better history taking so I can have a fuller picture of the patient with how are they presenting to me now, how have they been presenting, how have they managed it? So I really know what has been helping and what to recommend. I also think getting an idea of how life is for them socially and hopefully now that I'll be working with them for a longer time, I will have more time to build up stronger relationships. I can also just see how they've been presenting and progressing over time and hopefully they will be a little bit more open with me so I can see how things are going. Maybe it will also help me personally to link different factors together, advise them and give them better treatment." –P13 (male)

The importance of good handling skills, knowing when something is too intense and will cause harm to the patient and choosing hands-on techniques which will reduce pain within a treatment session was highlighted. Participants observed that if the patient feels better after the first session, it builds trust in the physiotherapist thus improving compliance and recovery overall.

3.5.4 Private vs public sector

The participants were physiotherapy students and most of their clinical training occurred within the public sector. However, participants did have some experience with the private sector during their clinical block in the sports physiotherapy field. During this block, they assessed and treated patients at various private physiotherapy practices. Participants mentioned that patients treated within a private

practice appeared to be more aware and in tune with their bodies, already understood their condition, willingly attended physiotherapy of their own accord and oftentimes described the exact physiotherapy treatment that they wanted. However, clear comparisons between the private and public sector cannot be made in this research report as only two participants mentioned this and described their experiences within the two sectors.

> "This patient [in the private sector], compared to other patients [in the public sector], was quite aware of her condition and she was also aware of different things that she should be doing like in terms of her ergonomics, how she sits, how she's working at home as well as the fact that she isn't very mobile in general. We always say that mobility is medicine, movement is medicine, she was quite aware of this and of her medical condition where as other patients just sort of do not know. I think she is also a private patient, whereas in public I feel like they are just going through the motions. They just come to physio because they were told that they should be here and they say yes, I'm still doing my exercises, but they maybe don't know how to do them."-P13 (male)

3.6 Factors influencing the treatment of patients with chronic pain

Various factors within participants' personal, academic and professional lives were described as factors which had an influence on how they approached and managed patients with chronic pain.

3.6.1 Physiotherapy Training

Participants described the basics of pain and chronic pain being taught in the first two years while the last two years focused more on assessment and management of chronic pain. Majority of the students mentioned learning about the "pain gate theory" in their first year of study.

> "I think the lecturers tried to explain it to us a little bit better. We had a lecture about pain in our second year and that was more pain gate theory and then a Masters' students also came in and explained to us that pain is not was always from a physical thing but that was pretty much it in terms of learning about pain."-P15 (female)

Due to the COVID-19 pandemic, lectures were moved to an online format which influenced the manner in which pain was taught to and understood by the students. The online format meant that they did not have face-to-face contact with their lecturers and reported difficulty in learning new concepts and asking questions easily. Students reported that they felt ill-prepared in certain assessment and treatment techniques due to this teaching method.

> "If they show emotion like crying, I could see with that patient but otherwise I cannot [pick up on psychosocial factors]. I wish Wits taught us more about how to speak to patients

psychologically and how to talk to them about their feelings and stuff because I kind of had to learn that on my own. It's difficult to see if they are depressed or anxious."-P14 (female)

The last two years of physiotherapy training include clinical training where students can put their theoretical knowledge into practice. Clinical training occurred at various hospitals, clinics and in some cases private practices; where they could practically use the skills that they had learnt. During their clinical training, the support that they received from their superiors and peers had an impact on their ability to treat patients with chronic pain. Third year physiotherapy students had some experience with chronic pain especially with patients who had arthritis of the knee while fourth year physiotherapy students saw a wider range of patients with chronic pain and various clinical conditions. Third year physiotherapy students had less theoretical knowledge and clinical experience than fourth year physiotherapy students, thus found the management of these patients more challenging.

"Related to chronic pain, I didn't know anything about it before I went into my clinical block. I still don't know anything about chronic pain and I feel like a lot of the education that we've received is acute pain, acute pain, acute pain, and then you get into clinicals and get these harder patients… chronic pain patients and I don't know what to do with them. You know how to treat them because you've got a little summary in your notes and then you'd be doing this exercise, but you don't know how to handle them. You don't know much about where their chronic pain is coming from, no sense of what's happening, and yeah… that that was really difficult. Having to find it out myself."-P3 (male)

Clinical training was majorly influenced by the clinical placement, the supervisors and the support received during the block as discussed previously. Participants noted gaps in their clinical training which they felt could be improved if supervision was improved on and if they had more experience with complicated chronic pain patients. The opinions and approach of clinical supervisors influenced students' attitudes which in turn influenced their management approach towards patients with chronic pain.

"I remember this one lady and anything that we did was just like worse, worse, worse… She was actually a patient of one of the qualifieds [qualified physiotherapist at the hospital] and kept saying, no it is not helping and I have been doing these exercises and it is not helping, nothing helps. Nothing helped. Afterward, when we were complaining to the supervisor, telling her that we did our best but she [the patient] said we made everything worse. The supervisor said this is her [the patient's] tendency and that nothing will help, because in her mind nothing will help…"-P11 (female)

In many instances participants noted that their clinical supervisors were available to guide them and advise them when they unsure about the assessment and treatment of patients. Participants noted that

in times of doubt and when feeling overwhelmed, they went to their clinical supervisors who guided them, provided them with direction and ideas regarding both assessment and treatment techniques.

> "I just remember asking her [the patient] questions and she would be very quiet and very submissive. I would move on to the objective and she wouldn't really like being touched and then with the treatments we tried to massage her back because she explained that she had pain in her back and then she just started crying. I was quite taken off guard. I was taken by surprise because I've never experienced that before and then our supervisor came in and she explained it. She actually spoke to the patient. She got her to speak more about the experience and then referred her to a psychologist because obviously she had PTSD [Post-traumatic Stress Disorder] from the incident and she still hadn't got past that. No matter what her pain actually was, she was still very shaken up [about it]."-P14 (female)

Clinical supervisors were available to assist students with background information on patients when the patients were known to them. This assisted the students in making decisions regarding assessment and treatment techniques to be used as well as how to approach the patients. However, this also resulted in preconceived ideas about the patients, leading students to make assumptions about patients before meeting them.

> "Most of the patients that we're seeing at the hospital, have been my supervisor's patients for quite a long time so few times they would tell us, "I know this one", "this works for them", "this doesn't work or they like to do this", "I gave them exercise". So they will help us get up to speed with those patients and also if it's a new patient, they will tell you [what the condition is likely to be] as the patient is feeling this kind of symptom."-P4 (male)

The fire at CMJAH which resulted in the hospital being closed for a substantial period also influenced their exposure to managing patients with chronic pain. The closure of the hospital meant that the students who were initially placed at CMJAH were added to other clinical placements/settings resulting in more students per placement. The more students at one placement, the less likely they were able to treat patients with chronic pain independently. The decreased clinical experience negatively influenced their confidence in their ability to effectively treat patients with chronic pain. Treating patients in groups limited the opportunity to independently think through the patient's case and make decisions on their own.

> "A lot of the time it was done in groups, so I never really felt like I got that confidence to do it properly on my own."-P13 (male)

At some placements, clinical supervisors provided tutorials which assisted in students' understanding of chronic pain and its management. The supervision and guidance received from onsite physiotherapists provided students with confidence to treat patients with chronic pain. They reported

learning more as they could put theory into practice with the guidance of a qualified physiotherapist. Majority of the participants noted that a tutorial by their main supervisor in their sports block formed the core of their understanding of chronic pain. This was the first lecture mentioned by them when asked about chronic pain training. They mentioned that pain education was often alluded to but it was not in their notes nor were they taught how to explain pain to patients. Some students noted that the basics of PNE was provided during the tutorial on chronic pain with their lecturer/supervisor in the sports block but it was not enough for them to be able to put into practice.

> "To be honest, I only started understanding chronic pain after my NMS block. It was because of the sports block. When I went to sports, our supervisor explained all the processes and how the brain also works with pain management. I didn't have that in my tool box to try and deal with it. I'm also starting to realise that the whole concept of pain, chronic pain is very multifaceted."-P13 (male)

However, some participants had negative experiences from their clinical training in terms of support and supervision provided. This was related to a poor support system or no support at all from onsite physiotherapists. Some participants were afraid to ask their supervisors for assistance resulting in increased stress over the management of their patients. In some instances, participants reported that the supervisor at the clinical placement was unhelpful resulting in them being reluctant to ask for assistance. However, the supervisor appointed from the university to assist students once a week was helpful and this was when they felt at ease to ask questions.

> "The lower back and spinal patients were different to our ankles [patients with ankle injuries] and stuff that we were seeing last year and we never had like that supervision. We would wait for the one day in the week that our Wits supervisor would come to supervise us. That was when we knew, ok, we can ask questions without freaking out that someone is going to shout at me for asking that question" -P11 (female)

In addition, participants noted that at some placements, complicated chronic pain patients were only treated by the senior physiotherapists. Participants agreed that they were not prepared to treat these patients but were disappointed that they were not allowed an opportunity to learn from their supervisors as they treated these patients.

> "I think it was very much, 'this is a chronic pain patient so we will take them'. I don't think we were empowered in any way to help these patients. We sat in on a session and I think we could have asked if we wanted to really see these patients and learn. I don't think anyone really went out of their way to explain this is what it [chronic pain] is. I also think that there are so many supervisors themselves who don't really understand chronic pain or who don't like dealing with chronic pain. They're not really going to explain it to you because they

themselves are like, ‘oh no, not this patient again’. I don't think I learnt anything in OPD about chronic pain until that tutorial in the sports block.”-P7 (female)

Participants expressed that the curriculum should include a greater focus on communication skills, people skills, identification of psychosocial factors and an understanding of how to address psychosocial factors. In addition, participants felt that the curriculum did not adequately prepare them to manage patients with chronic pain optimally. However, many students noted that due to the complex nature of chronic pain, it is a continuous learning process thus experience, research and attending postgraduate courses would improve their ability to treat patients with chronic pain optimally.

> “I think that there really needs to be a section on pain and all sorts of pain especially chronic pain. I don't think we can be sent into a setting in 4th year OPD where we are dealing with so many backs and so much of chronic pain back and not have anything to refer to. I think they definitely need to add pain in a proper section, even if it's in second or third year but definitely before you even get to clinicals [clinical blocks where patients are treated by the students]. It needs to be added as a section.”-P7 (female)

3.6.2 Personal Factors

Participants who had personal experience with chronic pain noticed that this influenced their approach towards patients with chronic pain. Those who personally experienced chronic pain mentioned that it influenced their treatment approach in terms of exercise prescription, choice of treatment strategies, handling techniques, patient education and looking at the case holistically. They described prescribing exercises which were simple and easy to follow as they had experience with tedious exercises and knew that it was difficult to follow. In terms of treatment techniques and handling skills, through personal experience, they understood the importance of being gentle and explaining exactly what was being done. Lastly, they understood that various factors which influence the pain should be considered. The importance of educating the patient on the assessment and treatment techniques to be used as well as the patient’s condition was emphasised by those who had experience as a patient with pain.

> “I had a jaw operation and I was in so much of pain, like all the time. The pain meds did not even help. I think it helped me to empathise a lot with patients. Before I only had experience with like scratches and scrapes to the head. I did not know what it was like to be in constant pain throughout the day and actually carry on with your life. I noticed with that, my emotions changed, people would try to talk to me and I was just so moody. It made me become more understanding of pain and that pain is subjective. It also made me learn that if someone is upset or does not want to speak, it may be the way that they are reacting to the pain.

> Hopefully over time we then see that this isn't who they are as a person, rather the pain is affecting them negatively."-P15 (female)

Many students noted that they did not think of their personal experiences as influencing factors towards their management of patients until they were directly asked about it and thought more deeply about it. It was easier for students who had personal experience with pain to understand the consistent nature of pain and how psychosocial factors influence pain.

> "What I have noticed is that my pain is consistently there. Even though I might not be doing anything different, I can be sitting in my chair in my room and I'm good but if I'm sitting in a chair at the exam room, pretty much the same chair, the same level of support but when I get a bit stressed out, my pain in my back kind of flares up a bit more. I didn't read into those situations in the subjective assessment and I certainly feel like probably most people missed it. I would pay more attention in these situations. If the pain flares up in the morning, it's not just the time but what are they doing in the morning? It's not necessarily physical, it could just be stress-related."-P3 (male)

In keeping with this, any personal injury also influenced their management of patients, the goals that they set and the exercises that they prescribed. Participants who had injuries such as sports injuries incurred during sporting events understood the rehabilitation process and the goals that they would want to achieve. This influenced the manner in which patients were approached and allowed them to be more compassionate and work through a patient-centred approach.

> "In 2018, when I was playing rugby, I tore my ACL. I then had to go through the whole rehab process. I kind of know how patients feel when I give them exercises and tell them to keep up with their exercises because I know it is very difficult, because I experienced that. So now every time I give patients rehab exercises, I tell them to just find time in the day… build it into your activities of daily living and build it into your routine. So just try to find time for it. If it is an ACL injury, I will tell them about my experience and motivate them to keep going because it does get better."-P14 (female)

3.7 Judgement of the effectiveness of treatment of patients with chronic pain

3.7.1 Biomedical vs. biopsychosocial

When describing patient encounters and the response of the patient to the treatment provided, participants noted the effectiveness of their treatment either in terms of pain, function or quality of life. Majority of the participants described the patient's improvement or the lack of it in terms of a change in pain intensity. Few mentioned it in terms of a change in function and to a much lesser extent it was described by patients' improvement in terms of quality of life. One participant described

how he encouraged a patient to look towards an improvement in function and independence in daily activities opposed to merely aiming for a complete reduction in pain:

> "I know there is pain but we can try to minimise it as much as possible and then you can still be functional. At the end we want to see you being functional, being able to do what you were doing before your ADLs [Activities of Daily Living] because those are important things you need to do in life."-P12 (male)

Participants often included aspects like weight-loss, emotional factors and occupational health in the management of their patients but when measuring the effectiveness of their treatment, it was noted as pain specific. For example, they did not use weight, Body Mass Index (BMI) or any anthropometric measures as outcome measures to determine a change in these parameters nor did they use psychological outcome measures to note a difference in emotional state. Emotional factors were sometimes included as a judgement of the effectiveness of their treatment but the main factor to measure the effectiveness of the treatment remained a reduction in pain intensity. Some participants described helping patients with their emotions and observed a change in pain intensity thereafter.

> "We managed to actually calm her [the patient] down by listening to her cries. We told her, sit down and we listened to her story, because like fortunately we didn't have patients to see after so we had time. I feel like talking to her, listening to her more actually helped. During the treatment and also during the assessments as well, after talking to her she was very calm. When she left, she said that her pain is much better than when she actually came in. I don't remember the scale in terms of the Visual Analogue Scale (VAS), but it was much better than it was before."-P6 (male)

The most commonly used outcome measures used to measure the effectiveness of their treatment were the Visual Analogue Scale (VAS) and the Numerical Pain Scale (NPS). A patient's improvement was rarely measured in terms of quality of life, functionality or ADLs. In addition, no other standardised outcome measures were used to measure progress. Pain and the reduction of pain was noted as the main outcome measure for treatment of patients with chronic pain.

> "I find it hard to think about chronic pain because I am not sure I can get a patient to that point where they do not feel that pain any longer."-P10 (female)

Participants who included the patient's hobbies or things that they enjoyed into the treatment programme observed increased compliance with the physiotherapy treatment which resulted in patients willingly returning for physiotherapy sessions. In addition, these patients were more satisfied with the physiotherapy services.

3.7.2 Readiness to treat patients with chronic pain

Varying levels of readiness to treat patients with chronic pain independently as community service physiotherapists was mentioned among the participants. Some felt completely unprepared especially when patients did not appear to have a direct cause of the pain and if the patient was suffering with this pain for a prolonged period of time. In addition, patients with many psychosocial factors, commonly termed "yellow flag patients", patients who have had pain for many years and/or were coming to physiotherapy for years on end were increasingly difficult to treat.

> "No, no I don't. I don't think I am ready to treat them [patients with chronic pain] especially if it's a complicated type of chronic pain. My external exam patient had a specific cause that resulted in long term pain and I could see an end… like we will get your pain out of your back, just trust the process. I will feel comfortable to manage that. If it is a patient in OPD, with lumbar OA [osteoarthritis], been here for 2 years… some of them are saying this is a yellow flag type of pain patient... Chronic pain… I don't feel I would be able to treat them."-P15 (female)

Other participants described moderate levels of preparedness to treat patients with chronic pain. They felt that they had comprehensive assessment skills and had enough treatment skills to choose from which would assist in managing the patient. Participants described that they would treat patients to the best of their ability and ask for assistance if they were uncertain about the way forward. Participants felt more confident in their ability to treat a patient with chronic pain if the cause was known and they had an idea of a protocol to follow for the management of the patient.

> "I'll say moderate [level of readiness], not like I'm exceptionally prepared to managing a patient with chronic pain. They [the lecturers] taught me to assess which is very important and then if you assess, then you'd know the cause and then you can treat the cause of pain and then they are always addressing that you should always educate the patient about their diagnosis. Therefore, the patient will understand what causes their pain."-P4 (male)

To a lesser extent, participants believed that they would be able to help patients adequately but perhaps not optimally. Participants believed that they would be able to assess and treat patients with the basic knowledge that they had and then through further learning and experience, they would be able to optimally treat patients with chronic pain.

> "So I'm not 100% confident but I would definitely try to… I mean if I was given a patient with chronic pain, I would treat them to the best of my ability and then hopefully learn with the patient about their pain and what could help their pain."-P10 (female)

In order to improve their readiness/ability to treat patients with chronic pain, students noted that they would ask superiors/colleagues for assistance where needed, attend Continuous Professional

Development (CPD) courses and with experience learn more and develop skills to optimally treat patients with chronic pain. Students also suggested that the curriculum should include a greater focus on the identification and treatment of psychosocial factors influencing chronic pain and increased practical learning with patients with chronic pain. Practical learning was emphasised as students noted that the theoretical curriculum did not prepare them for "every kind of environmental issue"- P4 (male) but rather prepared them for an ideal, standardised environment.

Participants described confusion when trying to treat patients which left them with feelings of guilt in being unable to assist the patient. However, it was noted that these were some of the patients that they remembered as it motivated them to ask questions, research further and learn more about how to help patients with these conditions in future. Participants described that experience with difficult patients and researching how to help these patients would improve their readiness to effectively manage patients with chronic pain.

> "She had lower back pain, but a low number, like under 5 [meaning an average pain level on the pain scale]. We gave her back exercises, different ones that she could do and when she came back, the pain was worse. It was my last week and I felt I should know more and do more for her but I still didn't know what to do. I did not know any more than in the first session. It wasn't memorable in that good things happened but it was memorable because I just did not know what to do with her."-P15 (female)

3.8 Referrals to other professionals and interdisciplinary teams

Participants did not reflect on the availability or engagement with an interdisciplinary team when describing referrals to other professionals, but rather saw different professionals as playing different roles. None of the participants mentioned the use of interdisciplinary nor multi-disciplinary teams in the treatment of patients with chronic pain either theoretically or in their own practical experience. Participants did not refer to the use of an interdisciplinary team or working in a team at all when treating patients with chronic pain.

Participants mentioned HCPs of other disciplines when they described referrals that they would make in future or in the context of a patient being referred for physiotherapy treatment by another HCP. They described referring patients to other HCPs when they felt helpless and did not know what else to do. Social workers and psychologists were mentioned when students discussed referrals for patients with psychosocial challenges and was often termed, "mental issues" by participants. Unfortunately, post referral, these patients were not followed up and a conversation between the HCPs did not occur. Participants did not interact with other HCPs, especially those specialised in the field of mental health to determine ways in which they could assist patients within their scope of practice or how physiotherapy could complement their treatments. Medical doctors were noted in the context of

referring the patients to a physiotherapist or referral from the physiotherapist back to the doctor. A team based approach was not standard practice in any of the clinical settings that they were placed at.

> "We would write a referral that he would take to the doctor and then he would come back saying that the doctor said we must solve it. There was a lot of back and forth happening"-P13 (male)

As mentioned previously, participants had difficulty in addressing psychosocial factors which influenced the patient's pain with contradictory opinions mentioned. Some participants explained that they would refer the patients to mental health professionals, some said that they would just listen and do nothing about it actively and others were completely unsure about how to mediate these issues. Many participants did not refer to other HCPs but described that this is what they felt should be done in future while a few participants noted that they did not think of psychosocial factors this deeply until they participated in this study.

> "So I think we know the usual… the social work and the psychologist. I think lots of time, it's social issues and stuff, then you know social worker. If you picking up on symptoms and signs of depression and that sort of thing, then a psychologist is needed."-P7 (female)

It must be noted that participants felt helpless and wanted to know how to help their patients in their capacity instead of just passing them on to other professionals. Two participants described a sense of guilt in just labelling patients as "yellow flag patients" without taking steps to identify the deeper issues and then addressing it appropriately. They found this label to be discriminatory and cynical. In keeping with other participants, they noted that although they were aware of this, they were unsure of how to address these issues and how to choose appropriate treatment techniques.

> "It is also difficult to be objective, especially with chronic pain when there is no physical damage. It is more mental. Then maybe it is about referring to psychology. I don't know if I can just keep doing that for all chronic pain patients and then say it is psych. I don't think that's how we can manage them."-P15 (female)

An occupational therapist was mentioned when speaking about desensitisation techniques opposed to being an active member of the chronic pain management team. Dietitians were only mentioned in the context of weight-loss and not as active members of a chronic pain management team. Participants alluded to minimal communication between the various HCPs. The main source of communication was a referral note from one HCP to another with no further discussion nor follow-up. Communication also occurred through the patient where the patient relayed information from one HCP to the other. This lack of communication resulted in instances where patients were poorly managed and increased frustration between HCPs. It also resulted in a negative attitudes and lack of trust in colleagues and their capabilities:

> "OK, so he [the patient] came in with a limp and he was experiencing lower back pain and presented with sciatica kind of pain as well. So he had pain down his leg and he went to the doctor prior to coming to the physio and, just bear in mind that he never had physio before, so he went to the doctor and his doctor told him to not weight-bear on that leg at all. So he, prior to coming to physio, for about 3 months, wasn't weight bearing on that leg at all. I mean a doctor to tell someone not to weight-bear just because it's painful is not OK."-P5 (female)

3.9 Coping strategies

Participants relayed that they felt overwhelmed at times, be it on an everyday basis as students treating patients or in specific when treating patients with chronic pain. The treatment of patients as HCPs and as a student can be overwhelming. Participants mentioned various coping strategies to manage their feelings. Coping strategies referred to practices and attitudes to mitigate and/or reduce the cause of an overwhelming day and/to reduce or manage one's feelings. Various coping strategies were employed which were made up of relaxation, physical activity, avoidance, acceptance, meditation, journaling, leisure activities, debriefing either formally or informally and having a support system. Majority of students mentioned physical activity and the consumption of substances such as drinking coffee/tea/alcohol as coping strategies.

> "Ah, I really do enjoy the gym and I really think it clears your mind. You can't really be thinking of anything else when you got weights on top of you. It's not anything like reflecting on your day, but it really does help" -P3 (male)

An array of other coping strategies which included debriefing formally or informally by speaking to colleagues, friends and family were mentioned. Participants noted that speaking to fellow classmates or other physiotherapists was more helpful than speaking to lay people as they could relate to the experiences and offer guidance. Some participants described that blocking everything out by forgetting what occurred during the day was what assisted them in coping with an overwhelming day. A few students described increasing their knowledge in the topic through research or speaking to others as useful coping strategy to allow them to help their patients effectively.

> "I think that as friends, we really discussed our patients, you know the weird ones. You always get those that are crazy and do or say silly things. Even like in our break or on the bus or whatever, we just discussed patients and that for me is like really nice. To debrief and just speak about it. You know sometimes at home; you speak but they don't really understand what you're saying. So when you speak to your colleagues like your friends, they understand and that itself will just make you feel better." -P11 (female)

Lastly, a few participants conveyed that observing the positive impact that their treatment had on their patients provided them with a sense of pride. It also created a sense of achievement which helped them to cope with the day and return to the clinical placement the next day.

Chapter Four: Discussion

Introduction

The study set out to explore the perceptions and experiences of physiotherapy students studying at the University of the Witwatersrand. The study also set out to describe the terminology and related meanings used by final year physiotherapy students when explaining chronic pain to their patients. Furthermore, the study aimed to explore the personal and professional factors which influences their management of chronic pain. Lastly, the study aimed to explore the role of interpersonal communication in chronic pain management among physiotherapy students.

There were mixed findings regarding students' perceptions towards patients with chronic pain. Some had positive attitudes while others had some negative towards patients with chronic pain. Positive attitudes stemmed from empathy, the ability to relate to patients, communicate effectively with them and develop meaningful therapeutic relationships. Negative attitudes often manifested in cynicism towards patients, scepticism over the severity of the pain, which stemmed from confusion over how to help the patient, frustration in the inability to help the patient and the belief that the patient is not complying to the treatment regimen. This was often because of difficulties empathising with the patients and understanding their suffering. Students displayed feelings of fear and uncertainty as they were unsure if they were helping or harming the patient which in turn resulted in guilt that they were not the best people to help the patient in question. However, they did feel pride and a sense of reward when they witnessed positive patient outcomes. Their perception of pain in theory followed a biopsychosocial approach; however, in practice, when describing the management of a patient encounter, a biomedical approach is often noted.

The description of their experiences with patients with chronic pain included their assessment and treatment skills used, the clinical conditions that they managed at the various clinical placements, the use of referrals and the gaps in an interdisciplinary approach to pain management. Management techniques were described in terms of physiotherapy techniques such as soft tissue release, joint mobilisations, heat therapy, posture and ergonomics education and exercise prescription with many students noticing that patients need someone to listen and talk to them. This emphasised the importance of interpersonal communication in the management of chronic pain. Different elements of patient education were included but the final outcome of their management was measured based on pain reduction opposed to other outcomes such as functionality and quality of life. There was minimal evidence of any interdisciplinary teams and the approach was mainly described theoretically in terms of what they would do in future opposed to what they actively conducted during patient encounters. Students described challenges in their experiences with patients with chronic pain. These included a

lack of patient compliance to the treatment regimen, a lack of student understanding of the causes and prognosis of pain, choosing assessment and treatment techniques to be used, ensuring patients are empowered instead of developing dependency on physiotherapy and concern over whether the treatment they provided was effective or not.

The study found that students often used the standard definition of chronic pain (pain for longer than three months) as known in the literature to describe it to their patients. When describing chronic pain in general, the terms “brain” and “mental” were often used sometimes alluding to chronic pain as being increased due to the influence of psychosocial factors and sometimes as the students wondering if the pain was real or not. Various personal and professional factors influenced the management of chronic pain showing that personal experience with any pain or injury influenced their approach to patients. Students who could relate to their patients found that it was easier to manage their patients as they understood their needs. Professional factors which influenced their management include theoretical training received during their years of study, new concepts learnt during tutorials provided by clinical supervisors, training in terms of clinical experience with patients with chronic pain and training in the context of guidance and supervision from superiors at the various clinical placements.

4.1 The management of chronic pain

The management of patients with chronic pain differed from student to student. The various influences to their approach to these patients is discussed in section 4.2 and 4.3 below. Theoretically they understood the biopsychosocial approach and the need to consider psychosocial factors but there were limitations in being able to translate the knowledge into practice. Students described treatment of chronic pain in a biomedical manner for the most part and mentioned a wide array of traditional physiotherapy techniques such as soft tissue release techniques comprising of massage and trigger point release therapy, heat therapy, posture re-education, education on ergonomics, spinal joint or peripheral joint mobilisations and exercise therapy. Exercise therapy was described in terms of strengthening muscles to ensure the body can cope with stresses placed on it. The other benefits of exercise to chronic pain, such as modulation of physiological changes in the central nervous system were not described (97). Some students attempted to grapple with the biopsychosocial approach using techniques such as listening, keen observation of the patient as a whole, reflection and displaying thoughtfulness with the treatment regimen.

There are many techniques which are embedded in the biopsychosocial approach such as exercise therapy which is tailored to the patient. Daenen et al., 2015 found that exercise therapy is beneficial in patients with chronic pain but it must be tailored to the patient with emphasis on recovery strategies and the prevention of flare ups (98). The barriers to students implementing some of these techniques

was the fear around exercise and physical activity among patients with chronic pain as well as how to tailor it specifically to the patient.

Graded exercise therapy/activity and activity scheduling were not included as management techniques. Studies have shown that physiotherapy techniques together with graded exercise or graded exposure to activities are beneficial in patients with chronic pain and has positive influences on depressive symptoms and pain catastrophizing (99–102). Other techniques such as listening skills, compassion, patient encouragement and increasing motivation and self-efficacy (103,104) within the patients were vaguely mentioned but not viewed as treatment techniques. Management by students in this study was focused on choosing treatment techniques that were known to treat a specific physical cause thus they experienced difficulty when the cause was unknown. When a cause was known, such as arthritis, but thought to be "incurable", students believed that there was nothing that they could really do for the patient. Students relied on biomedical terminology such as "bone on bone", causing the nocebo effect, which may result in poor patient outcomes.

Students grasped the importance of communication skills and patient education. They could link comprehensive patient education to an increase in trust in the physiotherapist resulting in compliance to the treatment regimen and ultimately better patient outcomes. Language was an important finding in the study, where students demonstrated an awareness of the influence of their terminology used on the patient outcomes. Students reported that patients responded positively when concepts were clearly described in a manner that did not increase fear. The study found that predominantly biomedical terminology was used, such as a focus on posture, biomechanics or ergonomics. Furthermore, students may be providing incorrect information to patients and unintentionally increase the nocebo effect, given that the notion that incorrect posture increases pain has been contested by many studies recently with the idea that there is not one correct posture (105,106). The spine is robust and movement and posture is unique to each individual thus education must be tailored to the individual (107). Students in the study attempted to tailor exercises and treatment to the patient but this was biomedical in nature and rarely, if ever, focused on explaining the robust nature of the spine and the importance of movement.

The study found that education on lifestyle modification, such as weight-loss or increasing physical activity was instructive and one-sided, rather than as a holistic approach to understand the patient and the context in which they live. As a result, the underlying causes for why the patient may avoid physical exercise such as fear avoidance beliefs (108) and decreased pain self-efficacy, which refers to the confidence a person with chronic pain has in executing activities while in pain, were not explored. By not acknowledging or addressing the underlying fear, the fear-avoidance model may be activated with patients continuing their negative beliefs, which in turn, exacerbates their suffering

with pain and ultimately decreases functionality. This has public health implications because those with decreased functionality have a higher chance of being unable to independently carry out ADLs and decreased ability to continue with all their tasks at their place of employment. This then results in unemployment and increased strain on our social grant system (109).

Some students accurately identified the impact of social, relationship and work-related stress on pain. The scarcity of HCPs in South Africa (110) highlights the need of each HCP to know the basics and follow a holistic approach to patient management. Students hypothetically explained that they would refer patients to various HCPs if indicated but this was not always done in clinical practice. An important finding of the study was that while a few students attempted to refer patients to other members of the interdisciplinary team, there was a failure of adequate follow up with the HCPs that they referred the patient to and a complete lack of an interdisciplinary chronic pain management team. Students did not discuss the patient with other HCPs in a team approach nor did they work towards a common goal. The use of an interdisciplinary team for chronic pain management has been shown to be cost-effective, enhances the effectiveness of treatment for those with chronic pain and creates a rewarding experience for the chronic pain provider if implemented correctly (32).

Students relayed frustration with medical doctors for a number of reasons. Firstly, the lack of quick referrals to allied health professionals and the advice given to patients which sometimes increased fear avoidance beliefs, decreased functionality and ultimately worsened pain and quality of life. Medical students are often taught pain as an additional module opposed to a core module (82) with increases focus on pharmaceutical pain management (81). This emphasises the difficulty in working within an interdisciplinary team and the need to develop solutions to increase this collaboration to ensure effective chronic pain management. Students in this study described difficulty working in a team due to limited time spent at the clinical placement, lack of follow up and the busy schedules of other HCPs The students' lack of experience in working within an interdisciplinary pain management team points towards a structural barrier within the clinical environment. The students were unable to work in these teams as there were no systems in place, no established interdisciplinary pain management team nor were there adequate referral pathways.

A concerning finding of the study was the uncertainty/inability of students to explain chronic pain, both to their patient and to me as the researcher, instead they relied on the diagnosis, and causes of pain. This has implications related to the patient understanding chronic pain, understanding that movement is not something to be feared and ultimately influences the overall treatment outcome. A critical concept that was missing was PNE. One student described it vaguely when explaining a tutorial provided by a clinical supervisor but mentioned that she had never tried it herself and was unsure of how to go about it. This has implications for pain management because PNE has been

shown to have positive outcomes on pain, pain catastrophization and perceived disability (63,66,76,111) in various studies. PNE includes educational sessions for patients where the neurobiology and neurophysiology of pain and pain processing by the nervous system is explained (62). Thus, the lack of PNE results in patients receiving sub-optimal chronic pain management.

An important positive finding of the study was that at a theoretical level, all students understood the biopsychosocial approach, and knew the assessment and treatment techniques. However, the lack of application in practice was evident. In terms of the biological/biomedical factors, students were able to explain excessive load to the body, various tissue pathologies, nociception and inflammation. They found this easier to assess and treat. However, psychological factors such as patient's beliefs, thoughts, knowledge of their condition, feelings and actions were more difficult to mediate and often not adequately included in their assessment and treatment. Social factors focusing on family life, friends, colleagues, culture and society (29) were included to a lesser extent unless it was used to increase treatment compliance. This is in keeping with a qualitative study conducted with physiotherapists and hip arthroplasty patients regarding social and cultural aspects of life. The study found that physiotherapists used knowledge of social/cultural aspects of the patients' lives to increase compliance to the treatment regimen focusing on physical capability alone opposed to addressing any of the social and cultural aspects (9).

Students were able to tackle work issues from a physical perspective but did not describe psychosocial influences to pain related to their occupation. This finding is in keeping with a 2015 study conducted with private practice physiotherapists which found that physiotherapists demonstrated and acknowledged a limited understanding of psychosocial factors and its influence in their patient's presentation (112). They described the biggest barrier to this challenge being lack of formal education in psychosocial factors, its assessment and treatment (112).

The limited use of a biopsychosocial approach in clinical practice by students in this study is significant. There are a substantial number of studies which demonstrate that a lack of adherence to the biopsychosocial model results in poor outcomes (25), with literature showing a predominance of the biomedical model in clinical practice (113,114). This study helped reveal some of the nuances of where the gaps lie between theory and practice. Some students described difficulty in identifying psychosocial factors while others complied with assessment protocols for assessing yellow flags, despite not grasping the concepts or being unsure of how psychosocial factors influence the patient's pain. The abovementioned lack of interdisciplinary pain management teams may also indicate why the biopsychosocial approach is not used to its full extent in clinical practice. Students may be hesitant to ask about psychosocial factors due to the uncertainty of how to address these factors within their

scope or practice. An established referral pathway or team would assist with addressing these challenges.

An important finding of the study was the measures used by students to judge effectiveness of their treatment. Only two pain specific outcome measures were used, either the VAS or the NPS (115,116) and this measure was only used in out-patient departments, not in hospitals. Most of the students focused on one measure, their ability to decrease the patient's pain level. By not focusing on other important outcomes such as compliance to a treatment regimen, range of movement in a joint, functionality and quality of life, important aspects are neglected resulting in patients' belief that pain controls their lives and that they cannot live full lives with pain. This finding has implications for curriculum development and the training provided to students regarding pain specific outcome measures. Thus, students do not assess behaviour change to note if their patients have actually changed their behaviour based on what was advised.

4.2 Relationship between student experiences and perceptions of patients with chronic pain

The relationship between a physiotherapist/HCP influences patient outcomes and this is particularly important in the management of patients who suffer with chronic pain. The study found that students' approach to the therapeutic relationship varied, with some demonstrating more confidence in building a therapeutic relationship with their patients, while others experienced challenges. This study demonstrated a rich insight into the complex interaction between confidence in providing clinical skills and students' ability to form a meaningful therapeutic relationship, demonstrate empathy and create a supportive environment to ensure the patient feels heard so that clear non-threatening communication can occur. The therapeutic relationship takes time to build, thus it is understandable that students were unable to fully form these relationships due to the limited time that they spend at a particular clinical placement.

The relationship between students and patients strengthened when patients experienced positive outcomes, which in turn, improved the student's attitude towards their patient. A therapeutic relationship refers to the relationship between the patient and the HCP. In this relationship, the HCP and the patient engage with each other to achieve beneficial change in the patient. There must be a working alliance where both parties work together to attain shared goals (117). This dynamic influenced the students' perception of their interpersonal skills, with those who had positive attitudes towards patients with chronic pain described themselves as having effective interpersonal skills and a greater ability to create a therapeutic relationship between themselves and their patients. This in turn had a positive influence on their experiences with patients with chronic pain and resulted in better

relationships and positive treatment outcomes. In keeping with these findings, other studies have shown that the stronger the relationship, the better the results are, thus pointing towards optimised functionality and well-being of the patient (118). Students in this study who had a good therapeutic relationship reported increased trust between them and their patients and they appeared to have better patient outcomes. A 2021 qualitative study which explore the experiences of patients regarding physiotherapy treatment showed that patients emphasised the importance of a therapeutic relationship and the positive influence that trust has on treatment outcomes (119).

Overall, students' attitude in the management of chronic pain was a concern, where students did not show an openness, attitude of listening, acknowledgement and acceptance. Instead, the study found that only a few students believed the patients description of their pain experience without question while most were cynical and had negative thoughts of whether the pain was real or not. Their negative attitude hindered their ability to treat patients objectively, holistically and without preconceived assumptions about the patient. Those students who adopted a holistic approach demonstrated greater empathy, for example, the student who included dancing in her programme took into account the interests of the patient, thus increasing compliance. Dance has been shown to have positive outcomes in patients with chronic pain (120) while the inclusion of hobbies and enjoyable tasks have also shown positive outcomes on recovery (121,122).

An interesting finding was how personal experiences with chronic pain had a significant positive impact on students' attitude because they could relate to their patients' pain experiences and empathise with them. Empathy is the ability to understand other people and share their feelings (123). It allows the clinician to relate to the patients and influences the management approach (123). Empathy between the HCP and the patient includes three main elements: understanding the patients' experiences, concerns, perspectives, emotional awareness to contextualise this and the ability to communicate with the patient to prevent and decrease suffering associated with pain (124). Students' ability to empathise with their patients influenced their approach to the patients as well as the treatments provided. For example, one student described simplifying the exercises prescribed so that it would be easier for the patient to comply as she herself could not keep up with a cascade of exercises prescribed by her physiotherapist. This resulted in positive attitudes towards patients with chronic pain opposed to negative attitudes around the lack of compliance to exercises prescribed.

Students who had personal experience with a medical procedure found that this influenced the manner in which they communicated and explained various aspects to patients, emphasising their understanding of the importance of communication skills (123,125). A 2018 study which aimed to assess the impact of physician empathy on pain relief and Health Related Quality of Life (HR-QoL) demonstrated that empathy plays a role in the outcomes of patients with chronic pain and that the

patient's perception of the physicians' empathy may contribute to pain relief and HR-QoL (124). In keeping with this, a 2021 study aimed to examine the relationship between perceived physician empathy and psychological distress in patients with chronic pain. The study found that patients experiencing chronic pain who receive more physician empathy experience less symptoms associated with depression and anxiety (126), both symptoms which are known to increase the pain experience (103,127). The study found that perceived empathy was strongly positively correlated with treatment satisfaction with a marked negative correlation between perceived empathy and depressive symptoms (126). Furthermore, HCPs who are non-judgemental, supporting, have good communication skills and whom the patient trusts have shown to have better therapeutic relationships (128). This has implications for chronic pain management pointing towards the need to develop good communication skills, empathy and effective therapeutic relationships.

Some students found that patients would always speak about the pain leading towards the perception that the patient does not know what life is like without this pain. This insight by the student is in keeping with the elements of pain catastrophizing, namely magnification, helplessness and rumination where patients constantly think about the pain, feel that something worse may happen and cannot see a life away from this pain. Those with high scores for pain catastrophizing have reported increased pain, worsened anxiety and depression, higher levels of disability, are more dependent on medication and have prolonged hospitalisations if admitted (7,129,130). This has implications on chronic pain management as those who present with pain catastrophizing have a higher chance of a problematic recovery (130). Students must be aware of not only how to identify these signs but how to address it so that they can effectively manage patients with chronic pain.

Clinical training which included the guidance and teaching from onsite clinical supervisors as well as the support provided to students by them influenced the perceptions of students towards patients with chronic pain. Students' positive attitudes were influenced by onsite supervisors who had positive attitudes towards patients with chronic pain and who supported and guided students when treating these patients. The role of clinical supervisors has been emphasised in the learning and facilitation of students (131). During clinical rotations, role modelling via clinical supervisors is accepted as an influential medical educational method (109). The adoption of perceptions from clinical supervisors by students in this study emphasises the aspect of role modelling. A clear example of this was the student who observed her supervisor speaking to a patient with post-traumatic stress disorder. Based on the supervisor's approach to the patient, the student will be able to model this behaviour in future. A 2018 study conducted at a South African University showed that collaboration between students, supervisors and clinical personnel is essential to the learning of the students (132). Students in this study emphasised that they learn from onsite supervisors, especially if they are allowed to watch them

treat a patient thus pointing towards learning various skills from supervisors opposed to just physical techniques that are formally taught (132).

Some students had negative attitudes towards patients with chronic pain and this was often linked to feelings of confusion, anxiety, guilt and inadequacy due to the inability to effectively help patients with chronic pain. This was often as a result of poor clinical supervision, decreased experience with patients with chronic pain and minimal guidance and support from on-site supervisors. This related to medical students who described feelings of frustration, exhaustion and difficulty when treating patients with chronic pain. This further led them towards negative perceptions such as scepticism and frustration regarding patients with chronic pain (39). These negative perceptions towards patients with chronic pain negatively influences the management of these patients.

Students in this study often felt that they were inexperienced and lacked confidence in their ability to effectively manage patients with chronic pain. They felt that their patients would have had better outcomes had a more senior physiotherapist managed the patient. Canadian nursing students were found to have negative attitudes towards patients with chronic pain as a result of poor knowledge of pain (54) whereas students in this study struggled to apply the knowledge that they had. When patients did not appear to improve, students moved towards one of two beliefs: the belief that they did not treat the patient effectively which was also seen in medical students who believed that they were ineffective as they could not cure the pain (38). In majority of the cases, students moved towards the second belief which was that the patient was non-compliant to the treatment regimen including the exercises prescribed. This brought in an element of blaming the patient when treatment outcomes were poor. This was also observed among qualified physiotherapists in a 2015 systematic review where physiotherapists described patients with lower back pain as demotivated, demanding and disinterested in recovery (51). This is concerning as dismissive attitudes may become an entrenched practice.

Students described that sometimes they believed patients with chronic pain should be referred to another HCP, such as a psychologist and could not see the role of physiotherapy in these cases. This was also shown in a 2015 systematic review where musculoskeletal physiotherapists did not feel equipped to treat patients with predominant psychological issues, thus referred them to other HCPs (50). This was often found in the cases of patients who were able to perform all functional activities and ADLs independently. This led to the assumption that the pain may not be real and the patient would benefit from purely psychological interventions. This finding was supported by Brunner et al., 2018 who found that physiotherapists stigmatise against and feel unprepared to treat patients with dominant psychological factors (49). The importance of understanding psychosocial factors and how to approach these patients is emphasised.

4.3 Relationship between training and students approach to patients with chronic pain

There were various factors which influenced the students' approach to patients with chronic pain. A major factor was training, both theoretical and clinical training received by students during their academic years. As mentioned previously, students understood the concepts of a biopsychosocial approach but had difficulty applying it appropriately. This demonstrates that students are aware of existent gaps in their knowledge which will be filled through further studies and clinical experience. Students described that these gaps were not a fault of the theory curriculum as there is a colossal amount of content to cover. Keeping in mind that they are still students, they will need to master concepts and skills through clinical experience. In keeping with the large amount of pain content, a 2016 study which explored undergraduate curricular noted that respondents found pain content to be spread over various modules making it difficult to locate. A successful curriculum was noted as one that increased coverage, increased student access and used diverse teaching methods (82). This finding has implications towards curriculum development and the structuring of the programme.

Students found that online teaching and learning due to COVID-19 negatively impacted on the manner in which they learnt. This is a global challenge since the start of the pandemic and studies are being conducted to determine the impact that this change in learning has had on students (133). Many students noted that gaps in theoretical training included communication skills, how to approach patients with many psychosocial factors and how to then address these factors. Some students explained that they only understood the concept of chronic pain during their sports clinical block where their clinical supervisor had a tutorial during which she taught chronic pain to them. They valued this session and wished that it was done at the beginning of their clinical blocks so that they could use this theoretical knowledge in practise. This finding further emphasises the role of a clinical supervisor in student training. This has implications to both the clinical and theoretical training curriculum as students should be equipped with this knowledge prior to treating patients with chronic pain.

Students described theoretical training in terms of definitions of chronic pain, theories of pain and general assessment and treatment techniques. Definitions of chronic pain are well known and taught to the undergraduate students as part of their objectives. Some students mentioned that chronic pain related to a condition that was difficult, confusing and overwhelming to treat. Other students described the subjective nature of pain noting that each patient presented completely differently increasing the challenge to treat them as there is no set protocol. They also experienced difficulty in understanding why the pain fluctuated and could not fathom why pain was tolerable on one day and

unbearable on another. This points towards the need for students to understand the influence of psychosocial factors on pain instead of looking at physical factors alone (29).

In terms of clinical training, the context influenced their training. Each clinical placement was different so some students had more experience with certain conditions than others. If there were more students at a placement where there were fewer patients with chronic pain conditions, students would see these patients together limiting individual learning. This meant that they had inadequate experience with patients with chronic pain which limited their ability to develop meaningful therapeutic relationships, limited their personal engagement with patients thus decreased their confidence to treat patients with chronic pain. Students who did have experience with patients with chronic pain were either able to develop meaningful relationships with patients or developed negative assumptions towards these patients. Negative assumptions included the belief that patients had just come to get a letter for work, did not really need to come for physiotherapy or were automatically labelled non-compliant and unwilling to make effort to get better. These negative assumptions had implications for how patients were approached by students which in turn affects their pain management.

Clinical supervisors played a major role in the training of students. Supervision refers to guidance and feedback provided to the students on matters related to educational and professional development in order to provide safe and appropriate care (134). Onsite supervisors (physiotherapists who worked at the clinic/hospital and were there with the students daily) guided students through the block. The guidance from these supervisors influenced the manner in which they assessed and treated patients. When students were uncertain about how to approach patients, supervisors guided them. Students who had approachable, helpful supervisors who provided adequate support (academic and emotional) had better experiences during the block thus had a positive attitude towards the clinical block and the patients treated during that block. Supervisors also guided students regarding various referrals that patients may require such as a consultation with a social worker or psychologist. However, if supervisors had negative assumptions towards a particular patient this would then translate towards the student developing the same assumption as described in section 4.2.

Clinical supervision has been shown to provide a way to learn clinical skills alongside experienced clinicians. A 2021 study conducted with medical trainees showed that trainees were able to link theoretical and practical knowledge and were better prepared to enter the real clinical setting independently when they had effective clinical supervision. The study noted that a challenge to learning was the absence of a consistent model to clinical supervision (135). Elements which resulted in positive supervision experiences and positive learning in a 2021 study included the choice of a supervisor, mutual trust, cultural understanding, focus on improving skills and knowledge and

adequate training and feedback (108). If students had negative experiences with clinical supervisors such as supervisors who were unsupportive, unhelpful, provided minimal guidance, were too busy to assist them and were unapproachable; they developed negative perceptions towards the clinical block and in turn towards chronic pain. Rothwell et al., 2021, showed that barriers to effective clinical supervision included limited time, lack of trust and lack of shared understanding to the purpose of the supervision (136). Carr et al., 2016 found that reliance on clinical educators who do not understand student experiences was a major challenge to undergraduate pain curricular (82). This points towards the need for effective training for clinical educators as well as an assessment of their challenges so that this can be addressed appropriately.

4.4 Interpersonal communication with the patient

Communication is an essential skill which facilitates the therapeutic relationship between patient and HCP if done efficiently and competently (61). Students in this study described the importance of good communication with a patient and highlighted the need to develop more skills in this field. The manner in which HCPs interact with their patients adds value to the care provided. This human component is vital with 40% of the treatment success attributed to the patient-HCP relationship (137). Further studies have shown that the interactions between patients and HCPs affect patient satisfaction, perceived quality of medical services and ultimately contribute to better outcomes (138).

It is important to have equal participation from the therapist and patient where they work together towards shared goals opposed to an active- passive relationship where the therapist is in charge and the patient passively agrees (61). Students in this study attempted to have this balance but often fell into the active-passive participation situation sometimes due to uncertainty and difficulty in creating dialogue. Students described important skills as listening and communicating appropriately with some students noting that patients would sometimes get better just because someone listened to them. Students described that some patients had family members who did not understand them or were tired of hearing complaints about their pain. One student described that this was even more challenging when the patient did not appear to have any major functional limitations, thus made it challenging for the family to sympathise with their pain experiences.

An important finding of the study was the students' perception that patients felt acknowledged by the physiotherapy students while they were dismissed by many other HCPs over the years. This increased the therapeutic relationship and resulted in better outcomes. Students in the study were able to describe the importance of listening while a few understood that listening forms part of dialogue. Efficient and valuable listening must be active, total, empathic and receptive. It must also include a certain level of criticism to prevent dishonesty from occurring during the session (61). Students

described listening to patients' problems/social issues and general worries but did not describe asking open ended questions regarding what the patient wanted from physiotherapy and what they needed in order to be more functional in their daily lives. This resulted in the students just providing information opposed to listening to the patient and working towards shared goals.

Majority of the students focused on telling patients what to do, rather than asking what the patient thinks. This resulted in a therapist-driven approach instead of a patient-driven and patient-centred approach (61). Students observed that each patient was different thus required a unique intervention specific to their needs. When describing challenges, students described major challenges to be lack of compliance to the treatment regimen, difficulty in "selling" the message of chronic pain and what needed to be done, concern over the treatment provided and the choice of assessment and treatment techniques to be used with these patients. Some students also described difficulty in empowering patients and preventing dependency on the physiotherapist. Many of these challenges can be mediated through effective interpersonal skills. Interpersonal connections encourage people to question and reinforce information which in turn affects their behaviour and perceptions (60). Thus, effective communication may assist in "selling" the chronic pain (59) message resulting in better compliance.

Patients with chronic pain may be more resistant to change than other patients, thus require a different approach to "buy" into what the therapist is "selling" (59). As such, skills such as motivational interviewing are important with the treatment of patients with chronic pain. Motivational Interviewing is a patient-centred type of communication used to elicit and enhance motivation for behaviour change by moving the patient away from indecision or uncertainty and increasing adherence to treatment. Its effectiveness has been shown with many conditions which require behaviour change such as smoking cessation, obesity, arthritis and cancer (139,140).

Motivational Interviewing has shown to be complementary to PNE for the treatment of chronic pain (8). A systematic review which included seven randomised clinical trials with 962 participants with chronic pain concluded that there was a small to moderate overall effect on treatment adherence with motivational interviewing in the short term. However, there was insufficient study data to produce conclusions about the effects of motivational interviewing on pain severity or physical functioning (141). Strong evidence exists to support the efficacy of motivational interviewing to address lifestyle modification, self-management and psychosocial needs of patients with cancer (142). Chronic (post) cancer pain is an underestimated yet incapacitating symptom in cancer survivors and requires lifestyle factors and psychosocial factors to be addressed (143). Thus, this is of importance to chronic pain management in cancer patients.

Students mentioned providing various types of education to their patients. This was provided in a patient-centred approach according to what the students believed the patient required. Unfortunately, this was often one-way communication with the therapist telling the patient what to do and what not to do instead of a dialogue between the patient and therapist. Education, which was biomedical in nature, focused on what to do at work or what not to do at work physically, how to avoid further injury, what is the cause of their pain and what type of general lifestyle modifications (exercise, weight-loss and diet adaptations) will assist in decreasing the pain experience. Some students tried to include exercise into the daily routine but most prescribed specific exercise for the affected area opposed to general increased physical activity. The biopsychosocial approach emphasises physical and psychosocial strategies opposed to one way, passive treatments (52) which further emphasises the need to bridge the gap between the theoretical and practical use of this approach.

4.5 Strengths and Limitations of the study

While all students were exposed to patients with chronic pain, some students had limited exposure or did not treat these patients independently. The COVID-19 pandemic limited the number of patients visiting the physiotherapy department and the fire at CMJAH limited students to one less clinical site, resulting in students treating patients together.

The data may have been influenced by social desirability bias (144) where students may have felt that they must provide "academic answers" rather than share their opinions and perceptions. This could have also been influenced by the fact that I am a physiotherapist and a clinical supervisor at the university, although I had not worked directly with any of the fourth year students. The potential social desirability bias was mitigated through building rapport and phrasing questions in a way that encouraged participants to open up. In addition, during the recruitment process, I made it clear that this interview is a conversation to learn about their perceptions and experiences opposed to an assessment. There might have been a power imbalance (145) between the students and I which could have influenced the participants' responses to questions. This was addressed by clarifying that I, too am a student.

It is critical to note that the students come from the same cohort, therefore had the same training and some had the same clinical supervisors. This may have resulted in data saturation been reached quicker. The interviews were conducted virtually over Microsoft Teams via video calling, thus connectivity and data challenges had to be considered. However, this was mediated by considering load shedding schedules and providing participants with mobile data. Response bias was prevented through the use of open ended questions to avoid leading questions due to poorly constructed questions (145).

The study was conducted after the examination period which resulted in a poor response. Students may have been unwilling to participate in a study at the end of the year. The study aimed for maximum variation but this was not entirely possible as some of the students who met that criteria were unwilling to participate. Lastly, researcher bias may have occurred if I asked questions to suit assumptions (145).

Chapter Five: Conclusion and Recommendations

5.1 Conclusion

This study aimed to explore the perceptions and experiences of fourth year physiotherapy students regarding patients with chronic pain. The study found that students found this experience overwhelming and confusing with some students believing that this will improve with further clinical experience as they qualify and see more patients. The management approach to patients with chronic pain was influenced by many factors including training received, personal and professional experience with pain and chronic pain, observing their clinical supervisors and their own personal perceptions. Students attempted to take on a biopsychosocial approach but it was observed that while they understood the biopsychosocial approach theoretically, they took on a more biomedical approach in clinical practice. This was emphasised in their description of the difficulty experienced when treating patients who had many psychosocial factors influencing the pain experience.

Students measured patient outcomes based on a reduction in pain and rarely included other outcomes such as functionality and quality of life. However, students did note the importance of good communication skills, listening to patients and being mindful of the terminology and tone used. The students were aware of the importance of explaining assessment findings and treatment techniques comprehensively and clearly to patients as this had an influence on treatment outcomes. In addition, they attempted to avoid jargon and harsh words as this was shown contribute to negative treatment outcomes.

The study highlighted the importance of supporting and guiding students when treating patients with chronic pain so that they can be more effective and less overwhelmed during the experience. The role of the clinical supervisor was observed to be important as well as ensuring that the students had the opportunity to observe new techniques and practice their skills. Notably, students did not work with any interdisciplinary teams in the management of patients with chronic pain. They reported that in some instances they had referred a patient to a psychologist but did not know whether the patient received the help that they needed as there was no communication between the HCPs. The study emphasised the need to build empathy for patients with chronic pain and use innovative methods to increase compliance to exercise guidelines. Some students demonstrated creative and intuitive ways to make the sessions fun and to cajole patients who were fearful of experiencing more pain to try new things.

5.2 Recommendations

5.2.1 Pain Curriculum

Students described that due to the magnitude of content to be covered within the four years, they understand that everything related to chronic pain cannot be taught effectively. Thus, many students noted that through experience and postgraduate studies, their knowledge and ability to effectively treat patients with chronic pain will improve. In light of this, students should be provided with resources for further studies and resources to further their chronic pain knowledge such as recommended readings (journal articles, books, videos and websites). In addition, at the end of their fourth year, they should be provided with information regarding CPD courses or postgraduate studies regarding chronic pain so that they are aware of where to look when they need to increase their expertise in the area. Examples of this include Train Pain Academy or the South African Society of Physiotherapy's pain management special interest group. CPD courses are necessary for professional development and increase competency and expertise in the area (146).

In terms of the undergraduate curriculum, it will be useful for students to observe the treatment of a chronic pain patient within an interdisciplinary team. This could occur during the pre-clinical block so that all students receive similar experiences and supervision. However, an alternative to this could be real-life complex chronic pain case which should be worked through with interactive learning in play. An alternative to this due to time constraints during the teaching block could be an optional module on their online platform with access to additional resources should they find the need for it.

Majority of the students mentioned difficulty in assessing pain as they did not find the VAS to be useful enough. This in turn made the measurement of progression and final outcomes increasingly difficult as the reduction of pain alone is not an effective measure in patients with chronic pain. Emphasis should be placed on building a therapeutic relationship and understanding their patients. However, outcome measures are important to determine a baseline and monitor progress. Students should be aware of various outcome measures and this could be included in the curriculum. This includes pain specific outcomes measures such as the Brief Pain Inventory (BPI) (147) which is more comprehensive than the VAS alone. Some students described fear and fear of movement as a limiting factor with patients. In this case, outcome measures such as the Fear Avoidance Beliefs Questionnaire (FABQ) (148) or the TAMPA Scale for Kinesiophobia are valuable (149). Students also struggled to understand why patients could not follow certain treatment regimens and this is often linked to psychosocial factors such as a self-efficacy. In this case, the Pain Self Efficacy Questionnaire (PSEQ) (104,150) may be a useful outcome measure. Lastly, students mentioned elements of rumination where they described patients constantly thinking of the pain, elements of helplessness where they described patients who cannot see a life without pain and elements of magnification where they

described an over-exaggeration of pain. In this case, it will be helpful to teach students about pain catastrophizing and the Pain Catastrophizing Scale (PCS). This will improve their assessment of the patient in a more biopsychosocial approach leading to more holistic treatment plans (151,152).

Students have appeared to grasp the concept of "words matter", focusing on the importance of language used when communicating with patients. They actively attempt to use words which do not have a negative influence on the patient's pain. In keeping with this, students should be taught about arthritis, specifically osteoarthritis in a way that does not increase fear of an "incurable disease". By using phrases like "bone on bone", "bones scraping on each other" and "lack of oil/fluid", we increase the nocebo effect resulting in poorer patient outcomes (4). We should rather be using phrases like "wrinkles on the inside" to describe the degenerative process which occurs with aging and use studies like the 2015 systematic review showing radiological findings of features of spinal degeneration in asymptomatic populations (153) to show that degeneration can occur with the absence of pain and that pain can occur in the absence of tissue damage.

5.2.2 General training and skills

Students described challenges with the identification of psychosocial factors which was often completed just because it was on their assessment form opposed to understanding the importance behind it. Majority of the students described the need to understand their role when it comes to psychosocial factors. Thus, this will be beneficial if included in the curriculum. In keeping with this point, students also experienced difficulty in preventing dependence on the physiotherapist. Students should be reminded of their public health principles, namely empowerment to prevent this dependence.

Many students mentioned difficulty in relating to patients due to language and/or cultural barriers. A requirement should be instituted where students should learn another language in their first year of study to ensure that they can at least hold a simple conversation. If this becomes too time consuming, short courses for conversational speech should be introduced.

Clinical supervisors, both onsite supervisors and external supervisors to the clinical setting from the university played an essential role in the training of students. As mentioned, those with positive experiences with supervisors learnt more, were more confident in their abilities and enjoyed the clinical block more. This points towards effective training for clinical educators, with a strong recommendation that all clinical educators attend courses such as the Effective Clinical Supervision Course run by the University of the Witwatersrand Faculty of Heath Sciences.

5.2.3 Interdisciplinary team management

The absence of an interdisciplinary pain management team limits the ability to adequately use a biopsychosocial approach and work within one's scope of practice. Thus, the use of these teams is key to effective pain management. Students have been taught the importance of an interdisciplinary team throughout their studies and in every clinical area. The recent introduction of this in their Verbal Case Presentations will aid in increasing this engagement. Verbal Case Presentations refer to group presentations completed each clinical block by the students, where they present either a public health project or a case presentation of a patient who they managed. The inclusion of reflection and a clear demonstration of working in an interdisciplinary team within these presentations will encourage students to work within interdisciplinary teams, reflect on the challenges at play and work towards solutions for these challenges. Students should also be aware of challenges associated with this team and work around mediating these challenges. They should also understand the difference between an interdisciplinary team and a multidisciplinary team (32).

However, the clinical setting at which students were placed, did not have any pain management teams in place, thus this structural barrier made it difficult for students to work within a team. The use of a team will remain theoretical until the environment changes. This is a limitation to the clinical healthcare setting rather than the physiotherapy training programme. As presented in this research report, the use of an interdisciplinary team is essential to effective pain management (32). As such, advocacy for a change at the institutional level which focuses on the introduction of pain management teams must occur. Pain management teams in the form of an interdisciplinary pain clinic should be established within these clinical settings. In cases where these clinics do exist, they should be assessed so that they can be expanded and improved on. In addition, well-functioning interdisciplinary pain clinics should be used as models for the creation and/or improvement of other interdisciplinary pain clinics.

If formal teams cannot be established due to various structural barriers, referral pathways must be enhanced with physiotherapists advocating for this (154). In the present setting, a referral to a HCP does not necessarily mean that the patient was seen or will be seen by the HCP. As such, follow-ups are vital to this process and the referring HCP must discuss the patient and goals of the treatment with all HCPs to whom they refer the patient.

5.2.4 Communication skills

Students will benefit from a communication skills workshop such as the one conducted by Train Pain Academy to improve patient-therapist communication. Students being made aware of the difference between message sending versus dialogue may also assist in improving patient outcomes. Focus must be placed on effective interpersonal communication. The data showed that students struggled with

patient compliance to a treatment regimen, knowing the cause of the pain and/or how to explain the cause of the pain to the patient. In addition, many do not know how to "convince" patients to follow their advice. Communication skills with focus on behaviour change communication such as motivational interviewing as a technique which may assist with this challenge. In addition, teaching students about PNE or continuous pain neuroscience conversations with patients is essential to the communication process with patients with chronic pain.

5.2.5 Coping strategies

Students described various coping strategies to deal the overwhelming nature of the profession. Many mentioned physical activity which has shown to be effective for stress management and mental health. This combined with an activity that they enjoy such as a specific sport and fresh air appears to be more effective. Students should be debriefed about the overwhelming nature of the profession once they begin their clinical blocks and be provided with resources to assist them such as making them aware of the University's mental health services or evidence based strategies to assist them.

Students found that debriefing with their friends and supervisors in a casual manner is more effective than a structured session with someone who does not fully relate to their challenges. Weekly debriefing sessions to discuss patients and their challenges should be included at each clinical placement. This also helps them to learn from each other and adapt their assessments and treatments appropriately.

Some students developed a "don't catch feelings" attitude meaning that they have tried to distance themselves emotionally from the situation, thus preventing an attachment from being formed. This helps to keep work away from personal life but also limits the ability to empathise. Students should be made aware of this fine balance.

5.2.6 Future Studies

Future studies could focus students at other universities and in different medical fields to note differences and see what improvements can be made to curricular nationally. Other studies can also focus on community service physiotherapists, junior and senior physiotherapists to see what their experiences, perceptions and challenges with chronic pain patients are. An understanding of their knowledge base regarding chronic pain and the treatment techniques used by many of them will aid in further curriculum development. Comparisons can also be made between the different levels of experience between therapists and those working in the private vs. public sector. The resources used by them will also be considered thus noting the cost incurred when treating patients with chronic pain. Many public health implications such as costs incurred, behaviour change and health promotion will come into play here.

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Appendices

Appendix A: Plagiarism Declaration

PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

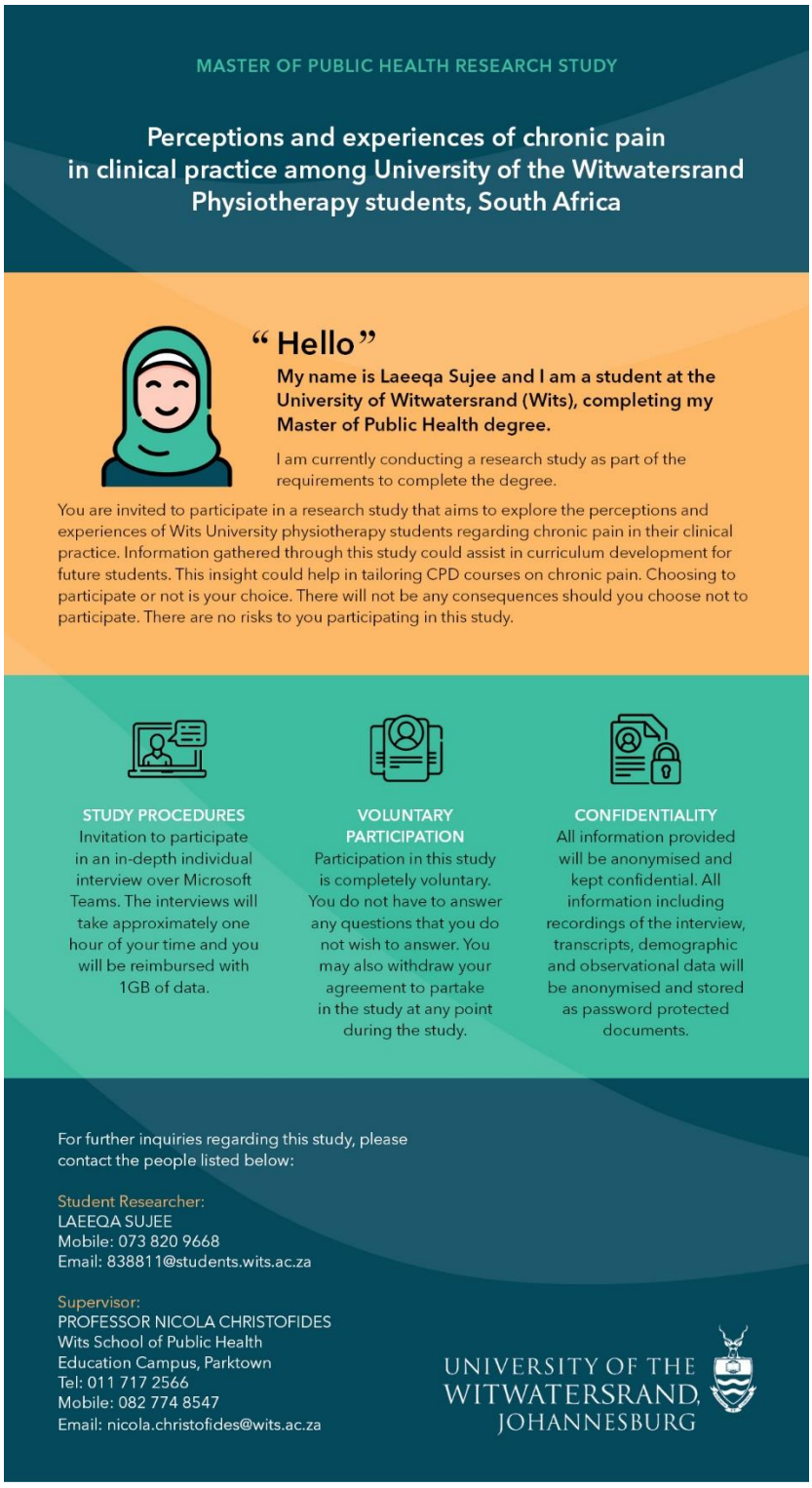
SENATE PLAGIARISM POLICY: APPENDIX ONE

I ,Laeeqa Sujee (Student number: 838811) am a student registered for the degree of Master of Public Health in Social and Behaviour Change Communication in the academic year 2022.
I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix (appendix J) a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature:  Date: 09 May 2022

Appendix B: Infographic



Appendix C: Interview Guide

Research Title

Perceptions and experiences of chronic pain in clinical practice among university of the Witwatersrand Physiotherapy students, South Africa.

Research Question

What are the perceptions and experiences of physiotherapy students in their clinical years, studying at the University of the Witwatersrand regarding chronic pain within their clinical practice in South Africa in 2021?

Aim of the Study

To explore the perceptions and experiences of physiotherapy students in their clinical years, studying at the University of the Witwatersrand regarding chronic pain within their clinical practice in South Africa in 2021.

Specific Objectives

1. To describe the terminology and related meanings used by physiotherapy students studying at the University of the Witwatersrand to explain chronic pain to their patients in 2021.
2. To explore the perceptions and experiences of physiotherapy students studying at the University of the Witwatersrand when consulting with patients experiencing chronic pain.
3. To explore the personal and professional factors which influence the management of chronic pain by physiotherapy students studying at the University of the Witwatersrand.
4. To explore the role of interpersonal communication in chronic pain management among physiotherapy students studying at the University of the Witwatersrand.

Introduction

Hello. How are you today? My name is Laeeqa Sujee. I am a post-graduate student at the University of the Witwatersrand School of Public Health. To complete my Master of Public health, I am conducting a qualitative research study with the above aim and objectives. By now you would have read the information sheet, signed the two consent forms and filled out a demographic questionnaire. This interview will take about an hour during which I will ask you some questions to help me explore the aim above. Anything we discuss here is private and confidential. The 1G data reimbursement was sent to the number provided on your demographic questionnaire.

Please note that this is not a clinical assessment. There is no model answer meaning that there are no correct or incorrect answers. I am interested in your perceptions and experiences. If any of the questions I ask make you uncomfortable, you do not have to answer them. My role as the interviewer is to listen and to respect your point of view. Do I have your permission to interview you?

This interview will be recorded. The recording will be transcribed, and the results from this research will be disseminated on completion of the write-up. Do I have your permission to record this conversation?

Do you have any questions for me before we begin?

Opening questions

1.) Please describe your experiences during your most recent clinical block.

Probes:
[if the block was not OPD/NMS, ask:] How did this block compare to your OPD/NMS block?

2.) When reflecting on your most recent clinical block and the OPD/NMS block, what clinical conditions did you see?

3.) What comes to mind when you hear the term "chronic pain"?

Probes:
What do you think about when you see/observe people with chronic pain?
How would words would you use when speaking about chronic pain to a patient?
How would words would you use when speaking about chronic pain to a colleague?
If you were talking about your day and your experiences during a long clinical block to your family members/friends, what words would you use to describe/talk about chronic pain?
How would you talk about chronic pain to a patient's family member?

4.) What experiences do you have related to chronic pain, both personally and professionally?

Key Questions

5.) Tell me about your most memorable patient who was experiencing chronic pain.

Probes:
What was the patient's diagnosis?
How long did they experience chronic pain for? (Years, months?)
How did the patient respond to treatment?
How many times did you see the patient?
How did this compare to other chronic pain patients that you have treated?

To what extent did you treat this patient independently? (Did you treat this patient independently, with a colleague or supervisor or were you shadowing a qualified physiotherapist?)

How was chronic pain/diagnosis explained to this patient?

How did this experience make you feel?

What was challenging about this experience?

6.) Not all patients with chronic pain present in the same way. What are some of the things that influenced how patients dealt with their chronic pain?

Probes:

Among your patients who had good therapeutic outcomes, what were the aspects that supported this improvement?

What were some of the things that hindered a patient's recovery?

7.) Describe how you have or would manage patients suffering with chronic pain in future.

8.) In your opinion, what are the most important skills required when treating patients with chronic pain?

Probes:

Will the set of skills required to treat patients with chronic pain differ from those required to treat patients with sports injuries?

What type of communication skills are required to treat patients with chronic pain?

9.) Please elaborate on whether you, a family member or friend has been directly influenced/ affected by chronic pain in your personal life?

Probes / re-phrasings:

How has this influenced your approach to treating patients with chronic pain?

Closing questions

10.) What are some of the coping strategies that you employ for yourself when treating difficult patients?

Probe/rephrasing:

When you are overwhelmed with a patient who you feel you cannot help, what do you do?

What coping strategies do you employ for yourself when emotionally overwhelmed by a patient?

11.) Before we close this interview, is there anything that you would like to add, or ask me?

Thank you for agreeing to participating in this study. Your time and valuable information are highly appreciated. Would you like me to send you the transcript of this interview, so that you are able to check that I have captured and represented your responses accurately?

Thank you, enjoy the rest of your day.

Appendix D: Information Sheet

MASTER OF PUBLIC HEALTH RESEARCH STUDY

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHYSIOTHERAPY STUDENTS, SOUTH AFRICA

Participant Information Sheet

Good day,

My name is Laeeqa Sujee and I am a student at the University of Witwatersrand (Wits University) completing my Master of Public Health degree. I am currently conducting a research study as part of the requirements to complete the degree. You are invited to participate in a research study that aims to explore the perceptions and experiences of Wits university physiotherapy students regarding chronic pain in their clinical practice. Information gathered through this study could assist in curriculum development for future students. This insight could help in tailoring CPD courses on chronic pain. Choosing to participate or not is your choice. There will not be any consequences should you choose not to participate. There are no risks to you participating in this study.

Study procedures

I am inviting you to participate in an in-depth individual interview over Microsoft Teams. The interviews will take approximately one hour of your time and you will be provided with 1GB of data once you provide your consent to participate in this study.

Voluntary Participation: Participation in this study is completely voluntary. You do not have to answer any questions that you do not wish to answer. You may also withdraw your agreement to partake in the study at any point during the study. Furthermore, the refusal to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled.

Confidentiality: All information provided will be anonymised and kept confidential. All information including recordings of the interview, transcripts, demographic and observational data will be anonymised and stored as password protected documents. My supervisors and I will have access to this data.

Ethics approval: This study has been approved by the University of the Witwatersrand Human Research Ethics Committee on 27/08/2021. Permission has been obtained by the head of department of the School of Therapeutic Sciences, Professor Hellen Myezwa and the Acting head of department of the School of Physiotherapy, Mrs Monique Keller.

Results Dissemination

Preliminary results of the study and a copy of the transcript of your interview will be provided to you if you wish to see it. At the culmination of the study it will be made public. All university of the Witwatersrand dissertations and theses are available on the world-wide web. Additionally, if you would like access to a summary of the research, this can be made available on request. If the opportunity arises, this study may also be published and presented at conferences.

If you have any further questions about this study, please contact the people listed below:

Student Researcher: Laeeqa Sujee Email: 838811@students.wits.ac.za	Supervisor: Nicola Christofides Wits School of Public Health Education Campus, Parktown Tel: 011 717 2566 Mobile Number: 082 7748547 Email: Nicola.Christofides@wits.ac.za

This study has received ethical approval from the University of the Witwatersrand and the physiotherapy department. If you have questions about your rights as a research participant or complaints about the manner in which you were treated, or feel that study has caused you harm, please contact:	
Prof. Clement Penny Chairperson for the Committee for Human Research Ethics Committee University of the Witwatersrand Tel: 011 717 2301	Ms Mapula Ramaila Administrative Officer for the Committee for Human Research Ethics Committee (Medical) University of the Witwatersrand Tel: 011 717 2656

Appendix E: Consent form for participation in study

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHYSIOTHERAPY STUDENTS, SOUTH AFRICA

Participant Consent

I, _____have read and understood the Participant Information Sheet regarding the study and/or I have discussed the research study with the researcher. I have been adequately informed about the study by the researcher (interviewer). The researcher has explained the objectives of the study to me and answered any questions that I had about the study and my participation in the study.

I understand that reporting from the study will be anonymous and confidentiality will be guaranteed. I understand that I may withdraw at any point and may decline to answer any of the questions without any repercussions.

I understand how my responses will be captured, stored and analysed for the purposes of this study.

I provide my consent to participate in the interview for this study.

I provide consent for the use of any of my personal information (anonymised) and interview responses for the analysis and write-up of this study.

Signature of Participant: _____ Date: _____

Researcher Name: Laeeqa Sujee

Researcher signature: _____ Date: _____

Appendix F: Consent form for recording

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHYSIOTHERAPY STUDENTS, SOUTH AFRICA

Participant Consent for audio/video recordings

I, _____ understand the need to record this interview. The researcher has explained the reasons for this process. I have been informed that the interview process can be stopped at any time and the recordings will be deleted at my request.

I understand that I have the option of switching my camera on or off for this interview and that the researcher will have her camera on unless there are challenges with the bandwidth

I understand that the recording, the verbatim transcription and other details of the interview will be kept confidential and anonymised when stored.

I understand that all data will be stored with password protection accessed by solely by the researcher and her supervisors. I understand that it will be permanently deleted at a time stipulated by the ethics committee.

I consent to having the interview:
Audio recorded_____
Audio and Video-recorded_____

Participant Signature: _____ Date: _____
Researcher Name: Laeeqa Sujee
Researcher signature: _____ Date: _____

Appendix G: Demographic Questionnaire

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHYSIOTHERAPY STUDENTS, SOUTH AFRICA

DEMOGRAPHIC QUESTIONNAIRE

Please answer the questions listed below. The reason for this questionnaire is to gather background information regarding the participants of the study. If there are any questions that you do not wish to answer, you can leave them blank. If you have any questions or do not understand anything, please feel free to ask.

ALL INFORMATION PROVIDED WILL REMAIN ANONYMOUS AND CONFIDENTIAL.

1. **Date**:
2. **Age**:
3. **Sex:**

   These details are required for accurate follow-up contact details and the provision of the 1GB data:
4. **Preferred Contact Number**:
5. **Mobile Network**:
6. **Preferred email address**:
7. **Ethnicity/racial group**:
8. Which high school did you attend?
9. In which year did you commence your physiotherapy degree at the University of the Witwatersrand?
10. Please state other qualifications that you have as well as the learning institution at which it was completed:
11. Please state any work experience that you have:
12. At which clinical placement did you complete your Neuro Musculoskeletal (NMS/OPD) block in third year?
13. At which clinical placement did you complete your Neuro Musculoskeletal (NMS/OPD) block in fourth year?
14. Have you had experience with chronic pain in your personal life? If so, please elaborate:
15. Have you had experience with chronic pain in your clinical blocks? If so, which block?

Thank you for your time

Appendix H: Codebook

CODE BOOK

BROAD CODES	DEFINITION	FINES CODES	DEFINITION
Words used to describe chronic pain	Words or terms used to explain, define or describe pain	Long lasting	Refers to a description of chronic pain as a phenomenon which last for a prolonged period of time. This will include various time-frames mentioned such as longer than three months.
		Bone on bone/bones crushing	Refers to a description of chronic pain, most likely arthritis which is explained using these words.
		Never-ending	Refers to chronic pain being a life-long, persistent phenomenon and something that does not disappear.
		Beyond normal healing	Refers to pain persisting beyond the normal healing period.
		Longer than a particular period of time	Refers to pain persisting beyond the "normal" time frame.
		Medical jargon	Refers to any medical jargon used to describe chronic pain such as, inflamed, neurogenic, nerve impingement, upregulation, dysregulation
		Overuse injury	Refers to chronic pain being as a result of overuse to particular anatomical structured such as joints, muscles and ligaments.
		Cortically mediated	Refers to chronic pain as being driven by a cortical mechanism
		Intensity	Refers to chronic pain being described in terms of various levels of intensity.
		Inability to find a cause	Refers to chronic pain which comes from no obvious biological source
		Pain which does not respond to any treatment	Refers to chronic pain that does not go away regardless of the treatment provided
		Subjective in nature	Refers to chronic pain which is different in each person, based on a the person and understood differently by each treating clinician
Perceptions of patients with chronic pain	Understanding, thoughts, attitudes, feelings and opinions of students towards patients with chronic pain	Attitudes/thoughts towards patients with chronic pain	Attitude about / opinion about/ thoughts about patients with chronic pain.
		Feelings regarding chronic pain and people with chronic pain	Emotional reaction to / emotional state about / attitude about / opinion about patients with chronic pain.
Causes of chronic pain	Things mentioned as causes of pain, potential causes of	Medical	Any medical condition which results in or contributes to pain
		Psychological	Any psychological condition/factors which result in or contribute to pain
		Social	Any social factors which result in or contribute to pain

	pain or contributing factors to pain	Ergonomics	Any factors related to one's ergonomics which result in or contribute to pain
		Injury/overuse	Any physical injury including overuse injury which results in or contributes to pain
Consequences of chronic pain	The results or effects of chronic pain	Functionality	Refers to the consequences of chronic pain on one's functionality including Activities of Daily Living (ADLs)
		Work	Refers to the consequences of chronic pain on one's occupation
		Mood	Refers to the consequences of chronic pain on one's mood such as frustration and despair
		Relationship with others	Refers to the consequences of chronic pain on one's personal relationships with those in their lives, be it family, friends, colleagues or anyone who they meet.
Factors influencing the pain experience of a person who has chronic pain	This refers to any factor which has an effect/influence on a person's chronic pain, such as what makes it easier or more difficult for someone to deal with their chronic pain	Easing factors	Refers to positive factors in the life of a person with chronic pain which make it easier for them to deal with their pain. This includes support, understanding of the causes of their pain, compliance to medical advice and management, counselling, motivation and positivity.
		Aggravating factors	Refers to negative factors in the life of a person with chronic pain which makes it more difficult for them to deal with their pain/aggravates their pain/hinders their progress. This includes lack of education on their condition and/or pain, family and work strain, socio-economic factors, personal unwillingness to comply to advice provided, lack of compliance to medical advice, external factors such as COVID-19 protocols
Psychosocial factors in the context of chronic pain	Refers to the combined influence that psychological factors and the surrounding social	Psychological factors	Refers to any factor arising in the mind and is related to the mental and emotional state of a person.
		Social Factors	Refers to factors that affect one's lifestyle and include things like finances, occupation, education level and family
		"Mental" factors	This term is interpreted differently by participants. This will be coded for a direct mention of the word "mental"

	environment have on chronic pain	Yellow flags: Attitudes Beliefs Compensation Diagnosis Emotions Family Work	 Refers to the attitudes of a patient with chronic pain towards their pain Refers to the unhelpful beliefs of a patient with chronic pain about their pain Refers to financial remuneration such as Workman's compensation or Road Accident Fund Refers to the understanding of a patient with chronic pain regarding their diagnosis Refers to the emotions of a patient with chronic pain in the context of their chronic pain Refers to the family of a patient with chronic pain Refers to the occupation and working condition of a patient with chronic pain.
Biomedical/ biological factors	Any factor that refers to the biological make-up of an individual such as excessive load, tissue pathology, system dysfunction, nociception, inflammation and genetics	N/A	N/A
Biopsychosocial	Anything that refers to the interconnection between biology, psychology, and socio-environmental factors	N/A as the fine codes for this will be as noted in the above 2 codes	N/A
Interdisciplinary management vs multidisciplinary management	The management of chronic pain through an interdisciplinary team and/or multidisciplinary team	Referrals	Refers to a referral system to other healthcare workers
		Medical doctors	Refers to any communication/experience with medical doctors regarding a patient with chronic pain
		Psychologists	Refers to any communication/experience with psychologists regarding a patient with chronic pain
		Social workers	Refers to any communication/experience with social workers regarding a patient with chronic pain
		Dietitians	Refers to any communication/experience with dietitians regarding a patient with chronic pain

		Occupational therapists	Refers to any communication/experience with occupational therapists regarding a patient with chronic pain
Judgement of the effectiveness of their management of the patient	Students' understanding, perception, judgement of the effectiveness of their management of patients with chronic pain	Pain specific	Refers to students' judgement of their management of patients with chronic pain, specific to influence on the patients' pain.
		Function	Refers to students' judgement of their management of patients with chronic pain, specific to influence on the patients' function.
		Quality of Life	Refers to students' judgement of their management of patients with chronic pain, specific to influence on the patients' quality of life.
		Holistic/biopsychosocial approach	Refers to students' judgement of their management of patients with chronic pain in a holistic or biopsychosocial approach.
Experiences managing patients with chronic pain	Any reference to a particular patient with chronic pain or recounting an experience with a patient with chronic pain (what they did, what they didn't do)	Patient encounter	Refers to any anecdote of an encounter with a patient with chronic pain
		Clinical reasoning	Refers to a student's application of clinical skills in terms of the management of a patient.
		Clinical Conditions	Refers to clinical conditions seen by the student
		Assessment	Refers to any assessment which includes the subjective assessment, objective or physical assessment and use of outcome measures
		Management	Refers to any therapeutic management of the patient with chronic pain by the student physiotherapist, their colleagues or superiors
		Private vs. public health sector	Refers to any mention of experiences specific to the private sector or public sector and/or comparisons between the two.
		Clinical placement	The hospital or clinic where the student was placed for the block during which they see chronic pain patients influences their experiences of the phenomenon
Patient education provided to the patient	Any reference to patient education provided to the patient with chronic pain by the student physiotherapists, their colleagues or superiors	Pain Neuroscience Education	
		General pain education	Refers to any education provided on what pain is, what chronic pain is, what causes it, how to treat it etc
		Ergonomics/occupational health	
		Education regarding lifestyle modification	Refers to education on changes to lifestyle (weight-loss, sleep, diet etc), management of chronic conditions related to chronic pain and coping strategies
		Education on exercise	Refers to education on exercise in the context of chronic pain
		Education on general pain relief techniques	Refers to any education on pain relief techniques such as heat therapy, ice therapy, breathing exercises, meditation, distraction techniques, relaxation techniques, sleep and exercise
		Education on assessment and treatment techniques	Refers to any education provided to the patient based on any assessment and/or treatment technique conducted

General clinical experiences	Students experiences during their clinical training	N/A as this was an opening question and not related to chronic pain	N/A
Skills	Expertise or talent needed in order to treat patients with chronic pain effectively.	Communication skills	Refers to any skill involving communication/conversation/subjective assessment/interviews with patients with chronic pain.
		Improvement of clinical skills	Refers to anything that will assist one in improving on current skills
		Handling and observation	Refers to skills of observation, hand placement and technique
		Hands on techniques	Refers to physiotherapy skills which require the physiotherapist to touch the patient
		Providing patient education	Refers to physiotherapy skills referring to any patient education
		Assessment skills	Refers to any assessment of the patient as an important skill
Challenges with treating patients with chronic pain	Difficulties experienced when treating patients with chronic pain	Compliance to physiotherapy programme	Refers to challenges students experienced which resulted from patients' poor compliance to the physiotherapy programme.
		Understanding of the cause of the patient's pain	Refers to challenges students experienced which resulted from poor understanding of the source of cause of patient's pain.
		Understanding of the patient's prognosis	Refers to challenges students experienced which resulted from poor understanding of the patient's pain prognosis (specifically in terms of providing a time-line for recovery and discharge from physio).
		Assessment and treatment techniques to be used with patients with chronic pain	Refers to challenges students experienced which resulted from poor understanding of assessment and treatment techniques to choose for patients with chronic pain.
		Ambiguity	Refers to challenges students experienced which resulted from poor the lack of structure or lack of clear protocols for patients with chronic pain.
		Empowerment vs. Dependence on physiotherapy of the patient	Refers to challenges students experienced which resulted from poor understanding of what to do/how to treat such that the patient is empowered rather than dependent on physiotherapy
		Concern regarding treatment provided	Refers to concern on the students' part regarding the belief that they are not treating the patient effectively or that a qualified physiotherapist/someone else would be more effective.
Personal experiences living with pain	Factors related to the individual which influence students' management of	Personal chronic pain	Refers to any personal experience with chronic pain which influences their management of chronic pain
		Personal injury	Refers to any personal experience with an injury which influences their management of patients

	patients with chronic pain	Personal pain	Refers to any personal experience with any pain which influences their management of patients
Training	Factors related to knowledge, learning and experience with pain which influence students' management of patients with chronic pain.	Theoretical	The modules/courses which increased the knowledge and understanding of students regarding chronic pain.
		Clinical	The clinical training and experience which increased the knowledge and understanding of students regarding chronic pain. This includes the assistance received from clinical supervisors
		Support	The emotional and physical support provided to students during their training.
		External influences on training, e.g. COVID-19	External factors which influenced training such as COVID-19 restrictions resulting in online teaching
Coping Strategies	Practices and attitudes to mitigate and/or reduce the cause of an overwhelming day , and/to reduce or manage the one's feelings.	Positivity and reward	Positive attitude, including hopefulness, sense of perspective, future-oriented, work ethic.
		Family time	Spending quality time with immediate family, partner, and/or pets.
		Leisure	Activities done for the purpose of relaxation, entertainment, or fun.
		Work support	Accessing the support provided through, or encountered in, the workplace, including sharing/talking with colleagues, psychosocial support services, debriefing.
		Substances	Use of substances such as alcohol.
		Rest / sleep	Me-time, bath/shower, doing nothing, sleeping.
		Blocking it out	Accepting the dogma of "what happens at work, stays there"
		Information	Using opportunities such as reading, researching, asking questions and learning from others including patients to gain a better understanding of concepts
		Physical activity	Exercise or any other physical activity done to put one's mind at ease
		Debriefing	Refers to speaking someone formally or informally
Context	Factors outside of theoretical and clinical training as well as personal factors which influence the management of chronic pain	COVID-19	The influence that COVID-19, lockdown and restrictions had on the management of patients with chronic pain
		Current affairs	Any factor in the present day which influenced the management of patients with chronic pain
		Clinical Space	Refers to the environment in which patients are treated and includes resources available for treatment

Appendix I: Permission letters

Appendix I.1: HREC

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Miss Laeeqa Sujee

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M210833

NAME: (Principal Investigator)	Miss Laeeqa Sujee
DEPARTMENT:	School of Public Health Department of Physiotherapy
PROJECT TITLE:	Perceptions and experiences of chronic pain in clinical practice among University of the Witwatersrand Physiotherapy students, South Africa
DATE CONSIDERED:	27/08/2021
DECISION:	Approved unconditionally
CONDITIONS:	
NOTE:	If contact information regarding student study participants is required, please contact the University Registrar's office <Nicoleen.Potgieter@wits.ac.za>
SUPERVISOR:	Prof N. Christofides and Miss S. Munshi
APPROVED BY:	CB Penny Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	25/10/2021

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions.Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I **agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **August** and will therefore be due in the month of **August** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Sujee — 25/10/2021

Principal Investigator Signature — Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix I.2: HOD of Therapeutic Sciences

To: Professor Hellen Myezwa
HoS, School of Therapeutic Sciences,
Faculty of Health Sciences
University of the Witwatersrand
1 October 2021

Dear Professor Myezwa

Re: Permission to conduct research with final year physiotherapy students

I am currently finalising my ethics submission for a research study as part of the requirements to complete my Master of Public Health degree. The research study aims to explore the perceptions and experiences of Wits University physiotherapy students regarding chronic pain in their clinical practice. Information gathered through this study could assist in curriculum development for future students. Insights from the study could also assist in tailoring CPD courses on chronic pain. Participation in my study is voluntary, there will not be any consequences should students choose not to participate and there are no risks to participating in this study.

Final year physiotherapy students will be invited to participate in an in-depth individual interview over Microsoft Teams. The interviews will take approximately one hour and students will be reimbursed with 1GB of data. Participation in this study is completely voluntary and refusal to participate will not incur penalty or loss of benefits to which the participant is otherwise entitled. All information provided will be de-identified and kept confidential. This study has been provisionally approved by the University of the Witwatersrand Human Research Ethics Committee on 28th September 2021 (see letter granting provisional approval from HREC).

The Ethics Committee requires a letter of permission from Professor Veronica Ntsiea, as Head of the Physiotherapy Department granting permission to conduct this study, which I have requested. In addition, The Ethics Committee also requires a letter of permission from you, as Head of School granting permission to conduct this study. The letter would be submitted, as required, with the form requesting university permission as well. I hereby request a signed letter of permission for this study to be conducted with final year physiotherapy students.
If you have any further questions about this study, please contact the people listed below:

Student Researcher: Laeeqa Sujee Mobile Number: 073 820 9668 Email: 838811@students.wits.ac.za	Supervisor: Nicola Christofides Wits School of Public Health Education Campus, Parktown Tel: 011 717 2566 Mobile Number: 082 7748547 Email: Nicola.Christofides@wits.ac.za

Thank you

Kind regards

Laeeqa Sujee, Student Number- 838811

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHSYIOTHERAPY STUDENTS, SOUTH AFRICA

Permission

I, Professor Hellen Myezwa have read and understood the Information Sheet regarding the study and/or I have discussed the research study with the researcher. I provide permission for the study to be conducted with final year physiotherapy students.

Signature of HoS: 

Date: 08-10-2021

Researcher Name: Laeeqa Sujee

Researcher signature:  Date: 01/10/2021

Appendix I.3: HOD of Physiotherapy Department

To: Professor Veronica Ntsiea
HoD, Physiotherapy Department,
School of Therapeutic Sciences, Faculty of Health Sciences
University of the Witwatersrand
1 October 2021

Dear Professor Ntsiea

Re: Permission to conduct research with final year physiotherapy students

I am currently finalising my ethics submission for a research study as part of the requirements to complete my Master of Public Health degree. The research study aims to explore the perceptions and experiences of Wits University physiotherapy students regarding chronic pain in their clinical practice. Information gathered through this study could assist in curriculum development for future students. Insights from the study could also assist in tailoring CPD courses on chronic pain. Participation in my study is voluntary, there will not be any consequences should students choose not to participate and there are no risks to participating in this study.

Final year physiotherapy students will be invited to participate in an in-depth individual interview over Microsoft Teams. The interviews will take approximately one hour and students will be reimbursed with 1GB of data. Participation in this study is completely voluntary and refusal to participate will not incur penalty or loss of benefits to which the participant is otherwise entitled. All information provided will be de-identified and kept confidential. This study has been provisionally approved by the University of the Witwatersrand Human Research Ethics Committee on 28th September 2021 (see letter granting provisional approval from HREC).

The Ethics Committee requires a letter of permission from you, as Head of the Physiotherapy Department granting permission to conduct this study. The letter would be submitted, as required, with the form requesting university permission as well. I hereby request a signed letter of permission for this study to be conducted with final year physiotherapy students.

If you have any further questions about this study, please contact the people listed below:

Student Researcher: Laeeqa Sujee Mobile Number: 073 820 9668 Email: 838811@students.wits.ac.za	Supervisor: Nicola Christofides Wits School of Public Health Education Campus, Parktown Tel: 011 717 2566 Mobile Number: 082 7748547 Email: Nicola.Christofides@wits.ac.za

Thank you

Kind regards

Laeeqa Sujee, Student Number- 838811

PERCEPTIONS AND EXPERIENCES OF CHRONIC PAIN IN CLINICAL PRACTICE AMONG UNIVERSITY OF THE WITWATERSRAND PHSYIOTHERAPY STUDENTS, SOUTH AFRICA

Permission

I, _____Monique M. Keller (Acting HOD)_____have read and understood the Information Sheet regarding the study and/or I have discussed the research study with the researcher. I provide permission for the study to be conducted with final year physiotherapy students.

Signature of HOD: _____ Date: __11 October 2021_____

Researcher Name: Laeeqa Sujee

Researcher signature: Date: 01/10/2021

Appendix I.4: University deputy Registrar

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

OFFICE OF THE DEPUTY REGISTRAR

26 October 2021

Laeeqa Sujee

Student Number (838811)

Master of Public Health
School of Public Health

TO WHOM IT MAY CONCERN

" Perceptions and experiences of chronic pain in clinical practice among university of the Witwatersrand Physiotherapy students, South Africa."

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants' rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained. (Protocol number: M210833)

Research Expiration: (25 October 2026)

Potgieter

Nicoleen Potgieter
University Deputy Registrar

Appendix J: Turn-it-in report

Research Report 26_06_2022 for turn it in.docx

ORIGINALITY REPORT

3%	2%	2%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	global.oup.com Internet Source	<1%
2	www.science.gov Internet Source	<1%
3	hdl.handle.net Internet Source	<1%
4	academic.oup.com Internet Source	<1%
5	Alexander A Vendrig. "The minnesota multiphasic personality inventory and chronic pain", Clinical Psychology Review, 2000 Publication	<1%
6	G. Colleary, K. O'Sullivan, D. Griffin, C.G. Ryan, D.J. Martin. "Effect of pain neurophysiology education on physiotherapy students' understanding of chronic pain, clinical recommendations and attitudes towards people with chronic pain: a randomised controlled trial", Physiotherapy, 2017 Publication	<1%