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PATIENT'S PERCEPTIONS ON THEIR RECOVERY OF PHYSICAL FUNCTION AFTER POLYTRAUMA

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A research dissertation submitted to The University of The Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Masters in Physiotherapy.

Supervisors: Mrs Monique Keller
Prof Helena Van Aswegen

14 June 2023

DECLARATION

I, Mughammad Abubakr Reis, hereby declare that this dissertation is my own work, all the sources which have been used in this dissertation have been referenced appropriately. I declare that this dissertation has not been submitted to another university previously, in order to obtain a degree.



Signed

Date : 14-06-2023

ABSTRACT

Background: The prevalence of polytrauma is increasing globally and in South Africa, resulting in a contribution to the already increasing rate of disability. Early physiotherapy intervention in the acute care setting has been shown to reduce the risk of complications and facilitate functional recovery of patients sustaining polytrauma injuries. There is minimal evidence exploring the patient's perceptions of their health care service provision following polytrauma injury in an acute care and outpatient setting.

Objectives: To explore patient's perceptions of their recovery of physical function after polytrauma.

Method: A qualitative single case study design comprising of nine semi structured interviews with key informants, selected through purposive and snowball sampling, was employed in a private trauma facility in Johannesburg. Inductive data analysis was conducted utilising MAXQDA to derive codes and themes from the interview transcripts.

Results: Major themes which arose reflected barriers and facilitators to the patient's perceptions of their recovery of physical function amongst patients sustaining polytrauma injuries. Several themes arose, namely, level of satisfaction with care, post-discharge rehabilitation, mental health status and mental resilience, level of disability, pain and physical function, as well as support structures.

Conclusion: Factors influencing patient's perceptions of their recovery of physical function following polytrauma injury are multifactorial. Most noteworthy is that interpersonal relationships significantly influence patient's perception of care.

Clinical implications: This study may inform clinical practice in the management of patients sustaining polytrauma injuries, by addressing barriers and promoting facilitators identified. The study may also be used to inform policy related to patient management following polytrauma injury.

DEDICATION

I dedicate my efforts to:

The Almighty firstly, to my beloved wife, parents and family.

Your support has been invaluable.

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- I thank The Almighty for the innumerable bounties and mercy upon me to complete this with ease.

- With special thanks to my supervisors, Professor Heleen Van Aswegen and Mrs Monique Keller, for your patience, expert advice, and guidance throughout this study.

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LIST OF ABBREVIATIONS

AIS - Abbreviated Injury Scale
D/C - Discharge
ICU - Intensive Care Unit
PICS - Post Intensive Care Syndrome
PTSD - Post Traumatic Stress Disorder
WHO - World Health Organisation

CHAPTER 1

1. INTRODUCTION

Polytrauma is a life-threatening condition in patients who have sustained multiple injuries to various parts of their body due to physical trauma, resulting in orthopaedic and systemic injuries (Rau et al., 2017). Polytrauma is the leading cause of death worldwide in people aged five to 44 years. While there have been improvements in polytrauma care, the leading cause of mortality in polytrauma cases is uncontrolled bleeding (Corradi et al., 2011; Bajwa et al., 2011). Hence, patients suffering from polytrauma have a higher risk of death (Berkeveld et al., 2021). According to Muniz et al., (2017), trauma is attributed to many deaths globally where trauma accounts for more deaths than human immunodeficiency virus/acquired immune deficiency syndrome, and this subsequently contributes to a significant number of deaths in South Africa (Van Breugel et al., 2020). Patients who survive traumatic events become victims of trauma, often not receiving the quality of care they need to optimise their recovery (Van Breugel et al., 2020). This care includes surgical intervention, nursing care, physiotherapy, occupational therapy and psychiatric intervention. Causes of polytrauma in South Africa, in order of incidence include, road traffic accidents (61%), fall from height (25%) and falling of heavy objects on top of individuals (7%) (Moodley, Aldous and Clarke, 2014). A combination of orthopaedic injuries such as pelvic and rib fractures as well as abdominal injuries are sustained due to these events (Moodley, Aldous and Clarke, 2014). Internationally, polytrauma takes on many meanings but is generally used as a predictor where these multiple injuries in combination result in more than a 10% risk of patient deaths (Rau et al., 2017). By extension, it is then anticipated that these patients would require more expensive medical and surgical management, endure a longer intensive care unit (ICU) and hospital stay and utilise more hospital resources (Rau et al., 2017). The World Health Organisation stated that the annual global injury mortality rate is five million, with almost a fifth of these deaths occurring in Africa (Mathers, 2008). According to Hardcastle et al., (2016), South Africa is a middle-income country and approximately 90% of deaths occur due to trauma, with approximately 50 000 trauma related deaths annually across South Africa (Lozano et al., 2012).

It is estimated that the number of trauma survivors are between 10 and 50 times that of trauma related deaths. Of these survivors, 50% live with permanent disability (Matzopoulos et al., 2015). In 2011, one of South Africa's metropolitans (Pietermaritzburg), with a population of approximately one million, reported that their trauma services saw 10 644 patients in one year (Moodley et al., 2014). This number was broken down to percentages where assault-related injuries accounted for 35%, motor vehicle accidents 35%, stabbings 26% and gunshot wounds five percent. In five percent of the patients, ICU admission was required and almost

half were from motor vehicle accidents (Moodley et al., 2014). The burden of disease caused by trauma is significant in low to middle income countries such as South Africa as it places an increased strain on specialised services in the public health system where specialised services are often lacking. Despite this increased burden of disease, the South African government has continued to focus on primary healthcare to increase accessibility of healthcare. In doing so, it has inadvertently placed less emphasis on tertiary healthcare and so by extension trauma (Hardcastle et al., 2016). A study conducted in the KwaZulu Natal province of South Africa, describes the high burden of disease due to trauma and generalises this trend across South Africa (Hardcastle et al., 2016). This high number strains a resource limited system where there is a reduced capacity for rehabilitation and intensive care service provision. The study also shows that there is no defined system designed to manage trauma efficiently and establish adequate referral pathways. Sherry (2014) also shows a lack of adequate pathways for rehabilitation referrals in South Africa, in the sense that there is a limited presence of referral pathways, and in the case where they are present, the exclude vital health care services such as physiotherapy, occupational therapy and psychology for example. Hardcastle et al., (2016) also outlines the need for prevention programmes and resource allocation for individuals who sustained traumatic injuries to be managed better. Furthermore, surgical morbidity has been found to be under-reported with reasons such as a blame culture and inadequate data collection methods utilised being most notable (Kong and Clarke, 2016). Due to the complexity of surgical interventions and the different stakeholders, there is shifting of responsibility and accountability amongst those involved.

De Vries et al., (2018), explored the Dutch Trauma Registry from 2009 and 2014, and discovered that 47.8% of polytrauma patients were over the age of 60, implying that the majority of the polytrauma cases were in younger people between the ages of 18 to 59 years. In South Africa, Gauteng is a populous region with a high ratio of young people compared to older people. According to De Vries et al., (2018), younger people are more at risk of polytrauma injuries through high impact traumatic events and more severe injuries such as traumatic brain injuries. In terms of health spending models, South Africa and the Netherlands have shown similarities in the spending models as well as presentation polytrauma amongst younger individuals (Ataguba, 2021). Despite the lower incidence of polytrauma in the elderly, the potential of recovery is lower in this population group due to an increased association of comorbidities leading to increased risk factors. In contrast, the younger population have a higher potential to recover despite the high energy injuries due to a lower association of risk factors and a higher potential for regeneration and physiological recovery mechanisms (De Vries et al., 2019). A retrospective analysis conducted in Qatar by Arumugam et al., (2015) reviewed patient records and objective outcome measures from 2008 to 2011. They found that the majority (93%) of polytrauma patients were males averaging the age of 30. This

alludes to the importance of considering gender when reviewing statistics relating to polytrauma.

Long term immobility due to the need for intubation, mechanical ventilation, and sedation therapy in ICU after sustaining polytrauma, leads to patients developing neuromuscular weakness that often results in physical impairments, loss of function, and negatively affects their quality of life. These impairments have been noted to last for as long as half a decade in more than 80% of ICU patients (Needham et al., 2012; Desai et al., 2011; Fletcher et al., 2003). In long term follow up, as many as 85% of patients who have been diagnosed with polytrauma reported to still have pain where the severity of pain and quality of life, correlated with severity of the initial trauma (Gross and Amsler, 2011). It is important to note the effects of immobility on the human body such as a decrease in muscle bulk, bone density as well as impairments in other bodily systems (Parry and Puthucheary, 2015). Mariñansky and Jauregui, (2020) found that prolonged bed rest may lead to patient deconditioning and patients presenting with depression, lethargy, anorexia, dehydration, neuromuscular instability, decreased bone density, muscular weakness and incoordination, altered bladder and bowel function or even incontinence. Furthermore, the negative and potentially harmful effects of bed rest significantly affect the cardiovascular, respiratory, and musculoskeletal systems, in particular antigravity muscles in the lower limb extensors and trunk musculature (Parry and Puthucheary, 2015). These effects are often exacerbated in patients with critical illness as these patients are often confined to bed rest for longer periods of time due to their fracture management (Parry and Puthucheary, 2015). The weakness they may present with from a musculoskeletal point of view will be as a result of the immobility associated with delay in fracture management surgery due to initial instability of a patient's condition. Additionally, this may be due to the development of sepsis and organ failure due to critical illness leading to the development of ICU-acquired weakness (Jolley et al., 2016). Early physiotherapy intervention such as cardiopulmonary physiotherapy techniques and neuromusculoskeletal rehabilitation techniques have been shown to improve the outcome of patients suffering from traumatic injuries, both in reducing hospital length of stay and improved physical function (Gohy et al., 2016).

As the survival rate of patients with polytrauma increases due to advancements in many areas of patient management, the resulting disabilities post ICU admission has increased in both number and complexity (Reid et al., 2019). In a study at a single institute in Germany, 4849 polytrauma patient cases over 30 years were analysed and it was found that the rate of mortality declined from 37% in the first decade to 22% in the second and 18% in the third (Probst et al., 2009). The increase in survival rate is directly proportionate to the prevalence of disability. These disabilities included decreased mobility and limited functionality in

activities of daily living (Probst et al., 2009). Addressing this, physiotherapists have begun their interventions earlier in patients' ICU stay to allow for early mobilisation and improved functional capacity (Needham et al., 2012). This vital role that physiotherapy plays in ICU patient management has led to reduced length of hospital stay and reduced number of readmissions, and hence the recommendation for increased referral to physiotherapy in the general ICU setting (Malone et al., 2015).

A lack of communication and skills competency of members of the interprofessional team influences patient's perceptions of their recovery (Nantz and Hines, 2015). Feelings of anxiety and frustration by the patient are reported due to a lack of education received on the healing process, as well as a loss of independence and physical function (Claydon et al., 2017). Feelings of anxiety and frustration are increased by delayed healing times, unsuccessful surgical management, and wound infections (Claydon et al., 2017). Patients report taking ownership and accountability for their recovery both in hospital and upon discharge when they felt they had received the necessary guidance (Claydon et al., 2017).

It is important to consider all factors influencing a patient's perception of their recovery, which this study aimed to do. A study conducted by Larsen et al., (2016) showed a decreased quality of life reported by patients who sustained polytrauma injuries. They also found that 32% of patients had returned to work after one year of recovery. This shows the importance of patient perceptions of their quality-of-life post injury. Taherinia et al., (2016), explain the role of pain in polytrauma and that there may be barriers to improvement of pain levels experienced. This may be influenced by the patient's perceptions of their pain level, the management of their pain and how this perception influences recovery (Taherinia et al., 2016). The role of pain in polytrauma has been shown to be significant. Peixoto et al., (2018), report that majority of patients who sustained polytrauma injuries due to motor vehicle accidents, experienced chronic pain including headaches, overall bodily pain, and poor sleep outcomes. A factor which also affects recovery of physical function after polytrauma is family or caregiver support structures (Peixoto et al., 2018). For the purpose of the present study, caregivers were defined as medical or non-medical individuals who took primary responsibility for the patient either for long term or short-term periods. Boyle (2015) describes the important role of family support on the patient's perceptions of their recovery. While the support of family members or caregivers is integral to recovery in polytrauma, Friedemann-Sanchez et al., (2012) highlights that for families of patients who sustain polytrauma injuries, appropriate support and information need to be given by health care professionals for ideal care of these patients.

1.1 PROBLEM STATEMENT

Management of a patient who sustained injuries related to trauma often require interprofessional care. The possibility for high level of disability is addressed by optimising in-hospital care which includes early commencement of rehabilitation programs (Hardcastle et al., 2016). It has been found in different cultures that those patients who show signs of depression after skeletal trauma, report disability and posttraumatic stress disorder, resulting in difficulty with work and community reintegration (Nota et al., 2015). It has been shown that the levels of psychological distress in the early stages after injury are correlated to later outcomes of recovery (Nota et al., 2015). The financial implication of prolonged in-hospital stay is far reaching, placing a burden on an already strained South African healthcare system, the patient themselves, their families and society at large (Seneff et al., 2000). A prolonged in-hospital stay poses the need for ongoing rehabilitation post discharge thus leading to increased medical costs (Hong et al., 2020). There is a lack of research regarding the patient's perceptions on recovery of physical function after polytrauma in a South African context. The lack of knowledge on patient's perceptions of care could lead to limited communication pathways between practitioner and patient as well as a malalignment of rehabilitation goals between the two.

1.2 AIM OF THE STUDY

The aim of the study is to explore patients' perceptions of their recovery of physical function after polytrauma.

1.3 OBJECTIVES OF THE STUDY

1.3.1 To explore patients' perceptions of the effect of health care provision received in-hospital on recovery of their physical function after polytrauma.

1.3.2 To explore patients' perceptions of the rehabilitation service provision received in-hospital on recovery of their physical function after polytrauma.

1.3.3 To explore patients' perceptions of the effect of health care provision received after hospital discharge on recovery of their physical function after polytrauma.

1.3.5 To explore the patients' perceptions of their ability to reintegrate into the community and workplace after polytrauma.

1.3.6 To explore patients' perceptions of the effect of secondary complications developed while in-hospital on their recovery of physical function after hospital discharge.

1.3.7 To explore the patients' perceptions of the effect of pain and its impact on their ability to perform functional activities after hospital discharge.

1.3.8 To explore the patients' perceptions of the effect of their own family and caregiver support structures on recovery of their physical function after polytrauma.

1.3.9 To explore patients' perceptions of the rehabilitation service provision received after hospital discharge on recovery of their physical function after polytrauma.

1.4 RESEARCH QUESTION

What are the perceptions of patients of their recovery of physical function after polytrauma?

1.5 SIGNIFICANCE OF THE STUDY

Claydon et al., (2017) report that patients who experienced polytrauma injury, expressed that they benefitted from guided rehabilitation. The current study looked at exploring the patient's perceptions of the effect of health care and rehabilitation service provision received on their recovery of physical function after hospital discharge, providing insight into an area that is lacking in the literature. This current study may impact future clinical decision-making as it provides health care professionals with some understanding of patients' perceptions regarding rehabilitative care provided. It may inform current clinical practice and lead to the development or revision of rehabilitation and general health care guidelines on service delivery provided to patients who are recovering from polytrauma injury.

1.6 CONCLUSION

The perception of recovery after polytrauma from the patient's perspective is integral to understanding the recovery process holistically. The aim was to explore these perceptions through a qualitative study utilising semi-structured interviews. The above chapter explained an introduction to the topic and the study. The next chapter is a literature review that investigates literature related to patient's perceptions of recovery following polytrauma and its associated factors.

CHAPTER 2

2. LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the literature related to polytrauma, patient perceptions of care as well as the role of physiotherapy in patient management. The review is structured according to the various definitions of polytrauma, followed by setting the global and South African epidemiology of polytrauma. This is followed by exploring the outcomes of polytrauma patients and the role that patient's perceptions and physiotherapy play in their recovery. Finally, this chapter discusses the literature relating to the qualitative research methodology utilised for this study.

2.2 DEFINING POLYTRAUMA

There are numerous definitions of polytrauma according to the available literature. The Abbreviated Injury Scale (AIS) defines polytrauma according to varying levels of injury severity in different body regions. The AIS defines and grades polytrauma according to six categories with level one being minor injuries and level six being the most severe with no chance of survival (Greenspan, McLellan and Greig, 1985). The AIS was scrutinised and flaws in the framework were identified by Hsieh et al., (2018), who revealed that in patients with severity scales greater than level three, the AIS did not justify why there was the vast difference in mortality rates. Instead, this same study provided a broader definition of polytrauma by utilising polytrauma as the term given to describe patients who have experienced trauma and sustained multiple severe injuries (Hsieh et al., 2018).

Butcher and Balogh (2014) argued that the definition of polytrauma is lacking consensus and validation. Despite this, the current consensus is that the definition of polytrauma should include both anatomical and physiological parameters (Butcher and Balogh, 2014). Another definition of polytrauma is the new Berlin definition where the definition extends beyond merely stating the number of injuries in various regions, but also includes the extent to which the injuries cause a life-threatening condition (Rau et al., 2017). Additional criteria include the requirement of laparotomy, existence of severe shock, involvement of at least one vital organ necessitating ICU admission, and systemic inflammatory response syndrome on at least one day during the first 72 hours (Rau et al., 2017).

Kalsotra et al., (2016) defined polytrauma as primarily blunt traumatic injuries in more than one limb or cavity, which lead to physiological defects and have the potential to cause organ damage to unaffected organs. The study also revealed that lower limb injuries accounted for

68.7% of polytrauma injuries in the study population. Marsden (2021) extends the above definition by attributing disability to polytrauma.

Another viewpoint of polytrauma is that it is characterised by a lesion model that involves numerous anatomical regions (Padovani, Da Silva and Tanaka, 2017). There are numerous definitions of polytrauma, but they all allude to the fact that polytrauma is a result of impact injuries which either lead to mortality or morbidity. For the current study, the operational definition of polytrauma selected is the New Berlin definition which reviews polytrauma from a physical impact point of view as well as the implications on long term functionality and physiological health. This definition has been selected as it takes a more holistic approach to viewing the effects of polytrauma and not only the short-term physical impairments (Rau et al., 2017).

2.3 EPIDEMIOLOGY

According to the World Health Organisation report on injuries and violence (2021), approximately eight percent of global deaths are caused by traumatic injuries annually. The report also states that people in low to middle income areas are more likely to be vulnerable to traumatic injuries and death. This is a reduction of one percent compared to the report in 2014. This reduction in trauma may be associated with the impact of the global Covid-19 pandemic and its associated lockdowns and restrictions, which limited alcohol consumption and numerous activities which generally cause polytrauma (Chu et al., 2022). Despite a reduction in trauma statistics over the pandemic period, overall, there has been an increase in polytrauma since 2000 in Africa, caused by road traffic accidents (World Health Organisation, 2021).

Polytrauma is reported to account for approximately 40% of hospital admissions in developing countries (Padovani, Da Silva and Tanaka, 2017) with injury to the extremities accounting for 60% of polytrauma cases (Devendra et al., 2020). Polytrauma contributes to more than five million deaths globally (Halvachhizadeh et al., 2020). A higher prevalence of polytrauma is reported for patients between 21 and 40 years (Kalsotra et al., 2016) and it is the leading cause of death amongst those aged 40 and younger (Devendra et al., 2020). Males are four times more likely to sustain polytrauma injuries than females (Tripathi et al., 2021; Kalsotra et al., 2016).

The incidence of polytrauma in low to middle income communities in South Africa is high (Hardcastle et al., 2016). An example of this is in the province of KwaZulu Natal, where approximately 90% of polytrauma cases occur in low to middle income communities (Hardcastle et al., 2016). In 2009, approximately 50 000 deaths were recorded due to

polytrauma. There is a directly proportional relationship between poor socioeconomic situations and the incidence of polytrauma (Hardcastle et al., 2016). Another study conducted in an urban metropolitan namely, Pietermaritzburg audited the prevalence of polytrauma between the first of December 2010 and the end of January 2011. The study found that 1105 deaths were attributed to polytrauma within two months, with most patients being males (Moodley, 2014).

These statistics are in keeping with those of the World Health Organisation given South Africa's socioeconomic status (Moodley, 2014).

2.4 BURDEN OF DISEASE

With an increasing rate of survival amongst polytrauma cases, there is an increased rate of residual complications and disability, resulting in a higher need for rehabilitation services. In a country like South Africa, the health care system is already strained has been placed under further strain since the beginning of the Covid-19 pandemic. This increased demand for rehabilitation service provision for polytrauma survivors' results in a higher burden of disease and places tension on an already strained health care system (Lewis and Wood, 2015; Saggie, 2013). Lewis and Wood (2015) investigated admissions into ICU in Kwa-Zulu Natal in South Africa, over a five-year period. They found that an average of 62 of trauma cases were admitted monthly to the ICU and only a small percentage of patients were referred to step down facilities due to prolonged hospital stay before discharge. Van Breugel et al., (2020) explored the global changes to mortality rates in polytrauma patients and found that there has been a decrease of 1.8% in mortality per year since 1996. These authors reviewed the mortality rates amongst 30 studies from across North and South America as well as Asia and Europe, comprising of more than 80,000 polytrauma cases over a decade. The global changes to mortality rates in polytrauma patients are attributed to improvements in medical and emergency care. While this figure is encouraging, it reflects the reality of an increased rate of survival amongst polytrauma patients who most likely will have residual injuries or conditions post recovery (Hardcastle et al., 2016).

In Africa and South Africa, the high burden of trauma injuries is closely associated with alcohol abuse (Van Hoving et al., 2021). Van Hoving et al., (2021) compared temporal changes between polytrauma statistics over a six-month period between 2019 and 2020 across the same months in a hospital in Cape Town. The authors found an average of less than 4.8 patients admitted to the trauma unit per day in 2020 due to the COVID-19 lockdown and ban on alcohol sales.

Since polytrauma is a leading cause of death and disability globally, the high financial burden it causes should not go unnoticed (Tripathi et al., 2021). In the South African context, the already strained financial resources are placed under a higher burden due to the high number of polytrauma cases. Another result of polytrauma is an increased loss of productivity regardless of the geographical location it occurs in (Devendra et al., 2020). The study further explains the difficulties associated with providing the specialised care that polytrauma patients often require. A limiting factor that poses challenges is the competence and technical abilities of the interprofessional team members and their ability to react within an effective time period (Devendra et al., 2020). Similarly late referral in-hospital and later to step down/ rehabilitation centres impedes the recovery process (Devendra et al., 2020).

Despite some studies explaining the burden of disease in polytrauma, Zaidi et al., (2019) conducted a study in Cape Town, South Africa describing the gap in the literature to clearly explain the relationship between burden of disease and polytrauma in South Africa. This relationship between burden of disease and polytrauma, is due to poorly reported and poorly described trauma data which has become a barrier to improving the care pathways in the health systems which manage trauma (Zaidi et al., 2019). A tool to reduce this burden of polytrauma is rehabilitation interventions which can prevent complications and promote function and independence, which in turns leads to return to work and society reintegration thus ultimately reducing socio-economic burdens as well (Zaidi et al., 2019).

Dattari et al., (2020) state that trauma has and continues to be a public health issue of major concern due to the high associated costs of morbidity as well as mortality in both developing and developed countries. An intervention to counter the high burden of disease, is the implementation of early and consistent rehabilitation. Early intervention, when coupled with considerations from understanding patients' perspectives, ensures a holistic approach to the management of patients (Zwingmann et al., 2016). Falkenburg et al., (2017) highlight that while early physical rehabilitation is effective in reducing the burden of disease, early mental health rehabilitation coupled with physical intervention, improves outcomes to prevent health complications.

While rehabilitation has been shown to be effective, Khan, Amatya and Hoffman (2011) explain that the poor implementation of rehabilitation is attributed to the high costs associated with its implementation and the lack of evidence to justify its need. The above evidence provides a snapshot into the burden of disease that polytrauma places on health care and it provides insight into the way that rehabilitation can contribute to reducing the burden of disease.

2.5 CAUSES OF POLYTRAUMA

There are numerous causes of polytrauma both globally and in South Africa. Marsden (2021) states that the most common cause of polytrauma is road traffic accidents. Tripathi et al., (2021) concurs and extends beyond this to explain that approximately half of road traffic accidents occur in conjunction with alcohol abuse.

While there is a consensus that road traffic accidents are the leading cause of polytrauma, Ciechanowicz et al., (2020) revealed that other causes of polytrauma include fall from a height and other blunt trauma to the body resulting in multiple injuries. Similarly, El Metoui et al., (2017) reviewed 1073 polytrauma cases and found falls from a height to be the cause of almost 50% of the polytrauma cases in Tunisia. The secondary cause in this study was bicycle accidents. Devendra et al., (2020) supports the sentiment that road traffic accidents and falls from heights are amongst the leading causes of polytrauma globally. However, the socio-economic circumstances of different countries can influence the mechanism of injury and the types of polytrauma cases encountered (Hietbrink et al., 2020).

Within the South African context, the highest cause of polytrauma is blunt trauma due to interpersonal violence and assault, associated with alcohol abuse (Moodley, Aldous and Clarke, 2014). The second highest cause is penetrating trauma with the highest percentage attributed to stab wounds, also associated with interpersonal violence and alcohol and substance abuse (Moodley, Aldous and Clarke, 2014).

2.6 COMPLICATIONS OF POLYTRAUMA

The risk of mortality is high following trauma, however survivors of polytrauma are still at risk of complications (El Mestoui et al., 2017). There are numerous complications following polytrauma injury which range from acute to chronic conditions (Hildebrand et al., 2015). The acute complications generally occur within the intensive care unit followed by chronic complications which generally occur closer to and upon discharge. Acute complications in the intensive care unit may be associated with complications of bed rest and immobility such as chest infections, loss of lung volumes, pressure sores and joint contractures. Patients who sustained polytrauma face a higher risk of death due to the severity of their injuries (Halvachizadeh et al., 2020). In the case where patients survive, they are susceptible to numerous complications like restricted mobility, joint stiffness and muscle weakness throughout their recovery process (Elbaih, Hosseini and Khalifa, 2018). Not only are the complications severe, but they are complex and thus require specialised interprofessional interventions (Padovani, Da Silva and Tanaka, 2017).

It was found that the monitoring of the pulmonary status of patients is integral to ensuring the patients recovery is optimised (De Vries et al., 2019). Another factor affecting recovery in polytrauma includes lung contusions. In a population of polytrauma patients, 40% presented with pulmonary contusions (De Vries et al., 2019). The study by Schulz Drost et al., (2019) explains the importance of early detection and management of pulmonary contusions are vital in the recovery process. El Mestoui et al., (2017) shows that the leading complication amongst a large pool of patients who sustained polytrauma injuries, was respiratory complications which eventually led to respiratory failure and death. This is supported by De Vries et al., (2019) where respiratory failure was the most severe complication.

There are numerous other complications that may develop due to polytrauma such as pneumonia, sepsis, organ failure and haemorrhaging as explained by Halvachizadeh et al., (2020). This emphasises the importance of understanding the impact of physiological changes to long term complications that may develop in patients recovering from polytrauma. Vollrath et al., (2021) explains the major immunological suppression that patients who sustained polytrauma undergo. This in turn, places patients at higher risk of contracting nosocomial infections such as Covid-19.

A major complication of polytrauma patients admitted into the ICU is post intensive care Syndrome (PICS) which impacts on patient recovery during hospitalisation and long after discharge from hospital. Since patients with polytrauma often need management and care in an ICU setting, PICS may be a complication developed by some of them. PICS may include cognitive, physical, and mental disability as a result of the polytrauma injuries or the prolonged admission in intensive care (Rawal, Yadav and Kumar, 2017).

Other problematic complications following polytrauma include anaemia, urinary tract infections, development of pressure sores, deep venous thrombosis, and localised infections in areas where patients sustained open wounds (Matvieienko et al., 2019; Malato et al., 2015). The prevalence of deep venous thrombosis is as high as 10% in patients admitted into the ICU due to the prolonged immobility these patients require because of their injuries (Malato et al., 2015). Hermans and Van Den Berghe (2015) describe the complication that numerous patients with polytrauma experience when admitted to the intensive care unit namely, intensive care unit acquired weakness. This results from either or a combination of both primary myopathy and axonal neuropathy. Dattari et al., (2020) showed that acute and chronic pain is a major complication of polytrauma and has implications on patient outcomes. Acute pain is often associated with the immediate impact of the polytrauma injuries, such as soft tissue damage. Chronic complications are also complex and multifactorial. This includes

chronic pain, which is often a result of unresolved acute pain management and complications from the initial injuries.

Chronic pain can result in limitations to mental health such as anxiety, depression and numerous psychiatric conditions, as well as limitations to the physical recovery of patients (Hooten, 2016). Additioto chronic pain, are the neuromusculoskeletal complications such as loss of muscle power and loss of joint range of motion that arise (Dattari et al., 2020). Another study by Corona, Wenke and Ward (2016), explains that the loss of muscle strength in patients who sustained traumatic injuries, is due to the direct loss of muscle mass, which can sometimes be beyond the bounds of skeletal tissue capacity to regenerate new tissue. In turn, this reduced muscle power results in decreased joint range of motion due to reduced movement through full range. The lack of movement may also be associated with fracture management techniques which limit certain movements (Dugan et al., 2013).

Another complication of polytrauma is reduced cardiopulmonary endurance. Patients also experience poor exercise endurance as a complication of polytrauma. This is particularly the case in patients who also sustained pulmonary injuries such as pulmonary contusions. The lack of oxygenation results in poor oxygen delivery to the peripheral skeletal system thus reducing overall cardiopulmonary endurance and exacerbating fatigue (Nagashima, Inoue and Ohta, 2020). This reduction in cardiopulmonary endurance may be a risk factor for further complications such as chronic dyspnoea, decreased respiratory muscle strength and fatigue, if early rehabilitation intervention is not implemented (Nagashima, Inoue and Ohta, 2020).

It has been shown that polytrauma results in numerous acute and chronic complications which require early interventions to limit the negative results. There are multiple factors affecting the outcomes of these complications, and an important way to understand the outcomes and how they are affected, is to understand the perceptions amongst polytrauma patients on the care received as they recover from their injuries. This is discussed in the section below.

2.7 PATIENT'S PERCEPTIONS OF CARE

2.7.1 Definition

There are numerous definitions that explain what precisely the perception of care by patients is. The general understanding of patient's perceptions of care is that it is the term used to describe the patient's view regarding the quality of the healthcare service provision and service delivery received (Gishu, Weldetsadik and Tekleab, 2019). It is important to note the difference between the perception of care and the patient experience. The patient experience is the reflection of the actual services which were provided to the patient (Thomas,

Newcomband Fusco, 2019). The benefit of focusing on patient perceptions of care is that it promotes accountability amongst health care professionals and leads to improved clinical efficiency (Gishu, Weldetsadik and Tekleab, 2019). Sofaer and Firminger (2005) establish the importance of understanding patient perceptions to have a patient-centred approach to health care service provision. It provides insight into understanding patient satisfaction and patient perception as it can often be confused. Satisfaction is the fulfilment of expectations and can be an example of a perception.

2.7.2 **Factors Affecting patient's Perceptions.**

Numerous factors are affecting patient perceptions of care. Read, Perry and Rossaak (2021) advocate the value of utilising checklists in the acute care setting to understand patient perceptions of care. The authors reported improved and more accurate record keeping and a reduction in errors when patients are at the centre of their decision making. The study further showed that the implementation of ward round checklists which provided objective outcomes for patients to understand their recovery, improved their perceptions of care with regards to the aspect of quality of life.

Azar et al., (2017) reported that a lack of teamwork amongst the interprofessional members a significantly affect patient outcomes as well as perceived patient outcomes. Other factors that can affect patient perceptions of care include communication, the healthcare provider's concern for the patient, the actual treatment administered to the patient as well as the accessibility of the environment (Tiwari, Queenan and St.Jaques, 2017). It is important to note that there may be discrepancies between the actual service provision and the perceptions of care by patients. The patient's perceptions have a significant influence on their clinical outcomes. Additional to this, patients perceive the non-clinical components of care such as waiting times and communication as integral components to their care (Tiwari, Queenan and St.Jaques, 2017).

Zrelak (2018) interestingly explores the differences in patient perceptions according to the gender of the patient in California, the United States of America. The author reveals that men were more active in seeking health care services regarding their health care. While this is the case in the United States of America, there is a different situation in South Africa. Women and children are more likely to visit health care services in South Africa (Evans and Shisana, 2012). This indicates a gap in health care seeking behaviour as females are more likely to seek and obtain required diagnoses and treatment than males (Evans and Shisana, 2012).

Farber, Eilberg and Basatski (2019), support the sentiment that gender plays a role in patient perceptions of care. They explain that the health care providers can influence healthy

behaviours and the physical and personal impressions made by the health care providers affect the patient's perception of care. Levine et al., (2017) suggest that the understanding of interventions provided to a patient plays a significant role in the patient's perception of care received. Other factors which affect perceptions of care include pain, physical limitations, interpersonal relationships, mental health, perceptions of care and affordability of rehabilitation services.

Numerous factors affect patients' recovery and subsequently, their perceptions of care in the intensive care setting. A study conducted by Hoffman et al., (2012) reviewed the impact of body mass index on the outcome of polytrauma patients. The study found that a higher BMI body mass index resulted in increased mortality rates. Another factor influencing the recovery rate of patients who have sustained polytrauma injuries is age. Older patients (over the age of 75) have a higher risk of in-hospital mortality and if they survive, they have a lower rate of complete recovery and higher susceptibility to complications.

2.7.3 **Pain and Polytrauma**

Chronic pain is commonly experienced by patients recovering from polytrauma and an interesting approach to understanding this presentation has been shown by Peixoto et al., (2018). These authors described the pain clinical triad as a combination of post-concussion syndrome, posttraumatic stress disorder and chronic pain following polytrauma. This highlights how easily post-concussion syndrome and posttraumatic stress disorder can easily be overlooked as chronic pain. Riganello, Soddu and Tonin (2021) emphasise the importance of understanding the integral role that pain plays in affecting the patient's perception of recovery. While the pain clinical triad is an important consideration for the present study, the mental and emotional status of the patient must be considered to evaluate the influence it has on perception of pain. This is seen by a study conducted in Freiburg, Germany, that explains the importance of social and emotional problems in patients who have sustained polytrauma injuries which can exacerbate the patient's perceptions of pain (Zwingmann et al., 2016). In the present study, the focus is on understanding the patient's perceptions of their recovery. Thus, it is integral to understand the role of pain and its impact on recovery outcomes. The patient's perception of pain significantly affects the perception of recovery in a direct proportionate relationship (Gnass et al., 2017).

2.7.4 **Physical Limitations**

Patient reported outcomes on physical activity following polytrauma show that patients perceive prolonged limitations to physical activity which form a barrier to complete recovery (Gnass et al., 2017). Ritschel et al., (2021) describe reduced participation in activities of daily living as a factor influencing patients' perceptions of recovery. Another study by Alleman et

al., (2019) showed the perceived effects of polytrauma in functionality in patients. They found that despite previous studies by Zelle et al., (2005), which determined that lower limb injuries are more likely to reduce functionality, upper limb injuries must not be overlooked due to the high association of poor perceived functional outcomes such as limited mobility, limited function in activities of daily living such as brushing hair and teeth, and sexual limitations in these patients with lower limb functionality.

2.7.5 **Interpersonal Relationships**

An important interpersonal relationship that has been shown to affect patient outcomes is interprofessional relationships between the patient and health care provider. Effective interprofessional collaborations positively impact the patient's perception of their recovery (Marsden and Tuma, 2021). This is because interprofessional collaboration that is effective, results in a holistic approach to patient care, while providing a supportive environment for the patient. Another important relationship affecting recovery is the relationship between trauma staff members. Lapierre, Lefebvre and Gauvin-Lepage (2019) highlight the gaps in quality of care of patients who sustained polytrauma injuries due to poor intersectoral collaboration amongst team members caring for patients in the trauma unit. Intersectoral collaboration is referred to as the process in which team members of varying health care sectors and disciplines, take on tasks to successfully cooperate in solving health related problems (Chircop, Bassett and Taylor, 2015). Another dynamic of relationships affecting recovery is between the caregiver or family of the patient and the patient. Patients report that family or caregiver support in the form of listening to their expression of feelings as well as providing advice and affection, plays a significant role in facilitating the recovery process following polytrauma (Griffin et al., 2009).

2.7.6 **Mental Health**

The mental health of patients who sustain polytrauma injuries is not to go unnoticed. Patient's perceived negative effects of poor mental health on their recovery outcomes is significant (Gladstone et al., 2007). Emotional trauma results from the magnitude of the shock associated with the mechanism of injury, fear of a threat to their life, and the perception of possible negative consequences in their life due to their injuries (Peixoto et al., 2018). Brown and Weiss (2017) explain the importance of understanding the term polytraumatisation. This refers to patients who sustained polytrauma injuries experiencing more than one type of trauma, namely physical and emotional trauma which leads to mental health concerns throughout recovery. Another author clearly stipulated that mental illness is associated with poor outcomes in patients who sustained polytrauma injuries, due to the average prolonged hospital stay in an unfamiliar environment with sudden functional limitations (Weinberg et al., 2016). Furthermore, these authors described that patients with previous mental illness have

exacerbations of mental illness following polytrauma because the new occurrence of mental illness can cause triggers resulting in the re occurrence of the old instance (Weiss, 2017; Weinberg et al., 2016).

2.7.7 Perceptions of Health Care Service Provision

There are gaps in the literature relating to understanding the patient's perception of the medical care that they received. Their perception of care is reported to be directly proportional to the standards of the technical quality of care received at the medical facilities (Isaac et al., 2010). Despite the gaps reported by Isaac et al., (2010), Tevis, Kennedy and Kent (2016) explained an improved effort to understand patients' perception of care as an outcome measure to assess quality of health care service provision. They also found that inclusion of patients as an active member of the care process and decision making increases the strength of the relationship between patient satisfaction and surgical outcomes (Kennedy and Kent 2016).

2.7.8 Affordability of Rehabilitation Services

The evidence regarding the perceptions of patients on the affordability of health care is lacking (Khan, Amatya and Hoffman, 2012). These authors stated that while rehabilitation improved patient functionality, the cost-of-service provision was exceedingly high. This systematic review included studies from across the globe and mentioned the recommendations from the World Health Organisation to provide low-cost high-quality rehabilitation service provision (Khan, Amatya and Hoffman, 2012). Another study conducted in Tanzania, revealed misconceptions regarding the high cost of rehabilitative care to polytrauma patients (Young, 2014). This is relevant to South Africa as Tanzania is a developing country with similar demographics as South Africa. These misconceptions are often associated with the misunderstanding that the initial investment for the rehabilitation multi-disciplinary team is expensive, while not realising that long reduction on the burden and subsequently the cost on the health care system in the long term. The context of Young (2015) is relevant to South Africa as Tanzania and South Africa share similar socio-economic and demographic settings (Mills et al., 2014).

2.8 DEFINING REHABILITATION

There are varying definitions of rehabilitation, and a consensus has not been reached in the literature. The following section reviews numerous definitions of rehabilitation available and shows the operational definition for the current study. Wade (2020) argued that there is no consensus on the definition of rehabilitation nor is there agreement on where and how the rehabilitation services should occur. Despite this, he concluded his study by defining rehabilitation as a process centred around the individual who requires the treatment. He

further stipulates those interventions should be tailored to the needs of the patient with constant assessment of progress and adaptations to the intervention in line with the patient's progression or changes which occur.

Miklos et al., (2021) viewed rehabilitation from a social systems perspective. They understood rehabilitation as a programme that promotes physical functioning, competency in activities as well as encourages self-advocation. The study found that rehabilitation implemented in a group setting, is highly effective as it allows for improved motivation, improved social interaction and improved learning amongst individuals experiencing functional limitations.
King (2017) explored the engagement between the physiotherapists and patients and its implications on rehabilitation. They found that there is a lack of measures available to better understand engagement between the physiotherapist and the patient, and this can affect the understanding of patient outcomes for health care providers as well as patients. The value of rehabilitation has been highlighted by the fact that the WHO has developed the WHO Rehabilitation 2030 call for action by developing a Package of Rehabilitation Interventions to ensure health ministries have support to implement rehabilitation as best as possible (Rauch, Negrini and Cieza, 2019).

Rehabilitation has been shown to add value to the lives of patients who have experienced physical trauma, as demonstrated by Hunt et al., (2018). The importance of educating patients who experienced blunt physical trauma is emphasised, thus resulting in improved rehabilitation outcomes due to an active education intervention. McDonald et al., (2019) view rehabilitation from a cognitive perspective due to the implications that cognition has on quality of life and motor recovery. They highlighted the lack of consensus on cognitive rehabilitation interventions, due to gaps along referral pathways between different healthcare providers, affecting overall rehabilitation outcomes. These gaps include the lack of inclusion of psychology referral to assist with mental health issues and the lack of referral to social work in the case where patients may need disability grants.

Considering the WHO Rehabilitation 2030 initiative which defines rehabilitation as a collective and inclusive approach to improving functionality, there is an increased need and demand for an improved and more holistic understanding of rehabilitation. The strategy emphasises the importance of ensuring access to rehabilitation according to the WHO (World Health Organisation Rehabilitation 2030 Initiative). Rehabilitation interventions have improved over the years and with the improvement in evidenced based treatments, the definition of rehabilitation has evolved (Keshner et al., 2019). The more recent literature, in conjunction with the WHO Rehabilitation Factsheet alludes to the fact that rehabilitation is a key health strategy in our current century (World Health Organisation Rehabilitation Fact Sheet, 2012).

Despite this notion, rehabilitation continues to face numerous barriers due to the lack of evidence supporting it as a social and economic investment (Bickenbach, Sabariego and Stucki, 2021). Stucki et al., (2019) refers to rehabilitation as the intervention which aims to optimise the functional abilities of an individual facing functional limitations. While Stucki et al., (2019) includes the lack of functional limitations when defining rehabilitation, the study fails to incorporate other factors of the ICF such as environmental and personal factors which have an integral role to play in understanding the patient and function holistically.

International Classification of Function

Function forms an integral role in the quality of life of individuals. Functional limitations in any domain or aspect of life, affects the overall quality of life in patients who have sustained polytrauma injuries. These limitations have been defined according to the International Classification of Function (ICF) (Vargus-Adams, and Majnemer, 2014). For the purpose of this study, the operational definition of rehabilitation has been selected according to the international classification of function (ICF), as it is comprehensive and allows for a holistic perspective on rehabilitation. The ICF is a an agreed upon framework which views individuals from the perspective of five functional domains, namely, impairment, participation and activity restrictions, as well as personal and environmental factors (Anner et al., 2012). Despite the fact that Anner et al, (2012) defined the ICF accordingly, they did not apply it to the context of developing countries such as South Africa.

It has been shown that there are numerous definitions of rehabilitation, with varying reasons for the lack of consensus. Further research is required to reach consensus on the definition of rehabilitation that will be applicable to the South African context.

2.9 THE ROLE OF PHYSIOTHERAPY IN POLYTRAUMA

Physiotherapy plays a crucial role in the acute care management and rehabilitation of patients who have experienced polytrauma. Verdian and Dilogo (2021) explained the importance of early physiotherapy interventions such as early mobilisation and joint range of motion exercises, in patients who sustained polytrauma as it allows for improved early joint mobility and improved patient outcomes. Rich, Newell, and Timothy (2019) showed the valuable contribution that physiotherapy makes to the rehabilitation of neurological systems affected in polytrauma. The physiotherapy treatment techniques utilised include neuromuscular electrical muscle stimulation via electrotherapy modalities, peripheral neuromuscular facilitation, balance and proprioception exercises, as well as joint range of motion exercises (Rich, Newell, and Timothy, 2019).

Padovani, Da Silva and Tanaka (2017) reviewed 198 patients who received physiotherapy after experiencing polytrauma and found that physiotherapy aided in recovery and helped prevent complications in patients who sustained polytrauma injuries. While the previously mentioned authors proved the effectiveness of physiotherapy interventions in patients who sustained polytrauma injuries, they did not clarify the specific types of physiotherapy techniques that were utilised. Physiotherapy can improve the outcomes of polytrauma patients through assistance with breathing techniques, as well as numerous techniques such as manual chest physiotherapy, active joint range of motion exercises and muscle strengthening exercises to assist in the management of respiratory, circulatory, and motor complications which are consequences of the traumatic injuries (Van Aswegen and Morrow, 2015). Other interventions included functional rehabilitation of patients into their daily activities as well as bed-based and in-ward mobilisation techniques (Van Aswegen and Morrow, 2015). The above study concluded that physiotherapy plays an integral role in the rehabilitation process through restoration and facilitation of functional activities to assist with return to life post injury. Van Aswegen and Morrow (2015) described the objectives of physiotherapy as well as precautions and contra indications for patients who have sustained multiple injuries. Furthermore, the authors recommended physiotherapy treatments such as early mobilisation, manual chest physiotherapy, endurance and mobility exercises as well as the importance of objective outcome measures to gauge patient progress. The general principles of physiotherapy in the management of patients with polytrauma, established by these authors, resonate with the suggestions made by Padovani, Da Silva and Tanaka (2017).

Besemann (2011) argued that the most important role of the physiotherapist during early intervention is the setting of realistic and achievable goals of treatment that encourage the patient to work towards it. The study further showed that the involvement of physiotherapy from the onset of recovery allows for improved musculoskeletal recovery and allows for a greater potential for a return to work and improved vocational rehabilitation outcomes.

2.10 QUALITATIVE RESEARCH METHODOLOGY

Qualitative research has been used for several decades to contribute towards evidence-based practice. More recently, it has been used more as the understanding of the methodologies have improved (Mohajan, 2018). Qualitative research refers to the techniques used to explore and understand perceptions, opinions, and human experiences in cases where these factors cannot be quantified. It can be utilised to explore human behaviour and develop an understanding of human experiences (Mohajan, 2018). Thus, it is an appropriate methodology for this study as we explored the perceptions of patients regarding their recovery of physical function post polytrauma. This method of research allows for an

opportunity to understand the experience of health care service provision from the perspective of the patient.

The main goal of qualitative research is to document, reflect on and interpret a phenomenon from the perspective of the individual being interviewed or surveyed (Creswell, 1998). Qualitative research seeks to explore experiences in the natural setting in which they occur to get a true reflection of the experience (MacDonald, 2012).

2.11 CONCLUSION

The literature reviewed above shows the importance of exploring the different factors and consequences related to polytrauma due to its high prevalence globally and in South Africa. It has been shown that the implications of polytrauma are far reaching. Resulting in an increased burden of disease due to technological advancements that have prevented mortality but not disability of those who have sustained polytrauma injuries.

It is important to contextualise polytrauma in a developing country such as South Africa as the socio-economic situational factors influence recovery outcomes. This is shown by Padovani, Da Silva and Tanaka (2017) who reveal that these socio-economic factors affect the prevalence of polytrauma as well as the resources to manage the high prevalence. The literature also revealed physiotherapy's important role in rehabilitation of patients as they recover from polytrauma and its role in decreasing the burden of disease by facilitating earlier recovery outcomes, thus reducing the socio-economic constraints associated with a high burden of disease of polytrauma. Further research is required to understand the perceptions of patients about the management they received and how this has influenced their recovery. As a result, this study aimed to answer these questions utilising the qualitative methodologies explained in the next chapter.

CHAPTER 3

3. METHODOLOGY

3.1 INTRODUCTION

The following chapter describes the methodology used in this study to achieve the study objectives. This includes the study design and procedures, ethical considerations, as well as the data collection tools and the sample selection criteria.

This qualitative study utilised a constructivist paradigm as this was a single-case qualitative study which sought to understand the phenomenon of patient's perceptions of care from the experience of the patient themselves, using the data collection method of semi-structured interviews. Ontology refers to a philosophy about the nature of the reality of a social occurrence. In this instance, the occurrence was the patient's perceptions of their care, and this was an important consideration in this study as it allowed the researcher to establish the reality and existence of the phenomenon being explored. The study also incorporated an epistemological perspective which allowed the researcher to describe this population's specific view of their experiences of care. The axiology of this study was also important to ensure adequate ethical considerations were made to prevent judgements on the patient's perceptions of care.

3.2 STUDY DESIGN

This study was a qualitative single case study design. Qualitative research allows the researcher to investigate themes related to participants' experiences, which cannot be captured quantitatively. A case study design provides an in-depth analysis of a particular phenomenon and factors influencing it (Baskarada, 2013). An inductive approach was used. This study explored patients' perceptions of their recovery following polytrauma. This was achieved using semi-structured interviews.

3.3 STUDY SETTING

The study was conducted with adult patients who sustained multiple traumatic injuries and were managed for these injuries at an accredited level 1 trauma unit of a private hospital in Johannesburg.

3.4 STUDY PARTICIPANTS

The researcher approached a private physiotherapy practice in the study setting to telephonically contact the patients who meet the inclusion criteria, to explain the study to them and to request permission for their details to be shared with the researcher. The procedures followed in contacting the patients was selected because the physiotherapists

who work in this practice are familiar with these patients as they would have treated these patients in the trauma ICU and wards of the study setting during their hospital stay. Thereafter the researcher contacted patients who gave consent for their details to be shared, explained in detail the study procedures (Appendix 3) to them, and sent them the consent forms for participation and audio recording (appendices 4 and 5).

***Sampling approach*:**

This study utilised purposive sampling to identify participants. This approach enabled the researcher to identify the most appropriate interview participants for the study. It is a deliberate approach to selecting participants who have sustained injuries relating to trauma and therefore fall into the category of polytrauma, to answer the research question. Due to the nature of qualitative research, a sample size was not calculated; thus, interviews were conducted until data saturation was reached. Data saturation is the point at which no new themes emerge during the interviews.

3.5 INCLUSION CRITERIA

Inclusion Criteria:

- Adults of any gender with multiple orthopaedic injuries (including the upper and/or lower extremities) that resulted in ICU admission for management.
- Patients who were discharged from the hospital for a period of six months to one year, to allow for the normal processes of healing to take place.
- Provided informed consent and consented to interview being audio-recorded.

Exclusion Criteria:

- Patients who sustained traumatic brain injury, spinal cord injury or amputation of limb/s
- Patients with pre-existing cognitive disabilities determined by the physiotherapy practice after reviewing the patient's file to exclude the presence of cognitive disabilities.

3.6 DATA COLLECTION PROCEDURE

The researcher approached the private physiotherapy practice at the medical facility, to request permission to contact the practice's patient database. A representative from the practice was familiarised with the study, and who was familiar with the participants and was appointed by the physiotherapy practice owner, to contact each participant to explain the study and request consent to share their contact details with the principal researcher. Once the participant agreed, the researcher contacted the participants telephonically to explain the study and request participation in the study. The written informed consent forms were sent electronically to the participants by the researcher and once consent was obtained, the semi-structured interviews were conducted by the principal researcher at a date and time that

suited each participant over a period of one year for all participants (2020 to 2021). The interviews were conducted virtually due to a combination of factors such as patient preference, and the Covid-19 pandemic. This study explored participants' perceptions of their recovery following polytrauma.

Semi-structured interviews were conducted via video link (WhatsApp) during the COVID-19 period to ensure the safety of the researcher and participants. The interviews were audio-recorded on a mobile device to obtain transcriptions from the recordings.

3.6.1 Pilot Study for the Interviews

A pilot study was initially conducted to familiarise the researcher with the procedure of the main study. A pilot interview was conducted virtually prior to the main study, by the principal researcher, with an eligible participant to identify any gaps in the process or areas of improvement for the main study. The variables that were tested in the interview included the time set aside for the interview and the effectiveness of the interview guide. The information obtained during the pilot study was vital for inclusion in the data analysis as the participant provided valuable insight into the topic. The researcher followed up on the pilot study participant interview to confirm the participants responses as part of ensuring the rigour of the process. Minimal changes were required for the main interviews thus the pilot study interview findings were included in the main study. These changes included an increased use of the probes in the interview guide, as well as the inclusions from the principal investigator's reflective journal such as explaining the questions more clearly.

3.7 DATA COLLECTION TOOLS

3.7.1 Semi-Structured Interview Guide

To objectively document the interview results, a semi-structured interview guide (Appendix 7) was developed by the principal researcher and supervisors, using the parameters of the study, and utilised for all interviews. The information obtained during the literature review, informed the questions that were developed in the interview guide. This contained the open-ended questions which guided the interview. It consisted of seven broad-based questions (appendix 7) based on the objectives of this study which allowed for discussion on the research topic. This allowed the researcher to ask questions that enabled the participant to openly express their experiences, without introducing researcher bias. Given the COVID-19 pandemic that we faced, the interviews were conducted through the medium of a telephonic WhatsApp video call (with end-to-end encryption) to ensure the safety of the participants and researcher.

3.7.2 Reflective Journal

Throughout the data collection process, the researcher recorded field notes in a reflective journal. The notes were taken during the interviews to document the participant's responses to the questions posed. Any pauses, hesitation or passion expressed by the participant, was documented. Further notes were taken upon the researcher's reflection of the quality of the interviews and throughout the data analysis process. This allowed the researcher to reflect on the research process throughout data collection and data analysis.

3.8 DATA ANALYSIS

The study utilised qualitative data analysis computer software, namely, MAXQDA to analyse the data. The interviews were transcribed by a transcription company. The transcripts were uploaded to the software and data was analysed through inductive thematic analysis (Castleberry and Nolen, 2018). The process of inductive thematic analysis begins where the researcher reads through and familiarises themselves with the transcript. This is followed by searching for broad codes which are then categorised into themes (Vaismoradi et al., 2013). The codes and themes were identified from the transcriptions after each interview, to enable the researcher to recognise when no new themes emerged, and data saturation had occurred. To ensure rigour in this qualitative research, the following trustworthiness strategies were implemented.

Data Management

The recordings, transcriptions and coding of transcripts were kept confidential in a password protected computer folder where only the researcher has access to it. The raw data such as the original recordings and transcriptions are stored electronically on a locked computer in a locked room in an office in the physiotherapy department at the University, in a secure place for six years according to university policy.

3.9 TRUSTWORTHINESS STRATEGIES

Since qualitative research cannot be evaluated with regards to validity and reliability, other methods were utilised to evaluate the research process (Hadi and Jose Closs, 2016). For qualitative research to be trustworthy, the rigour of the research can be ensured through various trustworthiness strategies (Lincoln and Guba, 1985). These are listed below:

Credibility: Credibility refers to the ability of the researcher's findings to correlate to the reality and truth of the findings. The researcher achieved this by following the same procedures for each interview and utilising the same manner of approaching the questions in the interview guide. The researcher was mindful of the use of probes to avoid leading the participant with their responses.

Transferability: Transferability refers to the ability of the study findings to be applied in different situations. This was achieved in this study through detailed descriptions of the methodologies used as well as the inclusion of changes made after the pilot study, despite the changes being minimal.

Dependability: This refers to the ability of the study findings to be reproduced if the exact same study design and procedure was followed. This was established in the study through detailed descriptions of the methodology as well as the inclusion of a detailed reflective journal.

Confirmability: This refers to the ability of the findings to be confirmed against the participant's responses and not influenced by the researcher's bias on the study topic. This was ensured through the researcher confirming participants responses after the questions were posed and the answers received. The researcher also confirmed electronically, the responses with the interview participants within 3 days after the interview to ensure the information was correctly captured and transcribed.

3.10 ETHICAL CONSIDERATIONS

Ethical clearance was obtained from Wits University Human Research Ethics (Medical) Committee (Ethical clearance certificate reference number: M200951 - Appendix 1). Following this, permission was obtained from the management of the private medical facility and the medical facility's Ethics Board (Appendix 2), as well as the owner of the physiotherapy practice through which the study was conducted. The researcher approached the private practice, the practice then appointed an individual, with whom the patient was familiar from admission, to first contact the patients to explain the study to them. Once the patient gave consent for the practice to give their details to the researcher, he contacted the participants. Written informed (Appendix 3) consent (Appendix 5) was obtained from participants for the interviews and audio recordings (Appendix 6) on a separate form. The recordings, transcriptions and coding of transcripts were kept confidential in a password protected computer folder where only the researcher has access to it. The raw data such as the original recordings and transcriptions are stored in a secure password protected computer for six years according to university policy. This study adhered to the Declaration of Helsinki ethical principles by ensuring participant confidentiality, while preserving the integrity and dignity of the participants.

3.11 CONCLUSION

The above chapter described the methodology that was used to ensure that the study aim, and objectives were achieved. The next chapter presents the results of the study.

CHAPTER 4

4. FINDINGS

4.1 INTRODUCTION

This chapter presents the findings from the semi-structured interviews. The findings are presented according to the six main themes which were derived from data analysis and answers the study objectives.

4.2 PARTICIPANT DEMOGRAPHIC INFORMATION

The eight participants ranged from 21 to 59 years of age. Twenty-five percent of patients were female and 75% were male. The length of stay varied from less than one month to six months with male patients averaging a longer length of stay than females. All participants were involved in a motor vehicle accident. With reference to age the upper 50th percentile had a longer length of stay than the lower 50th percentile.

Table 4.1: Patient Demographics

Participant Number	Age	Gender	Mechanism of Injury	Length of Stay Range
1	56	Female	Motor vehicle accident	1-3 months
2	59	Male	Motor vehicle accident	Less than 1 month
3	43	Male	Motor vehicle accident	3-6 months
4	21	Male	Motor vehicle accident	Less than 1 month
5	28	Male	Motor vehicle accident	1-3 months
6	39	Female	Motor vehicle accident	Less than 1 month
7	19	Male	Motor vehicle accident	1-3 months
8	45	Male	Motor vehicle accident	1-3 months

4.3 OVERVIEW OF FINDINGS

Upon qualitative data analysis using MAXQDA, numerous overarching themes arose under the perceptions of recovery following polytrauma. The themes were developed through inductive thematic analysis, and then categorised under each objective. These overarching themes are as follows: level of satisfaction with care, post-discharge rehabilitation, mental health status and mental resilience, level of disability, pain and physical function, support structures. This is presented in the Figure 4.1 below, followed by a presentation of each theme. Each overarching theme is presented with the corresponding question from the interview guide which yielded the overarching themes and subthemes.

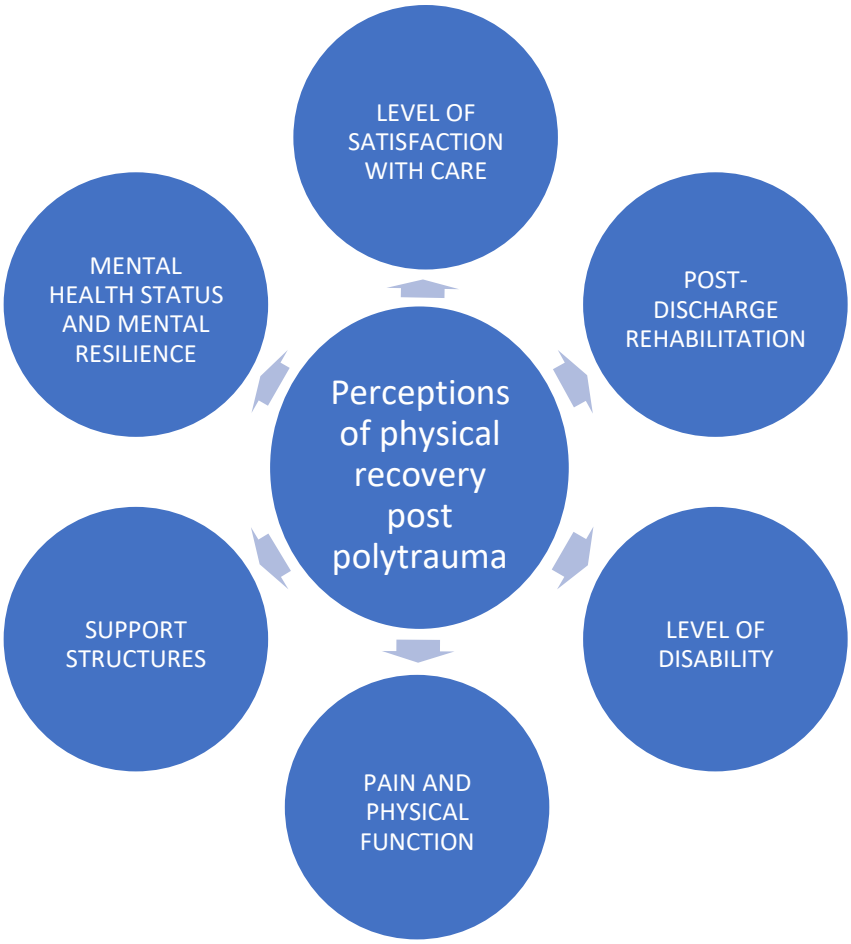


Figure 4.1: Figure Showing Overview of Findings

4.3.1 Level of Satisfaction with Care

The following question was posed to participants in order to obtain the responses below:

How do you feel the healthcare provided to you in-hospital affected your recovery of physical function?

The overarching theme that arose from participants' experiences of in-hospital care is that their level of satisfaction with the care received, influenced their recovery after injury. Sub themes which arose under this included the following:

Quality of care received was an important subtheme as majority of participants felt that the care they received was of a high standard, the hospital environment was clean, and that healthcare personnel were professional in their manner towards their patients (participants 1, 2, 4, 5, 6 and 7). However, some participants felt that the quality of care received during night shift was unprofessional and that staff were very loud which disturbed their sleep (participants 2, 3 and 6). Patients found that physiotherapy assisted in their recovery in terms of function in order to return to activities of daily living (participant 8). The physiotherapists motivated and encouraged patients (participants 5, 7 and 1) but frequent changing of physiotherapy

staff seemed to hinder progress (participants 2 and 6). Poor communication was noted as a factor with staff in general (participants 1, 2, 6, 7 and 8). In certain instances, poor communication was also noted with regards to the physiotherapist, who reportedly pushed the patients too far and participants felt that treatment was not tailored to the patients' needs (participants 1, 2 and 7). Another subtheme was that patients reported a lack of emotional support from the health care professionals and a desire to return to familiar environment (participants 1, 2 and 3). This is seen in the Table 4.2 capturing responses from patients regarding their level of satisfaction with care and items which influenced physical function recovery.

Table 4.2: Patient Responses Relating to Quality of Care

QUESTION 1 **In-Hospital Care and Physical Function Recovery** **OVERARCHING THEME:** **Level of Satisfaction with Care Influencing Physical Function Recovery**	
Quotes	**Sub-Themes**
"The physios - changing of personnel was a challenge…" (participant 2)	progression of rehabilitation
"I just wanted to get out of hospital you know and just be in my own room again" (participant 1)	emotional needs
"There was no psychologist referral during hospital stay…" (participant 3)	emotional needs
"Clean hospital and excellent surgeon…" (participant 6)	quality of care
"They did not change their methodology or the approach to my rehab program. It was basically a one size fits all approach which didn't suit me and the type of injury I had." (Participant 3)	quality of care
"The nurses were very caring" (participant 3)	medical staff support
"My mom needed to phone the (explicit) hospital, no one answered" (participant 7)	poor communication
"They told me we're going to go on this date and somewhere there was a communication gap and I only got to go a week later." (Participant 5)	poor communication
"There was one physio that made me cry so badly that I asked her please stop. And she said no, she needs to go on. And I cried like a little baby." (Participant 7)	negative perceptions of physio
"The best physio, sweetest of hearts, really took care of me. And also motivated me to do something more and more and more and more. And with her my progress was actually very well" (participant 2)	relationship with physiotherapist
"Everything that I did in physio helped yeah because they made me more stronger than I was before." (Participant 1)	positive experience
"The healthcare itself was absolutely excellent." (Participant 7)	positive experience

4.3.2 Post Discharge Care Influencing Physical Function Recovery

The following question was posed to participants to obtain the responses below:

How do you feel the healthcare provided to you after you were discharged from hospital affected your recovery of physical function?

The overarching theme that arose from participants' experiences of post discharge care is the influence rehabilitation service provision, or lack thereof, had on physical function recovery. The corresponding sub themes which arose include the following: care at rehabilitation centres was noted to have greatly assisted with recovery of physical function (participant 2). A clear limitation to post discharge care, both home care and rehabilitation centers', was financial constraints (participants 1 and 3). High cost and job loss were both factors mentioned by participants (participants 1 and 7). The resultant effect was participants receiving partial rehabilitation, leaving them with the desire to continue after experiencing improvement in physical function and being empowered with the knowledge that they have the potential for greater recovery (participant 3). This is presented in the table below along with the relevant codes.

Table 4.3: Patient Responses Relating to Rehabilitation Services Received Post Discharge

The table below captures responses from patients regarding their experience of post discharge (D/C) rehabilitation care and its influence on physical function recovery.

QUESTION 2 Post D/C Care and Physical Function Recovery OVERARCHING THEME: Post Discharge Rehabilitation Influencing Physical Function Recovery	
Quotes	**Sub-Themes**
"Physio and OT home service provision –I had limited funds…" (participant 1)	Home-based rehab
"Medical aid payment for hospital and rehab center had limited communication" (participant 2)	Medical aid service provision and delayed transfer
"There was good care received at Rehab center…" (participant 2)	Rehab hospital
"can't pay my medical aid in full so I can't go to physio, I don't have the money to do it so I can't go there to rework my leg and that stuff or get expertise on it." (Participant 3)	Financial constraints
"I had to stop that because I'm unemployed you know, and it was expensive." (Participant 1)	Financial constraints
"You don't have the funds to go to the physiotherapist or to your doctor and to go make sure the stuff is right. " (participant 7)	Financial constraints

4.3.3 Level of Disability

The following question was posed to participants to obtain the responses below:

How do you feel you have managed to reintegrate back into your community and workplace?

The overarching theme that arose from participants' perception of their recovery was the influence disability had on physical function recovery. Subthemes which arose included negative body image, physical limitations and emotional health. Although some patients felt that they had a normal and full recovery (participants 1 and 4), others felt that any shortfalls in the medical care received were overcome (participants 2, 6 and 5).

It became clear that the participant's emotional state had played a significant role where personal drive was a factor in overcoming physical challenges (participant 4). Participants reported difficulty in having to face repeated surgeries (participant 3), poor nursing care flaring up previous depression (participant 3) and even the need for professional assistance from a psychologist (participant 7) to assist with recovery. The trauma of the accident also reportedly affected the rehabilitation process (participants 6 and 7). There was clearly the desire for full recovery (participants 8 and 7), but some participants reported that they felt they had not fully recovered (participants 4 and 7) and things such as delay in surgery (participant 5) affected recovery. Lack of recovery (participant 5) resulted in job loss, inability to do certain physical activities (participant 3) or having to alter the way physical tasks are done (participant 2). Personal body image was negatively affected (participant 8)

Table 4.4: Patient Responses Relating to their Perceived Level of Disability

The table below captures responses from patients regarding their perceived level of disability and its influence on physical function recovery.

QUESTION 3 Level of Perceived Recovery/Disability OVERARCHING THEME: Level of Disability and its Influence on Physical Function Recovery	
Quotes	**Sub-Themes**
"It did not affect recovery…" (2)	No impact on recovery
"My chronic depression flared up significantly and impacted recovery …" (7)	Emotional health
"Nothing in the hospital really impacted necessarily in a bad way to my recovery." (Participant 7)	No impact on recovery
"Now I have got a big, gaping bald spot on my head. I went to a plastic surgeon for Road Accident Fund as well and that is so damaged that hair implants won't even work" (participant 1)	Negative body image
"So for life I'm sitting with this big bald ass spot on my head. So it's a cap for me for the rest of my life." (Participant 8)	Negative body image

Quotes	Sub-Themes
“Otherwise from the accident specifically, from that aspect I recovered pretty well. I’ve just been going from strength to strength, and I’ve learnt to cope with whatever was… what it is that I was struggling with and work with it you know” (participant 4) “If they could have done it a little bit quicker my hand will still be fine. Now my hand is not working properly” (participant 8)	perception of complications perceptions of complications-delay in surgery
“Well, everything is 100% you know. I think my whole body has recovered, everything its fine” (participant 5)	No complications
“I can’t yet use my arm, I can only move it a little because it can only move a little, also only just at sort of angles”. (Participant 7)	functional/activity limitation/ functional limitations
“My doctor did tell me that after a head-on collision, it’s a very serious thing that happens, so it’s something that you just have to make peace with because you will never be able to walk 100% normal” (participant 8)	functional/activity limitation/ functional limitations

4.3.4 Pain and Physical Function Recovery

The following question was posed to participants to obtain the responses below:

How do you feel that pain impacted your functional abilities after discharge?

The overarching theme that arose from participants' experiences of prolonged pain was the influence it had on physical function recovery. The corresponding sub-themes which arose include the following: Participants reported both acute and chronic pain impacted physical functioning. In the acute phase after injury, participants reported pain had hindered physical functioning in the hospital bed (participant 8) and in severe cases of high levels of pain, physical functioning was limited due to fear of pain (participant 2). In the chronic phase after injury, the effects of pain hindered physical function from intimacy with one’s partner, to activities of daily living (participants 6, 7, 8 and 9). Some participants reported no pain (participant 5) while others used it as a motivator to do their ward exercise programme to improve recovery (participant 4). Use of medication was intended to assist in regaining physical functioning although it had been noted that withdraw symptoms from medication cessation hindered physical functioning recovery (participants 1, 2 and 7). A high occurrence of pain was also associated with poor sleeping patterns which lead to poorer functional outcomes. This is presented in the table below along with the relevant codes.

:

Table 4.5: Patient Responses Relating to Pain and Physical Function Recovery

The table below captures responses from patients regarding their experience of pain and its influence on physical function recovery.

QUESTION 4 Pain and its Effects OVERARCHING THEME Impact of Pain	
Quotes	**Sub-Themes (negative impact of pain)**
"It was painful after the injury…" (participant 2) "And you know there was a lot of times you were still in pain so you couldn't do a lot, you had to do every single thing really slowly and you had to do it or just watch out for yourself if you don't get hurt or stuff like that." (Participant 1)	Pain severity
"There is still discomfort in leg almost 2 years after injury…" (participant 6)	Persistent pain
"That made me so scared to bend my knee because my knee was the major problem. That made me so scared to even let a physio touch me for I think it was two days after that incident I refused that a physio come near me or touch me." (Participant 2)	Fear
"I had withdrawal symptoms after stopping pain meds which delayed recovery." (Participant 7)	Withdrawal symptoms
Quotes	**Sub-Themes (positive impact of pain)**
"I felt pain made me stronger…" (participant 4)	Motivation

4.3.5 The Role of Support Structures in Recovery of Physical Function

The following question was posed to participants in order to obtain the responses below:

How do you feel that your family and/or care givers' support impacted on your recovery of physical function?

The overarching theme that arose from participants' experiences of non-medical interventions was the influence of support structures and its effect on physical function recovery. The corresponding sub themes which arose include the following: participants widely expressed gratitude to family, friends and neighbours (participants 1, 2, 3, 4, 5, 6, 7 and 8) for care and support both in-hospital and on discharge, noting their assistance in recovery of physical function. Rehabilitation centres were also seen as very supportive (participant 9). Whereas depression led to a lack of drive to work on recovery of physical function (participant 3). Lack of support, most notably in-hospital resulted in great frustration (participants 8, 6, 3 and 7), in some cases frustration was described due to the perceived lack of medical support while in-hospital (participant 8) where it is believed better support

would have led to a better physical outcome for participants (participants 8 and 7). An example of this is a patient who mentioned the delay in the referral process between the physiotherapist and occupational therapist to assist with upper limb function and rehabilitation to facilitate hand function.

Table 4.6: Patient Responses Relating to Support Structures during Recovery of Physical Function

The table below captures responses from patients regarding their experience of support structures and its influence on physical function recovery.

QUESTION 5 **Participants' Experiences of Non-Medical Interventions** **OVERARCHING THEME** **The Role of Support Structures in Recovery of Physical Function**	
Quotes	**Sub-Themes**
"My friends supported me and my wife well early after discharge." (Participant 6)	Gratitude
"My family, friends and neighbours were strong support network." (Participant 7)	Gratitude
"My family support and funds in the medical aid for continued rehabilitation assisted a lot with recovery." (Participant 9)	Gratitude
"I'm on strong depression medication now so my depression skyrocketed" (participant 5)	Depression
"You really got frustrated and emotional and that stuff, so I think that was the biggest thing yeah" (participant 6)	Frustration
"If they could have done it a little bit quicker my hand will still be fine. Now my hand is not working properly" (participant 8)	Frustration
"my biggest thing on that was where I was frustrated, I was emotional, I wanted to get out of hospital, I want to go… I want to recover. I want to get on… to go home…" (participant 7)	Frustration

4.3.6 Mental Health Status and Mental Health Resilience

The following question was posed to participants to obtain the responses below:

Do you feel that there were any medical complications which affected your recovery of physical function in hospital?

The overarching theme that arose from participants' experiences of the impact mental health had, was that mental health status and resilience impacted physical function recovery. The corresponding sub themes which arose included the following: participants often described posttraumatic stress disorder symptoms, feelings of terror, hallucinations, disorientation, nightmares (participants 4, 8 and 7), inability to allow others physical contact with the injury sight (participant 7), residual pain and feelings of body disfigurement (participant 3), and the need to the seek medical intervention for such symptoms (participant 7). Although pain was

a limiting factor and recovery took noticeably long (participants 2 and 7), limited work reintegration (participants 6 and 2), or even inability to return to work (participants 5, 7 and 8) was often preceded by fear of ability to return to work (participant 7). Difficulty reintegrating into the community due to both physical injury and poor mental health (participants 3 and 8) was noted. Some participants were able to get back to work or find new work but noted that this was only after concerted and prolonged (participants 7 and 6) efforts working to maintain a positive mindset (participant 9) or gaining mental support from ones' religious belief systems (participant 7).

Table 4.7: Patient Responses Relating to their Experience of the Impact of Mental Health of Physical Function Recovery

The table below captures responses from patients regarding their experience of the impact of mental health of physical function recovery.

QUESTION 6 **Participant's Experience of the Impact of Mental Health of Physical Function Recovery** **OVERARCHING THEME** **Mental Health Status and Mental Health Resilience**	
Quotes	**Sub-Themes**
"It took a very long time…" (participant 2)	Prolonged reintegration
"I struggled to reintegrate into my community due to poor mental health." (Participant 3)	Limited reintegration
Feels she recovered completely - still working at home as pre-injury (participant 4)	Reintegrated to society
"That experience caused a little bit of trauma… still till today, I don't like someone touching my knee or my leg." (Participant 7)	PTSD
"I struggled with nightmares long after discharge…" (participant 4)	PTSD
"I can't work anymore as I cannot drive all day as pre-injury" (participant 5)	Limited reintegration
"I Well I was basically terrified for about 3 or 4 days after being discharged from there (ICU). These hallucinations for like 2 weeks. Didn't even know where I was." (Participant 8)	PTSD
"I basically re-integrated into my family home but I'm not able to work or do anything like that at this stage." (Participant 1)	Lack of return to work
"I'm not sure if I will be able to do the work at or if I will lose that job, or what is going to happen" (participant 7)	Lack of return to work

4.4 CONCLUSION

The above chapter provided the major themes which emerged from the analysis of the semi structured interview transcripts. According to the six objectives of this study and overarching themes, the study findings were presented. The next chapter discusses these findings considering the current available literature.

CHAPTER 5

5. DISCUSSION

5.1 INTRODUCTION

This study explored the perceptions of recovery of physical function in patients who sustained polytrauma injuries. To achieve this understanding, qualitative semi-structured interviews were employed to ensure that the study objectives were met. The findings of the study were presented in chapter four. In this chapter, the discussion of the findings of this study are compared to the evidence in the available literature. The discussion is presented according to the themes which arose during the data analysis process.

5.2 QUALITATIVE RESEARCH METHODOLOGY

The present study utilised a qualitative single-case study design using semi-structured interviews to explore the perceptions of patients about their recovery following polytrauma. There is evidence in the literature to support a qualitative study design to explore patients' perceptions such as this study (Verma et al., 2019). Qualitative methodologies enable the researcher to explore and better understand human experiences. Further evidence suggests that semi-structured interviews as a data collection tool, is optimal to understand perceptions without guiding the responses, and it allows for open ended descriptions which help to answer the research question (Verma et al., 2019). Another study used the same qualitative methodology approach to explore perceptions of recovery in patients after major orthopaedic trauma (Claydon, Robinson and Alridge, 2017). The present study utilised inductive thematic analysis to analyse the data from the semi-structured interviews. This is supported by Van Horn (2013) who conducted a similar study with the same methodology to explore patient perceptions of barriers and facilitators to recovery following polytrauma in the United States of America.

5.3 DEMOGRAPHIC PROFILE OF PATIENTS SUSTAINING POLYTRAUMA

The demographic profile of the patients in this study aligned with the evidence in the literature related to polytrauma. De Vries et al., (2017) compared the demographics and injury profiles of polytrauma patients in the Dutch Trauma Registry. They found that most of the trauma population were individuals aged between 18 and 59. This was the case in the current study as well. Additional to this, a higher prevalence of polytrauma occurred amongst males compared to females in this current study. De Vries et al., (2017) reflects the similar dynamic of the study participants in this present study where 75 % of patients were male. It is, however, important to note the contextual differences between the Dutch Trauma situation and the dynamics of trauma in South Africa. This is due to varying socio-economic challenges in South Africa, coupled with barriers to health care access such as poor socio-economic

conditions which is associated with higher levels of interpersonal violence amongst men compared to women. Within a South African context, the current study's findings of a higher prevalence of males compared to females who sustained polytrauma injuries, is supported by Dhaffala et al., (2013) who reviewed demographic information of individuals who sustained polytrauma at a provincial hospital in Mthata, South Africa. It is also noteworthy that the present study revealed a longer length of stay in-hospital amongst males, as opposed to females and this is also shown by Dhaffala et al., (2013). The increased length of stay of males in the current study, may be associated with the higher prevalence of high impact injuries due to violence thus longer recovery times as opposed to women in South Africa (Seedat et al., 2009). This may also be associated with the type of injuries in the present study where more male patients sustained lower limb injuries which is often associated with a longer length of stay (Prabhakaran et al., 2020). This is an interesting finding considering Joestl et al., (2016), found women in the United States of America, to be at higher risk of in hospital stay but this may be due to contextual differences in South Africa. The increased length of stay of males in the current study, may be associated with the higher prevalence of high impact injuries due to violence thus longer recovery times as opposed to women in South Africa however further evidence is required to substantiate this (Seedat et al., 2009).

Regarding the mechanisms of injury, the study results reflect a high prevalence of motor vehicle accidents. This is in concordance with a study conducted in a central hospital in Gauteng, South Africa, where the authors conducted a retrospective analysis to review patient records following polytrauma injury (Milton, Engelbrecht and Geyser, 2021). They showed that the majority of polytrauma admissions were due to motor vehicle accidents resulting in blunt trauma injuries. This is contrasted by Lewis and Wood (2015) who showed that their study in Kwa-Zulu Natal, had the highest prevalence of interpersonal violence resulting in polytrauma injuries. This difference in presentation may be attributed to the changing contextual factors between the provinces. These changes include some provinces, such as Gauteng, being more urban with a higher concentrated population as opposed to other more rural spread-out populations (Zaidi et al., 2019).

The study data regarding return to work, focused on occupation pre-polytrauma injury and most patients reported difficulty with return to work and community integration as all participants in this study were employed prior to their injuries. In many instances, patients expressed the need for adaptation of work roles and the need for reinventing their methods of earning a livelihood. This is seen by Khan, Amatya and Hoffman (2012) who showed, through a systematic review, that the majority of the patients were unable to return to pre-trauma activity levels at work. This highlights an important need for rehabilitation

professionals such physiotherapists and occupational therapists to focus on return-to-work following polytrauma injuries.

The length of stay is also a noteworthy contribution to the discussion of our findings. The current study revealed that most older patients had a longer length of in-hospital stay. This may be associated with the higher risk of complications post polytrauma injury as well as a higher potential for co-morbidities at an older age thus increasing recovery time. This is shown by Braun et al., (2016) and De Vries et al., (2019) who reiterate the association between the prolonged duration of hospital stay and the increased age of patients after sustaining polytrauma. De Vries et al., (2019) specifically emphasised that the high potential of increased risk factors in an older population is a contributor to the prolonged hospital stay. Another important contributing factor is the physiological changes such as decreased healing ability, reduced healing times and increased osteoclast activity, occur with aging that increase recovery times (Braun et al., 2017). These physiological changes result in limited abilities to comply with ward exercise programmes and rehabilitation things increasing the hospital length of stay (Braun et al., 2017).

5.4 PATIENT PERCEPTIONS OF RECOVERY POST POLYTRAUMA

As seen in chapter four, the study results show numerous factors affecting the recovery of physical function following polytrauma according to the patient perceptions. This includes interpersonal relationships which refer to family support, the relationship between the patient and the health care service provider, as well as the networks within the interprofessional team. Other factors include physical limitations, pain, mental health, perceptions of the quality of the health care service provision and affordability of rehabilitation. These factors are discussed further and described as barriers or facilitators to the recovery of physical function following polytrauma.

5.4.1 Level of Satisfaction with In-Hospital Care

Patient satisfaction is an important consideration when exploring patient perceptions of care and recovery outcomes. The study results present an interesting argument that improved functional outcomes exist when patient satisfaction levels are high. This is in concordance with Calydon, Robinson and Alridge (2017), who show that higher functional recovery outcomes are associated with higher levels of patient satisfaction.

Another interesting emergence is that the present study showed that patient satisfaction was higher in instances where patient engagement was more (“The best physio, sweetest of hearts, really took care of me. And also motivated me to do something more and more and more and more. And with her my progress was actually very well”- participant 2). This means

that a patient centered approach to recovery, with the patient contributing to their own treatment goals, had a higher level of satisfaction and ultimately improved recovery outcomes. Kimmel et al., (2016) describe this presentation of improved physical function outcomes in patients (aged 18 to 59) who sustained polytrauma injuries, in instances where patients were actively involved in the decision-making process as part of their rehabilitation. This is often because when patients play an active role indecision-making, they have a sense of ownership which provides a certain level of accountability to comply with treatment plans and home exercise programmes. Wong et al., (2020), highlighted that patient-centred care has been associated with improved clinical outcomes and a reduced cost of healthcare. Won et al., (2020) further emphasizes the importance of ensuring respect for patient's values while providing physical and emotional support to the patient.

In the current study, a higher number of younger patients reported improved functional abilities and mobility when a patient centred approach was used. This may be due to an increased level of awareness amongst younger populations in actively participating in the decision-making process. Patient centred care, in this instance, refers to the involvement of the patient in their clinical decision making through active engagement with the interprofessional team responsible for their care (Richards, Coulter and Wicks, 2015).

The level of satisfaction with in-hospital care amongst participants is a major overarching theme which arose in the current study. In cases where participants reported a positive perception of their in-hospital experience, they had better physical functional recovery outcomes as opposed to those who had a negative experience and a negative perception of care ("the healthcare were okay with me and the recovery came along fine, no complaints around that." Participant 5). This is in concurrence with Boulding et al., (2011), who conducted a regression analysis to evaluate the effects of perceptions of in-hospital care and recovery outcomes. They found that higher satisfaction with in-hospital care and discharge protocols, resulted in better recovery outcomes, and decreased risk of secondary complications post discharge. This is further supplemented by Otani, Herrmann and Kurz., (2011), who emphasise that higher levels of satisfaction and functional outcomes correlate with high levels of empathy amongst health care staff towards patients. This may be due to patients feeling supported and encouraged in their environment of care, as seen by Tan et al., (2021) who highlight clinical empathy and how an emotional connection between the patient and health care professional results in improved outcomes as the patient feels safe. The lack of empathy from healthcare workers may be associated with high levels of burnout due to increased workloads in health systems such as South Africa.

The patient's perception of quality of care is a predictor of the overall standard of care of a hospital setting (Akdere and Tekingündüz, 2020). Quality of care received was an important subtheme as majority of participants felt that the care they received was of a high standard, the hospital environment was clean, and that healthcare personnel were professional in their manner towards their patients ("there was good care received at Rehab center…" participant 2). Another example is participant 7's response ("the doctor's treatment was good. The hospital was clean and neat…" participant 7). These findings concur with Akdere and Tekingündüz (2020), who show that a high standard of care, coupled with a high level of cleanliness, resulted in improved recovery outcomes. Regarding the way patients perceived professionalism, our findings concur with Abbasi-Moghaddam et al., (2019) who evaluated service quality from the viewpoint of the patient and found that the perception of the medical personnel's quality of consultation greatly affected the overall level of patient satisfaction and subsequently their recovery outcomes of physical function.

Another subtheme is that patients reported a lack of emotional support from health care workers in-hospital. An example of this is seen by participant 3's response ("There was one physio that made me cry so badly that I asked her please stop. And she said no, she needs to go on. And I cried like a little baby"). This stresses the importance of patients' expectations of courtesy and empathy and emotional support from health care providers, to promote improved recovery outcomes of physical function. Khan et al., (2022) also reiterate the need for emotional support from the multi-disciplinary teams in-hospital to result in higher levels of satisfaction of care amongst patients and consequently, higher perceived functional recovery outcomes. This may be due to a lack of time within the workload of the health care professional due to resource constrained environments, particularly in trauma units in South Africa (Howick and Rees, 2017).

Moreover, a subtheme which arose, is that patients reported a desire to return to a familiar environment due to the clinical nature of the in-hospital setting (I want to come home, I had enough of hospital now…" participant 4). This is an interesting finding as it is supported by Stutzbach et al., (2021) who show that the hospital environment influences patient's perceptions of their care, thus subsequently affecting their level of satisfaction and recovery outcomes. The authors place emphasis on the fact that a pleasant hospital environment led to higher functional outcomes and increased physical mobility. Tronstad et al., (2021) conducted a qualitative study to explore the perceptions of patients and their family members on their experience in the intensive care unit setting. They found that the environment directly affects recovery outcomes. They highlighted a similar and important finding from the current study, and that is that patients report a limited ability to personalise the hospital environment thus the unfamiliar setting hinders functional recovery outcomes.

In the current study, certain participants felt that the quality of care received during night shift was below the standard of care received during the day shift, that staff were unprofessional and very loud which disturbed their sleep, with particular reference to the nursing staff. This concurs with the study findings of Palese et al., (2017) who conducted a secondary analysis to review the level of satisfaction of nursing care amongst patients and found that there is a directly proportionate relationship between the perception of nursing care and the overall in hospital experience.

Additionally, the dissatisfaction with nurses and patient reports of experiencing disruptive behaviour from the nursing staff, was affecting patient's sleep, and may be attributed to the amount of staff resources and nursing education on patient's needs and appropriate behaviour in the workplace as seen in a systematic review done on current literature (Melnyk, 2020). This is noteworthy considering the resource limitations within the South African health care setting where socio-economic constraints result in overworked nursing staff and burn out leading to poor patient care (Chesak et al., 2015). Other environmental factors have been shown to contribute to the nursing level and quality of care. This is seen in a study that explored the factors associated with patient levels of satisfaction with nursing care and showed that the hospital context and organisational support structures to nurses, affect the nursing level of care and subsequently, the patient perceptions of their care (Lotfi et al., 2019).

Patients found that physiotherapy assisted in their recovery in terms of functional abilities and mobility. This is supported by Silvester, Trompeter and Hing., (2021), who also found that physiotherapy in England was shown to have a positive impact and improve the physical function recovery outcomes such as increased levels of mobility and endurance in a population of male and female patients (aged 18 to 59) who sustained polytrauma injuries. The perceptions of patients of their physiotherapy care, directly affected their overall level of satisfaction (Vitomskyi et al., 2020). Participants also reported that the physiotherapists motivated and encouraged them, but frequent changing of physiotherapy staff seemed to hinder progress. Critchfield et al., (2019), show that positive re-enforcement from the physiotherapists lead to improved outcomes of recovery relating to physical function post polytrauma injury. With regards to our findings on the high turnover of physiotherapy staff, Mattocks et al., (2020) revealed that this high turnover is a barrier to recovery outcomes.

Poor communication was noted as a factor with staff in general. In certain instances, poor communication was also noted with regards to the physiotherapist, who reportedly pushed the patients too far and participants felt that treatment was not tailored to their needs. Pelletier et al., (2019), supports our findings by modelling the relationship between communication and levels of patient satisfaction in in-hospital patients. The authors show that poor communication

between medical personnel, as well as between medical personnel and patients resulted in a higher level of dissatisfaction in patients, and poorer recovery outcomes. An example of poor communication on the part of the medical personnel is poor listening skills which result in poor translation of patient's expressions of their needs. Good communication between the patient and health care professional can result in better understanding of treatment goals, and improved implementation of patient-led activities such as a ward exercise programme (Severino and Director, 2020).

The provision of health care and rehabilitation have been a topic of contention due to varying definitions of health care and rehabilitation. Bircher and Kuruvilla (2014) define health as a conglomerate of social, individual, and environmental determinants. As seen in this study, the understanding of health by patients influence their perception of recovery outcomes. There was a correlation between a poorer understanding of health status and perceived poorer outcomes of recovery. An example of this is seen by participant 5 who expressed a poor level of satisfaction of care and has poorer perceived outcomes ("I was heavily sedated, and I told them that I was a recovering addict and they should not sedate me and they sedated me"). On further probing, it was discovered that this participant was medically sedated to control the amount of brain activity, however the participant perceived it as a threat to his previous drug addiction and the participant felt that the healthcare workers were not acting in the participant's best interest. This lack of alignment with the understanding of why medical procedures were followed resulted in poorer perceive outcomes by the participant. Moreover, the participant's positive perception of health improved recovery outcomes.

Additional to this, is the comprehension of rehabilitation. For this study, the definition of rehabilitation by the World Health Organisation Rehabilitation 2030 Initiative was used. This refers to rehabilitation as the combination of inclusive interventions to improve functioning. The facilitation of function may occur through rehabilitation professionals who work on improving function within the domains of the international classification of function namely, physical limitations, environmental and personal factors, as well as activity and participation restrictions.

Rehabilitation 2030 Initiative highlights the high levels of unmet needs for rehabilitation, particularly in developing countries such as South Africa. This has been reflected in this study results which show the lack of rehabilitation service provision in certain instances, particularly with outpatient follow up. Additional to the lack of follow up as an outpatient, is that only one participant in the current study, had psychiatry consultation so the lack of referral for mental health support is evident at present and showed the lack of a holistic approach and a potential lack of resources to rehabilitation. Despite this finding, it is noteworthy to consider the

possibility of the study participants having been averse to the idea of a referral to a psychologist or psychiatrist. This presentation of complications following polytrauma due to poor follow up upon discharge is supported by Jackson et al., (2015), where the authors explored the importance of an evidence-based approach to planning health care following discharged and show the implications of the lack of referral from the health care team as seen in the present study.

In this study, the perceptions of health care and rehabilitation by patients is an interesting discussion. Many participants perceived their health care to be satisfactory when there was adequate engagement with the health care professionals. Bright et al., (2015) support this notion that engagement between health care professionals who were involved in the rehabilitation process, and patients improves recovery outcomes and patient levels of satisfaction. The section below discusses access to health care and rehabilitation and factors which affect it, specifically within the context of a developing country such as South Africa.

The perception of the quality of the health care provision was shown to be a factor affecting recovery in this study. In cases where the patient perceived a high quality of health care service provision, they reported improved functional outcomes. Majority of the patients in this study perceived the quality to be of a high standard however there were isolated cases where patients perceived the quality of care by nurses in the intensive care unit, to be of poor quality thus they perceived this as a barrier to their recovery. Additional to this, was a patient who complained about a bad experience with the physiotherapist. This patient also has poorer perceived health outcomes post polytrauma by expressing residual complications such as pain and decreased functional ability. This presentation of quality of health services was reflected as far back as Cullinan (2006), who did a situational analysis of the quality of health service provision in South Africa and found this to have a direct correlation with health outcomes of patients. More recently, Mercure, Hardcastle and Rocher (2020) highlighted the low standard of health care services in KwaZulu Natal which affected recovery outcomes in trauma units.

Fingerhut and Boffard (2012) confirmed Cullinan (2006)'s findings that the recovery outcomes are directly related to the quality of health care service provision at trauma facilities.

It is important to consider all factors influencing a patient's perception of their recovery, which this study aimed to do. A study conducted by Larsen et al., (2016) in Denmark, showed a reduced quality of life reported by patients who sustained polytrauma injuries. They also found that 32% of patients had returned to work after one year of recovery. This shows the importance of patient perceptions of their quality-of-life post injury based on the fact that they only returned to work one year after injury. This may be particularly relevant in the case where

the patient already had poor perceptions of their quality of life prior to the polytrauma injury, thus the perceptions of care and quality of life post injury may be further affected.

. The role of pain in polytrauma has been shown to be significant (Peixoto et al., 2018). This may be due to the high level of subjectivity associated with pain, which further influences the perceptions of care. In the current study, the effect of pain was seen on participants who expressed fear of movement due to the pain, where others expressed the prolonged presence of pain hindered their ability to comply with home exercise programmes and ultimately their recovery of physical function. Peixoto et al., (2018), report that majority of patients who sustained polytrauma injuries due to motor vehicle accidents, experienced chronic pain including headaches, overall bodily pain and poor sleep outcomes. Taherinia et al., (2016), explained the role of pain in polytrauma and that there may be barriers to improvement of pain levels experienced. This may be influenced by the patient's perceptions of their pain level, the management of their pain and how this perception influences recovery. It is, however, noteworthy to mention the subjectivity of pain and that this may influence the patient's perceptions based on their previous experiences of pain. Wideman et al., (2019) described the subjective nature of pain and it's influences on patient's perceptions as pain cannot be observed by the healthcare professionals conducting health interventions. Raja et al., (2020) emphasised that pain is always subjective, and it is based on the application of the concept of pain by the patient, based on their life experience and previous injuries.

A factor which also affects recovery of physical function after polytrauma is family or caregiver support structures (Peixoto et al., 2018). Boyle (2015) describes the important role of family support on the patient's perceptions of their recovery. While the support of family members or caregivers is integral to recovery in polytrauma, Friedemann-Sanchez et al., (2012) highlighted that for families of patients who sustain polytrauma injuries, appropriate support and information need to be given for ideal care of these patients. This may be associated with numerous challenges that families in South Africa face such as the lack of resources and lack of access to appropriate information as was reported by two of the participants. The lack of access to appropriate health information to the greater public of South Africa is a barrier to health care access (Gaur et al., 2020). This is associated with the reduced levels of general education leading to higher levels of illiteracy even if health education material is provided. In some cases, the poor geographical access of remote areas results in health education not reaching communities and patient's families (Gaur et al., 2020).

Access to health care service provision, is the interface between the providers of health care services and the individuals who wish to access it (Penchansky and Thomas, 1981). The authors further explored access to health care by reviewing it in five dimensions namely the

theory of access which explore access in relation to availability, accessibility, affordability, accommodation, and acceptability.

In the current study, participants reported the affordability dimension of access in relation to their experience of recovery of physical function following polytrauma injuries. Patients reported the affordability of health care and rehabilitation services to be a barrier to recovery. Majority of patients did not have access to additional funds to cover the cost associated particularly with their rehabilitation following discharge which is why they discontinued rehabilitation upon discharge. Numerous patients also had to cover the shortfall which their medical funders did not cover for the health care and rehabilitation provided to them in-hospital, resulting in major financial setbacks upon recovery in conjunction with difficulty to return to work. This is a reflection of the poor socio-economic status of patients who are accessing health services in South Africa. It also highlights the lack of resource provision even in the private sector such as the current study context that it is often assumed that patients accessing private healthcare have additional financial resources, when often this is not the case. In the present study, one of the participants was admitted under the Workman's Compensation cover thus the participant did not have extra funds to pay for additional hospital and out of hospital services. This is in accordance with the global literature as well as evidence in South African trauma facilities (Khan, Amatya and Hoffman ,2012). Khan, Amatya and Hoffman (2012) highlighted the global issue that health care and rehabilitation in trauma units are universally unaffordable. In South Africa, Hardcastle et al., (2016) highlight the lack of affordability forming major barriers to recovery of physical function following polytrauma injuries. For this study, the focus was on the affordability aspect due its relevance to the study and study findings.

5.4.2 **Post-Discharge Rehabilitation**

The overarching theme that arose from participants' experiences of post discharge care is the influence of rehabilitation service provision on physical function recovery. Kang et al., (2018) showed the importance of adequate discharge care to improve recovery outcomes. They emphasised the importance of patient education upon discharge to ensure improved functional recovery outcomes. In the current study, the majority of patients felt that they had adequate guidance on the rehabilitation process post discharge. This is in contrast to Sandström et al., (2019) who found that in a Swedish population of participants who sustained polytrauma injuries, they felt that they had no one to turn to for guidance with regards to their rehabilitation, so they sought alternative means for advice, and this hindered their physical function recovery outcomes.

A corresponding sub theme relating to post discharge rehabilitation, is that the physiotherapy, occupational and nursing care at rehabilitation centres was noted to have greatly assisted

with recovery of physical function. It was further elaborated that the teamwork between members of the multi-disciplinary team as well as clear communication between the healthcare professionals and the patient, facilitated recovery of physical function. This is supported by Pfeifer (2022) that regular rehabilitation provided in a structured format, such as that provided in rehabilitation centres, result in improved physical function outcomes. This is further reiterated by Sidiropoulos et al., (2019) who showed that rehabilitation centres can decrease the risk of complications and be a catalyst to physical function recovery.

Despite the correlation between rehabilitation centre admission and recovery outcomes, in certain cases, a clear limitation to post discharge care, for both home care and rehabilitation centers, was financial constraints. This resulted in poorer outcomes of physical function recovery. The financial constraints were a result of no medical aid cover for post discharge rehabilitation. This highlights the lack of understanding amongst medical funders, on the role of rehabilitation in decreasing post polytrauma injury complications and its facilitation of physical function recovery. Allen et al., (2022) further highlights this lack of funding for rehabilitation and its negative implications on the recovery outcomes of patients post polytrauma injury.

High cost of rehabilitative care and job loss post-polytrauma injury, were both factors of poorer physical function recovery outcomes. The resultant effect was participants receiving partial rehabilitation. Despite this, when participants did attend outpatient rehabilitative care, they acknowledged the benefits due to feeling empowered and being proactive in their recovery. This reiterates Kang et al., (2018) who bring to light, the important role that patient education plays in compliance, to improving physical function recovery, and subsequently, improved physical function outcomes. 4.3.3rand, in the private sector, as is the context of this study (McIntyre, Cleland and Ramklass, 2021). This coupled, with job losses due to the lack of re integration into society and return to work support, results in residual symptoms post polytrauma. Thus, contributing to the already high burden of disease associated with polytrauma. Morris et al., (2021), highlight the high cost of rehabilitation in South Africa, making it inaccessible to many patients who have sustained polytrauma injury. This then leads to poor support with return-to-work activities, which often forms part of end stage rehabilitation. The knock-on effect of this is the loss of jobs amongst these patients, leading them to turn to disability grants and become dependent on an already strained social services department in South Africa (Morris et al., 2021).

5.4.3 **Mental Health Status and Mental Resilience**

The overarching theme that arose from participants' experiences of the impact mental health had, was that mental health status and resilience impacted physical function recovery. The

corresponding sub themes which arose include participants who described posttraumatic stress disorder symptoms which included feelings of terror, hallucinations, disorientation, nightmares, residual pain and feelings of body disfigurement and anger. Peixoto et al., (2018) highlights the complexity of posttraumatic stress disorder and its negative implications on recovery of physical function. These implications include apprehension, anxiety and fear of re injury (Van Aartsen and Van Aswegen, 2018). Other implications discussed by the authors include nightmares which often leads to sleep disturbances in these patients, where the sleep deprivation further exacerbates the post-traumatic stress disorder. This is further supported by Kalbas et al., (2022) who conducted a retrospective cohort study over a 16-year period of patients who sustained polytrauma injuries. It is imperative to understand the implications that mental health has on the recovery of physical function. When patients are not in health mental states, their level of motivation is reduced, and often this negatively affects their compliance with physiotherapy and their ward and home exercise programmes, subsequently hindering physical function recovery.

As a result of the physical disability, it became clear that the participant's emotional state had been affected negatively, but in some instances, where participants had a high personal drive, they succeeded in overcoming physical challenges. A study showed that high levels of motivation from health care professionals throughout the rehabilitation process provided coping mechanisms to improve mental resiliency therefore reducing mental health issues and subsequently improving the outcomes of physical function recovery (Silverstein, Higgins and Henderson, 2021). In the current study, some participants reported difficulty in having to face repeated surgeries, poor nursing care flaring up previous depression and even the need for professional assistance from a psychologist to assist with recovery. Pfeifer (2022) shows that professional psychological intervention facilitates better mental health recovery and thus in turn, improved recovery outcomes of physical function. This is an important consideration reflecting on the fact that only one participant in the current study was referred for psychiatric assistance.

Although pain was a limiting factor and recovery took noticeably long, limited work reintegration, or even inability to return to work was often preceded by fear of ability to return to work. Difficulty reintegrating due to both physical injury and poor mental health was noted. Some participants were able to get back to work or find new work but noted that this was only after concerted and prolonged effort working to maintain a positive mindset or gaining mental support from ones' religious belief systems. This may be a result of not only a high unemployment rate in South Africa, but also, the lack of return-to-work rehabilitation services in South Africa. Wyse et al., (2020) support these findings and attribute the difficulty in returning to work due to challenges when accessing supportive services in the rehabilitation

process. This is largely due to the limit in the amount of facilities that offer return to work services, and the high costs associated with accessing the services.

An important barrier to functional recovery outcomes following polytrauma, which arose in the study, is poor mental health. Patients reported depression, a lack of motivation and negative personal attitudes which impacted their functional recovery outcomes in and out of hospital after sustaining polytrauma injuries. This showed that mental illness and the lack of mental health support is a barrier to recovery of physical function following polytrauma and emphasises the need for health care facilities to provide more comprehensive mental health support programmes in the trauma units. In certain cases, patients who had positive attitudes and higher levels of motivation, indicated that their mental health played a role in facilitating their recovery of physical function. This is supported by Wiseman, Foster and Curtis (2013), who conducted an integrative literature review to explore the relationship between mental health and the recovery of physical function following traumatic injuries. They found the relationship to be complex and higher outcomes of physical function in patients with improved mental health status.

Aitken et al., (2016) conducted a prospective cohort study in Australia, over two years to review mental health and physical functional outcomes following traumatic injuries. Interestingly, they found a higher risk of poor mental health outcomes in female patients following polytrauma injuries, which was not the case in the results of the present study. Despite this finding, the authors were unable to identify reasons for the higher prevalence in females.

5.4.4 **Level of Disability**

The overarching theme that arose from participants' perception of their recovery was the influence that disability had on physical function recovery. Although some patients felt that they had a normal and full recovery, others felt that any shortfalls in the medical care received affected their outcomes of physical function and resultant disability levels. In the case of patients who had a full recovery of physical function, Al Hanna et al., (2020) conducted a systematic review which included a range of developing countries similar to South Africa, and explained that this high level of recovery of physical function is a result of advances in acute trauma care thus reducing the risk of disability post polytrauma. Majority of patients experienced levels of disability due to physical limitations such as pain, loss of joint range of motion, limited mobility thus resulting in a poorer perceived quality of life following discharge after polytrauma injury. This is supported by Schneiderman, Van Aswegen and Becker (2013) who conducted a cross-sectional study in Johannesburg at a trauma unit and they explored the quality of life in survivors of trauma at six months after discharge, which is the similar time

frame used for this present study. Schneiderman, Van Aswegen and Becker (2013) showed that several physical and emotional limitations were experienced by survivors of trauma at six months post discharge. They also found a correlation between the length of hospital and intensive care unit stay and physical limitations. This meant that the longer a patient stayed in hospital, particularly the intensive care unit, the higher the risk of physical complications which lead to functional limitations if not dealt with early. This is due to the complications associated with prolonged bed rest such as pressure sores, joint contractures, muscle shortening, muscle pain, and joint stiffness. This in turn, results in reduced mobility and a limited ability to comply with the rehabilitation interventions such as mobilising out of bed, which increases the hospital length of stay.

The physical trauma of the accident also reportedly affected the rehabilitation process. There was clearly the desire for full recovery, but some participants (participants four, seven and eight) reported that they felt they had not fully recovered and things such as delay in surgery affected physical recovery. This lack of recovery resulted in job loss, inability to do certain physical activities or having to alter the way physical tasks are done. This lack of recovery led to varying levels of disability amongst some participants. Kamp et al., (2021) supports this and show high levels of disability in a population who sustained polytrauma injury. These high levels of disability resulted in an overall reduced quality of life following their polytrauma injury and recovery process. Silverstein, Higgins and Henderson, (2021) showed that contrary to our findings, participants who received high levels of motivation through the rehabilitation process, had a higher quality of life and improved physical function outcomes. In the present study, participants (participants 5, 7 and 1) expressed high levels of motivation due to support from the physiotherapists which resulted in higher perceived recovery outcomes. Saengniam and Jitpanya, (2019), report a low level of self-esteem and negative body image in patients who sustained polytrauma injuries which in some cases, lead to depression.

5.4.5 **Pain and Physical Function**

The overarching theme that arose from participants' experiences of prolonged pain is the influence it had on physical function recovery. The corresponding sub themes which arose include that the participants reported that both acute and chronic pain impacted on their physical function. This concurs with the findings of Nummela et al., (2022), who revealed that posttraumatic pain and discomfort can last for a few months after injury. This prolonged pain has implications on physical function and various other aspects of life in particular, physical mobility and activities of daily living.

Participants reported that the acute phase of pain, had hindered physical function in the hospital bed and in severe cases of high levels of pain, physical function was limited due to fear of pain. This limitation of physical function due to pain may lead to secondary complications associated with immobility, such as thromboembolisms and pulmonary complications. This was shown by Shafeeq et al., (2022), who conducted a retrospective study of polytrauma patients, and highlight that pain is one of the highest stressors in the intensive care unit.

The effects of pain, over time hindered physical function, limiting activities of daily living including intimacy with one's partner. The effect of pain on intimacy is an interesting point, which is often overlooked in the rehabilitation process with the focus primarily on physical function of mundane daily activities. This highlights a gap in the rehabilitation approach and a need for holistic care to factor in all aspects of life when rehabilitating a patient. There is no evidence to support our findings due to the lack of available literature relating to pain and intimacy in patients who sustained polytrauma injuries. The study that does speak to sexual dysfunction and discomfort following polytrauma injury, explored pelvic floor dysfunction leading to sexual discomfort in pelvic fracture following polytrauma from war-based settings (Dettmer et al., 2015).

Contrary to the above findings, some participants reported no pain, while others used it as a motivator. The use of pain as a motivator and facilitator to recovery, is a noteworthy find, as this contradicts the findings of most studies which suggest pain as a barrier to motivation and recovery progress (Olson-Madden and Bahraini, 2019; Farago and Pop, 2018). Another study highlights how a pain response can be used to expedite healing (Navratilova and Porreca, 2014). While the use of medication was intended to assist in regaining physical function, it was noted that withdrawal symptoms from medication cessation, hindered physical function recovery. These findings are supported by Boncyk et al., (2020), who did a case study in a polytrauma patient to evaluate the effects of pain medication and found withdrawal syndrome to be high on the list of neurological complications, because of the pharmacological management of pain, following polytrauma injury. Mirjana et al., (2020) also highlight that while patients who sustained polytrauma injuries, benefitted from pharmacological pain management such an analgesics and anti-inflammatories, improved recovery outcomes were seen in patients who received a holistic approach to treatment, thus reducing the risk of withdrawal symptoms and its negative repercussions. In the case where high dosages of these medications were administered without weaning protocols, patients experienced withdrawal symptoms such as irritability, anxiety and sleep disturbances.

The results of the current study reflect a high prevalence of pain following polytrauma and the negative impact on recovery outcomes according to the patients' perceptions. This is in concordance with another study such as Lew et al., (2010) who reviewed the relationship between pain and sleep disturbance patterns following polytrauma. They found a high occurrence of pain associated with poor sleep patterns which lead to poorer functional outcomes. This was also reflected in this present study.

A high occurrence of pain had also been associated with poor sleep patterns which lead to poorer functional outcomes. Balba et al., (2018), brings to light, the correlation between pain and sleep disturbance. They note that this is more prevalent in patients who also experienced post-traumatic stress disorder. This is in line with our findings, where participants reported waking up with nightmares, associated with posttraumatic stress disorder, after their polytrauma injury. Morgan and Aldington (2020), highlighted the relationship between chronic pain post polytrauma and flashbacks of the traumatic incident which together, aggravate post-traumatic stress disorder. This discussion was further expanded upon by Unseld et al., (2020) who showed a correlation between pain, post-traumatic stress disorder and a higher occurrence of anxiety and depression which was the case of two of the present study's participants.

5.4.6 **Support Structures**

The overarching theme that arose from participants' experiences of non-medical interventions was the influence of support structures and its effect on physical function recovery. The corresponding sub themes which arose included that the participants widely expressed gratitude to family, friends and neighbours for care and support both in-hospital and on discharge, noting its assistance in recovery of physical function. This is in concurrence with Critchfield et al., (2019), who expressed the important role that family support plays in improving physical function outcomes. The authors also emphasized that family support is increased when healthcare professionals educate the family members adequately, and also noted how family members can facilitate community reintegration when equipped with the correct knowledge.

Rehabilitation centers were also seen as very supportive and a facilitator to physical function recovery. This has also been seen by Cornis-Pop et al., (2019) who found that a high level of motivation and support provided to patients who sustained polytrauma injury, had improved physical function outcomes. In the case of the lack of emotional support to patients, this led to depression which led to a lack of drive to work on recovery of physical function. This lack of support was initially attributed to family members not being allowed to see the patient in the intensive care unit, which has also been shown by Lapierre et al., (2019), to have negative

effects on physical recovery outcomes. The lack of support from medical staff, resulted in frustration, and in some cases, frustration was described due to the perceived lack of medical support while in-hospital where it is believed better support would have had a better physical outcome.

The role of interpersonal relationships affecting the recovery of physical function cannot go unnoticed. The study findings revealed that caregiver, family and neighbour support was a major facilitator to the recovery of physical function following polytrauma injury. Many patients reported improved mental health outcomes and motivation to actively participate in their rehabilitation process because of family support in the hospital and following discharge. De Beer and Brysiewicz (2017) highlighted the role of family care in the critical care setting and showed an association between positive family support structures and improved recovery outcomes.

Another important interpersonal relationship which arose was that between the patient and health care service providers. This included doctors, nurses, and physiotherapists. Many patients reported improved mental health and functional recovery outcomes when they had an engaging relationship with the health care professional. An important component which facilitated recovery was clear communication supporting a patient centred approach to rehabilitation. These findings are supported by Khan, Amatya and Hoffman (2012). The patient centred approach entails the inclusion of the patient in decision making, to ensure the multi-disciplinary team has treatment goals that are aligned with the patients' expectations (Khan, Amatya and Hoffman, 2012).

Further facilitators to recovery of function following polytrauma included the relationship amongst the multi-disciplinary team. In this study, patients reported improved outcomes when there was an established working relationship between the numerous rehabilitation professionals in and out of hospital. A clear representation of this was seen by a participant from the current study who described the referral process between the physiotherapist and occupational therapist to assist with upper limb function and rehabilitation to facilitate hand function. Khan, Amatya and Hoffman (2012) highlight the need for an interprofessional team to have good working relationships to improve physical and mental health functional outcomes of patients who have sustained polytrauma injury.

5.5 CONCLUSION

This chapter discussed the findings of this study in relation to current literature under each theme which arose from data collection and data analysis. In conclusion, the results of this study aligned with the literature in certain cases such as the role of subjectivity of pain and

its influence on perceptions of care, however in other instances, the findings contradicted the evidence in the literature. This may be due to contextual differences between the current study setting and participants and the study settings of some of the referenced studies. An example of this was a longer length of stay in more males than females in the present study as opposed to literature which found longer lengths of stay amongst females in different contexts. The study sought to explore perceptions of care and found that most participants perceived high levels of quality care in hospital and post-discharge, with some participants having experienced challenges with a lack of post discharge follow up due to a lack of funding. This was reflected in majority of the literature as well. Other study objectives such as the understanding of pain and secondary complications were achieved through study findings that pain was a barrier to recover in most cases, yet in one instance, it was seen as a motivator. This was also seen in the literature. In terms of perceptions of community and work re integration, the study findings echoed in the literature, revealed the lack of appropriate referral for work and community reintegration. There are numerous discussions on the topic of perceptions of physical recovery and function following polytrauma injury. Despite this, further research is required to understand why the themes arose within the context which they arose in. The next chapter provides a summary of findings, and concludes this study by drawing on strengths, limitations, and recommendations for future studies.

CHAPTER 6

6. CONCLUSION

6.1 INTRODUCTION

The following chapter concludes this dissertation which explored the patients' perceptions of recovery of physical function following polytrauma injuries. This was a qualitative single case study which utilised semi-structured interviews and inductive thematic analysis to understand which factors affected the recovery of physical function. The next section describes the summary of findings, implications of the study, study strengths and limitations as well as recommendations for future research.

6.2 SUMMARY OF FINDINGS

The study findings revealed six major themes with numerous subthemes relating to the patient's perception of their recovery of physical function following polytrauma injuries. This includes level of satisfaction with care, post-discharge rehabilitation, mental health status and mental resilience, level of disability, pain and physical function, support structures. A positive mental health attitude and interpersonal relationships resulted in improved outcomes. Physical limitations, pain, the inability to afford rehabilitation and poor perceived quality of care were barriers to the perceived recovery of physical function following polytrauma.

6.3 IMPLICATIONS OF THE STUDY

This study has implications for clinical practice, research, as well as public health policy. This is described further below.

6.3.1 Clinical Implications

The findings of this study can be used to inform clinical practice amongst rehabilitation professionals working in trauma units. By being cognisant of the factors affecting functional recovery outcomes following polytrauma, health care professionals can strive to decrease the barriers (high cost of rehabilitative care, poor communication and lack of family support) to recovery. Furthermore, it can be used by the medical facility as an evaluation of the quality of their health care service provision.

6.3.2 Research Implications

This research sets the foundation for further research in mapping the rehabilitation process in polytrauma through establishing appropriate referral pathways and translating the research into practice by implementing it in policies. This study can also inform the approach to research when interviewing participants who have sustained physical and mental trauma, based on the methodology as well as the questions used.

6.3.3 Policy Implications

Additional to the above implications, are the implications for policy related to rehabilitation and trauma. The study findings can potentially inform protocols within rehabilitation departments at the trauma facilities as well as national policies related to rehabilitation of patients who sustained polytrauma injuries to ensure that barriers are addressed, and resource allocation is included in future policy revision. This includes advocating for the inclusion of patient centred cared in the rehabilitative approach to patients who sustain polytrauma injuries.

6.4 STRENGTHS OF THE STUDY

A major strength of the study was the in-depth description of the qualitative methodologies utilized and the employment of numerous trustworthiness strategies. Moreover, the study explored a meaningful topic with the research problem being developed at ground level and informed by rehabilitation professionals at ground level. This aligns with the aim to innovate research to align with the needs of end users and deal with problems identified by the providers and users of the health services at ground level.

6.5 LIMITATIONS OF THE STUDY

A limitation of this study is that it was conducted with participants from a single private trauma facility; thus, the study findings may not be applied to all contexts particularly in the governmental sector due to different resource allocation. The study was also conducted through a single physiotherapy practice, where other practices may have had access to a different patient dynamic.

Another limitation is that while a major theme emerged regarding family and caregiver support, the study did not engage with family members or caregivers to understand their perspective. Additionally, the study did not interview rehabilitation service providers at the trauma unit to explore their perceptions. Furthermore, it must be noted that the principal investigator is a novice researcher, thus improvements of interviewing and probing techniques occurred throughout the research process which may have impacted on the way participants responded initially compared to the end of the data collection process. Moreover, the limitation of poor cell phone connection during the interviews may have affected the quality of the transcriptions and subsequently, data analysis.

6.6 RECOMMENDATIONS

Clinical

A clinical recommendation because of this study is for health care workers in the field of rehabilitation to be more cognisant of their empathy towards patients who have sustained polytrauma injuries, as well as implement a multi-disciplinary approach in the management of these patients. This can be accomplished through inclusive undergraduate training programs and continued professional education programs.

Research

The study brings to light the need for further research on outpatient follow up referral pathways. Moreover, more research is required to map the rehabilitation process from the emergency scene to admission into the trauma facility through to outpatient management in patients who sustain polytrauma injury. It is further recommended that research is done to explore the referral pathways within these processes of rehabilitation and how this may affect recovery outcomes. Moreover, further research is recommended to explore the perspectives of rehabilitation service providers on how participants regain physical function following polytrauma injury in South Africa and the perceived associated factors.

Policy

This study highlights the need for protocols to be implemented by management in trauma units which screen patients for mental health issues because of polytrauma injuries. Moreover, policy at the level of national and provincial departments of health, may assist to ensure the appropriate referral pathways are adhered to in the rehabilitation process.

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APPENDIX 1

- **ETHICAL CLEARANCE**

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Mr MAB Reis

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M200951

NAME: (Principal Investigator)	Mr MAB Reis
DEPARTMENT:	School of Therapeutic Sciences Department of Physiotherapy Medical School University
PROJECT TITLE:	Patients' perceptions on their recovery of physical function after polytrauma
DATE CONSIDERED:	2020/10/02
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Ms M Keller and Professr H van Aswegen
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2020/11/11

This clearance certificate is valid for 5 years from the 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 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
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 submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **September** and will therefore reports and re-certification will be due early in the month of **September** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

APPENDIX 2

- **STUDY SITE PERMISSION LETTER**

Netcare Milpark Hospital

Tel: +27 (0) 11 480 5600
Fax: +27 (0) 11 482 3317
9 Guild Road, Parktown West, Johannesburg, South Africa
PO Box 91155, Auckland Park, 2006, South Africa
www.netcare.co.za

LETTER CONFIRMING KNOWLEDGE OF CLINICAL MEDICATION OR NON-MEDICATION RELATED TRIAL RESEARCH TO BE CONDUCTED IN THIS NETCARE FACILITY

To: University of Witwatersrand: Ethics Committee

RESEARCH TO BE CONDUCTED IN NETCARE FACILITY

RE : The Wits Human Research Medical_ Ethical Committee for the following research study to be conducted Patient's perceptions on their recovery of physical function after polytrauma

We furthermore confirm that application will then be made to the Netcare Research Operations Committee and that the research may not commence prior to receipt of FINAL APPROVAL from the Netcare Research Operations Committee.
We hereby confirm knowledge of the above named research application to be made to the Netcare Research Operations Committee and in principle agree to the research application for **Netcare Milpark Hospital**, subject to the following:

- That the research may not commence prior to receipt of FINAL APPROVAL from the Netcare Research Operations Committee.
- That insurance stating the necessary indemnity cover (where applicable) will be provided by the researcher and maintained for the duration of the research, protecting both the staff and the hospital facility from potential liability
- That, in accordance with MCC approval, that medicine will be administered by or under direction of the authorised Trialist/ principal investigator
- That Netcare Research Operations Committee will be furnished with a STATUS REPORT on the progress of the study at least annually on 30th September irrespective of the date of approval from Netcare Research Operations Committee as well as a FINAL REPORT with reference to intention to publish and probable journals for publication, on completion of the study.
- That the Hospital Management reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects / Netcare or should the researcher not comply with the conditions of approval.

We wish you success in your research.

Yours faithfully

Signed by Hospital/Site/Division Management — **Date** 2020/09/04

HCM-Netcare Milpark Hospital
Specify designation)

Netcare Hospitals (Pty) Ltd T/A Netcare Milpark Hospital
Directors: J du Plessis, R H Friedland, K N Gibson, C Grindell
Company Secretary: C Vikisi
Reg. No. 1996/006591/07

APPENDIX 3

- **PARTICIPANT IDENTIFICATION INFORMATION SHEET (FOR THE RESEARCHER)**

SECTION 1: IDENTIFICATION INFORMATION

1.1 Participant identifier(number):	1.3 Name of Interviewer:
1.2 Date of interview	

SECTION 2: DEMOGRAPHIC DATA SHEET FOR KEY INFORMANTS

1. Identifier code	
1.2 Gender	
1.3 Age	
1.4 Date of admission	
1.5 Occupation	
1.6 Length of stay	
1.7 Injuries sustained	
1.8 Mechanism of injury	

APPENDIX 4

- **PARTICIPANT INFORMATION SHEET**

STUDY INFORMATION SHEET

Study title: Patient's perceptions on their recovery of physical function after polytrauma Introduction:

My name is Mughammad Abu Bakr Reis. I am currently doing my Master's degree by dissertation at The University of The Witwatersrand. My research is focused on patient's perceptions on their recovery of physical function after polytrauma and hospital discharge. Research is a process used in seeking new knowledge. In this study, we aim to explore patient's perceptions of their recovery of physical function after polytrauma and hospital discharge.

This study is involving research by interviews. This study is being done to identify the patient's perceptions on recovery of physical function after polytrauma and hospital discharge, particularly in the private healthcare sector of Johannesburg. It may lead to improved patient care, decreased disability and improved quality of life for patients sustaining polytrauma injuries. This may subsequently decrease the burden of disease and reduce the financial implications of prolonged in-hospital stay. This study has been given ethical approval by the Human Research Ethics Committee, Faculty of Health Sciences, the University of the Witwatersrand (*Reference number to be added once obtained*).

Invitation to Participate: We are inviting you to take part in a research study which looks at the patient's perceptions on their recovery of physical function after polytrauma and hospital discharge.

The information below describes what the study will entail:

1. Study design: A single case study which will entail an interview that will be audio recorded.

2. We would like to request your voluntary participation in the semi-structured interviews in this study.

3. If you wish to participate in this study after reading this information form, you can sign the attached consent form for the interview, and a separate form for the audio recording. Once permission from you has been obtained, we will arrange for a time and date that is convenient for you participate in the interview. I, (Mughammad Abu Bakr Reis) will conduct the interviews telephonically (WhatsApp video call,) myself.

4. The interviews will be approximately 30 minutes to an hour maximum. The interviews will be conducted telephonically (WhatsApp video call,). The interviews will be recorded and will then be transcribed after the interview.

5. The questions to be asked will be very broad and open-ended about the perceptions on recovery of physical function after polytrauma and hospital discharge. You will be sent a copy of this information page and the consent forms, to keep for your personal records.

6. Feedback and any other pertinent information on this study during and after the completion of the study, will be available to you, should you request this information.

Risks of being involved in the study: There are no risks associated with participating in the interviews. The interviews will be done at a time that is convenient to you.

Benefits of being in the study: There are no direct benefits from being in the study.

Participation is voluntary: Your participation in this study is voluntary and refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. Moreover, there is no requirement to provide a reason for withdrawing and any data collected on you will by default be destroyed if you withdraw unless you specifically consent to its retention.

Confidentiality: All the information obtained during this research will remain strictly confidential. This includes the audio recordings as well as the transcripts. A number will be allocated to you in the findings, and you will be identified as a participant. The information in the interview will be for the purpose of this study only. This research may be referenced in other studies; however, no reference will be made to your name hence you will not be identified personally. Any information obtained will not be disclosed to a third party, without your permission.

Results of this study may be published, which may, exceptionally, lead to cohort, or more rarely, individual identification. All data collected in the course of the study will be securely retained for two (2) years, if a scientific publication arises from the study and six (6) years if there is no publication. Thereafter it will be destroyed accordingly.

Outputs: The study may be used to improved patient care, decreased disability and improved quality of life for patients sustaining polytrauma injuries.

Contact details of researcher/s: Should you wish to clarify anything, or find out more information on this study, please contact me on 076 59 8048 or email me on mughammadreis@gmail.com. I will be supervised by two lecturers at Wits University. Their contact details are seen below:

1. Monique Keller (Wits Physiotherapy department) monique.keller@wits.ac.za
2. Helena Van Aswegen (Wits Physiotherapy department) Helena.VanAswegen@wits.ac.za

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand. A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.
Date: Month and Year only (*To be confirmed)*
Principle investigator: Mughammad Abu Bakr Reis
Contact number: 076 590 8048
Email address: mughammadreis@gmail.com

APPENDIX 5

- **INFORMED CONSENT FORM**

PARTICIPANT INFORMED CONSENT SHEET

STUDY TITLE:
"PATIENT'S PERCEPTIONS ON THEIR RECOVERY OF PHYSICAL FUNCTION AFTER POLYTRAUMA"

Principal Investigator: Mughammad Abu Bakr Reis

Institution: UNIVERSITY OF THE WITWATERSRAND

DAYTIME AND AFTER-HOURS TELEPHONE NUMBER(S):
Daytime numbers: 076 590 8048
Afterhours: 076 590 8048

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION: dd/mm/yr/time

You are invited to volunteer for a research study. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved. If you agree to be a part of this study, we require written informed consent below.

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;

2. I was given time to read it, or had it read to me, in the language I best understand;

3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;

4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;

5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;

6. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained

7. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study, I am free to speak to any of these contacts.

Contact details:
Mughammad Abu Bakr Reis, Principal Investigator, telephone no.0765908048 mughammadreis@gmail.com
Monique Keller, Supervisor, on telephone no. 011 7173715 monique.keller@wits.ac.za
Helena Van Aswegen, Supervisor, on telephone no. 011 717 3706
Helena.VanAswegen@wits.ac.za
Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Name of Participant	:	_____
Date	:	_____
Place	:	_____
Signature or mark	:	_____
Name of Researcher	:	_____
Signature or mark	:	_____

Witnessed by:

Name of Witness	:	_____
Date	:	_____
Signature or mark	:	_____

APPENDIX 6

- **AUDIO RECORDING CONSENT FORM**

CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION

Project Title: Patient's perceptions on their recovery of physical function after polytrauma

I hereby consent for Mughammad Abu Bakr Reis to do an audio recording of the interview.

.

I understand that:

- The recording will be stored in a secure location (a locked cupboard or password protected computer) with restricted access to the researcher, the research supervisors and the individual doing the transcription.
- The recording will be transcribed and any information that could identify me will be removed,
- The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years if no publications arise from this research.
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research.

Name of Participant : _____

Date : _____

Place : _____

Signature or mark : _____

Name of Researcher : _____

Signature or mark : _____

Witnessed by:

Name of Witness : _____

Date : _____

Signature or mark : _____

APPENDIX 7

- **SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE GUIDE**

INTERVIEW GUIDE

Good morning/afternoon. Thank you for giving your time for this interview. My name is Mughammad Abu Bakr Reis, I am a Masters student at the University of the Witwatersrand. Today, I would like to learn from you, regarding your perceptions on your recovery and physical function associated with the injuries that you sustained and are recovering from.

This interview should last 30 minutes to an hour approximately and will be audio recorded. I have specific questions that I would like to ask, but feel free to provide additional information. Please try to speak loudly, clearly and slowly so that your comments can all be audio recorded.
Do you have any questions?

Interview Guide

Question 1 How do you feel the healthcare provided to you in-hospital affected your recovery of physical function?
Question 2 How do you feel the healthcare provided to you after you were discharged from hospital affected your recovery of physical function?
Question 3 Do you feel that there were any medical complications which affected your recovery of physical function in hospital?
Question 4 How do you feel that pain impacted your function abilities after discharge?
Question 5 How do you feel that your family and/or care givers' support impacted on your recovery of physical function?
Question 6 How do you feel you have managed to reintegrate back into your community and workplace?

This concludes the interview. Thank you for your time and input.

INTERVIEW GUIDE CHECKLIST:

Checklist	**Tick**
- Consent for interview and recordings	
- Audio recorder	
- Demographic information of the participant	
- All questions addressed	
- All responses rechecked with participant	

APPENDIX 8

- **APPROVAL OF TITLE**

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Private Bag 3 Wits, 2050

Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

02 September 2020
Person No: 457647
PAG

Mr MAB Reis
P O Box 6155
Ansfrere
1711
South Africa

Dear Mr Mughammad Reis

Master of Science in Physiotherapy: Approval of Title

We have pleasure in advising that your proposal entitled *Patient's perceptions on their recovery of physical function after polytrauma* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX 9

- **TURN-IT-IN REPORT**

Turnitin Originality Report

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MAB 041022 By Mughammad Reis



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