



An exploration of the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles

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Sciences

Department of Occupational Therapy

University of the Western Cape

Tarryn Lee Petersen

Student number: 2855435

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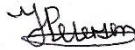
Supervisor: Professor Mogammad Shaheed Soeker

Declaration

I, Tarryn Lee Petersen, hereby declare that this thesis: **An exploration of the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles**, is my own original work, and that neither the whole work nor any part of it has been or will be submitted for another degree in this or any other university. All the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

Name: Tarryn Lee Petersen

Signature:



Date: July 2022



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Abstract

Traumatic brain injury (TBI) often results in residual cognitive, behavioural, physical, and functional impairments that may influence the person's independence in most areas of occupation, including work. Few resources are available for the rehabilitation of patients with TBI in South Africa, and access to rehabilitation facilities in the public sector is limited. On 7 January 2020, 'Severe Acute Respiratory Syndrome Coronavirus 2' (SARS-CoV-2) was confirmed as the causative agent of 'Coronavirus Disease 2019' or COVID-19. On 15 March 2020, the president of South Africa, Cyril Ramaphosa, declared a national state of disaster. On 23 March 2020, a national lockdown was announced, starting on 27 March 2020. In response to the COVID-19 pandemic, non-essential rehabilitative services (including out-patient occupational therapy rehabilitation for TBI patients) were suspended in order to assist with curbing the spread of the virus. In South Africa, there is no literature that focuses on how the COVID-19 pandemic impacted on the ability of TBI survivors to access rehabilitation and resume their worker roles. This study aimed to explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles. Data from 10 TBI survivors and two key informants was gathered through the use of semi-structured interviews, which was audio taped and transcribed verbatim. A thematic analysis was conducted to develop themes. Theme one describes the participants experiences and perceptions of the barriers to accessing occupational therapy rehabilitation during the COVID-19 pandemic. Theme two describes the participants' experiences and perceptions of the impact of TBI on quality of life as well as the loss of the worker role. Theme three presents the factors that facilitated access to occupational therapy rehabilitation during the COVID-19 pandemic. Theme 4 discusses the participants' perceptions and feedback on factors that could be implemented in future in order to improve access and utilisation of occupational therapy rehabilitation services during the COVID-19 pandemic. The findings of

the current study were then interpreted with the use of the Ecology of Human Performance Model (EHP) as a conceptual framework. This provided insight and revealed how the transaction between a person and the context influenced the participant's quality of life and their ability to resume their worker roles. Access to rehabilitation and the return to work of TBI survivors was not only influenced by the personal characteristics and contextual factors but also by the restrictions imposed by the COVID-19 pandemic. Recommendations to enhance occupational therapy practice during the COVID-19 pandemic are explored. Furthermore, other recommendations included are for future occupational therapy research, TBI programme development as well as policy issues affecting access to occupational therapy rehabilitation during the COVID-19 pandemic.



Definition of Key Terms

Traumatic brain injury

Traumatic brain injury (TBI) or craniocerebral trauma may be defined as an occurrence of injury to the brain arising from blunt or penetrating trauma or acceleration-deceleration forces (Moller et al., 2017). TBI often results in residual cognitive, behavioural, physical, and functional impairments that may influence the person's independence in most areas of occupation, including work. TBI is classified according to mild, moderate, and severe injury using the 15-point Glasgow Coma Scale (GCS) of which the degree of impairment depends on the severity of injury sustained (Kalyan et al., 2007).

Corona virus

COVID-19 (coronavirus disease 2019) is a disease caused by a virus named SARS-CoV-2 and was discovered in December 2019 in Wuhan, China. COVID-19 most often causes respiratory symptoms that can feel much like a cold, a flu, or pneumonia. Most people with COVID-19 have mild symptoms, but some people become severely ill.

Return to work

For the purpose of the current study, return to work (RTW) refers to engagement in work-related tasks after receiving occupational therapy rehabilitation or vocational rehabilitation.

Occupational therapy

Occupational therapy (OT) is a profession concerned with improving the well-being of persons of all ages through enabling occupations to promote health and participation in society. Occupational therapists do this by supporting persons' engagement in occupations and activities that they want, need and choose to do in everyday life (Bolt et al., 2019).

Rehabilitation

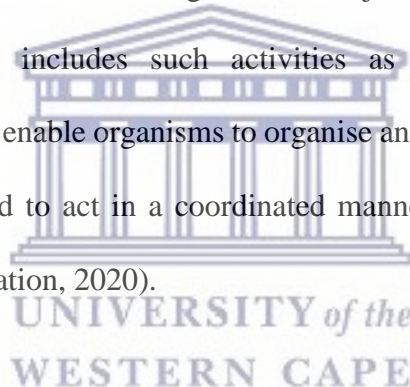
Rehabilitation is defined as a set of interventions to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment (WHO, 2021).

Vocational rehabilitation

Vocational Rehabilitation (VR) refers to a multi-professional approach that is provided to individuals of working age with health-related impairments, limitations, or restrictions with work functioning and whose primary aim is to optimise work participation (Escorpizo et al., 2011).

Perception

Perception is the process or result of becoming aware of objects, relationships, and events by means of the senses, which includes such activities as recognising, observing, and discriminating. These activities enable organisms to organise and interpret the stimuli received into meaningful knowledge and to act in a coordinated manner (Dictionary of psychology, American psychological association, 2020).



Experience

Experience refers to the observing, encountering, or undergoing of things generally as they occur in the course of time (Merriam-Webster dictionary, 2021).

Employment

Employment is the relationship between two parties usually based on a contract, where work is paid for and where one party (that may be a corporation, for profit, not-for-profit organisation, co-operative or other entity) is the employer and the other is the employee (Wikipedia, 2021).

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Chapter 1: Overview of Study

This study focused on exploring the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles. Prior to the COVID-19 pandemic, 2014 statistics indicated a high prevalence of TBI in South Africa, furthermore the return-to-work rate for TBI survivors is compounded by factors such as injury severity, pre-injury educational and occupational status, and age at injury. The COVID-19 pandemic resulted in the de-escalation of non-essential out-patient services in order to assist with curbing the spread of the virus. As an occupational therapist at the work assessment unit at Groote Schuur Hospital, it became evident to the researcher that many TBI survivors had been affected by the suspension of rehabilitation services to the extent that they either had not been able to return to work or their work had been terminated due to their ill health. This motivated the researcher to explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles. It is envisaged that the information gained from this study may shed light on how the suspension of rehabilitation services during the COVID-19 pandemic had a ripple effect on the TBI survivors' work roles. Furthermore, the information from this study may also assist in providing pivotal information regarding the need for rehabilitation to be deemed as an essential service during a global pandemic.

1.1 Introduction

“In South Africa (SA), the high prevalence of violence contributes to the national burden of disease” (Webster et al., 2015, p. 195). The National Institute for Occupational Health (2018) stated that, in South Africa, investigators have learned that men represent a higher percentage of traumatic brain injury (TBI) victims than women with an approximate man to woman ratio of 4:1. According to Moller et al. (2017) TBI frequently causes cognitive, behavioural, physical and functional limitations that may affect the individual’s independence in activities of daily living (ADLs), including work. Soeker (2011) indicated that many TBI survivors are of working age and run the risk of becoming unproductive persons in the community who no longer consider work as an important facet in their life (Soeker, 2011). The Society of Occupational Medicine (2020) reported that the coronavirus (COVID-19) pandemic is acknowledged as a worldwide health emergency by the World Health Organisation (WHO), and community health procedures have been employed, involving social distancing, work constraints and promoting working-from-home. In response to the COVID-19 pandemic, non-essential rehabilitative services (including out-patient occupational therapy rehabilitation for TBI patients) were suspended to assist with curbing the spread of the virus. This resulted in TBI survivors being unable to complete their occupational therapy rehabilitation and in turn unable to return to their worker roles.

In South Africa, there is inadequate access to rehabilitation services within the public sector. The consequence for individuals with TBI is that very few obtain satisfactory rehabilitation services; only 16 of the 654 individuals with TBI in the 2009 Groote Schuur Hospital (GSH) audit attended a public rehabilitation facility (Webster et al., 2015). The current study therefore explored the experiences and perceptions of TBI survivors and the reintegration into their worker roles, with a specific focus on access to rehabilitation during the COVID-19 pandemic and how this influenced their ability to return to work. The research was conducted at the

occupational therapy department of a tertiary hospital in the Western Cape. This study explored the importance of occupational therapy intervention in the facilitation of reintegration into work-related occupations for TBI survivors.

1.2 Problem statement

In South Africa there is limited access to the majority of South Africans to rehabilitation facilities, particularly in the public sector. According to Webster et al., (2015), TBI can require a long and arduous recovery process. Many survivors are left with permanent physical, emotional and cognitive disabilities. In addition, TBI can also impede an individual's ability to be an effective and efficient worker. During the rehabilitation process it is essential that the TBI survivor be involved in goal planning, which can act as a driving force for participation. Furthermore, the time period of recovery may vary from months to years, this may pose a significant challenge on the health facility and be costly for the individual with TBI. The COVID-19 pandemic has placed an additional burden of uncertainty on the health system, in that particularly patients such as individuals with TBI cannot access rehabilitation facilities and that the manner in which rehabilitation may be adjusted due to COVID related protocols (Kleinitz et al., 2020). Currently there is no research from a South African perspective that provide insight into the challenges that service users such as individuals with TBI and service providers such as occupational therapists experience with regard to vocational rehabilitation at a tertiary hospital setting. The current study therefore provides a description of the barriers and facilitatory factors that influence rehabilitation services for individuals with TBI at a tertiary setting.

1.3 Rationale

In South Africa, traumatic brain injury (TBI) has significantly added to the burden of healthcare as there are limited rehabilitation services available within the public sector. In addition, TBI can also impede an individual's ability to be an effective and efficient worker. During the rehabilitation process it is essential that the TBI survivor be involved in goal planning, which can act as a driving force for participation. Remunerative work is considerably affected after sustaining a TBI and the projected rate of joblessness is as high as 88% for persons with limitations/disabilities (Soeker & Ganie, 2019).

According to Webster et al. (2015), TBI can involve a long and laborious recovery process. Many TBI survivors have residual physical, emotional, and cognitive limitations. In South Africa, there is inadequate access to rehabilitation centres within the public sector. The significance for individuals with TBI is that not many receive sufficient rehabilitation services; only 16 of the 654 survivors in the 2009 GSH audit attended a public rehabilitation centre. It was also found that during the period 2008-2012, individuals with TBI accounted for less than 9% of the intake at Western Cape Rehabilitation Centre (WCRC). WCRC is a 240-bed rehabilitation facility and the only in-patient rehabilitation facility available to patients within the public sector. Additionally, a TBI may involve an initial phase of post-traumatic memory loss that usually requires a lengthy recovery time, yet individuals for rehabilitation facilities are required to conduct themselves in an appropriate manner and expected to recover in a period of 6-12 weeks. This implies that few individuals with TBI receive the essential rehabilitation assistance, and most are instead sent home to unqualified family members who often become their primary support structure.

The COVID-19 pandemic was confirmed as a worldwide health emergency by the WHO and public health measures such as social distancing, work restrictions and the promotion of working from home were implemented (Society of Occupational Medicine, 2020). In reaction

to the COVID-19 pandemic, non-essential rehabilitation services including occupational therapy out-patient rehabilitation services were de-escalated. The de-escalation of rehabilitation services had a direct impact on TBI survivors' ability to access rehabilitation during the COVID-19 pandemic.

At present, there is no research in South Africa that focuses on the TBI survivor's perspective of accessing rehabilitation services throughout the COVID-19 pandemic. Therefore, more research is required to gain a better understanding of the effect that the COVID-19 pandemic has had on a TBI survivor's ability to gain access to occupational therapy rehabilitation, when the emphasis is on returning the individual with TBI to his/her worker role. Hence the motivation for the current research project.

1.4 Significance of study

At present, there is no research in South Africa that focuses on the TBI survivor's perspective of accessing rehabilitation services throughout the COVID-19 pandemic. Therefore, more research is required to gain a better understanding of the effect that the COVID-19 pandemic has had on a TBI survivor's ability to gain access to occupational therapy rehabilitation, when the emphasis is on returning the individual with TBI to his/her worker role. The literature has indicated that there is a need for research to particularly understand how rehabilitation programmes could be adjusted or adapted in order to continue the provision of rehabilitation services to health consumers during a pandemic (Kleinitz et al., 2020). The findings of the current study provided insight from the perspectives of individuals diagnosed with TBI and occupational therapists with regard to the barriers and facilitatory factors that influence rehabilitation programmes. Furthermore, the study provided valuable suggestions with regard to adapting rehabilitation programmes, particularly for individuals with TBI who would want to transition back to work.

1.5 Research question

What are the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how it affected their worker roles?

1.6 Aim

The aim of the study is to explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles.

1.7 Objectives

- To explore the barriers TBI survivors experience when accessing rehabilitation and vocational rehabilitation during the COVID-19 pandemic
- To explore the facilitatory factors that aided TBI survivors when accessing rehabilitation and vocational rehabilitation services during the COVID-19 pandemic
- To explore the experiences and perceptions of TBI survivors about how they adapted to their worker roles during the COVID-19 pandemic
- To explore suggestions that could enhance access and utilization of rehabilitation and vocational rehabilitation services

1.8 Outline of thesis

Chapter 2: Literature review and conceptual framework

In chapter 2 the epidemiology of TBI is described as well as a review of the applicable literature pertaining to the coronavirus, statistics on TBI and return to work within South Africa. The role of the occupational therapist in TBI rehabilitation, infection risks for patients and rehabilitation professionals throughout the COVID-19 pandemic, telehealth as an effective service delivery method that could enhance infection control protocols, the influence of

rehabilitation cessation or reduction on patient outcomes during the COVID-19 pandemic and employment of a person who has suffered a TBI, is also highlighted. Furthermore, the Ecology of Human Performance is described and used as the conceptual framework in this study.

Chapter 3: Research Methodology

In chapter 3 the methodology of this study is described. It defines the research design, research setting, the study participants and sampling approaches, techniques, and data collection. In chapter 3, the data trustworthiness and reliability, data analysis and ethics statement are also discussed.

Chapter 4: Research Findings

In chapter 4 the findings of the research study are reported. The emerging themes, focused on categories and codes from the analysed data, are presented and explained by the researcher.

Chapter 5: Discussion

In chapter 5 the findings of the study are interpreted and examined. In the course of this chapter the researcher endeavoured to answer the research questions and appraise the findings in contrast to the relevant literature.

Chapter 6: Conclusion and Recommendations

Chapter 6 presents a dialogue of the study's limitations and contributions, following this the conclusion and final recommendations for future studies are noted.

Chapter 2: Literature Review and Theoretical Framework

2.1 Introduction to literature review

The literature review centres on the epidemiology of TBI, the role of the occupational therapist in TBI rehabilitation, and employment for a TBI survivor. Statistics on the prevalence of TBI in South Africa are discussed together with the return-to-work rate of TBI survivors. Furthermore, the literature review focuses on the COVID-19 pandemic, infection risks for patients and rehabilitation professionals throughout the COVID-19 pandemic, telehealth as an effective service delivery method that could enhance infection control protocols, as well as the impact of rehabilitation suspension or reduction on patient outcomes during the COVID-19 pandemic. Lastly, the theoretical framework, the ecology of human performance (EHP) model, is described.

2.2 Epidemiology of TBI

As stated by Cancelliere et al. (2014) traumatic brain injury (TBI) is an acquired brain injury stemming from a violent blow to the head as a result of external physical forces. According to the World Health Organisation, diagnostic criteria for TBI include confusion or disorientation, loss of consciousness for 30 minutes or less, post-traumatic forgetfulness for less than 24 hours, and/or other short-term neurological irregularities such as focal signs, seizure, and intracranial lesion not requiring surgery, and a Glasgow Coma Scale score of 13-15 after 30 minutes post-injury or later upon presentation for healthcare services (Cancelliere et al., 2014).

The National Institute for Occupational Health (2018) stated that, in South Africa, researchers have also found that men account for a higher percentage of TBI victims than women with a projected man to woman ratio of 4:1. Almost 50% of TBIs are caused by motor vehicle, bike or pedestrian-car accidents. The second most common cause of TBI is attributed to falls, which is more frequent among younger people. Incidents related to violence account for roughly 20% of TBIs, which is almost equally distributed into firearm and non-firearm attacks.

According to Roozenbeek et al. (2013) in the USA, approximately 5.3 million people are living with a disability as a result of a TBI, and in the European Union, roughly 7.7 million people who have suffered a TBI have incapacities. TBI frequently results in neurocognitive deficits (such as impaired awareness, failure to develop visuospatial associations, or inadequate executive function) and psychological health concerns; for example, 30-70% of individuals with TBI are diagnosed with depression. TBI survivors also demonstrate increased impulsivity, inadequate decision-making and impulsive-aggressive behaviour. These impairments in self-regulating behaviours can influence interpersonal relationships and contribute to poor integration within social, community, and work environments, and may possibly lead to long-term institutionalisation. Variability in both diagnostic criteria and case ascertainment in TBI further contributes to the inconsistency of incidence estimation and confounds comparison between studies. However, evidence indicates that population-based patterns of TBI are developing, related to the outcomes of prevention approaches and healthcare delivery.

Peeters et al. (2015) showed that traumatic brain injury (TBI) represents a significant health and socioeconomic issue globally. TBI is prevalent in low- and high-income populations and impacts people of all ages. TBI is often referred to as the 'silent epidemic' because impairments due to TBI are often not instantly visible, and TBI survivors are not particularly vocal. The word 'silent' further indicates that society is often uninformed as to the impact of TBI due to the common underestimation of its actual incidence. Therefore, epidemiological investigations of TBI are crucial for prevention measures and the successful treatment of TBI patients. (Peeters et al., 2015).

According to Roozenbeek et al. (2013) a common observation is that most individuals who suffered a TBI are young adult males who were involved in motor vehicle accidents. Even though a great deal of TBIs are the consequence of motor-related accidents, the cause of injury differs across regions. It was found that motor-vehicle accidents are a common cause of TBI

in high-income countries; however, individuals with TBI are often victims of road traffic accidents, namely pedestrians and those riding bicycles or motorcycles in middle- and low-income regions. Increased use of motor vehicles together with insufficient traffic education and slow application of traffic safety laws are the main contributors to the rising prevalence of TBI in low and middle-income countries. On the contrary, in high-income regions, improved safety laws have resulted in a decrease in traffic-associated TBI (Roozenbeek et al., 2013).

2.3 Coronavirus (COVID-19)

According to the WHO (2020), the novel coronavirus (COVID-19) is a communicable and infectious illness caused by a recently discovered coronavirus. Most individuals who contract COVID-19 are likely to develop mild or moderate respiratory disease and recover without needing special medical intervention or hospitalisation. Older persons and individuals with co-morbidities such as heart disease, diabetes, long-standing respiratory illness, and cancer are more prone to experience severe illness. The COVID-19 disease is commonly transmitted via droplets of saliva or secretion from the nose when a person who has become infected with COVID-19 coughs or sneezes. COVID-19 affects various individuals in different ways. The usual symptoms of COVID-19 are fever, dry cough, and fatigue. Less frequent symptoms include body aches, sore throat, looseness of the bowels, conjunctivitis, headache, inability to taste or smell, skin rash, or discolouration of extremities. Severe symptoms present as trouble breathing or dyspnoea, chest pain and difficulty speaking and the ability to move around. As mentioned previously, on 15 March 2020, the President of South Africa, Cyril Ramaphosa, declared a national state of disaster. A national lockdown was declared on 23 March, which commenced on 27 March 2020. According to the Disaster Management Act (2002), the COVID-19 five-level alert system, described below, was established to cope with the steady easing of lockdown restrictions. The five-level alert system is guided by a number of criteria, including the infection rate, percentage of transmission, capacity of health services, the

magnitude of the execution of community health interventions, as well as the impact on social and economic resources as a result of the continued restrictions.

Alert levels define the intensity of restrictions that need to be applied throughout the national state of disaster:

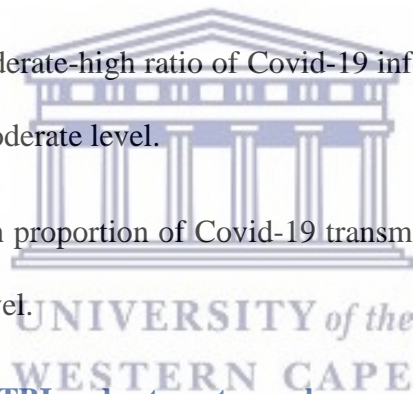
(a) Alert Level 1 suggests a low percentage of Covid-19 transmissions with the health system readiness being at a high-level.

(b) Alert Level 2 implies a moderate proportion of Covid-19 infections with the health system preparedness being at a high-level.

(c) Alert Level 3 involves a moderate percentage of Covid-19 transmissions with the health system readiness being at a moderate-level.

(d) Alert Level 4 implies a moderate-high ratio of Covid-19 infections with the health system preparedness being at a low-moderate level.

(e) Alert Level 5 signals a high proportion of Covid-19 transmissions with the health system preparedness being at a low-level.



2.4 South African STATS on TBI and return to work

In accordance with statistics from the South African Institute for Occupational Health (NIOH), worldwide more than 5% of people endure a severe brain injury of which an approximated 89 000 new incidents of TBIs are registered each year in South Africa (Moller et al., 2017). Naidoo (2013) state that, there is no particular database for TBIs within South Africa. Moller et al. (2017) further assert that the prevalence of TBI within South Africa is 316 per 100 000 which is indicative of a high frequency rate in comparison to other countries. Statistics in South Africa as of 2014 stated that the overall deaths from “other external causes of accidental injuries” added to 60% of unnatural deaths (Statistics South Africa, 2015).

Statistics South Africa stated that, the overall fatalities from “other external causes of accidental injuries” accounted for 60% of unnatural fatalities in 2014. During the period January 2014-January 2016, a regional health facility in the Eastern Cape had a prevalence of 90 in 100 000 for TBI. 73.7% of those persons with TBI were of working age. Data examined from a tertiary health facility in KwaZulu-Natal during the period January 2009 to December 2013 revealed that severe brain injuries attributed for 24 in 100 000. However, at national level within South Africa, the current incidence and severity of TBI is unknown. Bearing in mind that the majority of individuals with TBI are the appropriate age for employment and fulfil the employee role, a leave-of-absence from work or the failure to resume work might have a significant effect on the economy. Even though comprehensive labour regulations and guidelines safeguard and promote the employment of persons with disabilities in South Africa, the integration of individuals with disabilities into the open labour market is inadequate. Identification of the circumstances affecting the resumption-of-employment of individuals with severe TBI may assist with addressing the fundamental cause of inadequate resumption-of-employment for persons with disabilities (Statistics South Africa, 2015).

Moller et al. (2017) note that globally, TBI survivors who suffered a severe TBI have a significantly lower probability (i.e., up to 74%) of resuming employment than individuals who suffered mild and moderate TBIs. It is suggested that if the TBI is severe, the likelihood of maintaining employment is substantially lower than with mild and moderate TBIs. Individuals who suffered a TBI in South Africa, had a 32% probability of resuming employment yet the injury severity was excluded from the study. Taking into consideration the resumption-of-employment success rate for severe TBIs, it is presumed that severe TBIs are the category that is the most affected. After sustaining a severe TBI, deficits in overall functioning including cognitive, behavioural, and physical capabilities are regarded as immense and complicated (Moller et al., 2017).

As suggested by Grauwmeijer et al. (2012) the compounded effects of severe TBI are considered a restriction for resuming employment. Decreased self-awareness in addition to emotional and behavioural dyscontrol are similarly thought to be complex outcomes of severe TBI that, sequentially, hinder resumption of employment.

2.5 Role of the occupational therapist in TBI rehabilitation

Powell et al. (2016) propose that restoring an individual's capacity to work is a crucial aspect in the treatment of adult patients. The main objective of occupational therapy (OT), during the rehabilitation process, is to facilitate the participation of individuals in activities of daily living, including the capacity to work. Occupational therapists play a vital part in decreasing prolonged disability from TBI by enabling participation in daily tasks, areas of employment, and social responsibilities. Being equipped with the knowledge of the much-needed therapeutic services is of utmost importance to OTs who work with TBI survivors. According to Altman et al. (2010), occupational therapists play an important role in the rehabilitation of TBI survivors with the focus on reintegrating them back into the community. Their education and practice make them specialists at assessment and analysis of a person's performance skills in relation to the activity demands. This approach incorporates all facets of a person's life, together with ADLs and instrumental activities of daily living (IADLs) which include sleep, rest, home organisation, leisure, job demands and participation in social activities. OTs can assist clients with relearning exactly how to do daily activities (remediate) or determine new techniques of completing them (compensatory techniques). Occupational therapists make use of directed, graded therapy within the client's community and may work with people in actual life situations such as the supermarket, bank, shopping mall, in public transport, at work, home or any other location in which the client needs to reclaim occupational performance.

According to Schell et al. (2018), while the TBI survivor is in the acute phase the role of the occupational therapist would be to use biomechanical techniques comprising of positioning;

active range of motion (AROM), active assisted range of motion (AAROM), and passive range of motion (PROM) exercises; splinting; and casting as well as sensory stimulus and client and care-giver training and support. At a tertiary hospital (i.e., in an acute setting), the occupational therapist would do a physical and cognitive assessment to determine which components need to be addressed during rehabilitation. With severe and moderate TBI clients at an acute setting, occupational therapists would do a basic orientation assessment and intervention as well as observation of function as well as splinting and positioning. With mild TBIs, in the acute phase of rehabilitation, the occupational therapist would do a cognitive screening as well as specific testing, functional cognitive and physical testing and ADLs. During the acute phase of rehabilitation, the occupational therapist in an acute setting (i.e., in a tertiary hospital) would also liaise with the client's employer to obtain collateral pertaining to the client's inherent job demands and work performance prior to the TBI. Moderate and severe TBIs do not allow for intense cognitive rehabilitation during the acute phase of rehabilitation due to low levels of arousal therefore the occupational therapist would focus on facilitation of ADLs if possible.

After the acute phase of rehabilitation has been completed, TBI survivors are generally referred to an in-patient rehabilitation facility. According to Schell et al. (2018), the role of the occupational therapist in in-patient rehabilitation would be to improve gross and fine motor skills and capabilities by means of meaningful occupations as well as to enhance visual perceptual skills and capabilities by means of environmental variations, compensatory strategies, and assistive devices namely low-vision aids. During the inpatient rehabilitation phase the occupational therapist would also focus on maximising cognitive capabilities with compensatory or remedial approaches that improve areas of orientation, attention, and memory. Furthermore, throughout the in-patient rehabilitation period, the occupational therapist would increase independence in daily tasks and instrumental activities of daily living (IADLs) (Schell

et al., 2018). However, some TBI survivors would continue with out-patient rehabilitation at the tertiary hospital if intense in-patient rehabilitation is not needed.

After the TBI survivor has been discharged from the in-patient rehabilitation facility, some TBI survivors may still require on-going occupational therapy intervention. During the post-acute rehabilitation phase the occupational therapist would assist the TBI survivor with community rehabilitation together with the development of efficient procedures and programmes, relearning social competences, and memory compensatory strategies (Schell et al., 2018). During the post-acute phase, occupational therapists would also focus on environmental adjustments like using lighting to enhance attention and vision or marking drawers to assist with cognitive difficulties and by using adaptive equipment. Furthermore, according to Schell, et al. (2018) in the post-acute phase of rehabilitation, the occupational therapist would re-establish the individual's ability to do ADL and IADL by means of coaching and adaptation, participating in former or new leisure and/or job tasks including social skills training. Lastly, during the post-acute rehabilitation phase the occupational therapist would do client and caregiver training and support in addition to liaising with employers or educational organisations (Schell et al., 2018). At the tertiary hospital, most TBI out-patient/post-acute rehabilitation would focus on cognitive intervention and if any physical rehabilitation is required, the TBI survivor would need to attend their closest community healthcare centre. During the post-acute phase of rehabilitation, the occupational therapist would address the residual cognitive limitations of the TBI survivor by firstly re-assessing and thereafter establishing a cognitive intervention plan that is individualised to each client. At the tertiary hospital, the occupational therapist would focus intervention on attention retraining before memory or executive function can be addressed. Often the TBI survivor is taught to use compensatory techniques whilst the therapeutic intervention/remediation is taking place. During the post-acute phase of rehabilitation at the tertiary hospital, the occupational therapist would also prioritise family

education and support, as well as facilitating resumption of employment for TBI survivors who are employed. Thus, telephonic contact is made with the TBI survivor's employer to keep employers updated regarding progress and to negotiate possible reasonable accommodations that may be required when the TBI survivor returns to work. At the tertiary hospital, the occupational therapist would also provide the TBI survivor and their family with educational pamphlets to assist with understanding TBI and the process of TBI rehabilitation. When the TBI survivor has reached a plateau in post-acute rehabilitation at the tertiary hospital, the occupational therapist would liaise with the TBI survivor's family and alert them in advance that the treatment plan will be completed soon.

2.6 Infection risks for patients and rehabilitation professionals during the COVID-19 pandemic

According to the Kleinitz et al. (2020), as with other health services, in-person rehabilitation constitutes an infection risk that needs to be balanced alongside the consequences to patient outcomes and health facilities related to terminating or decreasing rehabilitation. Recommendations on how rehabilitation services are implemented during the pandemic would have to reduce exposure for clients and rehabilitation practitioners, particularly those who have a high probability of severe COVID disease as a result of their age or co-morbidities. The magnitude of risk will vary based on the accessibility of personal protective equipment (PPE) and additional infection prevention methods, which may differ throughout service delivery sites. Recommendations should also consider the likelihood of unconventional methods of rehabilitation namely telehealth, that could be applicable for certain types of rehabilitation, specifically those based on training and guidance. The feasibility of telehealth depends on local telecommunications infrastructure, the affordability of internet data for different socioeconomic groups, among other local factors.

2.7 Telehealth is an effective service delivery method that could enhance infection control protocols

Over the past few decades, advocacy for the increased use of telehealth has been endorsed by technology developers, healthcare practitioners and academics. Due to the advancement of communications and internet technology, governments have made gradual changes to facilitate the use of telehealth services (Hoffman, 2020). COVID-19, as a global health emergency, has generated an unparalleled number of governmental adjustments for telehealth. Telehealth/telemedicine may also decrease the number of visits to doctors' rooms and healthcare facilities. By reducing the in-person doctors' visits, the rate of COVID-19 transmission from patient to healthcare worker and vice versa is decreased as well as the chances of infection for those with co-morbidities (Hoffman, 2020). As stated by Hoffman (2020), telehealth services facilitate earlier patient discharge from the healthcare facility and limit new hospital visits, which in turn could free up beds within the hospital as well as equipment required for those who need it the most.

The American Association of telemedicine defines the subset of telehealth as the healthcare providers ability to deliver services to patients using telecommunications technology while the patient and healthcare provider are in different places (Hoffman, 2020). In a study conducted by Monaghesh and Hajizadeh (2020) it was noted that the use of telehealth has several advantages such as psychology services, particularly in non-critical/routine care and in instances where there is face-to-face client-healthcare practitioner interaction. Remote care also enhances access to treatment, decreases the use of healthcare facility resources whilst diminishing the immediate risk of person-to-person transmission of COVID-19 (Monaghesh & Hajizadeh, 2020).

Telehealth services are frequently split into three distinct categories: "synchronous, asynchronous and remote patient monitoring" (Hoffman, 2020). Synchronous monitoring

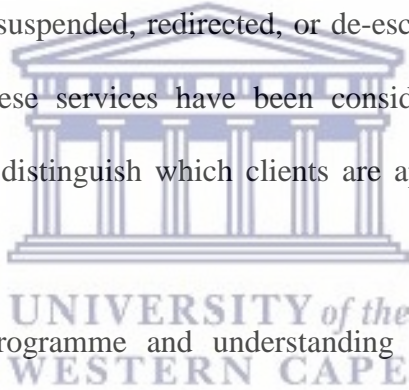
allows for immediate consultation between the client and healthcare practitioner through the use of video, texting or telephone use (Hoffman, 2020). Asynchronous monitoring permits healthcare practitioners and clients to store data and send it to service providers with a prospect of receiving feedback sometime in the future. The distribution/sending of photographs for examination is specifically effectual in asynchronous monitoring. Additionally, Hoffman (2020) indicated that remote patient monitoring enables a combination of synchronous and asynchronous contact which allows for evaluation of the patient's progress overtime by the healthcare practitioner.

Monaghesh and Hajizadeh (2020), indicate that even though clients are willing to make use of telehealth, there are some limitations. The difficulties of employing telehealth services is dependent on authorisation, payment structures and insurance. Moreover, there is also apprehension by some healthcare practitioners with regard to technological and clinical quality, security, confidentiality, and liability.

Due to the COVID-19 pandemic, telehealth could develop into a fundamental necessity for healthcare practitioners, community members and patients infected with the disease particularly when individuals need to isolate or quarantine. Telehealth would then allow patients to have real-time communication with their healthcare practitioner and receive advice on their medical conditions (Monaghesh & Hajizadeh (2020). During the course of this study, it became clear to the researcher that there is a paucity of literature on the efficacy of telehealth interventions for TBI survivors during the COVID-19 pandemic. Therefore, in this study, the researcher aims to explore the efficacy of telehealth as a form of intervention for TBI survivors during the COVID-19 pandemic and how this would influence their ability to return to work.

2.8 The impact of rehabilitation cessation or reduction on patient outcomes during the COVID-19 pandemic

As stated by Kleinitz et al. (2020), rehabilitation services for specific patients who are not infected with COVID-19 ought to be recognised as essential services and should continue throughout the pandemic. Evidence suggests that reduction or cessation of rehabilitation services for patients with burns, cerebrovascular accidents and spinal cord injuries could significantly influence the functional outcomes and health for these patients together with an increase in mortality. Therefore, the patient groups who should receive ongoing rehabilitation services throughout the pandemic include those who have suffered a traumatic brain injury, cerebrovascular accidents, burns, major surgery, spinal cord injury, myocardial infarction and fractures (Kleinitz et al., 2020). A triage system of patients should be considered in the event that rehabilitation services are suspended, redirected, or de-escalated to ensure that the risks related with suspension of these services have been considered (Kleinitz et al., 2020). Rehabilitation services should distinguish which clients are appropriate for the subsequent service alternatives such as:

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- An extensive home programme and understanding of possible impediments or suggestions for follow-up upon discharge from rehabilitation services
 - Ongoing rehabilitation for inpatients and outpatients as well as, telehealth or homebased services, often with amendments to rehabilitation processes
 - Temporary suspension of rehabilitation programme (with a transitional home programme and education) with a confirmed efficient procedure for follow-up when rehabilitation services have re-escalated (e.g., a coded rehabilitation database updated contact information)

Kleinitz et al. (2020) suggest that extra effort should be made to ensure that rehabilitation services continue to operate throughout the pandemic as they contribute to the safe and prompt

discharge from healthcare facilities for all patients whether or not they have contracted COVID-19. Rehabilitation services are essential for increasing the capacity of healthcare facilities that involve swift movement of healthcare users within the acute healthcare system (Kleinitz et al., 2020). When access to rehabilitation is suspended it could result in prolonged hospital admissions and inadequately planned or poorly organised rehabilitation could result in avoidable impediments and readmissions (Kleinitz et al., 2020). Access to rehabilitation appointments outside of the healthcare setting could also be a prerequisite for safe and well-timed discharge; thus, any recommendations regarding rehabilitation services should bear in mind the availability of services within the healthcare facility as well as facilities within the community (Kleinitz et al., 2020). However, within the South African context and particularly at Groote Schuur Hospital (Cape Town, South Africa), partial de-escalation of out-patient services was started on 20 March 2020, which meant that only certain out-patient clinics and services were functional, and patients were informed telephonically of a new appointment date. (Groote Schuur Hospital COVID-19 update: 20 March 2020).

2.9 Employment for a person with a TBI

The consequences of TBI often include residual behavioural, cognitive, functional, and physical limitations that could affect an individual's ability to engage in meaningful occupations, including employment. The majority of TBI survivors are of working age; however, return-to-work is not generally linked with these individuals (Moller et al., 2017). Statistics from an occupational therapy work assessment unit at a tertiary healthcare facility indicated that 97% of patients who suffered a mild or moderate brain-injury, were deemed unfit to return to employment within the labour force in South Africa (Soeker et al., 2012).

According to Conklin et al. (2015), vocational rehabilitation is considered a predictor for resumption of work and maintenance of employment. The return-to-work process is significantly influenced by vocational rehabilitation (Gilworth et al., 2008). Although

individuals who suffered mild or moderate TBIs are able to fulfil a certain degree of effective return to work, persons who suffered severe TBIs often encounter substantial marginalisation. Engaging in work is a complex phenomenon which comprises dynamic collaboration between internal aspects namely motivation and external aspects namely societal opinions of persons with disabilities (Moller et al., 2017). External and internal circumstances are intensified after a severe TBI and the injury severity adversely impacts on the individual's ability to engage in the worker role (Moller et al., 2017). Accessing rehabilitation services, could facilitate the enhancement of residual symptoms and provide unconventional approaches of participating in the worker role (Moller et al., 2017).

Cognitive impairment is regarded as the diminished efficiency, speed and persistency of thinking needed to participate in occupation or difficulty adapting to new or challenging situations (Soeker et al., 2012). In the study conducted by Soeker et al. (2012) it stated that cognitive deficits affected the ability of individuals with TBIs to participate in daily activities, to the extent that they had difficulty resuming their prior roles (Soeker et al., 2012).

Many TBI survivors are the appropriate age for employment, therefore, return to work is an essential objective of recovery (Liebson et al., 2018). Increased quality of life is commonly associated with resuming employment after TBI and it is often considered an indication of favourable rehabilitation outcomes (Liebson et al., 2018). The inability to return to work after TBI is linked to increased rates of economic dependence and worse psychosocial outcomes (Liebson et al., 2018).

Many individuals who have sustained a TBI are in their formative working years and brain injuries are known to have an overwhelming impact on vocational functioning. Individuals with TBI who resume employment often experience significant difficulty due to their residual symptoms as well as their vocational demands. The residual symptoms related to TBI often

have a direct negative impact on the TBI survivor's ability to meet the inherent requirements of their job (Mills & Kreuzer, 2016).

Return to employment is commonly deemed as the culmination of rehabilitation endeavours for rehabilitation service providers and individuals with TBI and is associated with several financial and psychological advantages. Employment following TBI is associated with enhanced quality of life, financial independence, and social integration. On the contrary, unemployment following TBI, coupled with low levels of productivity is commonly related to poor quality of life, increased mental health issues, low self-confidence, loss of financial independence and personal meaning. Individuals who suffered mild TBI usually have above-average rates of resuming employment than TBI survivors with more serious injuries. In a cohort study of employment post TBI it was found that 83% of TBI survivors who had a Glasgow Coma Scale (GCS) score of 13-15 were able to resume employment; however, only 37% of TBI survivors with a GCS of 8 were able to resume employment after 2 years (Liebson et al., 2018)

2.10 Theoretical framework

The assumption of the EHP framework is that the connection between person, environment, and occupations/tasks are dynamic and unique. They interact continually and across time and space. The underlying assumption of the EHP is that human performance and behaviour are influenced by the relationship between the person and the environment. Another assumption is that occupational performance can only be investigated and recognised within the environment. Therefore, occupational therapists should approach each situation as ever changing and distinct (Schell et al., 2018).

The holistic perspective of the person recognises the mind, body and spirit. Variables linked with the person involve beliefs and interests, aptitudes and capabilities, and life experiences.

Beliefs and interests help to ascertain what the person regards as significant, worthwhile and pleasurable. Aptitudes and capabilities involve cognitive, social, emotional, and sensory-motor skills including capabilities such as reading. Life experiences form the person's history and personal narrative. The person influences and is influenced by the environment (Schell et al., 2018).

The environment is where occupational performance tasks take place and encompasses the physical, cultural, social and temporal environment. The physical context is the most tangible and consists of constructed and natural elements, large elements such as terrain or buildings and small objects such as tools. The cultural context is centred on communal experiences that influence values, principles and traditions and also incorporates but is not limited to ethnicity, religious conviction and national identity. The social environment contains many layers. It includes close interpersonal relationships such as family and friends. Another layer includes work groups or social organisations to which the individual belongs. A larger layer consists of political and economic systems which can have a profound effect on the daily life of people with disabilities. The temporal environment includes time-orientated aspects connected to the person (developmental phase and stage of life) and the task (when it occurs, how frequently and the time duration). The assumption is that the context is a key aspect in the prognosis of effective and rewarding occupational performance. All facets of the context (physical, cultural, social and temporal) should be evaluated to determine relevant environmental influences (Schell et al., 2018).

Tasks are defined as objective representations of all possible activities available in the universe. Tasks/occupations occur when the person and environmental aspects combine to provide significance to tasks. Therefore, occupational performance is determined by the confluence of person, environment, and occupations (i.e., tasks). People, environments and occupations are

constantly changing and as these factors change, so does occupational performance (Schell et al., 2018).

Occupational therapy practice begins by identifying what occupations/tasks the person wants or needs to perform. Using a top-down approach, the targeted area of occupational performance is identified first by the client or family. This is followed by assessment of barriers and facilitators within the person, environment and occupation that affect occupational performance. Intervention is a collective practice among the person, the family and the occupational therapist and the primary objective is to enable occupational performance. The therapeutic intervention approaches described by the framework include: establish/restore, adapt, alter, prevent and create. The process of intervention is a collective one. Performance range can signify function or dysfunction. A wide-ranging performance range represents optimum performance therefore function (Schell et al., 2018).

2.11 Summary

In the literature, evidence suggests that the return-to-employment rate of individuals with TBI is relatively low as there are various aspects that have an effect on return to employment after TBI. Risk factors, namely severity of injury, age, level of education, employment status prior to sustaining the TBI, as well as socio-economic status, contribute to the high levels of unemployment after TBI. Occupational therapy practitioners play a pivotal role in rehabilitation after TBI as they enable individuals to actively engage in meaningful activities in everyday life including reintegrating back into their worker role. The review also identified that the cessation of rehabilitation services for certain non-COVID-19 patients (i.e., TBI, burns, fractures, and spinal cord injuries) could potentially compromise the health and occupational functioning outcomes. However, similar to other health services, face-to-face rehabilitation during the COVID-19 pandemic poses an infection risk to both the client and the rehabilitation professional. The ecology of human performance model has been applied in this study and is

aimed at investigating the experiences and perceptions of TBI survivors regarding access to rehabilitation during the COVID-19 pandemic and how this has affected their worker roles.



Chapter 3: Research Methodology

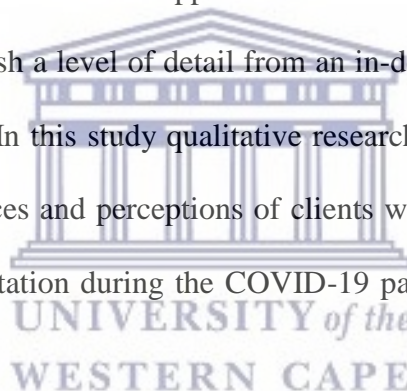
3.1 Introduction

Chapter 3 discusses the research paradigm. Thereafter the sampling approach employed for the selection of participants is defined followed by the process that was used for ethical approval of this study. A description of participants is provided together with the data collection technique and a discussion of the data analysis. Finally, the trustworthiness and the ethical declaration of the study are explained.

3.2 Research design

3.2.1 Qualitative research

For the purpose of this study, a descriptive, explorative qualitative research design was used. Qualitative research is defined as a research approach that occurs in a normal environment that allows the researcher to establish a level of detail from an in-depth participation in the actual experience (Cresswell, 1994). In this study qualitative research will enable the researcher to better understand the experiences and perceptions of clients who sustained a traumatic brain injury about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles.



3.2.2 Exploratory research

Exploratory research is intended to illustrate how a phenomenon is exhibited and it is particularly valuable in revealing the detailed nature of a less-understood phenomenon (Polit & Beck, 2012). Reid-Searl and Happell (2012) further suggest that a qualitative exploratory approach permits the researcher to explore a subject with limited reporting within the literature and permits the participants of the research to contribute to the expansion of new information in that area (Hunter et al., 2019).

For the purpose of this study, the researcher utilised an exploratory perspective so that novel, rich and meaningful insights into the participants' experiences and perceptions of TBI survivors regarding access to rehabilitation during the COVID-19 pandemic and how that has affected their worker roles could be determined. The researcher made use of open-ended questions throughout the interview process, which encouraged the participants to share and clarify a vast amount of rich information. This information aided the researcher in understanding the situation of TBI survivors in terms of accessing rehabilitation during the COVID-19 pandemic and how this affected their ability to resume their worker roles.

3.2.3 Descriptive research

Qualitative descriptive research produces data that describes the “who, what and where of events or experiences” from a subjective perspective (Doyle et al., 2020). The descriptive approach will allow the researcher to develop a detailed understanding from the experiences of the participants by explaining and interpreting the collected data (Lambert & Lambert, 2012). In the current study, the use of descriptive research allowed the researcher to collect accurate, rich and meaningful data from the participants, asking them to describe their experiences and perceptions about accessing rehabilitation throughout the COVID-19 pandemic and how this affected their rehabilitation and worker roles.

3.3 Sampling

Purposeful sampling is a method extensively employed in qualitative research for the confirmation and selection of information-rich cases for the most successful use of restricted resources (Patton, 2002). This requires finding and choosing individuals or groups of people who are particularly well informed or knowledgeable with an experience of interest (Cresswell & Plano Clark, 2011). The participants were carefully chosen from the statistical records of participants attending the occupational therapy department at a tertiary healthcare facility in

the Western Cape. Furthermore, a set of inclusion and exclusion criteria was used to select participants from statistical records.

3.3.1 Inclusion criteria

The criteria for selecting participants include confirmed diagnosis of a TBI in accordance with the Glasgow Coma Scale and having sustained the TBI prior to or during the COVID-19 pandemic. The participants would be male or female, between the ages of 18-65 years and be able to converse well in English, Afrikaans, or isiXhosa. Participants who accessed or had difficulty accessing rehabilitation and vocational rehabilitation services in the course of the COVID-19 pandemic were eligible. For this study, the criteria for selecting key informants included qualified occupational therapists with at least 1 year of experience in TBI rehabilitation and vocational rehabilitation and who provided rehabilitation services to clients during the COVID-19 pandemic.

3.3.2 Exclusion criteria

The criteria of exclusion for the study were: TBI survivors who could not communicate in English, Afrikaans or isiXhosa, participants who were displaying active acute psychiatric symptoms as well as participants who were younger than the age of 18 years. The criteria of exclusion for key informants were occupational therapists who did not have at least one year's experience in TBI rehabilitation and vocational rehabilitation and who did not provide rehabilitation services to clients in the course of the COVID-19 pandemic. According to Creswell (2013), in a qualitative study, it is acceptable to conduct interviews with 5-25 individuals who have all experienced the phenomenon being explored and who can articulate their lived experiences. For the intent of this study, a sample size of ten participants and two key informants were used.

3.4 Gaining access to participants

This study was conducted in fulfilment of the researcher's master's degree in OT, with permission from the University of the Western Cape. The current study was given consent from the Higher Degrees Committee of the University of the Western Cape and obtained ethical approval (registration number BM21/4/6) from the Biomedical Research Ethics Committee of the University of the Western Cape. Ethical consent was formally requisitioned and awarded from the Research Ethics Committee at Groote Schuur Hospital, to make use of their statistical records to obtain possible participants. The assistant director of the occupational therapy department similarly consented for the researcher to make use of their work assessment unit in order to conduct preliminary screenings and interviews.

Potential participants were identified with the assistance of the chief occupational therapist in the work assessment unit as well as occupational therapists at Groote Schuur Hospital. The potential participants were then contacted telephonically to determine whether or not they met the inclusion criteria of the study. The researcher arranged appointments with appropriate participants in order to discuss participation in the study. Upon meeting each participant, the aim and intentions of the study was explained verbally as well as in writing. Informed consent (see Appendix 2) from each of the participants was then obtained, and thereafter, dates for the interviews were arranged. Each participant was provided with an information sheet (see Appendix 7), which described the aim and objectives of the study as well as the expectations of the participants. The subject matter of the information sheet was further clarified to the participants verbally, and any inquiries that the participants had were answered to the best of the researcher's ability. All the interviews were conducted at the work assessment unit at Groote Schuur Hospital at an agreed upon time. The researcher ensured that the venue in which interviews occurred were private and had minimal distractions that could potentially have interfered with the interview process.

A total of 12 in-person interviews were conducted. Ten interviews were done with the participants and two interviews were conducted with the key informants. The researcher asked each participant and key informant a variety of questions, with the aid of an interview guide (see Appendix 1 and 2) as well as probes which were directly related to the objectives of the study. Thus, all of the participants and key informants were asked the same questions. Due to the interviews being semi-structured, the researcher allowed the participants and key informants to occasionally deviate from the guided questions in order to permit participants to express and share their experiences that were relevant to the dialogue.

3.5 Pilot study

A pilot study was done prior to the data collection in order to determine if the semi-structured interview questions were appropriate. For the purpose of the pilot study, the researcher discussed the semi-structured interview guide with the supervisor and thereafter the semi-structured interview guide was trialled with one participant. After the first interview was completed, the researcher discussed the feedback from the interview with the supervisor and it was deemed that no changes needed to be made to the semi-structured interview questions and therefore the researcher proceeded with the rest of the interviews with the participants. Furthermore, the data from the interview of the participant used for the pilot study was included in the analysis of the data.

3.6 Description of research participants

3.6.1 Key informants

Interviews with key informants are considered an essential component of qualitative research. Specifically, in policy-related studies, key informant interviews (KIIs) are frequently infused with particular value. KIIs frequently complement other research approaches including focus group conversations and surveys (Lokot, 2021). Inside the hierarchy of research approaches, KIIs might be unintentionally positioned as generating important knowledge due to the

significance and expertise of the key informant. Key informants are recognised as supplying valuable knowledge and more information than could be provided by interviews with “regular” people (Lokot, 2021). The key informants were selected based on their first-hand knowledge and professional expertise on the study topic as they held valuable information which could contribute to this research. For this study, the key informants were two occupational therapists at Groote Schuur Hospital in the Western Cape with at least one year of experience in TBI rehabilitation and vocational rehabilitation during the lockdown period. During the COVID-19 pandemic rehabilitation services often needed to be suspended or de-escalated in order to curb the spread of the coronavirus disease. As a result, OTs needed to find innovative ways to provide rehabilitation to clients. Therefore, the key informants needed to be OTs who were familiar with TBI rehabilitation as they needed to find innovative ways in order to provide rehabilitation to TBI survivors while adhering to lockdown restrictions and COVID-19 infection prevention protocols.

3.6.2 Description of study participants

The Population Registrations Act No 30 of 1950 called for the mandatory identification and registration of people from birth according to four well-defined racial groups: White, Black, Coloured, and other. Therefore, the racial classification of Black, White, and Coloured was used in this study in accordance with the classification of the South African Population and Registration Act of 1950 (South African Population and Registration Act of 1950). Ten participants were sampled between the ages of 21-55 years. In terms of race, one participant is White, five are Coloured and the remaining four are from the Black racial group.

Participant 1 (P1): AP is a 23-year-old black male who obtained grade 12. He resides in Nyanga with his three siblings. He was involved in a motor vehicle accident in November 2020 and suffered a severe TBI secondary to falling off a bakkie. AP still experiences cognitive fallout and decreased vision in his right eye. AP was previously employed as a trolley porter at

the V&A Waterfront. After the accident he was employed as a general worker at a Cash and Carry for two weeks; however, he had difficulty coping with the vocational demands due to his cognitive deficits.

Participant 2 (P2): NG is a 55-year-old black female who completed grade 12 level. NG resides in Nyanga with her two daughters. She also started a social auxiliary course; however, she did not complete it. She sustained a mild TBI after falling down the stairs at her house in June 2021 and still experiences dizziness and imbalance. NG had not received any physical or cognitive rehabilitation during the data collection period. Prior to the accident she had three jobs simultaneously. She was self-employed as a seamstress; she sold The Big Issue magazine and she also worked as a domestic worker.

Participant 3 (P3): MG is a 33-year-old black male who was diagnosed with a TBI after sustaining a gunshot wound to the head while sitting in a taxi on his way to work in July 2021. MG lives in a house with his siblings in Happy Valley. MG still experiences monoparesis of the right upper limb as well as cognitive deficits. MG is currently employed as a general worker in a dispatch area. MG has not returned to work yet due to his residual cognitive and physical deficits. However, he was still attending occupational therapy intervention during the data collection period.

Participant 4 (P4): NJ is a 28-year-old coloured male who suffered a TBI subsequent to a high velocity MVA in October 2019. NJ was an unrestrained driver who was ejected from the vehicle and apart from the TBI he also sustained C6 spinal process fracture, C6-C7 articular process fractures, right femur fracture, displaced left acetabular fracture and multiple rib fractures. He received an open reduction internal fixation for his right femur fracture and thereafter he received in-patient physiotherapy and occupational therapy. He was further referred to the Delft community health centre (CHC) for physiotherapy and occupational

therapy to continue rehabilitation. However due to COVID-19 regulations, he was unable to attend. NJ still experiences cognitive and physical limitations. NJ resides in Delft with his parents. Prior to the accident NJ was employed as a cleaner on a contractual basis but his employment contract was not renewed after the accident as he still experiences cognitive and physical deficits.

Participant 5 (P5): JR is a 46-year-old coloured male who suffered a TBI in July 2020 as a result of being an unrestrained passenger in a motor vehicle accident. JR had a craniotomy at Groote Schuur Hospital in July 2020, and he received physiotherapy and occupational therapy as an in-patient. After being discharged from GSH, JR was referred to occupational therapy at his local CHC however his appointments were postponed because of the COVID-19 pandemic. JR still experiences physical and cognitive deficits. JR resides in Hanover Park with his wife and daughter. JR completed grade 10. He is employed as a general worker within a dispatch area, and he is the sole breadwinner. JR has not returned to work yet due to his residual physical and cognitive deficits.

Participant 6 (P6): DP is a 37-year-old coloured male who suffered a TBI while on duty following a fall from a height off a stationary vehicle that he was busy offloading in December 2020. DP was admitted to GSH for neurology observations, and he did not require any surgery. DP received physiotherapy, speech therapy and occupational therapy from private practitioners. DP completed grade 8. He resides in Ceres with his wife and four children, and he is the sole breadwinner as his wife is unemployed. DP is employed as a long-distance truck driver. DP still experiences cognitive and speech deficits as well as seizures therefore he has not returned to work yet.

Participant 7 (P7): MB is a 21-year-old coloured male who was involved in a pedestrian vehicle accident in July 2021. He was intoxicated at the time of the accident and was hit by a

bus while running over the road and he sustained a TBI as well as an injury to his right ear. He experienced cognitive deficits and was seen by occupational therapy at GSH during the data collection period. MB is employed as a general worker installing aluminium windows; however, he has not returned to work yet due to cognitive deficits, severe headaches, and hearing loss in his right ear.

Participant 8 (P8): DD is a 31-year-old coloured male who suffered a TBI in June 2021 after suffering a seizure. As a result, DD had a left occipital craniotomy and evacuation of extradural hematoma, right frontal craniotomy, and evacuation of intracranial haemorrhage. He resides in Southfield and has completed a grade 12 level of education. DD still experiences physical and cognitive limitations, and he was seen by occupational therapy at GSH during the data collection period. Prior to the accident DD was about to start a new job as an English Educator in China. DD had not been able to start his new job in China yet due to lockdown regulations (i.e., South African travellers were not allowed to fly to China during the COVID-19 pandemic) and due to him still experiencing residual physical and cognitive limitations, requiring further rehabilitation.

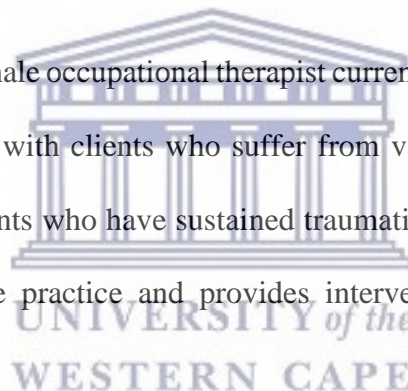


Participant 9 (P9): NS is a 22-year-old white female who was involved in a motor vehicle accident in June 2021 after she crashed her car into a wall. NS sustained a TBI, maxillofacial fractures and lacerations to the right side of her face. She was admitted to GSH and underwent placement of ICP and Licox monitors. She also underwent an ORIF of the right orbital floor. NS still experiences migraines and cognitive deficits, and she was seen by occupational therapy at GSH during the data collection period. NS resides in Milnerton, and she completed grade 12. NS is employed as a security officer doing remote surveillance. She has not returned to work yet due to cognitive and physical deficits that she is still experiencing.

Participant 10 (P10): VM is a 37-year-old black male who suffered a TBI in 2021 after suffering an epileptic seizure. He completed grade 12 level and thereafter he completed a Bachelor of Education degree. He resides in Gugulethu with his wife and children. He still experiences cognitive deficits, and he was seen by occupational therapy at GSH during the data collection period. VM is employed as an educator at a primary school but he has not returned to work yet as he still requires further rehabilitation.

Key informant 1 (K1): Is a female occupational therapist currently employed within the vocational rehabilitation unit of Groote Schuur Hospital. Prior to working at Groote Schuur Hospital she was employed at various district and tertiary hospitals as well as within the education sector. She is currently in the process of completing her post-graduate studies in occupational therapy.

Key informant 2 (K2): Is a female occupational therapist currently employed at Groote Schuur Hospital. She works primarily with clients who suffer from various neurological conditions and more specifically with clients who have sustained traumatic brain injuries for the past 12 years. She also runs a private practice and provides intervention to clients with various neurological conditions.



3.7 Data collection

3.7.1 Data collection methods

For the objective of this study, data was gathered from ten participants and two key informants by means of semi structured interviews that were audio taped and later transcribed. According to DeJonckheere and Vaughn (2019), in-depth and semi-structured interviews are frequently utilised in qualitative research and are the most frequently used data source in research focusing on health services. This technique usually involves a dialogue amongst the participant and researcher directed by an amenable interview guide and accompanied by follow-up questions,

remarks, and probes. This technique permits the researcher to gather open-ended data, to investigate participant beliefs, emotions, and opinions about a specific issue and to intensely explore intimate and occasionally sensitive matters. In this study, the participants had been notified about the inherent needs of the study vocally and in writing. Informed, written consent was received from participants. After obtaining written consent, the researcher then scheduled interviews with the participants. In-person semi-structured interviews were conducted at the participants' convenience. One semi-structured interview was completed with each participant and each key informant, and all interviews were audio recorded. However, interviews were conducted with all participants and key informants until saturation of data was achieved. Interviews were performed in Afrikaans with three of the participants as it was their home language. The remaining seven participant interviews and two key informant interviews were conducted in English. The interviews were approximately 30-45 minutes in duration with each participant however this varied based on the questions posed and the length of the responses. After the interviews were conducted, the recorded data was transcribed verbatim and then analysed. These interviews were all completed by the researcher at a place accessible for the participant and the researcher (i.e., at the tertiary hospital). The interviews required that the researcher either conducted face-to-face interviews or telephonic interviews. However, all the participants and key informants opted for in-person interviews. The data was analysed with the aid of thematic analysis. All of the interviews were conducted face-to-face; therefore, the following COVID-19 protocols were implemented for all of the participant and key informant interviews: the participant and the researcher both wore masks and sanitised their hands before the interview. The researcher made use of a Perspex screen on the table, to ensure no physical contact was made between the researcher and the participant/key informants. The table and chairs were also sanitised and cleaned prior to the commencement of the interviews. The

researcher and the participant/key informant maintained social distancing throughout the interview by being seated 1.5 metres apart and only the researcher touched the tape recorder.

3.8 Data analysis

Qualitative data analysis is focused on converting raw data by exploring, assessing, identifying, coding, mapping, surveying, and explaining patterns, developments, themes, and categories in the raw data, with the aim of interpreting them and providing their fundamental connotations (Ngulube, 2015). Numerous data analysis methods were employed to the data gathered in this study. These methods are explained in the following sections.

3.9 Deductive and inductive reasoning

In this study, the researcher made use of both deductive and inductive reasoning in the current study. Deductive reasoning entails analysing information from the usual to the distinct, as in beginning from an assumption, developing hypotheses from it, assessing those hypotheses, and reviewing the assumption (Woiceshyn & Daellenbach, 2018). By applying the deductive reasoning approach, the researcher attempted to identify the apparent meanings of the participants' experiences and perceptions about accessing rehabilitation during the COVID-19 pandemic. On the contrary, inductive reasoning entails shifting from the usual to the distinct, as well as making pragmatic observations about specific phenomenon of interest and creating ideas and assumptions based on them (Woiceshyn & Daellenbach, 2018). By applying the inductive reasoning method, the researcher aimed to investigate the probability of new themes developing from the accumulated data.

3.10 Thematic analysis

The data of this study was analysed with the aid of thematic analysis. Thematic analysis is a technique for recognising, evaluating, and reporting patterns (themes) within data (Braun & Clarke, 2006). There are six phases of thematic analysis. The first phase is to transcribe the

collected data, read and re-read the data, and document the initial ideas. During this phase the researcher read the transcriptions numerous times in an effort to become familiar with the experiences and perceptions of the participants. The second phase is to generate initial codes (Braun & Clark, 2006). This refers to coding intriguing features of data in a systemic manner throughout the entire data set, accumulating data applicable to each code. In this phase, the researcher analysed the participants quotes through line-by-line and was then able to identify codes that were similar in the entire data set. The coded data was further analysed and arranged into categories that had common meanings relating to the research aim. The third phase is about exploring for themes by organising codes into possible themes and collecting data related to the theme. During this phase the researcher extracted relevant data and grouped the codes into associated categories and themes. The fourth phase is about reviewing the themes to verify if the themes work relative to the coded excerpts (Braun & Clarke, 2006). During this phase, the researcher reviewed the themes. Similar descriptions of experiences as well as actual quotes that arose during line-by-line coding of the data were extracted and clustered collectively to develop themes. This method was replicated for every one of the 12 transcripts, after which a cross analysis of each of the transcripts were undertaken. The fifth phase consisted of defining and naming the themes by means of a continuing analysis to enhance the particulars of each theme and the overall narrative the analysis tells. In this phase, the researcher refined each theme in relation to the overall meaning of the analysis and generated a clear definition and name for each theme. The researcher then illustrated each theme with reference to the transcript using direct quotations or extracts that captured the fundamental nature of each theme. The themes were then compared with literature, which allowed for linkage between theories. The last phase is producing the report, which is the collection of vivid, compelling extract examples, and analysing them (Braun & Clarke, 2006). In the course of this phase the researcher explored and analysed the various themes in relation to one another, the research question and applicable

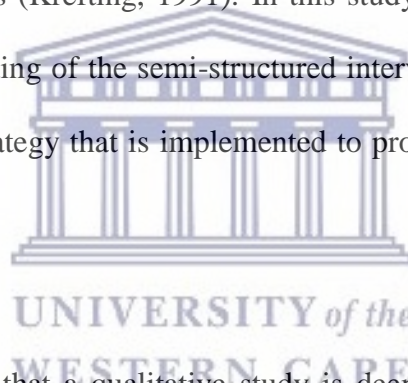
literature. This permitted the researcher to provide the results of the data that was analysed and in essence, to answer to research question.

3.11 Establishing trustworthiness

The current study employed Guba's model of trustworthiness in qualitative research (Krefting, 1991) to determine trustworthiness in this study. The four basic criteria are truth value, applicability, consistency, and neutrality.

3.11.1 Truth value

Truth value in qualitative research is generally attained from the detection of human experiences as they are understood and encountered by informants. It determines how optimistic the researcher is with the truth of the research outcomes derived from the context, research design and informants (Krefting, 1991). In this study, the researcher ensured truth value by using an audio recording of the semi-structured interviews and transcribed the data verbatim. Credibility is the strategy that is implemented to provide truth value to qualitative research (Krefting, 1991).



3.11.2 Credibility

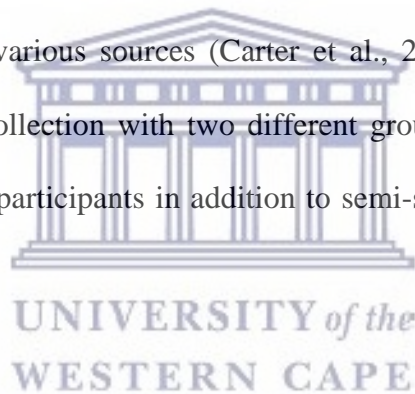
Sandelowski (1986) proposed that a qualitative study is deemed credible when it exhibits precise representations or explanations of human experience and how individuals who similarly share that experience would instantly identify the descriptions (Krefting, 1991). Credibility was ensured in this study by depicting the fundamental nature of the participants' natural manner of speaking, incorporating the sighs, repetitions and pauses in sentences. The researcher desisted from adapting or altering the transcripts from interviews with the aim of safeguarding the valuable and genuine perspective from the participants. In order to enhance credibility, the following strategies in the next section were used.

3.12.3 Member checking

According to Birt et al. (2016), member checking is referred to as the process of handing back analysed data or returning an interview to the participant. Member checking is also referred to as participant validation or validation by the interviewee. Member checking is utilised to authenticate, substantiate or evaluate the trustworthiness of the qualitative findings. In the current study, the researcher utilised member checking authenticating the study findings with the participants and amending the findings when needed.

3.11.4 Triangulation

Triangulation pertains to the utilisation of various approaches or sources of data in qualitative research in order to establish a greater understanding of phenomena. Triangulation has similarly been regarded as a qualitative research approach to evaluate authenticity through the confluence of evidence from various sources (Carter et al., 2014). Triangulation has been achieved by the use of data collection with two different groups of participants i.e., semi-structured interviews with the participants in addition to semi-structured interviews with the key informants.



3.11.5 Reflexivity

According to Palaganas et al. (2017), reflexivity is an ongoing method of reflection by researchers of their beliefs and of recognising, analysing, and acknowledging how their social background, location and assumptions affect their research practice. During the research process the researcher needed to reflect on any preconceived ideas and personal biases which could influence the study. Being an occupational therapist in the work assessment unit at Groote Schuur Hospital, some of the research participants were also the researcher's clients. Therefore, the researcher was aware of how the suspension of rehabilitation services during the COVID-19 pandemic directly affected their worker role prior to data collection. Thus, the researcher was aware of how her professional background could potentially influence the

engagement between herself and the study participants and thus the findings of the study. For example, the study participants who were also the researcher's patients/clients were more than willing to disclose their experiences about accessing rehabilitation services in the course of the COVID-19 pandemic. However, the participants who were not the researcher's patients/clients were not easily willing to disclose their experiences about accessing rehabilitation throughout the COVID-19 pandemic. Thus, the researcher made use of a reflexive journal to document any personal experiences, interactions and thoughts which allowed the researcher to reflect on her own preconceived ideas or personal biases which could have swayed the research findings

3.11.6 Interview technique

The semi-structured interview is an effective approach for comprehensive discussion. Typically, the researcher can do a comprehensive analysis of the discussions and replies of the participants in the course of the semi-structured interview to achieve multi-layered outcomes. Additionally, the researcher can generally follow up on all spoken and unspoken replies, namely silence, hunches, and laughter to uncover concealed information that may prove to be beneficial during the final data analysis of various themes extracted from the discussion (Kakilla, 2021). For the purpose of this study, the researcher made use of semi-structured interviews and observations for the interview technique. During the interviews, the researcher made fieldnotes of observations pertaining to the participants unspoken reactions and answers to the questions. Observations of the participants' expressions assisted the researcher with enhancing study's findings. This technique allowed the researcher to acquire extra visual data and to comprehend the perceptions and experiences of the participants about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles.

3.11.7 Peer debriefing

Peer debriefing refers to the technique of working together with one or several peers, an impartial and objective individual having no special interest in the task/programme, to improve

the authenticity of your research. It includes permitting a trained unbiased co-worker to review and evaluate your transcripts, methodology and findings. This method is used by qualitative researchers to investigate their method and initiate credibility in their research (delvetool.co, 2018). For the purpose of this study, the researcher nominated co-workers who are proficient with qualitative research approaches and techniques to talk about the research procedure and findings in addition to the researcher's personal opinions and assumptions. These co-workers were able to give the researcher unbiased feedback due to their unprejudiced relationship to the study at hand. Helpful feedback from these co-workers made the researcher aware of her assumptions for the purpose of preventing the misrepresentation of data and to ensure credibility.

3.11.8 Transferability

The measure for assessing external validity of the research findings is applicability or transferability (Hammarberg et al., 2016). A study is believed to have met the criterion of transferability when the findings are able to fit into contexts external of the study position and when practitioners and researchers regard the findings as important and relevant in their own encounters. Transferability was attained by presenting thorough interpretations of the research techniques, participants and their backgrounds, and comprehensive accounts of the lived experiences of the participants. Transferability is commonly thought of as the obligation of the individual intending to transfer the findings to alternative situations or people than that of the researcher of the initial study (Lincoln & Guba, 1985). They claimed that if the initial researcher produces adequate descriptive data to enable comparison, then she or he has handled the issue of applicability (Krefting, 1991).

3.11.9 Dependability

Dependability is the measure utilised to evaluate consistency (Krefting, 1991). The third measure of trustworthiness regards the consistency of the data, i.e., if the findings could prove

to be consistent if the study were reproduced with the same people or in a similar environment (Krefting, 1991). This was accomplished by providing a dense account of the research techniques. The researcher utilised a data audit trail, which allowed other researchers to assess the findings of the study to determine whether they would reach similar interpretations of the findings and in doing this, dependability was ensured. Triangulation and peer examination was also used to ensure dependability. The researcher formally discussed the research findings with the research supervisor as well as with co-workers who were proficient in qualitative research approaches and techniques. Dependability was further ensured by means of triangulation. In this study, the researcher made use of data collection with two different groups of participants i.e., semi-structured interviews with the participants in addition to semi structured interviews with the key informants, thus ensuring triangulation.

3.11.10 Confirmability

As stated by Korstjens and Moser (2017), confirmability refers to the extent to which the findings of the study may be validated by other researchers. Confirmability is focused on proving that the data and translations of the findings are not fabrications of the investigator's imagination, but evidently acquired from the data (Korstjens & Moser, 2017). The researcher made use of techniques such as peer evaluations, audit trail and member checking, in addition to reflexivity to impart a better understanding of her influence on the research information. By applying the measure of neutrality, the researcher intended for the information to be easily reviewed by the researcher's supervisor. The supervisor of the researcher was able to follow the techniques and procedures that were utilised throughout the study and arrived at an agreement of why or how particular assumptions or conclusions were made throughout the study.

3.12 Ethics statement

The World Medical Association (World Medical Association, 2013) established the Declaration of Helsinki as a declaration of ethical standards to provide guidance to healthcare practitioners and other contributors in medical research concerning using human subjects. For the purpose of this study, the Helsinki Declaration was employed to guide the research process and safeguard the health and well-being of each participant during the course of this study.

Ethics approval was obtained from the Biomedical Research Ethics Committee (BMREC) at the University of the Western Cape and the Research Ethics Committee at Groote Schuur Hospital, prior to the study commencing. The study was registered on the South African National Research Data base. Ethics can be defined as the analysis of human actions from the perspective of “good” and “evil,” or of “morally correct” and “morally wrong” (Bartnek et al., 2021). The following ethical principles were adhered to while conducting the study:

The principle of beneficence is the obligation of the physician to act for the benefit of the patient and supports a number of moral rules to protect and defend the right of others, prevent harm, remove conditions that will cause harm, help persons with disabilities, and rescue persons in danger (Varkey, 2020). According to Varkey (2020), nonmaleficence refers to the principle that the physician should not inflict harm on the patient. The study did not involve any invasive procedure, none of the participants were harmed and the study was conducted in the best interest of the participants. Thus, nonmaleficence and beneficence was ensured. Autonomy is defined as all people have inherent and absolute worth, and thus, should have the authority to make reasonable decisions and moral choices, and each should have the capacity to make their own choices (Varkey, 2020). The participants’ right to privacy, dignity and confidentiality was acknowledged as their identities were not divulged in the course of the documentation and reporting of the study findings. By using pseudonyms, the participants’ anonymity was ensured. The pseudonym was linked to each interview transcript and all

supporting quotes utilised in the thesis. The objectives, rationale and study contents were entirely divulged and described to the participants in writing and verbally, and thereafter their consent was achieved. Participation in the study was voluntary, and participants were advised that they may withdraw from the study at any stage during the research process. The benefits to the participants and the knowledge gained outweighed the risk of potential harm (National Health Research Ethics Committee, 2007). The information related to the study was saved in a password protected computer and the information will be stored for a period of five years. After a period of five years all research related data will be deleted from the password protected files.

Justice is commonly understood as reasonable, equitable, and appropriate treatment of individuals (Varkey, 2020). The principle of justice was adhered to during the study as all participants were interviewed using the same interview guide and the researcher compiled a list of psychosocial support resources that the participants could use should they require psychosocial intervention. These resources were made available to the research participants should they require the use of the resources.

The Protection of Personal Information (POPI) Act No 4 of 2013 protects the privacy rights determined by section 14 of the South African Constitution that specifies that “everyone has the right to privacy” (De Bruyn, 2014, p. 1315). De Bruyn (2014) further state that the POPI Act will influence all responsible groups that save, collect, process and/or distribute personal information included in their business activities. A responsible party is defined by the POPI Act as a public or private organisation or any individual who either independently or in collaboration with others, determines the objective and means for handling personal information (De Bruyn, 2014). The principles related to the POPI act were adhered to as all data linked to the current study were stored on the research repository of the University of the Western Cape.

3.13 Summary

In closing, this chapter presented the research methodology used to explore the experiences and perceptions of TBI survivors about accessing rehabilitation in the course of the COVID-19 pandemic and how this affected their worker roles. An exploratory and descriptive design and qualitative research approach was utilised to illustrate the participants' experiences. The study findings will be presented in the following chapter which contains the themes and categories developed from the information acquired from the study participants.



Chapter 4: Research Findings

4.1 Introduction

Chapter 4 illustrates the study findings that explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles. The study findings are described in accordance with themes, categories, and sub-categories. Theme 1 is linked to the barriers to accessing rehabilitation during the COVID-19 pandemic. Theme 2 focuses on how a lack of rehabilitation impacted on the individual with TBIs occupational performance. Theme 3 presents the factors that facilitated access to rehabilitation throughout the COVID-19 pandemic. Theme 4 presents suggestions to improve access and utilisation of OT rehabilitation services throughout the COVID-19 pandemic. The themes are described as follows:

Theme 1: The barriers to accessing rehabilitation during the COVID-19 pandemic

Theme 2: A lack of rehabilitation impacted on the individual with TBIs occupational performance

Theme 3: The factors that facilitated access to rehabilitation during the COVID-19 pandemic

Theme 4: Suggestions to improve access and utilisation of OT rehabilitation services during the COVID-19 pandemic

4.2 Theme 1: The barriers to accessing rehabilitation during the COVID-19 pandemic

Theme 1 represents the participants barriers to accessing rehabilitation programmes throughout the COVID-19 pandemic. The essence of the theme emphasises the impact that the suspension of rehabilitation services during the COVID-19 pandemic had on the participants. Theme 1 also describes the fears that they had when accessing rehabilitation and engaging in their worker roles. Furthermore, theme 1 also highlights issues relating to transportation to and from the hospital during the COVID-19 pandemic. The categories were then further divided into

sub-categories. This includes long waiting time negatively affected access to OT services, the de-escalation of rehabilitation services affected access to OT services, Fear of contracting COVID-19 at work, Fear of contracting COVID-19 at the hospital, an increase of costs of public transport in order to travel to work and hospital and an increase in waiting time to access public transport. Table 1 displays the categories and sub-categories of theme 1:

Table 1 Theme 1: The barriers to accessing rehabilitation during the COVID-19 pandemic - categories and related subcategories

<p>Theme 1: The barriers to accessing rehabilitation during the COVID-19 pandemic</p>	<p>Category 1: suspension of rehabilitation services due to the COVID-19 pandemic.</p> <p>Category 2: Fear of contracting COVID-19 when accessing rehabilitation and engaging in worker role.</p> <p>Category 3: Transport issues that affected access to rehabilitation</p>
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4.2.1 Category 1: Suspension of rehabilitation services due to the COVID-19 pandemic

In this category the researcher conveys the participants descriptions of their perceptions of the suspension of OT rehabilitation services throughout the COVID-19 pandemic and how this has impacted on them. Key informant 2 (K2) said:

“I think it’s the fact that this is protocol, so we weren’t supposed to bring patients in...the thing with cognitive therapy is that if you don’t jump on it fast, or immediately then the gains that you get even if its small gains it doesn’t happen easily after a period. So, with the limitations that the institution put in place in terms of us not being able to book patients... I think was a big factor.” (K2)

In the abovementioned quote the key informant describes the impact that suspension of OT rehabilitation services had on the TBI survivors.

- **Sub-category: Long waiting time negatively affected access to OT services**

In response to the COVID-19 pandemic, strict infection prevention control (IPC) protocols were implemented including, social distancing, wearing of masks and sanitising of hands, surfaces and equipment. This sub-category describes how the COVID-19 and IPC protocols resulted in long waiting times for appointment dates for OT rehabilitation services.

“You had to wait...they said it’s maybe three months for this one...they said it’s three months but the other ones before (COVID) they were kind of easy and they were quicker, but it took like two weeks or three.” (P1)

Another participant expressed how the long waiting time for OT rehabilitation appointment dates was impacting on his ability to return to work. Participant 5 reported:

“The dates were set far apart from each other....I think I waited quite long for an appointment date...You know things change every month or every week there’s different rules according to this COVID-19... and that is also prolonging and causing setbacks for me to go back to work.”(P5)

One of the participant’s expressed that long waiting times for OT appointment dates could be as a result of occupational therapy services being in demand during the pandemic. Participant 8 stated:

“Uhm it’s been a bit long to wait to see her (the OT). I think maybe she is really really busy...Probably I think for everyone it was an issue...I waited probably like a month...or five or six weeks ja.” (P8)

- **Sub-category: The de-escalation of rehabilitation services affected access to OT services**

In this sub-category the researcher aims to describe the experiences and perceptions of how the de-escalation of rehabilitation services has impacted on them. Participant 4 explained that he was referred to OT rehabilitation services at his local CHC, however his OT appointments were cancelled:

“Ek moes die OT sien by die dag hospital, maar hulle het gese ek moet nie kom nie.... want hulle het gese daar is te veel COVID.” (P4)

“I should have seen the OT at the day hospital, but they said I must not come...because they said there is too much COVID”

Another participant expressed that his OT appointments were suspended due to the COVID-19 pandemic. Participant 5 reported:

“I just went to one appointment the others were cancelled...I think I had 3 or 4(appointments). But I just went to one. They suspended it...like I’m finished with those sessions...they just said that I’m finished with that clinic (OT out-patient appointments)” (P5)

The above quote reveals how the de-escalation of rehabilitation services affected the participant’s ability to access rehabilitation during the COVID-19 pandemic. Further statements revealed that de-escalation of services during the COVID-19 pandemic was not ideal however it was necessary at the time as hospitals needed to deal with the increased number of patients testing positive for COVID-19 and requiring hospitalization. Key informant 1 (K1) explained:

“Look de-escalation is not ideal.... however, you can see that it was necessary because hospital services needed to be re-directed in order to deal with the COVID-19 pandemic.... Uhm things change and the best that you can do is try and adapt accordingly so that you are still able to provide a service. However, in saying that, we cannot turn a blind eye and say that it hasn't negatively impacted our patients.... where the deficits could have been minimised, uhm unfortunately that has now become the patient's new normal.” (K1)

The abovementioned quote describes how hospitals needed to adapt their services in response to the COVID-19 pandemic. However, participants also explained that the de-escalation of non-essential services negatively impacted them to the extent that they are now experiencing limitations which could have been addressed if they were allowed access to OT rehabilitation services during the COVID-19 pandemic.

4.2.2 Category 2: Fear of contracting COVID-19 when accessing rehabilitation and engaging in worker role

In this category the participants expressed their fears about contracting COVID-19 when accessing rehabilitation and when engaging in their worker roles.

- **Sub-category: Fear of contracting COVID-19 at work**

In this sub-category participants expressed their fears around resuming employment in the course of the COVID-19 pandemic. Even though wearing a mask within the workplace is mandatory, one participant explained that his colleagues are not very diligent with wearing their masks in the workplace. Participant 7 stated:

“Ek is bang, want daar by onse werk is daar nie mense wat maskers' nog wil opsit en so nie.” (P7)

“I am scared because there at my work there aren't people who want to wear masks.”

Another participant expressed his fear of becoming infected with COVID-19 in the workplace and he also voiced his concerns about possibly being admitted to hospital again. Participant 6 stated:

“...so vir my is dit bietjie moeilik want ek kan nie COVID op tel by die werk nie want ek gaan nie gelukkig wees dat ek dit weer sal maak uit die hospitaal uit nie.” (P6)

“...so, for me it's a bit difficult because I can't contract COVID at work because I won't be so lucky that I will make it out of the hospital again.”

- **Sub-category: Fear of contracting COVID-19 at the hospital**

Participants voiced their concerns about attending hospital appointments during the pandemic as they feared that they would contract COVID-19 at the hospital. Their unique reports and perceptions of contracting the virus while attending the medical appointments often resulted in the participants choosing not to attend their medical appointments. Participant 1 stated:

“I had to hire someone to take me here(hospital)... because I was scared. As I still am scared of the pandemic...Because it is real...I'm learning to distance myself from people. Which is one of the laws we have now. So ja, it's been difficult.” (P1)

One of the participants explained that prior to the COVID-19 pandemic he was receiving all of his medical care at his local community health centre (CHC) i.e., a day hospital. However, due to the de-escalation of rehabilitation services at his local CHC he now needs to travel to other facilities outside of his community in order to access the rehabilitation that he requires. The participant expressed the inconvenience of having to travel to hospitals outside of his community of residence as well as the concerns of cleanliness within these facilities. Participant 5 stated:

“Because the run around dates, I got a Mitchell’s Plain day hospital card, I got a Lentegeur day hospital card, I got a Grootte Schuur hospital card and all those different areas that I need to go to I must now think to myself...hey I’m going in a different environment now some places isn’t up to standard like clean enough and it leaves you in a worry.”(P5)

One of the key informants expressed the hesitancy that TBI survivors had about accessing rehabilitation during the pandemic due to fears of contracting COVID-19 while attending their hospital appointments. Key informant 2 (K2) stated:

“Obviously when you think of people and the fear that they had with COVID, I actually wonder, would they have come in? Just COVID in general... I think people are afraid of us working at a hospital.” (K2)

4.2.3 Category 3: Transport issues that affected access to rehabilitation

Under this category participants shared their experiences of how public transport was also affected during the COVID-19 pandemic, which had a knock-on-effect on their ability to access rehabilitation services as well.

- **Sub-category: An increase of costs of public transport in order to travel to work and hospital**

Two of the participants described that certain forms of public transport were suspended during the pandemic, which resulted in them having to make alternative transport arrangements and paying excessive amounts of money in order to travel to the hospital. Participant 3 stated:

“Ja, because there are no taxis now nothing to come and there are also no busses. Now I must hire a motorbike...and the money is a lot to come here coz I must pay R200 coz there is no taxis.” (P3)

One of the key informants also expressed concerns regarding participants not having sufficient funds in order to travel to the hospital. She further indicated that participants who receive social grants in particular often needed to make tough decisions between using their money to get to their hospital appointment versus putting food on the table. Key informant 2 stated:

“Despite even COVID, stuff like money. People don’t have money to come in and they end up having to pay people huge amounts of money just to bring them. And then when it comes to them getting a disability grant, they have to give off half of it just because of somebody dropping them off with a car. If you think of somebody needing uhm to pay somebody fuel versus somebody putting food on the table, there’s just that little bit of money.” K2

- **Sub-category: An increase in waiting time to access public transport**

In response to the COVID-19 pandemic, restrictions with regard to social distancing meant that public transport operators were only allowed to load a certain number of patrons. Under this sub-category the participants describe their experiences of an increase in waiting time for public transport in order to travel to their OT rehabilitation appointments during the COVID-19 pandemic. Participant 1 stated:

“I had to use a bus...I waited for two hours to get here.” (P1)

Another participant stated:

“I would say it’s difficult because me and my wife we stood around 30-40 minutes at the bus stop waiting for a bus to come to hospital. Some busses are full, and you can’t get in.” (P10)

Another participant vividly expressed the inconvenience of having to use multiple modes of transport to travel to the hospital for rehabilitation appointments. Participant 2 stated:

“I nearly didn’t come...my brother came with his car this morning. He gave us a lift to the police station where the buses are standing. We get off there. There was no way to come people were running...there was a lot of things happening there... Okay I don’t know maybe the taxis will be right you see. I don’t know. If the taxis are still not right...maybe I wouldn’t have come.” (P2)

Within the public sector, referral pathways between tertiary, district and primary healthcare have been well established. However, in response to the COVID-19 pandemic, rehabilitation services were not deemed as essential and therefore some rehabilitation professionals were re-deployed to other facilities in order to assist with caring for individuals with COVID-19. This resulted in TBI survivors travelling to facilities outside of their community of residence. A key informant corroborated the above statements of the TBI survivors indicating the challenges experienced by the participants when making use of public transport in order to travel to the hospital. Key informant 1 (K1) stated:

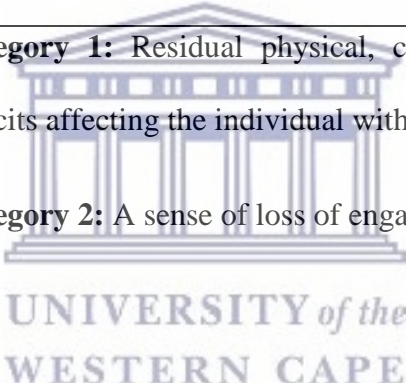
“If the patient still requires rehab then generally they would get down referred to their local CHC....because taking into consideration that transport might be an issue for the person to be coming in and out all the time to Grootte Schuur instead of to something that’s a little bit closer. So, in theory, limiting the travel should allow for more optimal adherence but if your appointments are spaced so far because of the other patient load that there is as well, you may not get optimal therapy as required.” (K1)

4.3 Theme 2: Lack of rehabilitation negatively influenced the individual with TBIs occupational performance

Theme 2 describes how the lack of OT rehabilitation during the COVID-19 pandemic impacted on the participants quality of life. The essence of the theme emphasises the impact that the suspension of rehabilitation services throughout the COVID-19 pandemic had resulted in the

participants still experiencing residual physical, cognitive and psychological deficits. Theme 2 also describes the sense of loss of engagement in occupational roles as a result of the residual deficits that the participants are experiencing. The categories were then also classified into sub-categories. This includes: A lack of rehabilitation negatively affected physical functioning, which impacted on participants quality of life; A lack of rehabilitation negatively affected cognitive and psychological functioning which impacted on participants quality of life; A loss of independence in ADLs and leisure skills activities negatively affects engagement in occupational roles and lack of rehabilitation resulted in loss of employment and engagement in the worker role. Table 2 depicts the categories and sub-categories of theme 2:

Table 2 Theme 2: Lack of rehabilitation impacted on the individual’s TBIs occupational performance - categories and related sub-categories

<p>Theme 2: Lack of rehabilitation impacted on the individual with TBIs occupational performance</p>	<p>Category 1: Residual physical, cognitive, and psychological deficits affecting the individual with TBIs quality of life.</p> <p>Category 2: A sense of loss of engagement in occupational roles</p> 
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4.3.1 Category 1: Residual physical, cognitive, and psychological deficits affecting the individual with TBIs quality of life

Under this category participants described how the suspension of rehabilitation services during the COVID-19 pandemic had resulted in them still experiencing residual physical, cognitive, and psychological deficits that impacted on their quality of life. One of the participants expressed that her quality of life had been affected to the extent that she requires assistance

while walking and she is not the same person she was before the TBI occurred. Participant 2 stated:

“It’s difficult and some people don’t understand when I’m like this now... I’m feeling dizzy. I can’t walk alone I have to have somebody to hold me. And the worst thing, even my body, myself, I’m not how I was before.” (P2)

- **Sub-category: A lack of rehabilitation negatively affected physical functioning and the individual’s quality of life**

In this sub-category participants describe the residual physical limitations that they are still experiencing post TBI as a result of rehabilitation being suspended during the COVID-19 pandemic. Two of the participants voiced concerns about the physical limitations that they are experiencing and how it affects them on a daily basis. Participant 1 stated:

“I have headaches every day...and if I walk too much distance, I experience pain on my legs.” (P1)

Another participant stated:

“Yes, my arms and hands are still very weak now...I can’t fix my house anymore...like if there is something broken in the house, I can’t fix it anymore.” (P3).

One participant explained that she experiences severe headaches post TBI which affect her quality of life to the extent that she has difficulty sleeping and has nausea that gets progressively worse. Participant 9 stated:

“I get a lot of headaches and nowadays I have been getting a lot of nausea. I would wake up nauseous and it would get worse and worse, and I would go throw up a couple of times.” (P9)

Participant 9 also stated that she has developed involuntary movements in her legs and arms since the TBI occurred. She also expressed frustration that nothing helps these movements stop. She further stated:

“...And then also my legs would twitch. it’s mostly the left leg but it would also be an arm or maybe the top of my shoulder ...And it doesn’t matter how I sit or stand... And nothing helps and then it will just stop on its own eventually.” (P9)

- **Sub-category: A lack of rehabilitation negatively affects cognitive, psychological functioning as well as the individual’s quality of life**

In this sub-category, participants conveyed that residual cognitive and psychological symptoms post TBI also impacted their quality of life. A key informant emphasised how a lack of cognitive rehabilitation post TBI influences their ability to participate in meaningful occupations. Key informant 2 (K2) stated:

“if we are talking about cognition specifically, I think it’s more the attention and the memory and it just seems like their processing is slow. So, in order for them to think on their feet, for them to remember to do the task that they are supposed to do at work...it’s just a problem. And then also executive function in terms of thinking on their feet. Uhm flexible thinking...they tend to lack that.” (K2)

Memory loss after TBI was a major concern for participants and they also expressed difficulty controlling their emotions, particularly anger and frustration. Participant 4 stated:

“Ek het al. velore geraak... Dan mekeer ek iemand om saam met my te gaan na ‘n nuwe plek...Ek raak gou kwaad van ek was nooit so nie. Voor die accident was ek nie so gewees nie.... maar nou, ek raak gou kwaad vir myself en ek kan dit nie verstaan dat

ek dinge voorheen gedoen het wat ek nie nou meer kan doen nie. Dan raak ek kwaad vir myself.” (P4)

“I got lost before...Then I need someone to go with me to a new place...And I get angry very quickly because I was never like this. Before the accident I was not like this...but now I get angry with myself and I can't understand that I could do things before that I can't do anymore. Then I get angry with myself”

Another participant stated:

“I get irritated a lot more. Or It escalates a lot more, quicker. And also, I'm a lot more depressed and anxious... And beforehand I could deal with that pretty well... But now I really get caught up in it which in the past I would be able to analyse it and sort it out...now I cling onto things and I don't know why.” (P9)

Participants conveyed significant difficulty communicating with co-workers when returning to work after the TBI. Participant 1 stated:

“Loss of memory is the main thing...I couldn't interact with other people at work...and I get angry...very fast I get angry.” (P1)

4.3.2 Category 2: A sense of loss of engagement in occupational roles

In this category participants conveyed a sense of loss of engagement in meaningful occupations as a result of the suspension of out-patient OT rehabilitation services throughout the COVID-19 pandemic.

- **Sub-category: A loss of independence in ADLs and leisure skills activities negatively affects engagement in occupational roles**

Under this sub-category participants describe their experiences of not being able to perform meaningful activities of daily living. Not being able to complete household chores due to

residual physical symptoms resulting in participants experiencing a sense of loss in occupational engagement and questioning their self-worth. Participant 5 stated:

“I try to bring my part also in the home...like washing up dishes and stuff but every day I break something. ...because of the left hand that is weak. I never used to let my wife iron my clothes. That I used to do myself but now she has to do that for me.” (P5)

Another participant emphasised the loss of engagement in meaningful home maintenance tasks.

Participant 6 stated:

“Ek kan nie met n’ graaf ook werk by die huis of met swaar goed nie of n’ boor of n’ grinder. Ek kan nie met dit werk nie.” (P6)

“I can’t work with a spade at home or with heavy stuff or a drill or a grinder. I can’t work with that anymore.”

Participants conveyed a loss of engagement in meaningful leisure activities post TBI as well as a loss of their independence with regard to driving as they now needed to rely on relatives to drive them. Participant 8 stated:

“I used to love the gym...lifting up weights....also, they worried about me driving. So, I drive small distances with my wife to the shop and back. But I miss that a lot. I miss driving a lot.” (P8)

Another participant expressed the loss of engagement in leisure activities as well as uncertainty and fear of resuming leisure activities after TBI. Participant 9 stated:

“I always used to do horse riding. I obviously can’t do that anymore...simple things like running. I don’t know if I can really run. I used to do a lot of yoga and gymnastic type of things and I can’t really bend and do those things that I used to do because of the bleeding to the brain...I don’t want to aggravate anything.” (P9)

- **Sub-category: Lack of OT rehabilitation resulted in loss of employment and engagement in the worker role**

Occupational therapists often assist TBI survivors in returning to work. Under this sub-category participants conveyed their experience of loss of employment post TBI as they were unable to resume employment due to residual physical, cognitive and psychological symptoms. A key informant emphasised how the suspension of out-patient OT rehabilitation services during the COVID-19 pandemic resulted in TBI survivors having deficits which could have been addressed during rehabilitation. However, due to participants not being able to attend out-patient OT rehabilitation they were unable to return to their worker roles which ultimately resulted in the loss of employment. Key informant 1 (K1) stated:

“many people weren’t able to access rehabilitation during this time (COVID pandemic)...we could be sitting with majority of our workforce who are now legitimately disabled and may not be suitable to return to their type of work that they were doing before...deficits that they had the potential of improving, but because of the pandemic they weren’t able to access OT intervention...to no fault of either side because I mean we dealing with a pandemic that there’s no rule book for. (K1)

One participant highlighted a unique loss of employment as she had been working three jobs concurrently, prior to the TBI, in order to sustain herself and her family. However, due to rehabilitation services being suspended, the participant still experiences significant limitations and thus she has not been able to resume employment. Participant 2 stated:

“I also had a sewing machine where I used to make masks and curtains. I tried to make a business. I can’t now use those things... My job was also selling The Big Issue (magazine). I can’t go back now because I used to stand at the robots. I’m scared I might fall in the middle of the road. I never went back selling the big issue. I never went

back doing sewing. I never went back cleaning people's apartments. How could I go there while...I'm dizzy and all those things?" (P2)

Another participant expressed his fears and anxiety about returning to work after sustaining a TBI while he was on duty. Participant 6 stated:

"Man, ek sal nie weer kan werk nie. Ek kan nie weer bestuur nie. Dis baie moeilik want ek kan 'n fit kry of ek kan n' aanval kry of ek kan n' stroke kry terwyl ek bestuur...en ek is 'n lorry drywer." (P6)

"Man, I won't be able to work again. I won't be able to drive again. It's very difficult because I can have a fit or a seizure or a stroke while I am driving...and I am a truck driver."

One participant described the stigmatisation that occurs in the workplace after suffering a TBI and how this, together with the postponement of rehabilitation services in the course of the COVID-19 pandemic, has influenced her ability to engage in her worker role. Participant 9 stated:

"I haven't been able to go to work since. So that's also been a big thing. And I think that has been also because my boss sees me as not being fit or as fit as I used to be." (P9)

4.4 Theme 3: Factors that facilitated access to rehabilitation during the COVID-19 pandemic

This theme aims to describe the factors that facilitated access to OT rehabilitation services in the course of the COVID-19 pandemic. The theme has been divided into two categories which illustrate the innovative methods used to allow TBI survivors to engage in rehabilitation throughout the COVID-19 pandemic as well as highlighting the OT's ability to triage/prioritise

rehabilitation for TBI survivors requiring cognitive intervention and vocational rehabilitation.

Table 3 shows the categories and sub-categories of theme 3:

Table 3 Theme 3: Factors that facilitated access to rehabilitation during the COVID-19 pandemic - related categories and sub-categories

Theme 3	Categories
Factors that facilitated access to rehabilitation during the COVID-19 pandemic	<ul style="list-style-type: none"> • Finding innovative ways of enabling individuals with TBI to engage in rehabilitation during COVID-19 pandemic. • Occupational therapists' ability to triage rehabilitation services to maximise rehabilitation benefit to individuals with TBI during the COVID-19 pandemic.



4.4.1 Category 1: Finding innovative ways of enabling individuals with TBI to engage in rehabilitation during COVID-19 pandemic

Under this category participants describe alternative methods that were used for the duration of the COVID-19 pandemic to assist TBI survivors with accessing OT rehabilitation during the COVID-19 pandemic. In earlier discussions, participants expressed the challenges they experienced owing to the suspension/de-escalation of rehabilitation services during the COVID-19 pandemic. This category aims to depict the innovative approaches that occupational therapists used to ensure that TBI survivors received some form of OT intervention during the COVID-19 pandemic.

- **Sub-category: Telemedicine/telehealth enables continuation of rehabilitation services**

The use of telemedicine/telehealth became a very popular form of treatment throughout the COVID-19 pandemic as it allowed health professionals to provide intervention while abiding by the lockdown regulations (i.e. social distancing). In this sub-category participants describe how they used various forms of telemedicine/ telehealth in order to provide OT intervention to TBI survivors as well as provide education and support to families of TBI survivors. Key informant 2 stated:

“I’ve been using a lot of the ACLS (Allen Cognitive Level Screen Test) with the patients and then I phone the family. Simply to give the family a guide of what they gonna require. Because I think that’s been a big thing like they don’t know what to expect. So that’s what I’ve been doing. And I think like during discharge within the COVID period, it’s just escalated the amount of times I’ve done that.” (K2)

Another key informant expressed that telehealth also became the “new normal” for TBI survivors and their families and that patients would even contact the OT for assistance when necessary. Key informant 1 stated:

“Doing the telephonic advice in terms of what to happen next. Allowing uhm you know giving that option that the family can phone if there’s anything that is required to make a follow-up date. Uhm, and generally that tends to happen quite a bit where patients feel comfortable to phone because you know they not being helped as quickly.” (K1)

- **Sub-category: Videos of intervention/rehabilitation protocols sent to family via social media platforms enables continuation of rehabilitation services**

In the course of the COVID-19 pandemic non-essential out-patient services (i.e., rehabilitation services) were suspended. In this category participants describe how the use of social media platforms assisted with sending OT intervention videos as well as home programmes to TBI survivors during the COVID-19 pandemic. A key informant describes how the use of videos assisted TBI survivors and their families with engaging in meaningful occupations. Key informant 2 stated:

“So even now just with the level 4 restrictions and the hospital having to cut visiting times. So, what we did in the department was... the videos...Sending through videos to family members in terms of transfers and how to do passive movements and just like sort of pressure care and things like that. So that has been a big thing in the department.” (K2)

Another key informant expressed the value of providing participants OT home programmes as they were unable to access OT rehabilitation during the COVID-19 pandemic. Key informant 1 stated:

“Home programmes have been developed so that patients...when they are not able to access the care then they are able to access... the therapeutic intervention that they would have required. Obviously not overseen by a therapist but at least it’s better than nothing.” (K1)

After sustaining a TBI, many survivors experience significant cognitive limitations. Thus, cognitive intervention plays a vital role in TBI rehabilitation. A key informant described how she used a home programme specifically for cognitive intervention for TBI survivors during the COVID-19 pandemic. Key informant 2 stated:

“We’ve got the (brain injury) workbook that we use. So, what I do is I photocopy stuff and then I give it to the family...so it’s like a take home package and I tell them you

need to do this today uhm if he can't tolerate everything then do the rest tomorrow... And I put dates on it, and I tell them do this twice per day or do it twice per week. And then when you can bring them back you actually check what they've been doing.” (K2)

4.4.2 Category 2: Occupational therapists' ability to triage rehabilitation services to maximise rehabilitation benefit to individuals with TBI during the COVID-19 pandemic

As lockdown restrictions were reduced, out-patient OT rehabilitation services were allowed to resume as well. In order to limit exposure for client's deemed high risk for contracting COVID-19, OTs needed to triage client's before deciding to do face-to-face intervention. Strict infection prevention protocols also needed to be adhered to when providing face-to-face intervention.

- **Sub-category: Triage related to severity of condition and the need for cognitive intervention**

In response to the COVID-19 pandemic, rehabilitation professionals were re-deployed to assist with screening and caring for clients infected with COVID-19. Thus, rehabilitation services were de-escalated at some facilities for considerable lengths of time. Consequently, OTs at the study setting tried to assist participants by providing rehabilitation at the tertiary hospital as rehabilitation services were suspended at certain primary healthcare facilities. Therefore, OTs needed to triage clients with regard to the severity of their condition and the need for cognitive intervention. In this sub-category participants describe the value of receiving cognitive intervention at the tertiary hospital, post TBI, during the COVID-19 pandemic. Participant 4 stated:

“Dit was maklik...sy het vir my gereeld datums gegee om vir haar te sien. Ek voel sy het vir my 100% gehelp... dit is beter en meer gemaklik om Groote Schuur toe te kom om die OT te sien.” (P4)

“it was easy...she gave me regular appointment dates to see her. I feel she helped me 100%...it is better and easier to come to Grootte Schuur to see the OT.”

Another participant stated:

“For the first time here it’s been quite good. You know seeing more or less what’s wrong. What the issue is. So, for the first time that I’ve seen her I think it’s good. I think every bit of help that she can give will help me ja. (P8)

Another participant highlighted the efficient manner in which the OT triaged his need for receiving cognitive intervention at the tertiary hospital and indicated the importance of these rehabilitation sessions continuing. Participant 10 stated:

“I just waited one week for my OT appointment... my appointments weren’t cancelled; I was still able to attend my OT appointments. And I wouldn’t like my OT appointments to be cancelled.” (P10)

- **Sub-category: Triage related to individuals who are working in a job in the open labour market**

Fulfilling the worker role is deemed a meaningful occupation as it allows TBI survivors to continue to provide for themselves and their families. Therefore, facilitating resumption of employment is a vital element of occupational therapy treatment for TBI survivors. In the course of the COVID-19 pandemic, OTs at the study setting also triaged clients who were employed in the open labour market to ensure that they receive rehabilitation, in order to maintain their employment. Under this sub-category, participants express the value of receiving vocational rehabilitation as it would assist them with returning to work in future. Participant 10 stated:

“The activities that she is doing with me I believe they are preparing me to be in a position where... when I get back to my kiddies, then I will be ready to teach them again.” (P10)

Another participant stated:

“I think it wasn't too long coz it was only a few weeks.... She is showing me how to do work and do my job again. She does exercises with my hand and my leg so that when I go back to work, I will be able to pick up the boxes again. ...and she say I must come back for more sessions.” (P3)

A key informant described how she triaged an employed client who required vocational rehabilitation in order for him to return to work. She further expressed how she would accommodate TBI survivors by seeing them for rehabilitation on the same day that they had a doctor's appointment in order to limit the number of times that the participant would need to come to hospital. Key informant 2 stated:

“I either book them when they come on their NSOPD (neurosurgery out-patient department) date or the third Thursday, two weeks after discharge. So even with this patient I was just speaking about, the dispatch one. So, I was going to see him next Thursday but then the doctor called me and said we actually bringing him in on Wednesday. So, I mean besides the fact that you don't want a patient travelling and getting exposure and stuff like that. Money is a big thing. So, you do try to accommodate. And usually Thursdays is my out-patient day, but these ones come on a Wednesday and I don't mind.” (K2)

4.5. Theme 4: Improvement of access and utilisation of OT rehabilitation services during the COVID-19

Theme 4 examines the participants perceptions and feedback regarding aspects that could be implemented in future in order to improve access and utilisation of OT rehabilitation services during the COVID-19 pandemic. Table 4 displays the categories and sub-categories of theme 4:

Table 4 Theme 4: Improvement of access and utilisation of OT rehabilitation services during the COVID-19

Theme 4	Categories
<p>Theme 4: Improvement of access and utilisation of OT rehabilitation services during the COVID-19</p>	<ul style="list-style-type: none"> • Category 1: Working “differently” enables for a continuation of rehabilitation services. • Category 2: Advocating for OT as being an essential service.



4.5.1 Category 1: Working “differently” enables for a continuation of rehabilitation services

This category captures how being willing to adapt rehabilitation services throughout the COVID-19 pandemic would allow TBI survivors to complete meaningful occupations and re-integrate back into the work environment more efficiently. Participants also describe how the COVID-19 infection prevention protocols needed to be incorporated in order to enable participation in rehabilitation in a safe environment.

- **Sub-category: Being willing to adapt allows for a continuation of OT intervention**

Under this sub-category participants conveyed their experiences and perceptions of the importance of being able and willing to adapt your treatment plans and protocols as this would allow for the continuation of OT intervention during the COVID-19 pandemic. A key informant described how scheduling protocols needed to be adapted for patients who had an OT appointment, but they have also tested positive for COVID-19. Key informant 1 stated:

“One thing that has come out of this pandemic is that you cannot plan rigidly. You need to be innovative with how it is that you are going to go about things... If the patient makes contact and says I’ve tested positive or I have a high-risk contact or I have symptoms, generally a 10-day waiting period would be counted out and the patient would be slotted into the next available date...all of these things are taken into consideration and tried to factor it in so that the patient is never disadvantaged further than the pandemic has already disadvantaged them. So, our protocols do have those factored in... to ensure that patients are given as much access as possible.” (K1)

Another key informant expressed how she used alternative treatment areas outside of the OT department to ensure adequate social distancing during treatment sessions. Key informant 2 stated:

“I think we just have to work smart. I mean I’m fortunate now that I have the room that I can use in neurosurgery.... So, I book my patients outside of the OT workspace. I book them every hour even though I see them for about 40 minutes then I clean the working area.... I don’t allow the caregivers in. So, it’s literally two people in a big enough workspace and I work with them that’s what I do.” (K2)

- **Sub-category: The incorporation of COVID-19 hygiene protocols enables participation in rehabilitation in a safe environment**

Under this sub-category participants describe how they integrated COVID-19 infection prevention protocols within the workplace to ensure that participants were still able to access face-to-face rehabilitation within a safe environment. A key informant expressed how surfaces and equipment need to be sanitised in between each patient to avoid cross contamination. Key informant 1 stated:

“At this point in time, you can only ever have one person within the (treatment) area at a time...the COVID protocols in terms of hygiene does not allow you to have more...because surfaces need to be disinfected between each assessment that gets done and the entire area needs to be cleaned and sanitized before you can bring the next patient in.” (K1)

A key informant also described the various COVID-19 infection prevention measures that needed to be implemented prior to the patient being treated to ensure a safe clinical environment for the patient and the clinician. Key informant 1 stated:

“And obviously adhering to all of the COVID-19 protocols and restrictions in order to make all of that happen...you have to take waiting areas into account as well. So always ensuring that there is enough space. So, it takes lots of communication, lots of booking and preparation... your infection prevention measures set out by the hospital because of...how the virus gets spread, and so ensuring that there’s hand sanitiser everywhere freely available to patients. Ensuring that screening happens and if the patient doesn’t have a mask on, they will not be seen....so you are ensuring the safety of your patient and you are ensuring the safety of your staff as well.” (K1)

4.5.2 Category 2: Advocating for OT as being an essential service

During the COVID-19 pandemic, rehabilitation professionals were often re-deployed in order to assist with screening and caring for patients infected with COVID-19. Under this category

participants express the importance of advocating for occupational therapy as being an essential service during the COVID-19 pandemic.

- **Sub-category: A need for OT rehabilitation services to continue in special circumstances during the pandemic**

Under this sub-category participants conveyed the necessity for out-patient OT rehabilitation services to continue throughout the COVID-19 pandemic. A key informant suggested advocating for OT rehabilitation services to continue throughout the COVID-19 pandemic as OTs have a vital role in rehabilitation for TBI survivors to resume their worker roles. Key informant 2 stated

“So, I do think advocating would be a good idea. Because then at least you will be able to assist people that could potentially go back to work. Or even just get them on a route for them to be doing something that’s productive...a lot of the patients are young patients. So, you don’t want them to be in the twenties or early thirties and living off a disability grant because it’s not like it’s a lot of money.” (K2)

Another key informant highlighted that the COVID-19 pandemic has motivated OTs to advocate more for their profession as well as to “think out of the box” and be more innovative in order to provide services to their patients. Key informant 1 stated:

“...so COVID has put lots of restrictions in place but at the same time it’s caused that people become more innovative and come up with ideas to get therapy out there...where you advocate for your patient continuously...even though management says uhm de-escalate and close. You still advocate for your patients for their best interest and yes, we might be an OPD service, however, we’re an OPD service that directly impacts the bread and butter that comes on the patient’s table.” (K1)

Another participant endorsed advocating for OT rehabilitation services to carry on throughout the COVID-19 pandemic. The participant also highlighted the importance of OT sessions being regular and consistent in order to achieve therapeutic goals and regain independence in meaningful occupations. Participant 9 stated:

“Maybe suggest that all the patients still have regular uhm occupational therapy visits. I think that’s important. To be consistent with healing in so many ways. It has to be consistent to make it work. So, I think for all the occupational therapy patients, they need to be seen regularly.” (P9)

- **Sub-category: Relook at how transport is provided to certain clients during the pandemic in order to continue with OT rehabilitation**

Throughout the COVID-19 pandemic, the public transport system also needed to abide by COVID-19 protocols in terms of social distancing. This resulted in public transport operators only being able to transport a certain number of passengers. Certain forms of public transport were also suspended during the pandemic which further caused a struggle for patients to travel to hospital for their rehabilitation appointments. Under this sub-category participants conveyed the necessity for transport assistance to travel to the hospital for their appointments during the COVID-19 pandemic. Two participants expressed the need for more patients to have access to the Dial-A-Ride transport service as this would allow them to attend their rehabilitation appointments. Participant 5 stated:

“To travel very easily to hospital that is actually the thing that they need to help the patients to get more easily to hospital to come to your appointment.” (P5)

Another participant stated:

“Uhm I’m not certain about this but if they can...offer maybe some transport or something like that. That can pick us up where we live maybe it will be alright to fetch us at the bus stop close to where we live or close to our addresses. So, then we can wait for the hospital transport to collect us so that we can attend our rehab appointments.”

(P10)

4.6 Summary

Based on the participants experiences and perceptions of TBI survivors regarding access to rehabilitation throughout the COVID-19 pandemic, findings related to the study objectives were achieved. Theme 1 described the experiences and perceptions of the barriers that hindered TBI survivor’s ability to access OT rehabilitation services during the COVID-19 pandemic. Theme 2 presented the experiences and perceptions of participants related to how the lack of rehabilitation during the COVID-19 pandemic impacted on the individual with TBIs occupational performance. Theme 3 described the experiences and perception of participants regarding factors that facilitated access to rehabilitation services for individuals with TBI during the COVID-19 pandemic. Theme 4 presented possible suggestions to improve access and utilisation of OT rehabilitation services during the COVID-19 pandemic.

4.7 Diagrammatical representation of themes and categories

The diagram below (see Figure 1) indicates how the barriers (theme 1) impacted on the participants occupational performance (theme 2). It also indicates that the barriers (theme 1) influenced the development of the facilitators (theme 3) to the extent that improvement strategies were developed (theme 4). Furthermore, the diagram indicates that the facilitators (theme 3) and improvement strategies (theme 4) would be able to address the barriers (theme 1).

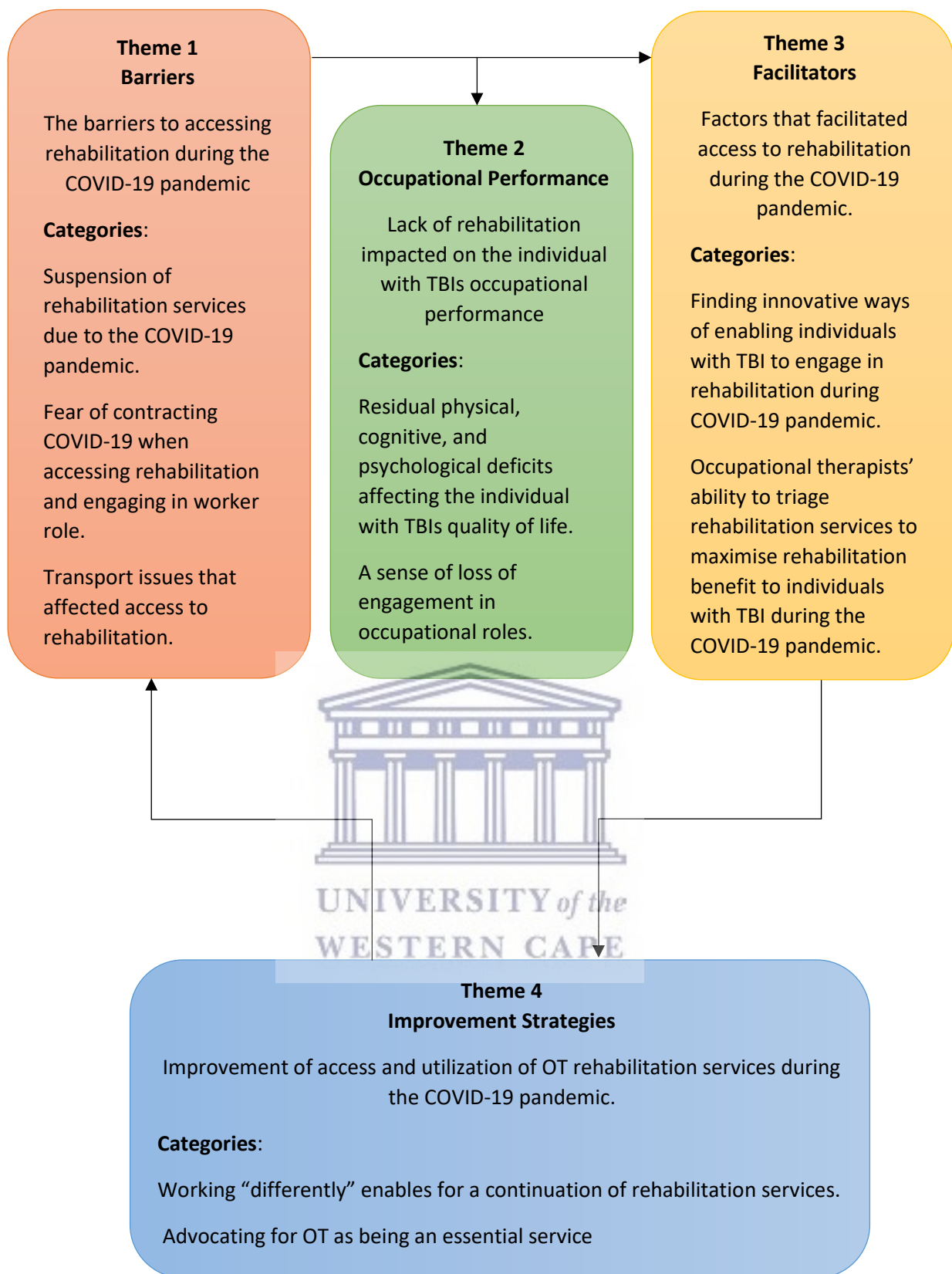


Figure 1 Diagrammatical representation of themes and categories

Chapter 5: Discussion

5.1 Introduction

In this chapter the researcher will discuss the factors that influenced the participants' ability to access rehabilitation throughout the COVID-19 pandemic. The main aim of the study is to explore and describe the barriers and facilitators experienced by the participants when accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles. This chapter will also highlight how the reduction or cessation of rehabilitation impacted on the participants' occupational performance. Lastly, there is a discussion on possible suggestions to improve access and utilisation of OT rehabilitation services during the COVID-19 pandemic.

5.2 Barriers

The World Health Organisation (2001) describes barriers as the aspects in an individuals' context that, through their presence or absence, limits a person's functioning and essentially establishes disability. These aspects comprise, amongst others; a physical context that is unattainable, insufficient appropriate assistive, adaptive, and rehabilitative technology, pessimism, and perceptions of individuals in relation to disability, and services, structures, and guidelines that are moreover devoid or delay the participation and engagement of individuals with disabilities (WHO, 2001). In the current study, barriers refer to the factors that prevented or restricted TBI survivors from accessing rehabilitation throughout the COVID-19 pandemic. One of the objectives of the study was to explore the barriers TBI survivors experience when accessing rehabilitation and vocational rehabilitation during the COVID-19 pandemic. The current study found that various challenges existed which influenced access to occupational therapy rehabilitation services during the COVID-19 pandemic. In theme 1, participants described their experiences of the barriers that influenced their ability to access rehabilitation during the COVID-19 pandemic. Some of the barriers identified by the participants were as a

result of restrictions that were established to limit the increase of COVID-19. The challenges identified were the suspension of rehabilitation services, long waiting times for rehabilitation appointment dates, fear of becoming infected with COVID-19 at the hospital or at work and transport issues when needing to access OT rehabilitation also emerged.

5.2.1 Suspension of occupational therapy rehabilitation services

Rehabilitation services that enhance cognitive and physical performance to decrease disability, are an essential constituent of high-level care (Bettger et al., 2020). Category 1 of theme 1 expressed the participants' experiences and perceptions relating to the suspension of rehabilitation services during the COVID-19 pandemic. It was found that the suspension of rehabilitation during the COVID-19 pandemic negatively influenced the participants ability to access rehabilitation which had a direct negative influence on their ability to resume their worker roles. Kleinitz et al. (2020) report that for certain patient populations (e.g., stroke, burns and spinal cord injuries), suspension or insufficiency of rehabilitation has the ability to significantly infringe on health and performance results and cause a rise in mortality. Bettger et al. (2020) state that during the COVID-19 pandemic, home-based therapy and out-patient care were postponed or functioning at limited-service capacity. Although these choices were justified for the purpose of the protection of both the general public and healthcare practitioners, the consequences were a rise in disability and illness as a result of a deficiency of essential rehabilitation care for those who require ongoing care. Healthcare institutions and care facilities have implemented different processes in an attempt to limit the spread of COVID-19 particularly among patients with co-morbidities. These techniques consist of suspension of medical visits, confinement of patients, rehabilitation, and follow-ups that are considered as inessential services (Deledda et al., 2021).

The latter was evident in the current study as participants expressed that the de-escalation of non-essential services negatively impacted them to the extent that they are now experiencing

functional limitations which could have been addressed if they were allowed access to OT rehabilitation services during the COVID-19 pandemic.

5.2.2 Fear of contracting COVID-19

Deledda et al. (2021) notes that frequently, patients were contacted by healthcare facilities to suspend or cancel booked appointments, therapeutic interventions and/or surgical procedures to limit the chances of becoming infected with COVID-19. On the other hand, patients have subsequently contacted healthcare facilities to cancel appointments. (Deledda et al., 2021). This was evident in the current study as participants expressed their concerns about attending hospital appointments during the pandemic as they feared that they would contract COVID-19 at the hospital. The participants unique reports and perceptions of contracting the virus while attending their medical appointments often resulted in the participants choosing not to attend their medical appointments.

Employees in various vocational sectors are now facing the possibility of contracting COVID-19 within the workplace. Undeniably, the workplace has some aspects that are likely to accelerate the increase of infections of COVID-19. This entails, for instance, physical closeness and close social interaction with co-workers or managers, working in nearby community spaces in addition to regular social contact with consumers, students, or patients (Falco et al., 2021). Nabe-Nielson et al. (2020) observe that balancing the responsibility of employment coupled with the dread of contracting COVID-19 and spreading the virus from the workplace to home or conversely is a fundamental concern for employees in the frontline throughout the pandemic. The feeling of uncertainty between workers and the anxiety of contracting the disease or spreading the disease is intensified by inadequate knowledge, insufficient usage of test and personal protective equipment (PPE) and subpar management of the occupational environment's response to the pandemic (Nabe-Nielson, 2020). In the current study, participants expressed their fears around resuming employment throughout the COVID-19

pandemic. In a study conducted by Taylor and Asmundson (2021), the wearing of masks has become progressively obligatory in public areas namely shopping centres and while using public transportation. Even though people have predominantly been compliant with wearing of masks, there are also members of the public who disapprove of wearing masks. Declining to wear a mask is related to a series of anti-mask attitudes, fundamental to psychological reactance and of the opinion that masks are futile (Taylor & Asmundson, 2021). Participants in the current study related that even though wearing a mask within the workplace was mandatory, their colleagues were not very diligent about wearing their masks in the workplace and this in turn contributed to the fears of the participants about resuming employment throughout the COVID-19 pandemic.

5.2.3 Transport issues during the COVID-19 pandemic creating barriers to access occupational therapy rehabilitation

Cochran (2020) found that barriers related to access to transport to medical facilities often cause missed appointments or postponement of care, which excessively affects persons with disabilities. Similarly, it was found that individuals with disabilities access medical care at an increased rate than individuals who do not have disabilities, they also experience numerous barriers related to transportation to attend healthcare. Furthermore, it was found that individuals with disabilities experience issues with transportation to healthcare more frequently than persons without disabilities and it is often regarded as social element of health (Cochran, 2020). Deledda et al. (2021) note that during the SARS-CoV-2 outbreak, patients' reasons for cancelled appointments included being unable to: get time off work, secure childcare, and/or find a safe mode of transport (Deledda et al., 2021). In the current study, participants expressed how the public transport system had also been impacted by the COVID-19 pandemic to the extent that certain forms of public transport were suspended during the pandemic, which resulted in participants having to make alternative transport arrangements and paying excessive

amounts of money in order to travel to the hospital for their rehabilitation appointments. In an effort to curb the risk of transmission of COVID-19, governments have implemented restrictions on travelling and adapted a work-from-home policy for non-essential employees, subsequently affecting transport usage. This has impacted on all modes of transportation including railway, airlines, subway systems and buses that have all experienced an unparalleled decrease in patrons. Similarly, the social distancing policy implemented by governments is likely to have an influence on lifestyle and customs worldwide (Kamgaa et al., 2021) Due to the increase in the number of COVID-19 infections, many countries employed social distancing protocols on places of employment, schools, shopping centres and public transport (Gkiotsalitis & Cats, 2020). These measures have had a significant influence on public transport services and service delivery (Gkiotsalitis & Cats, 2020). This is evident in the current study as COVID-19 restrictions with regard to social distancing where public transport operators were only allowed to load a certain number of patrons, resulting in lengthy waiting time for public transport in order for participants to travel to their OT rehabilitation appointments.

5.2.4 Lack of rehabilitation negatively influences quality of life

Quality of life refers to the persons' perception of their stance in life based on the culture, value systems that they live in and regarding their goals, principles, expectations, and interests. It is a vast concept which is affected by the individual's mental state, physical health, degree of independence, the individuals' morals, social interactions, and their relationship to important features of their context (Polinder et al., 2015).

Polinder et al. (2015) state that Health-Related Quality of Life (HRQoL) describes a person's view on how a medical condition and its treatment influences physical, psychological, and social factors of their life. In this study it was found that the suspension of rehabilitation services during the COVID-19 pandemic had resulted in the participants still experiencing residual physical, cognitive, and psychological deficits.

TBI is often considered a cause of longstanding illness and incapacity in physical, psychological, cognitive social and functional capabilities (Polinder et al., 2015). In theme 2 category 1 of the current study, participants expressed that the lack of rehabilitation in the course of the COVID-19 pandemic impacted on their quality of life to the extent that they still experienced residual physical symptoms after TBI such as headaches, nausea as well as weakness in the upper and lower limbs.

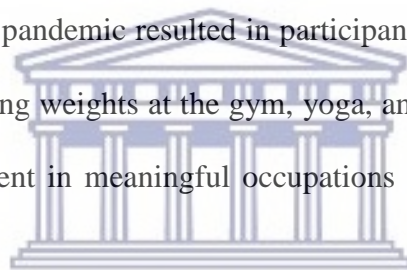
Gorgoraptis et al. (2019) indicate that TBI often results in cognitive impairment, which has adverse consequences for functional capabilities, as shown by its evident association with unsatisfactory results on a host of carer-clinician-reported proportions of impairment. Similarly, Sasse et al. (2013), note that severe cognitive impairment is frequently related with reduced self-actualisation of the consequences of TBI, which may give rise to increased estimations of patients' self-reported HRQoL. Thus, it is probable that cognitive deficits might be inconsistently linked to improved self-reported HRQoL. On the contrary, substantial deficits that post TBI cognitive deficits pose on the ability to do daily tasks could be linked to poor HRQoL perceived by the TBI survivor (Gorgoraptis et al., 2019). Category 1, theme 2, portrayed the participants' experiences and perceptions of how the lack of rehabilitation during the COVID-19 pandemic resulted in them still experiencing residual cognitive symptoms post TBI, impacting on their quality of life. In this study it was found that the lack of rehabilitation resulted in participants still experiencing problems with memory loss, poor attention span, slow thought processing and executive function.

Gorgoraptis et al. (2019) show that cognitive deficits resulting from TBI do not typically occur in isolation. Depression, difficulty sleeping and lethargy during the day are usual outcomes of TBI coupled with cognitive deficits post TBI. The psychological impact on health-related quality of life after TBI subsequently has an adverse effect on cognitive capacity (Gorgoraptis et al., 2019). In this study participants also described having residual psychological symptoms

post TBI and due to the lack of rehabilitation during the COVID-19 pandemic, these psychological symptoms were not being addressed. It was found that participants had difficulty controlling their emotions, particularly anger and frustration, and feelings of depression and anxiety were prevalent.

A study by Kelly and Nikopoulos (2010) in the UK found that TBI is more prevalent among the younger population at a substantial rate of 275/100,000 per year. Even though the prevalence rate is high, the mortality rate is low at 6-10 per 100,000. This revealed the greater number of individuals with TBI who live with longstanding impairments requiring professional care. It is often found that most brain injury survivors during the acute phase require assistance with self-care activities (Kelly & Nikopoulos, 2010). Daily self-care tasks include grooming, bathing, getting dressed and using the toilet, frequently known as a main objective for neurological therapy. Typically, promotion of functional skills towards PADL training constitutes a large percentage of the occupational therapy (OT) interventions within neurological rehabilitation (Kelly & Nikopoulos, 2010). In the current study, participants conveyed a sense of loss of engagement in meaningful occupations as a result of the suspension of out-patient OT rehabilitation services during the COVID-19 pandemic. The use of activities during therapeutic intervention aims to enhance functional capability to the optimal level of capacity probable within the confines of impairment arising from TBI. Numerous studies have found that achieving independence in ADLs and IADLs together with adequate social support and a fulfilling job promotes increased quality of life following TBI (Camp et al., 2020). In accordance with the findings of the current study, it was found that participants not being able to access rehabilitation during the pandemic coupled with them not being able to complete self-care tasks and household chores due to residual physical symptoms, resulted in participants experiencing a sense of loss in occupational engagement and the questioning of their self-worth.

Wise et al. (2010) state that the participation in leisure activities could be of considerable importance in TBI recovery. Participation in leisure activities is known to enhance self-esteem, improve physical ability, develop coping strategies, improve life gratification, and even result in finding a companion (Wise et al., 2010). Leisure activities are generally chosen by individuals because of the beneficial influence on emotional and physical health. Nevertheless, TBI survivors frequently encounter deficits in physical capabilities due to the high prevalence of TBI among the younger population and coupled with relatively usual life expectancy for individuals with TBI, it is likely that many TBI survivors would experience a decline in engagement in leisure activities over prolonged periods of time (Wise et al., 2010). This was evident in this study as it was found that participants experienced a loss of engagement in meaningful leisure activities post TBI. It was found that the de-escalation of rehabilitation services during the COVID-19 pandemic resulted in participants not being able to participate in leisure activities such as lifting weights at the gym, yoga, and horse-riding, which resulted in a sense of loss of engagement in meaningful occupations and in turn impacted on their quality of life.



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5.2.5 Lack of rehabilitation impacts on resumption of worker role

Materne et al. (2017) observe that acquired brain injury (ABI) comprises psychological, cognitive, and physical functioning with the resumption of employment being a primary objective for individuals with ABI. The resumption of employment is considered to be the main measure of successful rehabilitation, functioning as a substitute for recovery and measure of rehabilitation. Resumption of employment influences an individual's self-esteem, quality of life and wellbeing, and results in the individual experiencing a state of normality in civilisation and a measure of success. Moller et al. (2017) found that resumption of employment was better facilitated when some form of vocational rehabilitation was obtained. Mani et al. (2017) found that cognitive therapy is a feasible intervention to effectively facilitate resumption of

employment in patients with TBI. In the current study, participants conveyed their experience of loss of employment post TBI as they were unable to return to work due the de-escalation of rehabilitation services throughout the COVID-19 pandemic. Based on the findings of the current study, participants emphasised how the suspension of out-patient OT rehabilitation services throughout the COVID-19 pandemic resulted in TBI survivors having deficits that could have been addressed during rehabilitation. However, due to participants not being able to attend out-patient OT rehabilitation they were unable to resume their worker roles, which ultimately resulted in the loss of employment.

Individuals with TBI frequently experience difficulties with resuming employment. Marginalisation within the workplace also has an impact on identity, psychological and social wellbeing. Thus, effective resumption of employment is vital from an individual's perspective (Materne et al., 2017). In the current study it was found that the stigmatisation that occurs in the workplace together with the suspension of rehabilitation services during the COVID-19 pandemic negatively influenced the participants' ability to engage in their worker roles.

5.3 Facilitators

The World Health Organisation (2001) describe facilitators as those aspects in an individuals' environment that, as a result of their presence or absence, improve an individuals' functioning and diminish disability. These aspects consist of an accessible physical environment, the availability of appropriate assistive, adaptive and rehabilitative technology, positive viewpoints and perceptions of individuals regarding disability, and services, structures, and guidelines that endorse the involvement and engagement of individuals with disabilities (WHO, 2001). In this current study, facilitators refer to the factors that enabled TBI survivors to access occupational therapy rehabilitation during the COVID-19 pandemic.

5.3.1 Telemedicine/telehealth enables the continuation of rehabilitation services

Telehealth/telemedicine is often used interchangeably, and it is defined as the distribution of healthcare services by using information and communication technologies that enable the assessment, diagnosis, discussion, therapeutic intervention, training, care management and personal care management of a patients' healthcare while the patient is at the initial site and the healthcare professional is at an alternative site (Becevic et al., 2020). Therefore, telemedicine pertains to the provision of medical care at a distance. Telehealth programmes comprises video conferencing, the internet, asynchronous "store-and-forward" imagery, streaming media, and terrestrial and wireless networks (Becevic et al., 2020).

Telehealth offers the possibility of decreasing the number of trips to hospitals and doctors' consultation rooms. The decline in these visits will assist with curbing the transmission of COVID-19 specifically decreasing the rate of infections between COVID-positive patients and healthcare workers as well as safeguarding patients with co-morbidities who are at risk of severe disease (Hoffman, 2020). In the current study it became evident that the use of telemedicine/telehealth became a very popular form of treatment throughout the COVID-19 pandemic as it allowed health professionals to provide intervention while abiding by the lockdown regulations (i.e., social distancing). Participants described alternative methods that were used during the COVID-19 pandemic to assist TBI survivors with accessing OT rehabilitation in the course of the COVID-19 pandemic and telehealth became the "new normal" for TBI survivors and their families. Patients would even contact the OT for assistance when necessary. In theme 3 category 1 it was also found that the use of social media platforms assisted with sending OT intervention videos as well as home programmes to TBI survivors during the COVID-19 pandemic. Furthermore, in theme 3 category 1 participants also conveyed how the use of videos assisted TBI survivors and their families with engaging in meaningful occupations.

5.3.2 The use of home programmes allowed for continuation of OT rehabilitation

Makaram et al. (2021) propose that home exercise programmes (HEP) may be an excellent preferred alternative to formal or out-patient rehabilitation therapy sessions for clients during periods of COVID-19 lockdown or self-isolation, as they are cost-effective without compromising quality. This was apparent in the current study where participants received OT home programmes as they were unable to access OT rehabilitation during the COVID-19 pandemic. After sustaining a TBI, many survivors experience significant cognitive limitations. Thus, cognitive intervention plays a vital role in TBI rehabilitation. In theme 3 category 1 participants expressed how a home programme specifically designed for cognitive intervention for TBI survivors, assisted participants with being able to continue rehabilitation during the COVID-19 pandemic.

5.3.3 Triaging rehabilitation services to maximise rehabilitation benefit to individuals with TBI during the COVID-19 pandemic

Due to the surge in necessity for healthcare services, it is crucial for healthcare providers to determine how services need to be allocated. The term “triage”, derived from the French verb trier implying “to sort”, explains systems where patients are assigned to categories based on necessity or the kind of services needed” (Harding et al., 2011). Harding et al. (2011) further state that organisation systems are a type of triage, and the objective is to categorise patients in order of relative importance for treatment. In the current study it was found that occupational therapists needed to triage TBI survivors with regard to the severity of their condition and the need for cognitive intervention. This allowed TBI survivors to receive the necessary cognitive rehabilitation, which would assist with facilitating return to worker roles and improving their health and wellbeing. During the course of this project, the researcher found that there is insufficient recent literary work on the use of triage systems in allied healthcare. However, in a study conducted by Harding et al. (2009) it was found that allied health clinicians including

occupational therapists, often needed to make decisions regarding the comparative urgency of referrals, prioritising patients for treatment and in some instances determine whether patients need services at all. This is crucial in an environment where the demand for allied health services often surpasses supply (Harding et al., 2009). Triage systems or prioritisation guidelines are endorsed by professional bodies as they assist clinicians with decision making. The words “triage” and “prioritisation” illustrate procedures or tools that assist clinicians in the provision of their services. The objective of these procedures may be to determine which patients need to be prioritised, to designate patients according to how services could be offered (by OTs or assistants, for example), or to decide who needs treatment at all (Harding et al., 2009). In theme 3, category 2, it was found that fulfilling the worker role is deemed a meaningful occupation as it allows TBI survivors to continue to provide for themselves and their families. The findings of the current study found that, occupational therapists at the study setting also triaged clients who were employed in the open labour market to ensure that they received optimal rehabilitation, in order to maintain their employment.

5.4 Adaptation to worker role

A study conducted by Bettger et al. (2020) found that 12 countries indicated a suspension or decreased service capacity of home-based and out-patient therapy in the course of the COVID-19 pandemic. Even though these unavoidable outcomes were established for the safeguarding of the general public and healthcare practitioners, it may also give rise to an upsurge in illness and incapacity due to the deficiency of rehabilitation for those requiring ongoing care. The quintessential objective of any therapeutic intervention programme is to attain the most optimal level of function, health, and wellbeing. Resumption of employment is a critical factor affecting health and wellbeing as employment plays an important role in an individual’s life, and work is regarded as a positive element on QoL (Mani et al., 2017). Moller et al. (2017) found that the return to the worker role was better enabled when some kind of vocational therapy was

obtained. In the study conducted by Mani et al. (2017), it was found that cognitive rehabilitation facilitates resumption of employment following TBI. Objective 3 of the current study explored the experiences and perceptions of TBI survivors about how they adapted to their worker roles throughout the COVID-19 pandemic. In theme 2 of the current study, it was found that all the participants still experienced residual physical, cognitive, and psychological limitations due to the postponement of rehabilitation services in the course of the COVID-19 pandemic. These residual symptoms influenced TBI survivors' ability to meet the inherent requirements of their jobs and thus they have not adapted to their worker roles.

It is clear that patients are shying away from seeking medical care in hospitals due to fears of becoming infected with COVID-19 (Wong et al., 2020). This was evident in the current study as participants conveyed their fears of contracting the virus while attending their medical appointments, often resulting in the participants choosing not to attend their medical appointments. The main concern for frontline employees during the pandemic is balancing work responsibilities with the fear of contracting COVID-19 and transmitting the disease from home to work or vice versa (Nabe-Nielson et al., 2020). In the current study, participants expressed their fears of contracting the virus upon returning to work. Therefore, as a result of the suspension of rehabilitation services during the COVID-19 pandemic, together with the fear of contracting the virus in the workplace or while attending medical appointments, none of the participants in this study, had been able to adapt to their worker role or return to work.

5.5 Relation to the ecology of human performance (EHP) model

The findings of the current study were interpreted through the use of the ecology of human performance model (EHP) as a conceptual lens. Furthermore, the researcher made use of the EHP model to integrate the findings of the current study in Figure 5.5.1 below. The EHP framework reveals how the interaction between a person and the context affects human behaviour and task performance (Schell et al., 2018). It provides a model to analyse the findings

of the current study and to determine how the barriers and facilitators influenced the participants ability to access rehabilitation during the COVID-19 pandemic and how this has affected their worker roles.

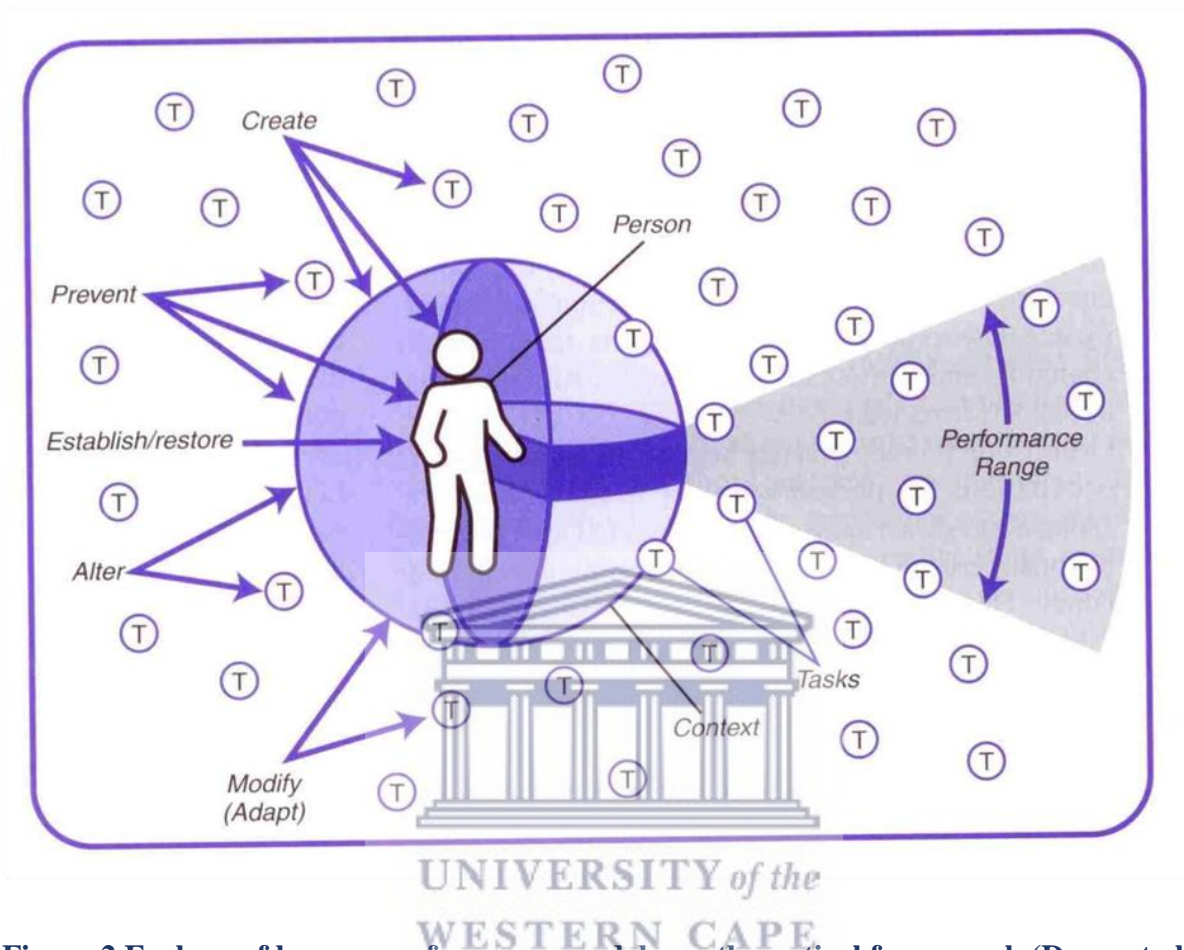


Figure 2 Ecology of human performance model as a theoretical framework (Dunn et al., 1994)

5.5.1 Person

The comprehensive view of the person recognises the body, spirit, and mind. Factors linked to the person involve morals and interests, skills, and aptitudes as well as life experiences. Morals and interests assist with defining what the person deems essential, significant, and pleasurable. Skills and aptitudes involve psychological, cognitive, and sensory-motor skills and capabilities such as reading. Life experiences shape the person’s individualised history (Schell et al., 2018).

Schell et al. (2018) further state that the person influences the context and similarly the context influences the person. According to Moller et al. (2017), traumatic brain injury (TBI) frequently effects cognitive, psychological, physical, and functional capabilities that may influence the person's level of independence in activities of daily living, including the participation in work. In the current study it was found that TBI caused physical, cognitive, and psychological deficits that directly influenced the participants' capacity to adapt to their employee roles. In response to the COVID-19 pandemic, non-essential out-patient rehabilitation services were de-escalated. In a study conducted by Machamer et al. (2013) it was found that the areas of greatest discontent concerning health-related quality of life post TBI involve the ability to remember and process information, physical health, employment status, participation in leisure activities and earning an income to meet basic needs. This was evident in theme 2 of the current study, as it was found that the suspension of rehabilitation services throughout the COVID-19 pandemic had resulted in participants still experiencing residual physical, cognitive, and psychological deficits that influenced their quality of life to the extent that they were unable to adapt to their worker roles.



5.5.2 Context/Environment

Occupational performance tasks take place within the environment, and it comprises the following: physical, cultural, social, and temporal environment. The physical environment is concrete and involves constructed and natural elements, buildings, terrain, and small components such as tools. The cultural environment is derived from shared experiences that establish morals, beliefs and traditions and also includes religious conviction, ethnicity, and national identity. The social environment consists of many layers such family and friends, work groups or social organisations that the individual belongs to as well as political and economic structures that could have an effect on the daily life of a person with a disability. The temporal environment consists of time-orientated aspects related to the person. These aspects include

developmental stage, life stage and the task. The assumption is that the environment is a key element in the likelihood of successful occupational performance. Therefore, all environmental factors (physical, cultural, social, and temporal) should be assessed to determine pertinent environmental influences (Schell et al., 2018). In this study the environment refers to the employment context that the TBI survivors had not gone back to because of residual physical, cognitive, and psychological limitations. As described in theme 2, the work environment presented with many challenges for the participants such as having to meet the inherent requirements of their job as well as being able to meet production demands. Donker-Cools et al. (2018) state that acquired brain injury frequently leads to prolonged physical, cognitive and psychological impairments that can have a negative impact on return to work. In theme 2 category 1, it was found that all the participants still experienced residual physical, cognitive, and psychological limitations, which influenced their ability to meet the inherent requirements of their jobs. As a result, none of the participants in this study had been able to adapt to their worker role and return to work due to the suspension of rehabilitation services during the COVID-19 pandemic. This refers to the physical environment. The social environment of participants in this study refers to the sense of loss of engagement in occupational roles due to the TBI as well as the restrictions imposed on the environment because of the COVID-19 pandemic. Webster et al. (2015) conveyed that not many TBI survivors receive the required rehabilitation and most of them are instead sent home to unprepared families who usually become their primary caregivers. Based on the findings of the current study it was found that because of the suspension of rehabilitation services during the COVID-19 pandemic, participants experienced a loss of independence in ADL activities and as a result they needed to rely on family members to assist them with self-care and home maintenance tasks. Donker-Cools et al. (2018) convey that return to work is a fundamental constituent in the health and wellbeing of patients with TBI as it makes provision for financial freedom, socialisation and a

feeling of meaning. In theme 2 category 2 of the current study, it was also found that the suspension of rehabilitation services throughout the COVID-19 pandemic resulted in participants experiencing the loss of their worker role that impacted on the participants ability to provide for themselves and their families. Additional barriers within the social environment in the current study found that the public transport system had also been affected by the COVID-19 pandemic to the extent that certain forms of public transport were suspended during the pandemic, which resulted in participants having to make alternative transport arrangements and paying excessive amounts of money to travel to the hospital for their rehabilitation appointments. In a study conducted by Subbarao and Kadali (2021) it was found that the spread of COVID-19 is largely dependent on factors such as the time on route, the distance of the trip, the number of passengers inside the vehicle and the health condition of the co-passenger. Therefore, overcrowding inside public transport vehicles is one of the main concerns in the daily functioning of the public transport system. The current study found that COVID-19 restrictions regarding social distancing meant that public transport operators were only allowed to transport a certain number of patrons in the vehicle at a time which resulted in an increase in waiting time for public transport in order for participants to travel to their OT rehabilitation appointments during the COVID-19 pandemic.

Even though there were many barriers which influenced the participants ability to access rehabilitation in the course of the COVID-19 pandemic, the current study also emphasised innovative approaches that occupational therapists used to ensure that TBI survivors received some form of OT intervention in the course of the COVID-19 pandemic. Abbott-Gaffney et al. (2022) note that by using telehealth, occupational therapists were able to provide on-going care to clients without being face-to-face. Telehealth improves access to care for clients who would in other respects have restricted or no access to care due to transportation barriers, bad weather and additional access barriers (Dahl-Popolizio et al., 2020). In theme 3 of the current study, the

use of telemedicine/telehealth was seen to be a very popular form of treatment during the COVID-19 pandemic as it allowed occupational therapists to provide intervention while abiding by the lockdown regulations (i.e., social distancing). The current study also highlighted that the use of social media platforms assisted with sending OT intervention videos as well as home programmes to TBI survivors during the COVID-19 pandemic. In a study conducted by Harding et al. (2009), it was found that triaging patients for allied healthcare services is valuable in the continual distribution of resources, as it can minimise waiting lists, and enhance staff and client satisfaction. In theme 3 of the current study, it was also found that a triage system related to severity of condition and the need for cognitive intervention, allowed participants to access rehabilitation in the course of the COVID-19 pandemic. Furthermore, by triaging clients who were employed in the open labour market, the participants received rehabilitation to maintain their employment.

5.5.3 Tasks

Schell et al. (2018) define tasks as unbiased representations of all probable activities accessible in the universe. Tasks or occupations occur when the person and environmental aspects come together to provide meaning for these activities. Consequently, occupational performance is affected by the convergence of person, context, and tasks or occupations. The latter are ever-changing and as these aspects change, occupational performance also changes. In the current study it was found that the lack of rehabilitation in the course of the COVID-19 pandemic had an adverse effect on the participants' occupational performance to the extent that the participants had difficulty doing self-care tasks, leisure activities and in fulfilling their worker roles.

5.5.4 Performance

Performance encompasses both the method and the result of the person collaborating with the environment to participate in occupations or tasks. Performance range is dependent on the

transaction between the person and the environment or context. Environmental barriers and facilitators together with a person's abilities, aptitudes, and experiences determines whether a specific occupation or task falls within the performance range. The performance range is ever-changing across time as the person and environmental characteristics change. (Crepeau et al., 2009). In the current study it was found that the suspension of occupational therapy rehabilitation during the COVID-19 pandemic, negatively influenced the TBI survivors' ability to adapt to their worker roles due to the residual physical, cognitive, and psychological limitations experienced.

5.5.5 Person-context-task transaction

According to Crepeau et al. (2009), the person-context transaction in task performance is considered to be the main variable that essentially governs the performance range. Task performance is affected by ecology, or the transaction between the person and context. Likewise, task performance affects the environment, the person and the transaction between the person and the context. In the current study it was found that TBI caused physical, cognitive, and psychological deficits. Due to the suspension of rehabilitation services in the course of the COVID-19 pandemic, all of the participants still experienced physical, cognitive and psychological deficits which had a direct negative influence on their ability to adapt to their worker roles.

5.5.6 Occupational performance

According to Schell et al. (2018), the person is embedded inside the context, with the individual being exposed to various tasks that they may need to perform. The performance range consists of tasks that are accessible to the person as a result of the current contextual supports and his or her own capabilities, skills, and experiences. Performance range fluctuates as other variables change. The performance range increases when the person obtains new skills. Similarly, expansion happens when stigma is reduced, physical obstacles are eliminated, further social

supports are obtained, or schedules are accommodating (Schell et al., 2018). Polinder et al. (2015) report that health-related quality of life is a comprehensive and complex concept determined by the person's mental state, physical health, level of independence, values, social relationships, and their affiliation to significant aspects of their environment. As a result of the suspension of rehabilitation services during the COVID-19 pandemic, participants experienced a loss of engagement in meaningful occupations due to the limitations of their TBI. However, findings of the current study indicated that using alternative and innovative approaches such as telehealth/telemedicine and home programmes, assisted participants with accessing rehabilitation during the COVID-19 pandemic to improve occupational performance. Furthermore, the findings of the current study highlighted that as lockdown restrictions were reduced, the implementation of triage systems allowed participants to access rehabilitation during the pandemic and improved their capacity to participate in meaningful occupations.

5.6 Summary

In summary, this chapter discussed the barriers and facilitators that TBI survivors experienced when accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles. The researcher highlighted the barriers that were related to the suspension of rehabilitation services, fear of contracting COVID-19 and transportation problems affecting access to rehabilitation services during the pandemic. The chapter also discussed how the suspension of rehabilitation during the COVID-19 pandemic influenced health and wellbeing and a sense of loss of the participants worker role. Furthermore, the facilitators that were discussed were linked to the use of telehealth/telemedicine, the use of home programmes and triaging of OT rehabilitation services. Lastly, the researcher made use of the ecology of human performance (EHP) model as a conceptual lens through which to interpret the findings of the study.

Chapter 6: Conclusion and Recommendations

6.1. Introduction

The recommendations and conclusions for the current study that concentrated on the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic as well as the manner in which this has affected their worker roles are discussed in this chapter.

6.2. Conclusions

The current study emphasised the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles. The study found that there were barriers and facilitators to accessing occupational therapy rehabilitation in the course of the COVID-19 pandemic for TBI survivors. The barriers comprised mostly of external factors within the environment, which impacted on TBI survivors' ability to access occupational therapy rehabilitation during the COVID-19 pandemic. The study also highlighted how the scarcity of rehabilitation influenced TBI survivors' quality of life and led to the loss of their worker roles. The facilitators comprised innovative and alternative methods used by occupational therapists throughout the COVID-19 pandemic to ensure that TBI survivors had access to occupational therapy rehabilitation while still adhering to national lockdown restrictions and COVID-19 infection prevention strategies. Furthermore, this study also revealed strategies to improve access and utilisation of occupational therapy rehabilitation services throughout the COVID-19 pandemic.

The external challenges that impacted on TBI survivors' ability to access occupational therapy rehabilitation, served as barriers related to the suspension of rehabilitation services and transport issues. These barriers negatively affected access to rehabilitation services throughout the pandemic. While the individual barriers were related to the loss of the worker role, there was also the fear of contracting COVID-19 at work or when visiting the hospital and the sense

of loss of engagement in occupational roles due to experiencing residual physical, cognitive, and psychological deficits. The current study revealed that the suspension or de-escalation of occupational therapy rehabilitation services throughout the COVID-19 pandemic influenced the participants' quality of life and also had a direct negative influence on the participants' ability to resume their worker roles.

The factors which served as facilitators to accessing occupational therapy rehabilitation were related to the utilisation of telehealth/telemedicine, home programmes and the triaging of occupational therapy rehabilitation services. The current study revealed that telehealth/telemedicine enabled the continuation of occupational therapy rehabilitation services throughout the COVID-19 pandemic, while still adhering to COVID-19 infection prevention protocols and national lockdown restrictions. Similarly, occupational therapists' ability to effectively triage TBI survivors related to severity of TBI and the need for cognitive intervention together with triage related to individuals who are employed in the open labour market aided in possibly retaining worker roles in future.

Using the ecology of human performance (EHP) model as a conceptual lens, this study provided insight on how the COVID-19 pandemic affected access to rehabilitation services, which consequently influenced the TBI survivor as a person, their environment and their participation in meaningful tasks.

In conclusion, the current study found that as much as the COVID-19 pandemic created barriers to accessing occupational therapy rehabilitation, it also encouraged occupational therapists to develop innovative ways of providing rehabilitation to TBI survivors. The study also provided insight into the effectiveness and value of occupational therapy home programmes for TBI survivors. Furthermore, this study revealed that telehealth/telemedicine can be used as an effective method of out-patient occupational therapy rehabilitation in the event that a TBI

survivor is unable to attend an in-person rehabilitation appointment. Overall, this study highlighted the value of occupational therapy rehabilitation services for TBI survivors as it directly influences the participation in meaningful occupations as well as the resumption of the worker role.

6.3. Limitations of the research

The current study had several limitations. Firstly, a few of the participants struggled with articulating themselves throughout the semi-structured interviews, which could be attributed to the residual effects of their TBI. This resulted in the researcher having to probe the participants and clarify certain statements that could have compelled the participants to answer in a specific manner. Secondly, only two of the study participants were female whereas the remaining eight were males. In comparison to the male participants, the two female participants reported a range of unique difficulties (e.g., psychological symptoms and impact on quality of life) that they as women experienced after their TBI whereas most of their male counterparts did not mention this. Thirdly, due to time limitations and COVID-19 infection prevention protocols, some of the interviews were conducted after the participants had completed their medical appointments. This may have had an impact on the quality of the data collected during the interviews as participants could have been experiencing fatigue and thus provided superficial or less meaningful descriptions of their experiences and perceptions. Fourthly, some of the member-checking interviews were conducted virtually and not face-to-face. Therefore, poor internet connectivity may have caused interrupted communication. Another limitation of the study was the fact that objective 3 could not be discussed in detail. This was because none of the participants had been able to adapt to their worker role as a result of the lockdown regulations, the suspension of rehabilitation services, the fear of contracting COVID-19 at work or when attending the medical appointments. Lastly, all the participants came from one hospital, therefore restricting the ability of the study findings to be generalised to other settings.

6.3.1. Recommendations for occupational therapy practice

- Occupational therapists need to ensure that the necessary COVID-19 infection prevention measures are implemented prior to the client being treated to ensure a safe clinical environment for the client and the clinician. This would include doing a COVID-19 screening prior to the treatment session and ensuring that the patient/client attends their treatment session with a mask/facial covering.
- To address the fears associated with contracting COVID-19 when attending medical visits, occupational therapists need to incorporate COVID-19 infection prevention protocols into treatment areas. This would include limiting the number of patients/clients as well as escorts within the treatment area to ensure social distancing and sanitising of surfaces and equipment after treating each patient/client.
- Being willing and able to adapt treatment plans and protocols allows for continuation of occupational therapy services during the COVID-19 pandemic. Therefore, occupational therapists need to adjust scheduling/booking protocols to accommodate TBI survivors who have tested positive for COVID-19 by delaying/postponing an in-person therapy session after 10 days of isolation.
- Occupational therapists need to ensure social distancing during treatment sessions. This could be done by using alternative treatment areas which are big/spacious enough to ensure social distancing.

6.3.2. Recommendations for occupational therapy research

- Future research could explore the experiences and perceptions of the efficacy of telehealth/telemedicine for occupational therapy rehabilitation during the COVID-19 pandemic.

- Occupational therapists should explore the experiences and perceptions of TBI survivors about the effectiveness of home exercise programmes during the COVID-19 pandemic.
- A study could be conducted to explore the experiences and perceptions of TBI survivors about the impact of not adapting to their worker role.
- Occupational therapists ought to conduct a study on the role of the occupational therapist in global pandemics.

6.3.3. Recommendations for traumatic brain injury programme development

- Occupational therapists should consider prioritising cognitive intervention or make cognitive screening and intervention “standard practice” for TBI survivors.
- All members of the multidisciplinary team should collaborate and develop a holistic out-patient treatment programme for TBI survivors during a global pandemic.
- Through the use of triage systems, occupational therapists can ensure continuation of rehabilitation services and prioritisation of employed patients/clients in order to retain employment after TBI.
- Occupational therapists can ensure continuation of rehabilitation services during the pandemic by using telehealth/telemedicine techniques such as: social media platforms (i.e. Whatsapp) to send videos of OT intervention (i.e., wheelchair transfers) and home programmes for cognitive intervention.

6.3.4. Recommendations for policymakers

- To ensure the continuation of rehabilitation services, occupational therapists should advocate for OT rehabilitation services to continue during the COVID-19 pandemic as OTs have a vital role in the rehabilitation of TBI survivors in order for them to resume their worker roles.

- Based on the findings of the current study it is evident that the suspension of rehabilitation services during the COVID-19 pandemic had a significant impact on TBI survivors' quality of life. Owing to this, policies regarding the suspension of out-patient rehabilitation services during a global pandemic should be reviewed or amended to ensure continuation of essential care.
- Based on the findings of the current study it is clear that the lockdown restrictions had a significant impact on the public transport system. Many patients rely on the public transport system in order to travel to their medical appointments. The findings of the current study also revealed that lockdown restrictions in terms of social distancing often prevented caregivers from accompanying TBI survivors to their medical appointments. Therefore, policies regarding the use of disability transport services for TBI survivors should be reviewed or amended and there should be advocacy for transport assistance (i.e., Dial-A-Ride or Healthnet) for TBI survivors who require escorts when travelling to the hospital for medical appointments. This will ensure that TBI survivors are still able to attend their rehabilitation appointments in the event that a family member or friend is unable to escort them to the hospital, thereby adhering to COVID-19 protocols of social distancing.

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Appendices

Appendix 1: Participant semi-structured interview guide

Project title: An exploration of the experiences and perceptions of TBI survivors' about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles.

The following questions are open-ended

1. What are the biggest challenges you have faced when attempting to reintegrate into the open labour market?

Probe: What are the things you find that makes it difficult for you to work?

: What are you currently having difficulty doing in your everyday life?

2. Has the COVID-19 pandemic affected your ability to access rehabilitation?

Probe: Were you able to attend your occupational therapy appointments during the COVID-19 pandemic?

: Were you able to attend your work assessment appointment during the COVID-19 pandemic?

3. How has the suspension/de-escalation of rehabilitation services during the COVID-19 pandemic affected you?

Probe: Do you still experience any physical limitations?

: Do you still experience any cognitive/psychological limitations?

: How has the suspension of rehabilitation services affected your ability to return to work?

4. Please describe the factors that assisted you with accessing rehabilitation during the COVID-19 pandemic?

Probe: How did you access OT services during the COVID-19 pandemic?

5. Please describe to me the things in your life that has helped you return to a job?

Probe: What things or factors in the hospital helped you return to your worker role?

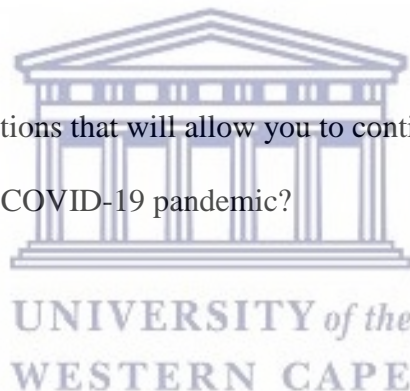
6. What impact did occupational therapy intervention have on your work readiness?

Probe: How did occupational therapy assist you with returning to your worker role?

: Did you have conversations about returning to work with the OT?

7. What suggestions do you have in order to improve access to occupational therapy rehabilitation services?

Probe: Do you have any suggestions that will allow you to continue with your occupational therapy intervention during the COVID-19 pandemic?



Appendix 2: Key informant semi-structured interview guide

Project title: An exploration of the experiences and perceptions of TBI survivors' about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles.

The following questions are open-ended

1. What are the main barriers for a TBI survivor for returning to work?

Probe: What are some of the most common difficulties that TBI survivors face when returning to work?

2. What are the barriers within the institution that have limited access to rehabilitation services during the COVID-19 pandemic?

Probe: What are the challenges, which are outside of your control, that affect gaining access to OT intervention during the COVID-19 pandemic?

: Can you identify the challenges that TBI survivors face in preparation for returning to work?

3. What type of OT intervention is done with TBI survivors in preparation for going back to work?

Probe: Do clients receive both in-patient and out-patient therapy? If yes, please describe what type of treatment is done during in-patient and out-patient therapy.

: Describe how returning to work is a focus for OT intervention in public hospitals?

4. How has the suspension/de-escalation of rehabilitation services during the COVID-19 pandemic affected TBI survivors and their ability to return to their worker roles?

Probe: Has the suspension/de-escalation of rehabilitation services impacted on TBI survivors' ability to return to the open labour market?

5. How have you adapted your occupational therapy intervention for TBI survivors during the COVID-19 pandemic?

Probe: Have you changed the manner in which you do your intervention? If yes, please describe.

6. Do you have any suggestions that could enhance access and utilization of Occupational therapy services during the COVID-19 pandemic?

Probe: Are there any other ways in which OT services can be accessed during the COVID-19 pandemic.



Appendix 3: Ethical approval from the Higher Degrees Committee, University of the Western Cape



UNIVERSITY of the
WESTERN CAPE



10 June 2021

Mrs TL Petersen
Occupational Therapy
Faculty of Community Health Sciences

Ethics Reference Number: BM21/4/6

Project Title: An exploration of the experiences and perceptions of traumatic brain injury survivors about accessing rehabilitation during the COVID-19 pandemic and how this affected their worker roles.

Approval Period: 08 June 2021 – 08 June 2024

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report annually by 30 November for the duration of the project.

Permission to conduct the study must be submitted to BMREC for record-keeping.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'Josias'.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

NHREC Registration Number: BMREC-130416-050

Director: Research Development
University of the Western Cape
Private Bag X 17
Bellville 7535
Republic of South Africa
Tel: +27 21 959 4111
Email: research-ethics@uwc.ac.za

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

Appendix 4: Ethical approval from the Research Ethics Committee, Grootte Schuur Hospital



GROOTE SCHUUR HOSPITAL

Enquiries: Dr Bernadette Eick

e-mail: GSHResearch.Request@westerncape.gov.za

MS TARRYN PETERSEN

E-mail: tarryn.petersen@westerncape.gov.za

Dear Ms Petersen

RESEARCH PROJECT: An Exploration of the experiences and perceptions of Traumatic Brain Injury Survivors about Accessing Rehabilitation During Covid-19 Pandemic and How this affected worker roles

Your recent letter to the hospital refers.

You are granted permission to proceed with your research, which is valid until **08 June 2024**.

Please note the following:

- a) Your research may not interfere with normal patient care.
- b) Hospital staff may not be asked to assist with the research.
- c) **Confidentiality must always be maintained.**
- d) No additional costs to the hospital should be incurred as indicated in your Annexure 2 i.e. Lab, consumables or stationery. **If access to TRACK Care/NHLS is required, kindly attach our letter of approval to the application form and approach Information Management to assist with data.**
- e) **No patient folders may be removed from the premises or be inaccessible.**
- f) Please provide the research assistant/field worker with a copy of this letter as verification of approval.
- g) **Should you at any time require photographs of your subjects, please obtain the necessary indemnity forms from our Public Relations Office (E45 OMB or ext. 2187/2188).**
- h) Should you require additional research time beyond the stipulated expiry date, please apply for an extension.
- i) Please discuss the study with the HOD before commencing.
- j) Please introduce yourself to the person in charge of an area before commencing.
- k) On completion of your research, please forward any recommendations/findings that can be beneficial to use to take further action that may inform redevelopment of future policy / review guidelines.
- l) Please contact Michelle Riley (Patient Fees) at ext. 2276 to ascertain if there will be charges for conducting the Research and to obtain a quote or to discuss charges
- m) **Kindly submit a copy of the publication or report to this office on completion of the research.**
- n) **At no time should any posters encouraging patients to partake in research, be displayed within a clinical area.**
- o) **Please adhere to ALL COVID-19 regulations and Grootte Schuur Hospital policies.**

I would like to wish you every success with the project.

Yours sincerely

DR BERNADETTE EICK
CHIEF OPERATIONAL OFFICER

Date: 20 July 2021

C.C. Mr. L. Naidoo, Mrs. R. Pillay

G46 Management Suite, Old Main Building,
Observatory 7925
Tel: +27 21 404 6288 fax: +27 21 404 6125

Private Bag X,
Observatory, 7935
www.westerncape.gov.za/health

Appendix 5: Participant consent form

Title of Research Project: An exploration of the experiences and perceptions of traumatic brain injury survivors about accessing rehabilitation services and adapting to their worker roles during the COVID-19 pandemic.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

- I agree to be audiotaped during my participation in this study.
- I do not agree to be audiotaped during my participation in this study.

Participant's name.....

Participant's signature.....

Date.....



Appendix 6: Key informant consent form

Title of Research Project: An exploration of the experiences and perceptions of traumatic brain injury survivors about accessing rehabilitation services and adapting to their worker roles during the COVID-19 pandemic.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

- I agree to be audiotaped during my participation in this study.
- I do not agree to be audiotaped during my participation in this study.

Key informant's name.....

Key informant's signature.....

Date.....



Appendix 7: Participant information sheet

Project Title: An exploration of the experiences and perceptions of traumatic brain injury survivors about accessing rehabilitation services and adapting to their worker roles during the COVID-19 pandemic.

What is this study about?

This is a research project being conducted by an occupational therapy student who is completing her masters' degree at the University of the Western Cape. We are inviting you to participate in this research project because you have previously undergone rehabilitation intervention and have not been reintegrated back in the workplace since your traumatic brain injury. The purpose of this research project is to explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how it affected their worker roles.

What will I be asked to do if I agree to participate?

You will be asked to answer questions based on your perception of accessing occupational therapy intervention during the COVID-19 pandemic with a specific focus on how this has affected your worker role. The questions will be in the form of semi-structured interviews which will be 30-45 minutes and at a place convenient for both the researcher as well as the participant.

Would my participation in this study be kept confidential?

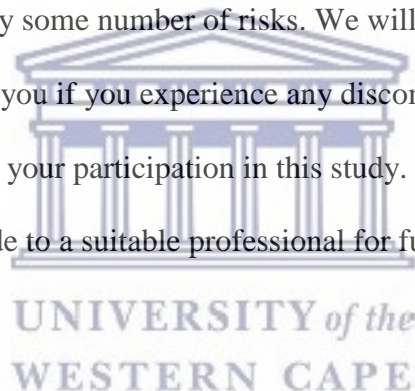
The researcher undertakes to protect your identity and the nature of your contribution. To ensure your anonymity, through the use of an identification key, the researcher will be able to link your semi-structured interview to your identity; and only the researcher will have access to the identification key.

To ensure your confidentiality, the data will be stored in a password protected file on the researcher's and a supervisor's computer. Data will be stored for five years and on completion on this date, the data will be permanently erased. If we write a report or article about this research project, your identity will be protected.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning any neglect or potential harm to you or others. In this event, we will inform you that we must break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

There may be some risks from participating in this research study. All human interactions and talking about self or others carry some number of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.



What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the importance of occupational therapy intervention for TBI survivors during the COVID-19 pandemic with regards to reintegration back into the open labour market. We hope that, in the future, other people might benefit from this study through improved understanding of reintegration back into a worker role after participating in occupational therapy rehabilitation.

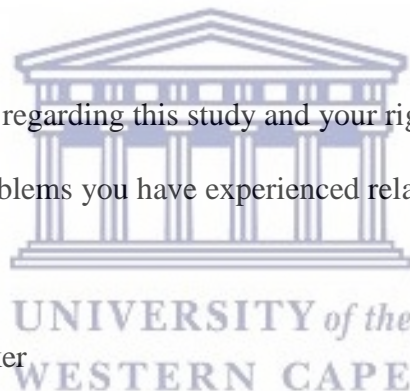
Do I have to be in this research, and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If the researchers have concern about the mental health status of the participant, i.e. experiencing a psychosis or relapse, the participants will be excluded from the study

What if I have questions?

This research is being conducted by Tarryn Lee Petersen and Professor Mogammad Shaheed Soeker from the Occupational Therapy Department at the University of the Western Cape. If you have any questions about the research study itself, please contact Tarryn Lee Petersen at tarrynlee21@gmail.com. Alternatively, contact Prof M. Shaheed Soeker at: 021 959 9339 or at msoeker@uwc.ac.za.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:



Prof Mogammad Shaheed Soeker

Head of Department: Occupational Therapy

University of the Western Cape

Private Bag X17

Bellville 7535

msoeker@uwc.ac.za

Prof Anthea Rhoda

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za

Biomedical Research Ethics Committee

University of the Western Cape

Email: research-ethics@uwc.ac.za

Tel: (021) 959-4111



Appendix 8: Key informant information sheet

Project Title: An exploration of the experiences and perceptions of traumatic brain injury survivors about accessing rehabilitation services and adapting to their worker roles during the COVID-19 pandemic.

What is this study about?

This is a research project being conducted by an occupational therapy student who is completing her master's degree at the University of the Western Cape. We are inviting you to participate in this research project because you have previously undergone rehabilitation intervention and have not been reintegrated back in the open labour market since your traumatic brain injury. The purpose of this research project is to explore the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how it affected their worker roles.

What will I be asked to do if I agree to participate?

You will be asked to answer questions based on your experience and perception about TBI survivors accessing occupational therapy intervention during the COVID-19 pandemic and how this has affected their worker roles. The questions will be in the form of semi-structured interviews that will be 30-45 minutes in duration and will be conducted at a place convenient for both the researchers as well as the participant.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. To ensure your anonymity, through the use of an identification key, the researcher will be able to link your semi-structured interview to your identity; and only the researcher will have access to the identification key.

To ensure your confidentiality, the data will be stored in a password protected file on the researchers and a supervisor's computer. Data will be stored for five years and on completion on this date, the data will be permanently erased. If we write a report or article about this research project, your identity will be protected.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning any neglect or potential harm to you or others. In this event, we will inform you that we must break confidentiality to fulfil our legal responsibility to report to the designated authorities.

What are the risks of this research?

There may be some risks from participating in this research study. All human interactions and talking about self or others carry some number of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the importance of occupational therapy intervention for TBI survivors during the COVID-19 pandemic with regards to reintegration back into the open labour market. We hope that, in the future, other people might benefit from this study through improved understanding of reintegration back into a worker role after participating in occupational therapy rehabilitation.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time.

What if I have questions?

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Head of Department: Occupational Therapy

University of the Western Cape

Private Bag X17

Bellville 7535

msoeker@uwc.ac.za

Prof Anthea Rhoda

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za



Biomedical Research Ethics Committee

University of the Western Cape

Email: research-ethics@uwc.ac.za

Tel: (021) 959-4111

This research has been approved by the University of the Western Cape's Research Ethics Committee. (REFERENCE NUMBER: BM21/4/6)

Chapter One: Overview of Study

This study focussed on exploring the experiences and perceptions of TBI survivors about accessing rehabilitation during the COVID-19 pandemic and how this has affected their worker roles. Prior to the COVID-19 pandemic, 2014 statistics indicated a high prevalence of TBI in South Africa, furthermore the return-to-work rate for TBI survivors have been compounded by factors such as injury severity, pre-injury educational and occupational status, and age at injury. The COVID-19 pandemic resulted in the de-escalation of non-essential out-patient services in order to assist with curbing the spread of the virus. As an occupational therapist at the work assessment unit at Groote Schuur Hospital, it became evident that many TBI survivors had been affected by the suspension of rehabilitation services to the extent that they either have not been able to return to work yet or they have been terminated due to ill health. This motivated

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