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Accessibility of resource constrained urban communities for female wheelchair users in the South African context

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ACCESSIBILITY OF RESOURCE-CONSTRAINED URBAN COMMUNITIES FOR FEMALE WHEELCHAIR USERS IN THE SOUTH AFRICAN CONTEXT

Sydney Edwards

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Occupational Therapy.

Johannesburg

2022

Declaration

I, Sydney Edwards, hereby declare that this research report is my own work. It is being submitted for the degree of Masters of Science in Occupational Therapy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

Signature 

6th Day of May, 2022.

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Dedication

To my husband, my biggest support, and guiding light.

Acknowledgments

Thank you to my supervisors, Denise Franzsen and Faye Jackson, for the support and advice throughout this journey. You were both with me every step of the way, and I am truly grateful for all the time and effort you put in to assist me.

This study would not have been possible without the assistance from the Bona Lesedi Disability Centre manager, Aggripa Thabede, who generously offered his time to assist in the data collection process.

A special thank you to the participants' of the study who shared their experiences and offered valuable insight into the realities of people with disabilities in South Africa.

Abstract

Background: Wheelchair users living in resource-constrained communities are faced with many physical, social and attitudinal barriers in their environment, which impacts on their access to and participation in their communities and society as a whole. Although legislation regarding access exists in South Africa, poor implementation of appropriate accessibility standards has been noted.

Methodology: This study followed a descriptive, explorative qualitative design to guide the exploration of female wheelchair users' experience of accessibility in the physical and social environment. Purposive sampling was applied, and five participants who matched the inclusion criteria were included in the study. Inductive data analysis was done using descriptive and *in vivo* codes. Validity strategies of trustworthiness, authenticity and credibility were applied throughout.

Results: The following three themes emerged from the data: "Not able to go where I want to go", "With others, I can go wherever I want to go", and "Attitude towards disability impacts participation".

Conclusion: The predominant barriers to access for wheelchair users in resource-constrained communities exist in the physical environment. Structural challenges related to not having enough space for the wheelchair, poor quality of terrain, and the absence of ramps to enter facilities or buildings were found to be some of the main limiting factors to accessibility. The social environment, although not without its own challenges such as negative community attitudes, offers more facilitators to access. Family support was found to be a vital facilitator to overcoming barriers in the physical environment, and to promoting occupational performance. Personal factors of the individual such as coping strategies and level of acceptance of disability was also found to influence the individual's access and participation.

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Operational Definitions

Resource-constrained context

A resource-constrained context refers to an environment that lacks economic, social and technical resources. Examples of these resources could be infrastructure, purchasing power, financial activities and access to education. In a discussion paper published by UNICEF, Fajth and Holland (2007) stated various factors that could consider a context resource-constrained. They are the following; a lack of adequate shelter with many persons staying in one shelter, lack of access to sanitation facilities, poor access to safe drinking water, lack of information, which constitutes a lack of access to radio, television, newspapers or computers, a lack of food and a lack of educational and health facilities.

Accessibility

The United Nations, (2015) defines accessibility as any space, place, item or service that can be easily approached, reached, entered, exited, interacted with, understood or otherwise used by people with varying disabilities. Accessibility is multifaceted and understood to entail the interaction between the physical and social environment, as well as the personal factors of the individual such as socio-economic status and level of mobility (Iwarsson & Stahl, 2003; Brovarone & Cotella, 2020). Accessibility describes a level of coherence between the individual's capabilities and mobility needs, and the demands of the environment (Lid & Solvang, 2016).

Environmental barriers:

Physical

Physical environmental barriers refer to the structural aspects and design features of a place, space or service which restrict access and participation of people with varying abilities and mobility needs (Iwarsson et al., 2004; Hammel et al., 2015; Harris, Yang & Sanford,

	2015). Examples of physical environmental barriers include: Buildings without a wheelchair accessible bathroom or elevator, places with only steps and no ramps, absence of pedestrian sidewalks, curbs or ramps which are too steep, and inaccessible design of public transportation vehicles.
Social	Social environmental barriers refer to the attitudinal factors and cultural beliefs related to disability in the community and society as a whole (World Health Organisation and the World Bank, 2011; Hussey, MacLachlan & Mji, 2017). Examples of social environmental barriers include: negative community attitudes and behaviours as well as stigma, discrimination and misperceptions of people with disabilities.
Universal design	Universal design refers to the design of products and environments which, to the greatest extent possible, is usable by all regardless of age, ability or status (Mace, Hardie & Place, 1991; Connell et al., 1997; Zajac, 2016). The foundations of universal design include barrier-free and accessible design approaches which considers the needs of all people (Persson et al., 2014).

Abbreviations

CMOP – Canadian Model of Occupational Performance

CRPD- Convention on the Rights of Persons with Disabilities

ICF - International Classification of Functioning, Disability, and Health

INDS – Integrated National Disability Strategy

LMIC - Low Middle Income Country

NRP – National Rehabilitation Policy

PEO – Person-Environment-Occupation model

PWD - People with disabilities

RAF – Road Accident Fund

RDP - Reconstruction and Development Programme

WHO – World Health Organisation

WWD - Women with disabilities

CHAPTER 1: INTRODUCTION

1.1 Background to study

In 2007, South Africa signed the United Nation's Convention on the Rights of Persons with Disabilities (CRPD), undertaking to uphold the rights of all individuals living with disability. Within this convention, disability is described as the interaction between the person and the attitudinal and environmental barriers which influence their opportunity to fair and equal participation in their communities and society as a whole (United Nations, 2006; World Health Organisation and the World Bank, 2011). Therefore, the experience and degree of disability is not seen to be the result of the impairments from illness or injury (World Health Organization, 2001; World Health Organisation and the World Bank, 2011), but rather as a complex, dynamic relationship between the individual and the physical, social, attitudinal and political environment (Whiteneck et al., 2004). This understanding is reflected within the International Classification of Functioning, Disability and Health (ICF) framework, where environmental factors are also seen as determinants of the individual's disability outcomes (Whiteneck et al., 2004). The World Health Organisation (WHO) and the World Bank further support this construct and state that "inaccessible environments create disability by creating barriers to participation and inclusion" (World Health Organisation & the World Bank, 2011, pg 4).

According to the 2011 census on disability, 7.5 % of the South African population were living with disability which increased to 7.7% in the community survey of 2016, with 2.3 % of the population being reliant on a wheelchair for mobility (Statistics South Africa, 2014, 2016a,b). This means that approximately 1.3 million people in South Africa or 1:44 people use a wheelchair and may have difficulty accessing their home and community environments. Individuals living with disability in under-resourced communities are faced with more environmental challenges that influence access to education and employment, and hence have a cascading effect on their overall socio-economic development (Venter et al., 2002). This supports the reciprocal connection found between disability and poverty (i.e. disability increasing poverty and poverty increasing disability) which is predominantly noted among under-resourced groups within developing countries (Venter, Rickert & Maunder, 2007; World Health Organisation and the World Bank, 2011). It is clear that poverty and disability need to be understood within the context of a multidimensional or livelihoods approach (Graham et al., 2010), which recognises that factors related to poverty

constrain the ability of individuals living with a disability or chronic illness and that disability or chronic illness constrains the ability of a person to more effectively deal with situations of poverty.

To alleviate some of the environmental barriers faced by those dependent on wheelchairs for mobility, the concept of universal design stipulates that all buildings, products, and environments should be designed in a way that they are accessible to all individuals with or without a disability (Mace, Hardie & Place, 1991; Zajac, 2016; Chiwandire & Vincent, 2017). Universal design is made up of seven guiding principles; namely; 'equitable use', 'flexibility in use', 'simple and intuitive', 'perceptible information', 'tolerance for error', 'no physical effort', and 'size and space for approach and use' (Mace, Hardie & Place, 1991; Connell et al., 1997; Zajac, 2016). People living with a disability have the right to an accessible built environment (e.g. public buildings, roads, pavements, transport services) as having equal opportunity to access these spaces is essential to not only their participation in life, but their overall quality of life (Banda-Chalwe, Nitz & De Jonge, 2014). The principles of universal design are unfortunately not applied within all South African settings and environments, with many wheelchair users being restricted from accessing their communities, educational institutions, public buildings and work places and hence possible employment opportunities (Chiwandire & Vincent, 2017). It is perhaps through the consistent application of these principles that the problem of accessibility may be addressed, with the overall aim of promoting participation in and contribution to the communities of all individuals.

Another issue which has implications for accessibility in South Africa is wheelchair prescription. Due to low resources and limited funding, wheelchairs prescribed through the health department or by donations are often inappropriate in terms of the fit, durability, and suitability for the individual's environment (Mcintyre, 2010; Visagie, Scheffler & Schneider, 2013; Visagie, Duffield & Unger, 2015). Possessing an appropriate wheelchair does not automatically ensure environmental access, and cannot be considered as the only solution in promoting accessibility, particularly in resource-constrained communities. While the prescription of a suitable wheelchair aims to assist in promoting the individual's access and overall quality of life, this does not necessarily equate to functionality. The appropriate fit between the person, the wheelchair, the environment as well as the individual's occupations is what promotes optimal functioning and participation (Visagie, Scheffler & Schneider, 2013). Furthermore, along with the importance of wheelchair suitability, Venter et al., (2002) highlighted the impact of poor accessibility within the public transport system (e.g. minibus taxis) where physical, financial, and attitudinal barriers limit wheelchair users access to and participation in the community.

This study explores accessibility within under-resourced communities by examining the experiences of female individuals who use wheelchairs as their primary mode of mobility.

1.2 Problem statement

South African research is limited to rural settings, with the focus predominantly on access to health care (Grut et al., 2012; Mji et al., 2017; Vergunst et al., 2017). With the notable exception of Hussey, MacLachlan and Mji, (2017), there appears to be a limited body of knowledge into the experiences of accessibility for wheelchair users within their urban communities and the effect this may have on not only their access to community resources and social participation, but also on opportunities for socio-economic development. This study aimed to contribute literature on the factors influencing accessibility in all parts of urban communities within the South African context.

1.3 Purpose of study

The purpose of this study was to explore the factors influencing accessibility for wheelchair users living in an under-resourced urban community within the South African context. The purpose was to explore the experiences and perceptions of these individuals, both with regards to the physical environment as well as with community attitudes towards disability.

1.4 Research question

What are the experiences and perceived factors influencing accessibility in under-resourced urban communities for wheelchair users in Johannesburg?

1.5 Research aim

To explore the experiences and perceptions of wheelchair users regarding accessibility of under-resourced urban communities in Johannesburg

1.6 Objectives of the research

- To explore the experiences and perceptions of wheelchair users regarding:
    - Physical - environmental factors influencing accessibility in under-resourced urban communities in Johannesburg.
    - Social - Community attitudinal factors influencing accessibility in under-resourced urban communities in Johannesburg.

1.7 Theoretical framework for the study

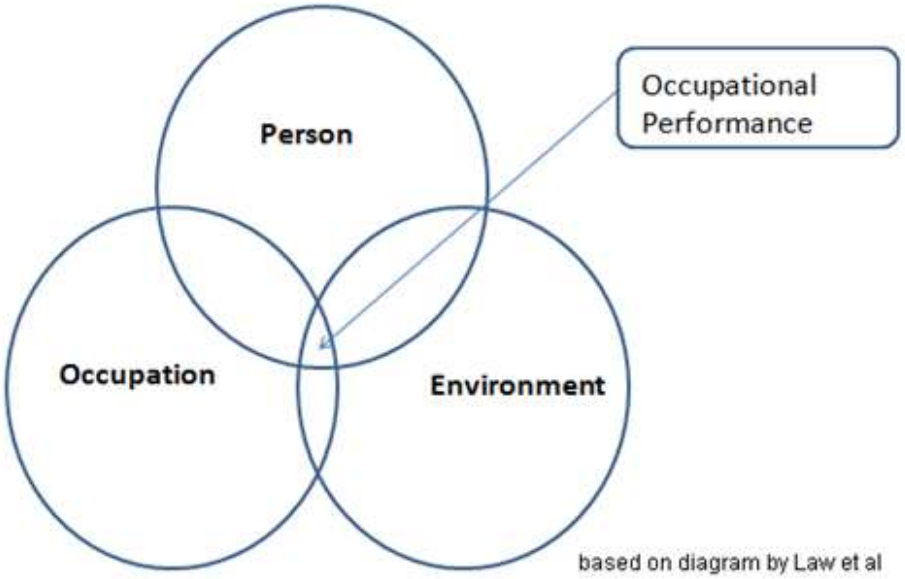


Figure 1.1 Representation of the Person-Environment-Occupation Model

This study incorporated the Person-Environment-Occupation (PEO) Model when analysing and interpreting findings (Law et al., 1996). The PEO illustrates the interconnected nature of the person (e.g. health, mobility, and self-concept), environment (e.g. physical, social, and socioeconomic), and occupation (e.g. work, leisure, and home management) in shaping occupational performance (Law et al., 1996; Strong et al., 1999). The transactional relationship between the person and environment is highlighted in this model, and for the purposes of this study was used to demonstrate the inhibitory and/or supportive role the environment can play in a wheelchair user's participation and integration in daily life. Within this study, particular attention was given to the concept of accessibility within the physical and social environment, and the many factors which may be a barrier or facilitator to the participants' experience of accessibility in their daily lives. The presence or absence of barriers with regards to the environmental and personal factors can impact accessibility and hence, a person's experience of disability and functioning or occupational performance in different occupations. Engagements in occupations for the purpose of this study include activities related to ADLs including self-care, health maintenance, safety and emergency management, community and functional mobility as well as social participation, education, work and leisure activities (American Journal of Occupational Therapy, 2020).

1.8 Justification of the study

This study contributes to the limited body of research within the South African context as well as provides a foundation for the need to identify suitable accessibility solutions in under- resourced communities. This study provides insight into wheelchair users' experiences and perceptions with regards to disability, and highlights the poor implementation of accessibility standards within the South African context. This study provides evidence for the need to improve and implement policies and regulations on accessibility within low-resourced communities. This study will be disseminated through publication in a peer-reviewed journal.

1.9 Layout of Research report

The study was organised and outlined as follows:

Chapter 1: Overview of the study

Chapter 2: Literature review

Chapter 3: Research design and methods

Chapter 4: Results

Chapter 5: Discussion

Chapter 6: Conclusion and Recommendations

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This literature reviews research focusing on the concept of accessibility, and more specifically it will consider literature related to the accessibility for wheelchair users in under-resourced communities in the South African context. Literature on accessibility from both low middle income countries (LMIC), and high income countries will be included within this review in order to offer a broader perspective on the disparities in accessibility standards, as well as the barriers or facilitators faced by people living with disabilities both within their home and community. The databases accessed were Elsevier, Wiley, Research Gate, SagePub and NCIB. The key words used were “accessibility”, “accessible”, “wheelchair users”, “people with disabilities”, “physical environment”, “social environment”, “community attitudes”, and “resource-constrained communities”.

2.2 Models and frameworks of disability

Accessibility for those with disabilities living in resource-constrained contexts is influenced by many physical, social and attitudinal factors which may differ from the developed world (Graham et al., 2010; Maunder et al., 2015). In many LMIC, addressing the needs of people with disability is still seen in a welfare framework and as the responsibility of the state and non-governmental organisations; rather than coming from a human rights perspective (Venter et al., 2002; Maart et al., 2007; Venter, Rickert & Maunder, 2007). Disability in these counties may be understood within the medical model, which places the emphasis on the individual’s diagnosis, and physical or cognitive impairments as the primary reason for limited participation in their daily activities (World Health Organization, 2005; Bromley, Matthews & Thomas, 2007; Persson et al., 2014). This medical model perspective understands disability as an individual problem where the disability needs to be ‘fixed’ or overcome, rather than acknowledging the effects that factors external to the individual have on their access to and participation in society (Roulstone & Prideaux, 2009; Retief & Letšosa, 2018).

In contrast, the social model recognizes the disabling effects of society, rather than simply defining the individual as the sum of their impairments (World Health Organization, 2002; Bromley, Matthews & Thomas, 2007; Retief & Letšosa, 2018). The concept of disability is therefore understood holistically as it acknowledges the reciprocal relationship between the individual and their environment(s). The International Classification of Functioning, Disability and Health (ICF)

provides an integrative understanding of the medical and social model perspectives by depicting disability and functioning as an outcome of the reciprocal interaction between the individuals health conditions (i.e. disease, disorders, or injuries) and contextual factors (i.e. environmental and personal factors) (World Health Organization, 2002; Maart et al., 2007). Ultimately, the ICF perspective acknowledges disability as being a universal experience rather than simply a problem of the minority population as all human beings are understood to at some point in their lives experience a degree of disability (Mji et al., 2017).

Whiteneck, Harrison-Felix, et al. (2004) suggest physical, attitudinal, and policy barriers to have a greater impact in determining the activity limitations, participation restrictions and the development of secondary complications in those with disabilities than an individual's underlying health conditions or impairments. The exclusion of people with disabilities which occurs as a result of these physical and attitudinal barriers is understood to create disability, rather than the condition itself (Chappell & Johannsmeier, 2009). This is also proposed by the adjusted 'EquitAble' conceptual framework (Mji et al., 2017), where individuals with activity limitations (e.g. disabilities, and/or low socio-economic status) interact with contextual, system, community and personal factors which can either act as barriers or facilitators to their ability to access public and other services. Brien et al. (2002) also recognised the influence of the environment in creating disability rather than solely the individual's physical impairments. The study described four elements of the environment, namely; physical, social, institutional, and cultural; as having equal possibility of constraining or enabling effects on the individual, as well as the influence this has on the meaning that is attached to particular places or spaces.

The human rights model of disability is closely linked to the social model in that it acknowledges the role society plays in creating disability; however, it differs in that it encompasses the first and second generation human rights (i.e. civil and political as well as economic, social and cultural) (Retief & Letšosa, 2018). This perspective recognises that disability rights are human rights, and provides a theoretical framework for disability policy formulation and implementation which, at its core, focuses on the human dignity of all people (Retief & Letšosa, 2018). The World Health Organisation and the World Bank (2011) also describe disability as being a human rights issue due to people with disabilities experiencing inequalities in access to resources or opportunities, violations of dignity and denial of autonomy. The accessibility of an individual's environment (physical, sociocultural, political, and economic) can either exacerbate or reduce the effects of disability by restricting or enabling participation (Hammel et al., 2015). Thus, disability rights and human rights can be understood as being one and the same, and by ensuring accessibility in all

spheres of our communities and society as a whole, we are truly upholding the basic human rights of all people.

2.3 Effect of disability on women

The South African 2011 Census and the 2016 Community Survey revealed that disability is more prevalent among females (8,9%) compared to males (6,5%) (Statistics South Africa, 2014, 2016b). Mitra, Posarac and Vick, (2011) and Mitra and Sambamoorthi, (2014), also demonstrated this to be the case and highlighted this to be a global occurrence. Disability and poverty are closely connected, and when coupled together with other social disadvantages such as race and gender, a far greater experience of marginalization occurs (Emmett, 2006). As a result of the intersection between disability and gender women with disabilities are described to face a double disadvantage of sexism and ableism (Brown & Moloney, 2019; Maroto & Pettinicchio, 2019). Supporting evidence of this unfortunate reality was also provided in Statistics South Africa, (2014). Black women with disabilities, however, experience a triple oppression due to gender, race and disability, and are thus described by Naidu et al. (2005) to be the most marginalized group in society. This is particularly noticeable in the workplace with evidence showing women, predominantly black women with disabilities, to be less likely to receive an education, be employed, and to earn a lower income (Moodley & Graham, 2015; Naami, 2015).

2.4 Accessibility

On a basic level, accessibility is understood in terms of structural design or environmental demands (Iwarsson & Stahl, 2003; Persson et al., 2014), however, literature has revealed that the principle of accessibility is multi-layered and entails not only the physical environment. Brovarone and Cotella (2020, pg 2) describes accessibility to be “the multiple interactions between the spatial characteristics of territories, their socio-economic structure, and the mobility of their inhabitants”. The paper by Iwarsson and Stahl (2003) also described accessibility as a multifaceted concept with different dimensions. These include; accessibility to the physical environment, to information or to societal activities and services (Iwarsson & Stahl, 2003). The complexity of accessibility is further highlighted by the description of different levels according to sociological terms. Iwarsson and Stahl (2003) describe three levels of accessibility, the micro level (i.e. immediate home environment), the meso level (i.e. neighborhood or public facilities such as transport), and lastly the macro level (i.e. society, nation- or world-wide).

Babamohamadi, Negarandeh and Dehghan-Nayeri (2011) explored the barriers and facilitators to accessibility in participants with a SCI and identified barriers from two of these three accessibility levels. Firstly, 'lack of facilities and accessibility of surroundings' which links to the meso level of accessibility, and secondly 'lack of societal acceptance or support' linking to the macro level. Ultimately, these barriers resulted in the individuals being restricted from opportunities for social interaction, community reintegration, and the acquisition of overall autonomy. Similarly, in the study by Venter, Rickert and Maunder (2007) which focused on mobility challenges faced by people with disabilities in LMIC (South Africa, Mozambique, Malawi, and India), three main accessibility barriers were identified. These were structural (e.g. infrastructure/wheelchair design) at a meso level, and societal (e.g. disability awareness) at a macro level as well as the effects of this on the individual resulting in not only physical barriers to mobility but also psychosocial barriers (e.g. low self-esteem and social isolation).

Thus, accessibility should be understood as a multifaceted concept involving the interplay and cumulative effect between the physical, social and psychological aspects of the individual and their environment. Accessibility within these many levels of society needs to be ensured to uphold the right of all people to have equal and fair opportunity to be productive participants of society (Iwarsson & Stahl, 2003; Lid & Solvang, 2016).

2.4.1 Physical accessibility

Accessibility within a physical environment considers the interaction between the individual or group's functional capacity and the physical environment's design and demands. This highlights accessibility as an objective measure of the compliance to official requirements and standards for those responsible for designing and building public spaces (Iwarsson & Stahl, 2003; Iwarsson et al., 2004). Traditional design previously created spaces that typically only allowed access to non-disabled populations; resulting in exclusion of individuals who deviate from the societal constructed 'norm' such as people with disabilities (Brien et al., 2002; Iwarsson & Stahl, 2003). This usually results, as an after-thought, in the addition of accessibility standards to existing inaccessible buildings which is an ineffective and costly process (Mace, Hardie & Place, 1991; Iwarsson & Stahl, 2003; Zajac, 2016).

The concept of 'universal design' introduced by Mace, Hardie and Place, (1991) has however provided a contrasting perspective which focuses on social inclusion, rather than exclusion, by applying the principle that there is only one population comprising of people with diverse functional abilities (Mace, Hardie & Place, 1991; Iwarsson & Stahl, 2003; Persson et al., 2014). Universal

design specifically refers to the design of products and environments which fulfil the needs of all people from the beginning, without requiring adaptation or specialised design at a later stage (Persson et al., 2014; Zajac, 2016); whereas the concept of usability, according to Iwarsson and Stahl, (2003) implies that a person should be able to use the environment on equal terms with other citizens. Thus, if environments, services and products are well thought-out in terms of universal design and usability, physical accessibility will truly be promoted regardless of age, status or functional abilities (Persson et al., 2014).

The United Nation's Convention on the Rights of Persons with Disabilities (CRPD) takes a human rights approach to accessibility and describes this construct in articles 19 to be the right to "living independently and being included in the community" (United Nations, 2006, pg 13; World Health Organisation & the World Bank, 2011, pg 138). With South Africa being a signatory of the CRPD, it is the state's duty to implement and apply the recommended standards which includes 'accessibility' as one of the general principles outlined in Article 3 of the CRPD (United Nations, 2006; World Health Organisation and the World Bank, 2011). The 2008 South African National Buildings Regulations and Building Standard Act (Act No. 103 of 1977) (Keuter, 2008) provides guidelines for designing and building new infrastructure, with the outcome being that all individuals, with or without a disability, are granted fair and equal access. Along with this, the 2001 Department of Public Works (South Africa) *Standard Electrical, Mechanical and Architectural Guideline for the Design of Accessible Buildings (Facilities for Disabled Persons)* (Department of Public Works, 2001), not only outlines the processes for the design of buildings, but includes standards to be applied to transport, mobility routes, as well as communication networks within the buildings. These guidelines link well to the construct of universal design, with each providing input towards promoting optimal accessibility for all. However, although accessibility guidelines have been clearly set out, South Africa has yet to fully comply to and successfully implement the strategies and standards set out in the convention (Hussey, MacLachlan & Mji, 2017).

2.4.2 Societal accessibility

Kitchin and Law, (2001) describe access as being a political and social issue rather than simply a spatial design problem because people with disabilities do not have the same rights in comparison to the general population in being able to access public spaces. Accessibility within society is impacted by the lack of awareness, negative attitudes and ignorance of the difficulties faced by people with disability. Hussey, MacLachlan and Mji (2017) suggest that attitudinal barriers play a significant role, and are central to and interconnected with the political, financial, physical, health system and communication barriers. The impact of unsupportive societal attitudes

and negative perceptions on the practicality and quality of community engagement of individuals with a spinal cord injury was also identified in the study by Barclay et al. (2016). Attitudinal barriers related to the knowledge, awareness and attitude towards disability are seen to be carried over into all areas of service provision and social interaction. Along with the stigma of disability, these challenges, often result in individuals staying at home rather than accessing health care facilities or opportunities for social participation in the community (Vergunst et al., 2015). Ultimately, as described by Whiteneck, Meade, et al. (2004), environmental barriers significantly impact on overall life satisfaction.

The influence of community attitudes was also found to be a prominent barrier to accessing society within the study by Aldersey et al.(2018) where participants reported they avoided leaving the house to access public places, educational institutions or employment opportunities due to the stigma experienced with regards to people with disabilities. The impact that attitudes have on a disabled person's participation in physical activity was also supported by van der Ploeg et al., (2004). Additionally, in the Ugandan-based study by Seymour, Geiger and Scheffler (2019), attitudinal barriers were cited as a barrier to mobility with participants describing many people from the Northern and Western regions being too fearful to access their health care facilities due to negative attitudes and behaviours directed towards them. Furthermore, it was found that individuals with mobility challenges preferred to not participate in activities in order to avoid having to request assistance or 'inconveniencing' others (Seymour, Geiger & Scheffler, 2019). Thus, this study revealed that the lack of security and vulnerability experienced by people with disability is not only the result of infrastructural barriers, but also the consequence of abuse, discrimination and marginalisation.

In order to successfully apply the CRPD within the South African setting, Hussey, MacLachlan and Mji (2017) proposes that perhaps the solution lies in not only correcting physical barriers, but in combatting attitudinal barriers associated with the cultural beliefs and negative perceptions of people with disabilities. Accessibility standards and the application thereof should also be understood within specific contexts, especially in considering the appropriateness of application within high income countries versus that in low-resourced settings, with each context facing their own unique challenges. The Universal Declaration of Human Rights (United Nations, 1948) highlights the fact that health care, education, and employment cannot be considered equitable if it is less accessible to some sectors of society (Seymour, Geiger & Scheffler, 2019). The World Health Organisation and the World Bank, (2011) describe disability awareness and challenging negative attitudes as being the initial steps towards making environments more accessible. They

also suggest that the development and successful implementation of accessibility strategies may need to be applied in stages while keeping in mind the restrictions of affordability, competing priorities, availability of technology and knowledge, and cultural differences experienced within a country (World Health Organisation and the World Bank, 2011). Therefore a 'one-size fits all' approach cannot be taken when defining strategies to improve and promote accessibility, and perhaps this requires LMIC to adapt accessibility standards to suit the needs of their context.

2.5 Factors impacting on the accessibility of people with disability in under-resourced communities

Although legislation regarding access for people with disability exists (Constitutional Assembly, 1996; Department of Justice and Constitutional Development, 2003; United Nations, 2006; Keuter, 2008; Department of Social Development, 2016); low-resourced communities in South Africa still predominantly experience the consequences of poor accessibility within their environments. Research in South Africa indicates accessibility is impacted at micro, meso and macro levels. The vulnerability status of people with disabilities is affected by the many multidimensional aspects of their lived experience, and more specifically, the reciprocal relations between their personal impairments, poverty, poor social support, and inadequate access to services (Mji et al., 2017). Therefore, as demonstrated within the PEO model and the ICF, one cannot separate the individual from their context and environment, nor can we ignore the effect that comes as a result of poor access to services and the impact this has on the marginalised population of people with disabilities. These challenges are exacerbated by the geographical location, access to healthcare, high transport costs as well as by their impoverished status impacted by access to education and employment, which affects their social and economic capability to overcome these barriers to participation and inclusion (Naidoo, Van Wyk & Joubert, 2017).

2.5.1 Geographical location

Maart et al., (2007) explored the environmental barriers experienced by urban and rural disabled individuals in the Western and Eastern Cape (South Africa). The study found that the most significant barrier for the urban participants in the Western Cape were the 'natural and built environment' and 'products and technology' whereas the participants living in rural Eastern Cape reported community 'attitudes' to be the biggest accessibility barrier. This highlights the complexity of accessibility with many factors needing to be considered when ensuring access for individuals of all backgrounds and abilities. In rural Kwa Zulu Natal access to essential resources

(e.g. clinics and shops) and survival resources (e.g. water and firewood) emerged as one of the challenges experienced by the participants within the study by Naidoo, Van Wyk and Joubert (2017). Moreover, the study by Mji et al., (2017) also found that geographical location influenced participants' access to health care in the urban, peri-urban and rural communities in which they reside; namely; the Western Cape (Gugulethu and Worcester), Eastern Cape (Madwaleni), and Northern Cape (Fraserburg) in South Africa.

2.5.2 Access to health care

A lack of access to health care may exacerbate an individual's disability and is a complex problem highlighted by Vergunst et al. (2017) as the result of interrelated geographical, organizational, transport, and attitudinal barriers, experienced before the individual has even left their home in the low resourced community of Madwaleni (South Africa). Moodley and Ross (2015) highlight the inequities in accessing healthcare in the South African context in their study which compared health outcomes and access to health services between disabled and non-disabled people. The study showed a higher incidence of communicable and non-communicable diseases as well as a poorer occurrence of access to medical aid insurance and a higher incidence of use of public healthcare amongst people with disability (Moodley & Ross, 2015). Furthermore, the fact that people with disability are more susceptible to contracting diseases also demonstrates the important role access to healthcare has in ensuring their health, wellbeing and quality of life. The study by Grut et al. (2012) also indicated numerous barriers to accessing healthcare experienced by people with disabilities from under-resourced communities, and the role this plays in exacerbating poverty.

The United Nations (2000) describes accessible and equitable health care services for those with disabilities to have four main components; namely, non-discrimination, physical accessibility, economic accessibility and information accessibility. People with disabilities in South Africa face challenges in accessing health and rehabilitation services (Department of Social Development, Department of Women, Children and People with Disabilities, 2012; Hussey, MacLachlan & Mji, 2017) as a result of inaccessibility within all four of these components.

In a study by Mji et al. (2017), four themes emerged highlighting the primary influencing factors for people with disabilities to accessing health care. Their participants identified 'structural and environmental factors' (i.e. physical accessibility) such as distances from public health services, transport, poor roads and cost of transport to impact access to health care services. This theme is further understood in the South African context where access to health care services in rural

settings is subject to far more challenging environmental factors (e.g. terrain, travel distances, finances, transport) than those in urban areas (Vergunst et al., 2015). Secondly, 'systemic factors' (i.e. economic and information accessibility) were described, specifically related to the distribution of resources and the organisation of health services. The third theme identified was 'activity limitations' within which people with activity limitations were discussed to not have a choice of service provider or the option to ask for a second opinion. Thus this personal choice was also affected by the availability and affordability of transport, ability to pay for private services and communication. Lastly, 'personal and cultural factors' were identified as influencing access to health care with the majority of participants reportedly experiencing a lack of support as well as disability being negatively perceived by many people which further emphasises the influence of discrimination on an individual's access.

Access to rehabilitation for people with disabilities is guided by the National Rehabilitation Policy (NRP) of South Africa which describes 5 principles as the foundation for rehabilitation services; namely; 'equality', 'social justice and equity', 'solidarity', 'integration and participation, and 'dignity'; all of which are essentially focused on the protection of human rights (Department of Health, 2000). Similarly, the 1997 Integrated National Disability Strategy (INDS) also provides policy guidelines regarding access to resources and strategies for community development and improved awareness of disability (South African Government, 1997). The NRP, along with the INDS, take a blended social and human rights model perspective in that they advocate for healthcare services which support empowerment, inclusion and integration of people with disability in all aspects of life such as social, economic, education, and recreation (South African Government, 1997; Department of Health, 2000; Naidoo, Van Wyk & Joubert, 2017). However, although these policies and strategies are theoretically in place, there appears to be a lack of action in the implementation, with many people in South Africa still experiencing limited access to adequate healthcare services (Naidoo, Van Wyk & Joubert, 2017).

In looking at possible solutions, the CRPD stipulates four areas of action to consider for accessible healthcare; namely, 'accessibility' (i.e. stop discrimination and make environments accessible), 'affordability' (i.e. ensure equal standard and variety of free and affordable healthcare), 'availability' (i.e. offer treatment services as close as possible to all communities), 'quality' (i.e. ensure the same quality of care is offered to both the able and disabled population) (World Health Organisation and the World Bank, 2011). Optimal healthcare services should not be a luxury item which only the select few have access to, and if we relook at the National Health Act (2004) we

will see that finding a solution to access barriers is not optional, but rather the duty of the state to fulfil (The Government of South Africa, 2004).

2.5.3 Access to public transport

People make meaningful connections predominantly through involvement in activities outside the home environment (i.e. in the meso and macro levels of accessibility), by participating in sporting or recreational groups, going to the local shops, working or studying (Barclay et al., 2016). Despite existing legislation (Republic of South Africa, 2000) aimed at inclusion, vast inequalities in access to opportunities and resources persist for people with disabilities, with inaccessible transport being one of the main limiting factors (World Health Organisation and the World Bank, 2011; Lister & Dhunpath, 2016). Community integration for people with disability is greatly dependent on the level of support the built environment provides in ensuring access to the many essential community resources such as housing, work, and transport (Sze & Christensen, 2017). Accessible transportation plays an essential role in the promotion of access to the many multifaceted aspects of a person's life (Bezyak, Sabella & Gattis, 2017). The availability of accessible, affordable and appropriate public transport is particularly vital for individuals who cannot drive themselves due to physical or cognitive impairments, and has been found to greatly impact on quality of life as well as play a role in reducing social isolation noted amongst the disabled population (Barclay et al., 2016; Sze & Christensen, 2017).

For those with disabilities, barriers experienced in public transport consequently affects the individuals willingness to leave their home (Velho, 2018). Savill et al., (2003) explored barriers to accessibility specifically within transport systems of the LMIC countries of Malawi, Mozambique and India. Vehicle design, infrastructure, pedestrian environment, as well as planning and availability of information was identified as the structural barriers to accessing society. Social barriers, created by transport staff and other passengers, were found to be caused by cost (e.g. extra charge for mobility devices), poor disability awareness, and communication (e.g. illiteracy) (Savill et al., 2003). Lastly, safety concerns and insecurities contributed to psychological barriers experienced and resulted in an avoidance of certain modes of transport or requesting assistance. The social and psychological barriers to accessible and affordable transport were also found to be prominent within the studies by Visagie et al. (2015) and Mji et al. (2017) where the taxi operators were reported to not stop for individuals in a wheelchair, and/or charging an extra fee to travel with a mobility device. The difficulties created by inaccessible transport as a result of both the physical and psychosocial barriers, is supported in the study by Joseph et al. (2017), where the participants living with spinal cord injury described being restricted from accessing their

health care facilities and workplaces, thus causing a decrease in their involvement in daily community life. This cumulative effect is emphasised within the CMOP (Canadian Model of Occupational Performance) model where a change within the person-environment-occupation relationship may obstruct or support overall occupational performance (Brien et al., 2002).

Zajac (2016) suggests that accessibility of public transport should be managed as a multidimensional phenomenon with a list of four actions being offered as the process to improve access within the developed city Warsaw (Poland). These four actions are: 1. 'Gradual upgrade of public transport vehicles', 2. 'Improving platform accessibility', 3. 'Modernization of large scale infrastructure', and 4. 'Small scale investments for elimination of local obstacles'. Steinfeld (2011) proposes that the principles of universal design applied to buildings are relevant in the design of transportation systems with the aim not only being to offer equal access, but also ensure social integration. Although accessibility is typically about ensuring access to buildings or resources, it is equally important to consider the impact that optimal accessibility has on people's lives and livelihoods (Velho, 2018).

A general framework consisting of three stages of response in the provision of accessible transport for those with disabilities, and perhaps more relevant in a LMIC context such as South Africa, was offered by Venter, Rickert and Maunder (2007). The first stage, 'basic rights and personal mobility', focuses mainly on disability advocacy and awareness as well as on ensuring access to suitable personal mobility devices such as wheelchairs or walking aids. The second stage, 'environmental access and special programs', is where regulations and strategies for the built environment and affordability of transport are given more attention. Lastly, the third stage, 'Improvements to public transport', comes into play once the legislation and regulations for accessibility are in place. The third stage is where the physical accessibility of transport is eventually considered, and Venter, Rickert and Maunder (2007) describe this stage to be achieved only once people with disabilities are empowered economically and sufficiently mobile in order to advocate for accessibility. LMIC are still battling with problems within the first two stages, and have yet to progress in fully implementing accessibility standards within the transport sector (Venter, Rickert & Maunder, 2007). Improving access to transport, and hence access to community resources and society, will assist in promoting social inclusion, participation in the economy, and ultimately contribute towards the alleviation of poverty which is common amongst the disabled population (Venter et al., 2002; Maunder et al., 2015; Lister & Dhunpath, 2016; Sze & Christensen, 2017).

2.5.4 Access to education

Section 29 of the South African constitution states that every person, no matter background or ability, has the right to basic education (South African Government, 1996), however, despite this commitment, access to education is plagued by many physical, social, systematic, and political barriers with the sentiments of segregation from the apartheid era still having an effect today (Khumalo & Hodgson, 2017).

The experience of disability and poverty are understood to be interconnected with each having an equal knock-on effect on the other (i.e. disability increasing the risk of poverty and at the same time poverty resulting in disability) (Mitra, Posarac & Vick, 2011; Hanass-Hancock & McKenzie, 2017). An example of this is highlighted within education where as a result of poor access to education, individuals with disability are essentially restricted from overcoming impoverished conditions with limited prospects to improve their social and economic wellbeing (Venter, Rickert & Maunder, 2007; Chiwandire & Vincent, 2017). A continued rise in unemployment, and thus poverty, is seen amongst people with disabilities in South Africa confirming the lower occurrence of educational and employment outcomes in people with disabilities noted by the World Health Organisation (WHO) and the World Bank,(2011). This is evident in the 2011 census with 24,6% of individuals with disabilities aged 20 and above having no schooling, as compared to 7,4% of individuals without disabilities (Statistics South Africa, 2014). The disparities in education, and hence employment opportunities, was further confirmed within the South African based study by Hanass-Hancock and McKenzie, (2017) where individuals with no disabilities between the ages of 15-59 years were seen to have an average of 10 years of education whereas individuals with severe disabilities having at least a third less.

South Africa, in theory, takes an inclusive education approach which aims to include people with disabilities in 'mainstream' schools (i.e. together with people without disabilities) through removing barriers to learning and providing the required support to the teacher and student (Khumalo & Hodgson, 2017). In addition to the constitution, this is in line with article 24 of the CRPD which stipulates that state parties are required to ensure that all people with disabilities have access to an inclusive education system at all levels (United Nations, 2006). The Department of Education's white paper 6 ('Special Needs Education') also provides a framework and recommended strategies to establish an inclusive education and training system for all children and adults living with any form of disability (Department of Education, 2001).

The study by Chiwandire and Vincent, (2017) highlighted the complexity of accessibility challenges wheelchair users face within higher education settings. The wheelchair users within this study revealed unjustifiable reasons universities provide for failed attempts to address inaccessible toilets, libraries and transport facilities, as well as poor efforts to create a welcoming environment which facilitates social integration and a sense of belonging (Chiwandire & Vincent, 2017). The youth of South Africa are hindered by the prevalent negative misconceptions and social attitudes towards disability (Cramm et al., 2012), and this, together with the physical inaccessibility experienced within the education setting, is the perfect recipe for exclusion.

The inclusion of children and adults with disabilities in education has many benefits, both individually and collectively. The World Health Organisation and the World Bank, (2011) describes education to be a key determinant of a person's well-being, as well as an essential contributor to capital creation which has the potential to promote positive social and economic outcomes, and thus contribute to the alleviation of poverty. Further to this, an inclusive and diverse educational environment can increase awareness, reduce discrimination, and ultimately contribute towards the promotion of a just and fair society (World Health Organisation and the World Bank, 2011).

2.5.5 Access to employment

The rate of employment as well as the level of income is found to be lower in those with disabilities as compared to those without and in addition to this, the level of income received also appears to be determined according the type and severity of disability (World Health Organisation and the World Bank, 2011; Statistics South Africa, 2014; Department of Social Development, 2016; Hanass-Hancock & McKenzie, 2017). The poor employment rate and discrepancies in income is the result of both physical and social barriers such as poor access to education, limited resources, negative perceptions, and the spatial inaccessibility of the workplace (Maja et al., 2011; World Health Organisation & the World Bank, 2011; Monareng, Franzsen & van Biljon, 2018). People with disabilities are under-represented in the labour market, and experience a multitude of obstacles not only with regards to participation and inclusion in the workplace, but also in advancing in their careers (Potgieter, Coetzee & Ximba, 2017). Marumoagae, (2012) describes some of the main challenges employees with disability experience to be inequality, discrimination and transformation. The integration phase of employment which include aspects such as job advertisements, interview venues, selection criteria and the use of medical and psychometric testing were also found to be inaccessible or discriminatory towards people with disabilities in the study by (McKinney & Swartz, 2019).

The study by Maja et al. (2011), based in Durban (South Africa), explored the knowledge, attitudes, and experiences of employers from two organisations in employing people with disabilities. Although numerous barriers were identified by the organisations, such as difficulty recruiting PWDs with necessary skills or qualifications, inaccessible infrastructure, and poor knowledge and awareness of disability, a few benefits were also identified. Employing people with disabilities was reported to increase profitability, improve their equity score, but perhaps more important to highlight is that the employees with disabilities are easy to train and demonstrate a positive attitude towards their work.

2.6 Summary

Accessibility is a complex and multifaceted concept, with its absence or presence having a ripple effect on the lives of people with disability. When considering the accessibility of a place, service or product, one needs to note whether it can be easily reached, entered or exited, interacted with, understood, and used by people of varying abilities or backgrounds (United Nations, 2015). The United Nations, (2016) describe marginalisation to have one common thread; that being 'barriers'. Barriers to accessibility may be experienced in the different layers of a person's life such as the physical, social, and political environments; and the presence of one or more of these barriers hinders participation and inclusion which ultimately results in the marginalisation of people with disabilities. The effects of inaccessibility and marginalisation is undoubtedly prominent in the disparities in access to education, healthcare and employment between people with and without disabilities (World Health Organisation and the World Bank, 2011; Statistics South Africa, 2016b).

Accessibility is a practice. It is a practice of breaking down the barriers that limits a person's right to fair and equal access to places, opportunities and community resources or services. As seen in the ICF, disability or impairment should not be viewed as the primary problem, but instead one needs to understand people from a holistic perspective where the health condition, as well as the contextual factors (environmental and personal) are interrelated, each having an equal impact on the other (World Health Organization, 2002). The same perspective may be applied to understanding accessibility where environmental as well as attitudinal factors play a role in a person's experience of disability, and not only the condition itself. Thus, the critical key to promoting an inclusive and accessible society may lie in truly understanding the multifaceted aspects involved in disability, and breaking down the physical and social barriers which impact a person's right to access.

CHAPTER 3: METHODOLOGY

3.1 Research design

This study followed a descriptive, explorative qualitative design. Qualitative research takes a naturalistic and interpretive approach which aims to develop a deeper understanding of human experiences with particular attention given to the participants' subjective perceptions, actions and contexts (Fossey et al., 2002; Denzin & Lincoln, 2005; Taylor, Bogdan & DeVault, 2016; Aspers & Corte, 2019). This design was deemed most appropriate for this study as it provided guidance in the exploration and interpretation of behaviours or events within specific contexts (Given, 2008; Creswell, 2014). This design directed the research process in order to gain insight into the perceptions of wheelchair users with regards to accessibility in urban under-resourced communities within the South Africa context. A qualitative design approach allowed for the participants to share, in their own words, their stories and perceptions of accessibility within their community and broader society as well as facilitate a broader perspective of their reality within the South African context. Thus, qualitative research does not only focus on the objective nature of a phenomena or behaviour but also the subjective meaning and descriptions from the individual's frame of reference (Taylor, Bogdan & DeVault, 2016; Aspers & Corte, 2019). The aim of using the descriptive explorative design was not to necessarily gain definitive evidence for events or experiences, but rather to further understand and promote an awareness of the underlying factors involved (Lambert & Lambert, 2012).

3.2 Study context

The study was based in the under-resourced urban community, Diepsloot, via Bona Lesedi Disability Centre in Johannesburg, South Africa (Annexure A). Diepsloot, situated north of the Johannesburg Metropolitan Municipality, is one of Johannesburg's newest resource-constrained settlements established in 1995 after the end of apartheid (Rubin, 2008; World Bank Studies, 2014). The community is made up of 13 formal and informal extensions, spanning over 8.58km², with a growing population of more than 200 000 people (City of Johannesburg, 2011; Adams et al., 2014; World Bank Studies, 2014). Despite being centrally located in the heart of South Africa's economic hub, Gauteng, Diepsloot is characterised by high levels of multiple deprivation with its residents suffering the consequences of poor service delivery and unemployment. Housing in the community includes a mix of Reconstruction and Development Programme (RDP) houses, with the majority being informal shacks (Rubin, 2008; City of Johannesburg, 2011; Adams et al., 2014).

The residents are predominantly reliant on public transport (mini-bus taxis) and only have access to two public clinics which service the entire population (Adams et al., 2014; World Bank Studies, 2014). This study occurred in the participants' natural context (i.e. home and community environment in Diepsloot) in order to ensure that realistic insight into the subjective experience of wheelchair users was developed, specifically with regards to factors influencing accessibility within their environment/s**.**

3.3 Sample and sample size

Qualitative sampling involves the identification of information-rich participants appropriate to the study as well as information sources such as people, places, events and type of data which assists in addressing the research question and developing a comprehensive depiction of the phenomena being studied (Fossey et al., 2002). Purposive homogenous sampling was applied within the study to ensure the selection of information-rich participants who matched the inclusion criteria for the study (Etikan, Musa & Alkassim, 2016). A demographic questionnaire was completed prior to commencing with the data collection process. The study population included five self-propelling female wheelchair users, at least 6 months post-acute rehabilitation, permanently confined to a wheelchair within the under-resourced community, Diespsloot, in Johannesburg. The study population comprised of individuals who can understand and speak English on a conversational level to ensure the success of the data collection process. The Covid-19 pandemic had an impact on the recruitment of suitable participants for the study, and delayed the data collection process. Many individuals were understandably nervous to travel via taxi to the Bona Lesedi Disability Centre, but also many of the potential participants, according to the centre manager, had moved out of the city to be with their family in rural areas of South Africa. Sampling in qualitative research may involve a small amount of participants where a large amount of data is gathered through multiple data sources such as interviews, observation-based field notes, and photographs (Fossey et al., 2002).

3.4 Research instruments

3.4.1 Demographic questionnaire (Annexure B)

The demographic questionnaire was self-designed by the researcher and peer reviewed by the supervisors of the study. It was done to determine the participant's age, gender, medical and occupational information. The participants' information regarding admission to a rehabilitation centre, length of stay and discharge date was obtained. The questionnaire gathered details of the participants' equipment (i.e. what was prescribed and who was the funder), and whether the

participants felt the equipment is appropriate for their environment and/or occupations. The questionnaire was also used to determine whether the participants can self-propel their wheelchair and what mode of transport is used to access their community.

3.4.2 Interview schedule (Annexure C)

The participants were asked semi-structured, open-ended questions to limit yes/no answers being given, and to rather gain more detailed, descriptive answers on their experience as wheelchair users in their community. The interview schedule was peer reviewed by the supervisors of the study and a pilot interview was done with one wheelchair user who was not included the research study as they did not fit all the inclusion criteria. The interview questions were also reviewed following each interview done with the participants of the study. This was done to ensure that the interview schedule is effective in gaining the necessary information for the study.

3.4.3 Photographs (Annexure D)

A transect walk is a mobile interview where the researcher walks through the community with an identified community guide and the participants along usual the routes of access to community resources such as shops, taverns, churches and taxis (Schoonmaker Freudenberger, 1999). The inclusion of a transect walk in the study was proposed to assist in ensuring that rich data was collected for the study which may also be used in analysing and interpreting the data (Schoonmaker Freudenberger, 1999). As a result of the Covid-19 pandemic restrictions, the transect walk through the community was not fully completed. The solution to this was to take photographs and record observations of the surrounding terrain of the participant's home, and while driving to each interview together with the centre manager, photographs and observational notes were recorded of the terrain in the community. In accordance with the Protection of Personal Information Act (POPIA), the researcher ensured that the photographs taken did not contain any recognisable features of the participants, other community members or businesses through blacking or blurring out and cutting off any of these identifiable aspects (Republic of South Africa, 2013; South African Parliment, 2020).

3.4.4 Wheelchair evaluation

The type and quality of the wheelchair was assessed after the interview process. Observations were recorded together with the hand-written notes done during the interview. The researcher evaluated aspects of the wheelchair according to the following criteria (World Health Organisation, 2008): fit and postural support, safety and durability, user's needs and environmental conditions.

3.5 Research procedure

The participants were recruited through the Bona Lesedi Disability Centre in Johannesburg (South Africa) once permission was obtained from the manager. The manager assisted in making the initial telephonic contact with the participants in order to request whether they were willing and available to participate in the research study. During the research process, the Covid-19 pandemic occurred which resulted in delays and limitations to the research procedure. The Bona Lesedi Disability Centre remained closed to the public from March until level 1 lockdown was introduced in September. The manager of the centre also reported that as a result of the Covid-19 pandemic, many of the individuals who are part of the centres database had moved out the city to their families in more rural areas. For this reason, there was difficulty in recruiting numerous suitable participants for the study who match the inclusion criteria, and in order to keep the most relevant participants for the study one pilot interview was done with an individual not from the study setting. This pilot interview assisted the researcher in reviewing the semi-structured interview questions as well as the prompts used. It was noted that further explanation or prompting was needed at times, specifically with regards to the concept of accessibility as well as the barriers and facilitators/supports related to their accessibility experiences. The interview questions were also peer reviewed by the research supervisors as well as the centre's manager.

Once participants who matched the inclusion criteria were recruited, specific dates and times were arranged with the Bona Lesedi Disability Centre manager, and the participants. The interviews were arranged to be done within the participants' home environment to mitigate the covid-19 risk of travelling in public transport to the centre, but this also allowed for the data collection to occur within the participants' context which provided a deeper insight for the study. The recommended Covid-19 precautions (i.e. sanitizing hands, wearing masks, social distancing and remaining in ventilated area) were followed during the data collection process. The participants were informed on the purpose of the study, the use of the information collected, and the predicted length of the interview process. An information sheet on the research was given in hardcopy to each participant, and they were informed of the contact details present on the handout should they have any further questions going forward. Before commencing with the data collection process, informed consent was gained for the interviews, audio recording and for photographs. Once informed consent was obtained, the demographic questionnaires were completed with each participant before starting with the interview questions. The semi-structured interviews took place in the participants' home environment, and one of the participants requested to meet at a shopping centre which she uses for her grocery shopping. Following the interview, the researcher took

photographs of the terrain around the home as well as of the participant's wheelchair. The data collection process with each participant took approximately 60-75 minutes.

3.6 Data collection

Qualitative research involves in-depth face-to-face interviews focused on developing a deeper understanding of the participants' views on their experiences or contexts (Taylor, Bogdan & DeVault, 2016). This study involved semi-structured face-to-face interviews with the participants, including audio recordings and hand written notes on observations during the interview. Semi-structured interviews follow an interview guide which facilitates a more focused discussion on a specific topic while allowing for a flexible, and conversational means of exploration (Fossey et al., 2002).

Qualitative research produces descriptive data through the use of a combination of data collections methods such as audio recordings, observational notes, and photographs (Taylor, Bogdan & DeVault, 2016). The use of multiple means of data collection also assists in the analysis of data, and in ensuring a holistic understanding of the topic or behaviour being explored (Fossey et al., 2002). Following the interview, and with the permission of the participants, photographs were taken of the surrounding physical environment. Due to limited time constraints with the manager, and the participants being reluctant to go on a transect walk to their points of access in the community due to concerns surrounding the covid-19 pandemic, photographs were instead taken around the home environment and while on route in the community together with the centre manager. Following the interview process, and once back at home, the researcher replayed the audio recordings and wrote in a diary for self-reflection.

3.7 Trustworthiness

The validity strategies of trustworthiness, authenticity and credibility were applied to ensure the rigour of this research study (Shenton & Smith, 2000; Denzin & Lincoln, 2005; Creswell, 2014). For credibility, data triangulation was applied through using multiple data sources and different methods of data collection, specifically interview transcripts, field notes made during the interview and video or photographic content (Shenton & Smith, 2000). Gathering numerous data sources using a variety of means assists in highlighting the multiple layers involved in a situation, experience or context, and brings greater depth to the study (Fossey et al., 2002; Taylor, Bogdan & DeVault, 2016). A transect walk was also done during data collection to perform a site

evaluation of their home and community environment as well as to gain insight into the lived experiences of the participants.

A code-book was developed, which was used in code-checking with the supervisors to review the study and assist with interpretation in conjunction with the researcher. Peer debriefing was done with the supervisors to ensure that the researcher's bias did not influence interpretation of the results. Furthermore, contradictory information or evidence which does not reflect developing themes was presented. Dependability was also achieved by thick rich description of the data (Shenton & Smith, 2000). Data collection continued until data saturation was reached and to ensure rich data, respondents with lived experience were interviewed. Qualitative research can include a small sample size provided that 'information power' of the participants, as described by Malterud, Siersma & Guassora, (2016), is considered. This study included a specific study aim, is supported by established theory, and the interview dialogue with the participants offered rich data (Malterud, Siersma & Guassora, 2016). Thus, although only five participants were included in the study, data collected was suitable for this study. Confirmability was ensured by the use of reflective journaling throughout by using a diary to reflect on reactions and bracketing to reflect on biases, and experiences during the data collection process (Shenton & Smith, 2000).

3.8 Data analysis

Qualitative data analysis is a process of reviewing, developing and interpreting data to describe the elements being studied (Fossey et al., 2002). Following data collection, transcription of the interviews was done externally by a reputable transcription company in Cape Town. Notes made on observations during the interview and transect walk also formed part of the analysis to assist with in-depth interpretation. Data analysis commenced following the initial three interviews and the transcription of the data, and continued after each interview through conventional content analysis where categories continually develop from the data (Hsieh & Shannon, 2005; Green et al., 2007; Lambert & Lambert, 2012). In order to ensure accuracy, the researcher compared and reviewed the transcriptions to the audio recordings, and re-read the transcriptions numerous times to better understand and interpret the data.

Qualitative research follows an inductive analysis process whereby in insights and interpretation is developed through reviewing patterns in the data (Taylor, Bogdan & DeVault, 2016). Inductive data analysis was applied in this study, using descriptive and *in vivo* codes. The use of an inductive approach to data analysis, through systematically comparing, grouping, reviewing data segments, allowed for the findings within this study to emerge from themes inherent in the data

itself (Fossey et al., 2002; Thomas, 2006). Coding (i.e. labelling sections of data) enables the researcher to locate and organise similar data and assists in the identification of themes (Fossey et al., 2002). A code book was developed and the codes were continually examined as new data was collected in order to ensure consistency. Following the coding process, themes were generated in order to create an explanation and interpretation of the results which developed (Green et al., 2007).

3.9 Ethical considerations

Data collection commenced once ethical clearance from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand was received (Annexure E). Following permission with the manager of the Bona Lesedi Disability Centre (Annexure F) to approach individuals who meet the inclusion criteria, participants were recruited for the study. Since the study included a vulnerable population their rights were protected by making sure they understood the purpose of the study by providing an information sheet and explaining aspects of this verbally when necessary (Annexure G). Participants were asked to sign witnessed informed consent forms for the interview (Annexure H), audio recording (Annexure I) and photographs (Annexure J) before commencing the data collection process. The conditions for processing of personal information, as set out in the Protection of Personal Information Act (POPIA), was applied in the study (Republic of South Africa, 2013). The participants were informed, both in the information sheet and verbally, that the photographs will only be used for the study and not for the personal use of the researcher or participants. Furthermore, the researcher ensured that photographs do not have recognisable features of the participants' or the environment (e.g. signs, businesses) by blurring out or cutting off any identifiable aspects. The participants were informed that participation is voluntary and the right for withdrawal is applied throughout the study without consequence. Furthermore, the participants were informed that feedback on the study will be given to them should they request it. Participants' particulars were kept separate from interviews, and confidentiality will be further upheld through use of pseudonyms in any publications flowing from this research. Data was stored in password-protected files on the University of the Witwatersrand's Office365 cloud and backed up on a password protected Dropbox folder.

CHAPTER 4 FINDINGS

4.1 Introduction

This study set out to explore wheelchair users' experiences and perceptions of physical and attitudinal accessibility. The purpose of this study was to explore the factors influencing accessibility for female wheelchair users living in an under-resourced urban community within the South African context. The study included participants living in the under-resourced community of Diepsloot (Gauteng, South Africa) and surrounds. The research instruments used in the study were a demographic questionnaire (Annexure B), interview schedule (Annexure C) and photographs of the environment in lieu of the proposed transect walk (Annexure D), and a wheelchair evaluation.

4.2 Demographics

This study included five women between the ages of 25 and 47 year old. Two of the woman acquired their disability from childhood phase in 1976 and 1996 due to childhood polio and clubfoot, whereas three experienced their disability later in life (i.e. 2007, 2012, and 2013) as the result of a spinal cord injury, stroke, and bilateral lower limb amputation. All the participants presented with physical impairments and required a wheelchair for all mobility. The standard folding frame wheelchair was found to be prescribed to all the participants, three of which were received via sponsorship whereas the remaining two were funded by the Road Accident Fund (RAF), and the South African government. Although all the participants reported their wheelchair to be appropriate for their daily occupations, four of the five participants reported they could only manage propelling it over smooth indoor terrain The public transport system (i.e. minibus taxis) was predominantly reported as the primary means of transport; however, since becoming disabled, three of the participants reported using private or hired transport. Furthermore, a notable four of the five participants were found to be unemployed, with only one being part-time employed.

Table 4.1 Participant demographics

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
Age	41 years old	46 years old	47 years old	36 years old	25 years old
Diagnosis	Bilateral lower limb amputation	CVA	Paraplegia (childhood Polio)	Paraplegia (SCI)	Bilateral lower limb amputation (club foot from birth)
Date of diagnosis	2013	2007	1976	2012	1996
Occupation	Unemployed	Unemployed	Unemployed	Unemployed	Part-time employed
Mode of transport	Rental/hired transport	Private vehicle	Public (Mini-bus taxis)	Private vehicle	Public (Mini-bus taxis and Uber)
Assistive device supplied on discharge	Folding frame wheelchair	None	Callipers and crutches	Wheelchair and mattress protector	None. Had own wheelchair.
Wheelchair funder	Government funded	Sponsored	Sponsored	RAF	Sponsored
Is the Wheelchair appropriate for environment?	Yes- “Can move around in it”	No - “Wheelchair is old”	Yes- “easier than using crutches”	No “Would prefer electric wheelchair for community mobility”	Yes
Is the wheelchair appropriate for daily occupations?	Yes	Yes “for home”	Yes	Yes “for indoor activities”	Yes
Do you Self-propel in your wheelchair?	Yes- indoors/level surface. Assistance for uneven terrain	Yes- in home. Assistance for outdoors.	Yes – indoors and outdoors	Yes indoors/level surface. Assistance for uneven terrain	Yes

4.3 Themes

Three themes emerged through the data analysis process; namely “Not able to go where I want to go”, “With others, I can go wherever I want to go”, and “Attitude towards disability impacts participation”.

Table 4.2 Themes, categories, subcategories and codes

Themes	Categories	Sub-categories	Codes
“Not able to go where I want to go”	Structural barriers	Having enough space to move around	home roads used by others no pavements
		Quality of surfaces	roads damage to chair pavements
		Buildings not accessible	not knowing what surfaces are there ramps
	Not able to use public transport	Added costs	pay for chair private transport
		No way to transfer independently	vehicles too high help from others
		Not worth their while to wait for me	time limits for taxi drivers can’t travel in rush hours
	Need for alternate transport	Space for the wheelchair	taxis do not have space for chair easier if take other transport
	Reliance on other people is frustrating	Loss of freedom	can’t do what i want in my own time need assistance
	Wheelchair better indoors than outdoors	Can’t manage uneven terrain	wheelchair can’t handle terrain good over level surfaces need another wheelchair
With others I can go wherever I want to go	Much easier with support of someone who knows me	I can do what I need to do with someone’s help.	appreciate how assistance improves mobility still means dependence on others
		Family are the greatest support	essential for easy mobility assist in overcoming challenges
Attitude towards disability impacts participation	Community is not always supportive of PWD	Feel unwelcome	feel excluded embraced due to treatment from others
		Underestimate abilities	seen as cognitively impaired viewed as unable to do anything or support themselves
		People differ in how they treat PWD	it depends on the people distance themselves or assist
	Personal attitude towards disability influences coping strategies.	Self-acceptance.	promotes perseverance learn or grow from the challenges
		Time of disability in life span.	easier if you have always lived with disability better coping strategies level of acceptance

4.3.1 Theme 1: Not able to go where I want to go

In theme 1, participants described not being able to go where they want to go in their wheelchairs within their home and community environment. Two main barriers, described in the categories, emerged as the reasons for their limited freedom of movement. The first category which developed was the structural barriers that have impacted on their ability to move around in their wheelchairs and in accessing places or spaces where they want to or need to go. Participants described the importance of **having enough space to move around** the home environment in their wheelchairs, and the effect this has on reducing the feeling of reliance on others and promoting their ability to independently participate in their daily activities or occupations.

> *Participant 3: If you have enough space its better because you are not dependent on a person…you can just move around and do that yourself.*

> *Participant 5: It's easy because there is enough space. There are no stairs or cars, so I can get around anywhere I want to go.*

Participant three shared the challenges she experiences when using the bathroom in her Reconstruction and Development Programme (RDP) house due to there being limited space to move around in her wheelchair.

> *Participant 3: It is easy to get around [in my home] because at least there is an open space, but the only part that I am crying about in my own place now is the bathroom…When we go for registration to the Department of Housing they will ask your disability, and then if you use a wheelchair or not. And then you give them those answers and they will give you a form [for] the doctor [to fill in], but when they build the bathrooms they don't give us an access. Because like my bathroom is small, I can't go in, I can't move around, I can just go in and then the basin is just in front of me, I can't close the door from inside.*

Before the interview commenced with participant four, she was observed moving around her kitchen in her RDP home while preparing tea. Having enough space to manoeuvre her wheelchair as well as having the kitchen setup optimally (e.g. items within reach) was noted to facilitate the ease with which she was able to complete the task without any assistance required. This observation was further supported within her description of how the space and setup of her home enables her independence when she is home alone.

Participant 4: Today, I am home alone. I can manage because everything I need is closer to me. I don't have to go and fetch it somewhere. It is just here around the house. So, everything I need is closer. I can take what I need. I can use what I need at my own time.

An unexpected finding related to the importance of having a sense of safety within the home setting was revealed in participant one's interview. When asked whether she had anything else to add with regards to her experience as a wheelchair user, she described feeling vulnerable and unsafe living in her shack, especially in poor weather conditions, which impacts on her quality of life.

Participant 1: I think like making sure that people with disability have like suitable places to live in, like houses, yeah I think that then it will help…Maybe having my own house, comfortable house where I know that I am safe when it rains, something like that, yeah, a safer environment, it will make life better.

Along with having enough space for the wheelchair within the home environment, it also emerged that there are spatial challenges on the roads when mobilizing in the community. Four of the five participants described predominantly using their wheelchair on the road due to there being no designated pedestrian pavement, and hence no suitable space for the wheelchair to propel on the side of the road.

Participant 5: Most of the areas are full of dirt roads, like full of sand, but then, if I'm driving myself on the roads, I go where the cars go, but going onto the oncoming traffic so that they can see me…

Participant 4: …most of the time, in this community, I must use the road because there are no paths along the road

Participant 3: On some of the pavements they haven't made access for us, because I don't know whether maybe it is just because they don't know the number of disabled people living on that area, but then most of them they don't have the access for wheelchairs, but then some of them do have…



Figure 4.1 Participant 3, on route to visit a family member, waiting for it to be safe to use the road.



Figure 4.2 Participant 3, making her way across a potholed tar road.

Furthermore, participant one shared her frustrations when accessing the mall in her community. She described the mall often being overcrowded and as a result not having enough space to move around freely in her wheelchair.

> *Participant 1: At the malls like it's...like the malls are always packed, like you are not free to do what you want do...*

The **quality of surfaces** was found to have an impact on the participants' ability to propel or use their wheelchair, particularly when accessing community resources such as clinics and churches. A level of inconsistency or unreliability in the accessibility of the terrain (e.g. roads, pavements, and ramps) was found to be a barrier to the participants' access, and described to be challenging when mobilizing in their wheelchairs. Participants described the roads being dirty, full of potholes or bumps, and often not suitable for their wheelchairs.

> *Participant 1: The roads are far, some are far and some there are bumps…the roads are dirty and stuff…they are not okay*

Participant 5: Most of them [the terrain] can damage the wheels because it really can't handle it, especially if there are potholes.



Figure 4.3 Mixed quality of terrain in the community with areas of potholes, overflowing sewage and rubbish

The unpredictability experienced when using the community terrain also appeared to cause a level of vulnerability when going places because the participants couldn't be sure as to whether or not it was accessible for their wheelchairs. Participant one shared her feelings of frustration with this irregularity in terrain when trying to access public facilities in her community.

Participant 1: Sometimes there will be roads, you don't know like where the entrance is, whether it's wheelchair friendly or what if you want to go there.

Furthermore, along with having enough space to move around, terrain or places which are level were also reported to be easier for participants to manage in their wheelchairs. Level surfaces was also described to promote their independence in their mobility and participation in daily occupations both at home and in the community. Participant four described the positive impact that having enough space and level ground in her home environment has on her sense of independence.

Participant 4: Within the home there is no bumps. There are no humps. There is space and the ground is level so I can go wherever I want, on my own time. There are no humps

and bumps that I can need assistance. So, I don't need assistance. It is level so I can go wherever I want on my own time.

The importance of **having access to ramps** when moving around the home or community was highlighted within participant accounts. Inaccessible buildings or infrastructure, specifically those with steps and without accessible ramps, were identified as creating barriers to entry as well as being a reason for avoiding these places all together.

Participant 5: Most of the things can be harder, because sometimes you can go to places where there's not any ramps. It's just stairs, and you can't get there.

Participant 2: …if there is no ramp I can't get inside, I stay outside.

Participant two shared her difficulty in accessing her church, and needing to be picked up in her wheelchair to get inside.

Participant 2: I just stay outside, but if there is a ramp I will try to get [inside], because last time I used to go to the church at number four, so there is no ramp, so they just hold this wheelchair and put it inside.

The spatial setup and design of shopping malls were described by participants to be more suitable for people with disabilities, with particular mention given to the accessible bathrooms, and ramps.

Participant 4: There is so much space. It is friendly to disabilities, because there is much space. There are ramps there. You can push yourself around.

Participant 3: …malls are fine because they have got that, we do have our special toilet and then where it is having the bigger spaces it's fine, and even the shops they do have enough space for us to go round.

All the participants' homes were observed to have ramps, and were described by participants to make mobility around the home easier. Three of the participants' homes had privately built ramps by family members, whereas two participants had ramps setup at the entrance of their RDP homes.

Participant 1: …because now like they've done where the wheelchair walks [to get inside my home], its better, but before it was difficult because the ground was not level.

Participant 4: In the house it is so easy for me to move, even to go outside. I can go because there is a ramp here on the door, so I can go outside myself and come back.





Figure 4.4 a level paved area at Participant four's RDP home that allows her to get from inside her home to the gate of her property when she has visitors



Figure 4.5 the ramp which was added to participant one's home by her family after she acquired her disability.



Figure 4.6 an inaccessible ramp participant 5 needed assistance to use when entering and exiting the bathroom at a petrol station

Inaccessible buildings were found to not only impact on the participants' access to community resources, but also participation in productive activities. Participant five shared her difficult experience of having to crawl up and down more than one flight of stairs for a couple of months to access her work place for training she was required to do. This was noted to be a physically taxing and degrading experience for her.

> *Participant 5: There was one time when I used to go to this other office where I used to help around. I just needed to go and help that lady at the office there, before I started working. So, I used to go and learn more things about computers and everything. So, it was only stairs. There was no lift. There was no ramp or anything. So, I had to get out of the wheelchair and crawl all the way up the stairs. Also, the same thing to get down and get someone to carry the wheelchair up for me.*

The second category that emerged as a reason for the participants' not being able to go where they want to go was that they are not able to use public transport. Participants reported three main challenges which contributed towards the inaccessibility of the transport available to them. Firstly, all five of the participants described the barrier of **added costs** that they incur as a wheelchair user within the public transport system. Without the necessary space for the wheelchair, the participants described having to either carry the wheelchair on their lap, paying double (i.e. paying for themselves and for the wheelchair) or having to hire private transport which costs a considerable amount more than public transport.

> *Participant 2: …if I want to go to the mall is R10…So I have to have R40. R20 to go [there] because I am going to pay for wheelchair too you see, I have to pay double amount to go and double amount to come back*

> *Participant 5: Using public transport you sometimes have to pay for two seats. It is you plus the wheelchair because you are taking a space for another person. So it is really not easy to use public transport, especially if you don't have enough money and you have to pay extra for the other seat.*

Having **no way to transfer independently** into or out of the taxi was the second challenge related to not being able to use public transport. Taxis were described as being too high, and for this reason, assistance is required from the drivers or other passengers to get into/out of the vehicle as well as to manage the wheelchair.

Participant 4: …the taxi, how can I put it, is too big on top, so I will be down and then the seat will be on top, so I can't move in and come back

Due to the taxis being inaccessible, three of the five participants reported avoiding the transport system all together since becoming disabled and having to resort to other means of accessing their community.

Participant 1: Since I became disabled, I never used public transport…I always have to hire transport…

Participant 2: No I can't get inside the taxi, because really I didn't even try, because it is high you see

Furthermore, participant five's account highlighted that although assistance may be often offered, the process of being picked up and placed inside the taxi is unpleasant as it takes away her sense of control in performing tasks she prefers to do alone. The investigator also noted in observations during participant accounts that being picked up and put inside the taxi is felt to be a demeaning experience because it is usually done with the other passengers watching.

Participant 5: Most of the time I am travelling alone. The driver or someone will offer to pick me up, which I don't like to be picked up. I like doing things myself.

This was further noted in participant four's interview when she shared her reasons for using private transport instead of public transport since acquiring her disability.

Participant 4: On the public transport you will have to carry me on, to lift me from the wheelchair to put me on the seat of the public transport. But, with my own transport I am able to get in myself and to get out myself.

The last challenge which was reported to contribute to the inaccessibility of transport, was that the **taxis are in a rush**. The drivers were described to not always being willing to take the time required to assist them and their wheelchairs into or out of the vehicle. The participants' accounts also highlighted a sense of impatience amongst the drivers, especially during peak travel times, which contributed to their avoidance of public transport.

Participant 1: Taxis are always in a hurry…you will always need help, someone to carry and put you inside, pack the wheelchair and stuff, and it's like you waste their time, they always want to do things fast, so that's why I never use the taxi.

Participant 2: They need to at least give us drivers that have brains because they don't have patience with people with the wheelchairs you see, they need to, they just need to take care… Because sometimes, say maybe I am outside then I want to go somewhere, just [because] I am using a wheelchair they need to wait until I am there, [but] they are in rush. So they need to wait until I have got there.

Participant 4: Using public transport is very difficult, especially if it is rush hour...because there are so many people, so they will be on a rush. So, if you come on a wheelchair they will take time to assist you, because they are doing it in a rush. They want to go. So If I go there, they will take time to assist me.

The third category which developed within this theme, 'not able to go where I want to go', was the need for alternative transport that has the necessary **space for the wheelchair**. All the participants reported a need for transport which accommodates to their needs, specifically with regards to vehicles that are suitable for wheelchair users. Accessible transport was found to be one of the main facilitating factors for ease of access and participation in the community.

Participant 1: I think the transport thing is the most difficult…because you need to go out time and again and if you don't have transport you know you can use its difficult.

Participant 4: …if they can maybe provide the transport which will be easier for us people in wheelchairs, to be our transport. I think that one will be so much easier for people using wheelchairs.

The next category which emerged was that the reliance on other people is frustrating**.** Participants' described a **loss of freedom** in doing what they need or want to do in their own time, and a sense of frustration in having to wait for someone to assist them in these tasks instead of doing them according to their own preferred routine or schedule.

Participant 2: I can't go wherever I want on my time. I need to have someone help me, [and] if there is no one I can't go anywhere obviously until I see someone to take me there.

It was further noted within all the participants' accounts that needing help and relying on others to do certain tasks degrades their sense of agency over their own lives and results in a feeling of inadequacy within themselves.

Participant 1: Some is hard, some I can't even do them like on my own, I need help, so yeah that's how hard it is.

Participant 4: Wherever I go, I must have someone to go with to assist me to help me. So, that is difficult being disabled. Because, if you are not disabled, you can go wherever, whenever, want alone and do whatever, on your own time with no-one helping you, but then if you are in a wheelchair, everywhere you go, you must go with someone to help you.

Participant two's explanation of why she did not continue working as a cashier since becoming disabled revealed the multifaceted nature of accessibility and how it can impact on a person's sense of freedom in doing the activities they want or need to do. She shared that using a wheelchair as her primary mobility, needing assistance from someone to get her ready for work and managing her wheelchair, distance from her new home to work, as well as the barrier of added costs in using public transport as her reasons for not returning to work.

Participant 2: No because I am using a wheelchair and then I can't move myself, so that is going to cause me maybe to need someone to come and push me, or to come and help me to put dresses [on] for me, and take me to the work. So and the place is too far from me because I was not working around here I was working at Thembisa you see, the place was too far for me, even the transport, I can't walk from here to Thembisa, so it is going to cost me a lot. So that's why I just leave it and come and stay here.

An overall emotion of sadness was detected in participants' descriptions, with participant one highlighting this when she described a sense of longing for independence in doing things outside of her home environment, and wishing for things for be different.

Participant 1: Like going to shopping, if I have to go and do my grocery shopping I have to go with someone to help me with stuff because yeah, I wish that I could do that on my own. Like when I feel like I want to go somewhere, like outside of the home, like I wish I can do things by myself but like I feel like I would need help every time.

Similarly, when asked whether she is able to participate in the occupations she enjoys doing, participant four highlighted the experience of isolation and loss of freedom amongst people with disabilities, and the impact that an inaccessible external environment has on their participation in their chosen occupations.

Participant 4: No. I can say no, because I am always indoors. What I am doing in a daily basis, I am doing what I can manage indoors.

Participant two and three also described the experience of isolation, and the desire to participate in productive and recreational activities outside the home environment.

> *Participant 2: Most of the time I don't go out, I stay inside the yard, last time I was trying to sell some children's stuff outside, sweets, snacks for the kids, so just to keep my mind working.*

> *Participant 3: Like if maybe they were having some sports like table tennis, tennis courts and all that stuff then at least that one, that was going to be better because some of us as disabled people we do like sport, and we do enjoy but then in our community we don't have those facilities.*

The last category found in this theme was that their wheelchairs are better indoors than outdoors. All the participants reported that their wheelchairs are okay on indoor or level terrain, but that they are not suitable when mobilizing in the community because their wheelchairs **struggle on uneven terrain**.

> *Participant 4: …because my wheelchair I would say is not perfect to take me out outside alone, because I need to be assisted, like there on the place where there are humps and bumps. I need to be assisted. I can't go alone and come back alone.*

> *Participant 5: Mostly it can damage the wheels, because it can't really handle it, especially if like there are like potholes. Then you go inside the pothole, so it also damages the wheelchair.*

Participant four shared that an electric wheelchair would be better suited for mobility in the community as it will be able to manage the rough terrain better and require less energy or effort.

> *Participant 4: On the roads… what can I say… on the roads it is easier if I am using an electric wheelchair, because I can even go on the bumps, but with this one, I can't.*

All the participants were noted to be in manual folding frame wheelchairs; three of which were sponsored and two were funded by the South African government and Road Accident Fund (RAF). Three of the five participants' wheelchairs were observed to not be optimal in terms of fit and quality due to prolonged use over 7 to 10 years. This was described to have an impact on their ability to use the wheelchairs outside of their home over the uneven terrain found in the community.

Participant 2: If I could get another wheelchair, a new wheelchair because this one I think is the old one…If I could get a bigger wheelchair than this one, because this one thing is very small for me…I think it is old, it is not moving nicely. You can feel it is old.



Figure 4.7 Participant two's wheelchair which she described to be too small with reduced quality of mobility.

4.3.2 Theme 2: With others, I can go wherever I want to go

Within this theme, all the participants described the support of people that know them as a facilitator when wanting to go to certain places or move around their community. It was found that in order to navigate the inaccessible physical environment around them, **having someone's help to perform tasks** was not only necessary, but also made it easier for them to manage. Although this was reported to create a sense of reliance or dependence on others, having someone else's support was described as being essential for them when participating in their daily activities, particularly when it comes to mobilizing around and participating in the community.

Participant 3: When you live with people, you won't struggle…people do help you around…they help you push

Participant 4: The limitations. Only if I don't have someone to go with.

Participant three shared the positive experience of having a supportive colleague at her previous place of employment. This colleague assisted her with transport to and from a sports centre which offered table tennis for wheelchair users, and was thus an important facilitator in her access to a recreational activity she enjoys.

Participant three: Because there was a year when I was like working in Johannesburg and then I used to go to Mandeville for table tennis. Yes every Wednesdays when I knock off, one of my colleagues would take me to Mandeville for table tennis, and then after 21:00 she will go there and fetch me and then take me to the taxis and then I go home.

Not having a strong social support system was described by participant 5 to not only be a barrier to access, but to also be a possible exacerbating factor to the struggles or challenges faced by people who are disabled.

Participant 5: For some people who are disabled it can be difficult, especially when you don't have anyone to support you…

Furthermore, the participants highlighted that **family are the greatest support**. When accessing public facilities or community resources, having the support of family was found to be vital when going where they want or need to go, as well as when accessing community resources or public facilities such as shopping malls, clinics or churches. With the support of their family members, the participants were able to overcome some of the challenges they face with accessibility such as transport and navigating the external environment. Overall, when discussing possible facilitators or support to access with the participants, there was undoubtedly a deep sense of gratitude for family and the role they play in their daily lives.

Participant 3: on my side, my family is the most supportive, they are the most supportive people

Participant 5: My main supports is my family and my boyfriend

Participant two shared the important role her brother played in being able to access healthcare as well as church. With her brother's assistance, she is able to manage the challenges faced within the structural environment.

Participant 2: No I don't have so much challenges because my brother can take me to the clinic and can take me to the doctor, and even to the church, so I don't have a lot of challenge, he can take me wherever I want.

Likewise, participant four also described the important role her family has with access, mobility, and performing tasks when she cannot manage.

Participant 4: The only support I have is my family. When I have them, we go wherever I want to go. They help me here and there when I don't manage myself…

Participant three highlighted that receiving support from others may be dependent on whether or not you have the support of you family, and hence emphasizing the important facilitative role family may have on the experience of disability, as well as the perception of disability amongst community members.

Participant 3: …because if you are not supported by your family no one will support you at the end of the day and then you will always be crying, having no shoulder to cry on.

The support of family was also described by participant five to have played a significant role in the development of confidence in who she is. She alluded to the fact that people with disabilities may be kept hidden from the community, and because her mother never did so with her also contributed towards her feeling of self-worth.

Participant 5: I just grew up in a family where my mom never used to hide me. She would always support me in everything, so that's why I have so much confidence in myself.

4.3.3 Theme 3: Attitude towards disability impacts participation

Two categories, with regards to personal and community attitude towards disability, emerged within this theme. Firstly, it was found that the community is not always supportive of people with disability. Participants described often **feeling unwelcome** within the broader community due to the way people act towards them.

Participant 1: Sometimes you feel like you are not welcome, people, you know they act somehow when they see you, yeah, that's how I feel.

This sense of exclusion within the community was particularly highlighted by one of the participants' experiences when using public transport. The way in which the taxi drivers treated her was described to create a feeling of embarrassment as well as sense of discrimination because she was not treated the same way in which the other able-bodied passengers were treated.

Participant 4: I don't know, it was rush hour or the driver was not accommodating. They just picked me on my wheelchair like this. They didn't take me out of the wheelchair to put me on the seat of the car. They just picked me like this with my wheelchair and put

me on the car sitting on the wheelchair. That one was disturbing for me. Yes. Because they just did like I don't deserve to be treated like other customers, because they were supposed to take me out of the wheelchair and put me on the chair like everybody else. But they just took me with the wheelchair, with me still on top of the wheelchair and then they put me on the car. And then I faced the other passengers, whilst each and every passenger should face the driver. But for me, it was different because they put me like this and then I faced the passengers.

The participants described the community to have preconceived perceptions of people with disabilities which makes them feel uncomfortable when accessing places or using services. The community was described to **underestimate their abilities**, particularly with regards to cognitive functioning and their potential to be productive members of society. This was found to be one of the possible barriers to the accessibility within the community because as a result of the misperception that people with disability are less capable than able-bodied members of society, the participants were noted to be more isolated, often only leaving home for essential chores or appointments.

Participant 1: …Some people look at you because you are in a wheelchair [and] will think that maybe you can't think for yourself…

Participant 3: Sometimes when people see you on the streets they will think you are going to beg at the robots…they don't think we can also work as they can…

Participant 4: …but the minute I step outside, I feel like people feel sorry for me. Everybody wants to help. Everybody, they see you like you are not the same person like before.

Participant five shared her experience of discrimination when looking to further her schooling to get a matric certificate. She reported that the community look down on people with disabilities, and described being made to be seen as not good enough to further her education. Although she does not have cognitive impairments, she described being perceived that way because she is a wheelchair user.

Participant 5: I can say most of the community look at us down as if we're nothing. Then most of them don't believe in us… because one time I was like I wanted to get a car and start driving, or to go to school. Because the schools I went to didn't have matric. I was like, I want to continue with my studies so I can get a matric. Then they were like you are

not good enough for that, just because of the school that I went to or the situation of how I am.

The participants' accounts also revealed a general negative attitude towards people with disabilities, and participation in the community to be a disheartening and exclusionary experience because they feel they are perceived as being abnormal.

Participant 1: …it's like you are not normal

Participant 3: …some do distance us from them, and they also have like maybe that bad attitude of a person in a wheelchair cannot work or cannot do anything…

In participant three's interview, two possible solutions to being underestimated by community members emerged. Firstly, participant three explained that building a relationship with the people around you, and having an open discussion about disability may assist in changing the negative perceptions of the disabled population.

Participant 3: If you can build that relationship with them…they won't undermine you, and they won't underestimate you. Because what I always tell them is that you know being in a wheelchair doesn't mean that I can't do anything for myself, and I won't always be dependent to people that I am living with.

Secondly, she described a level of resilience required as a person with a disability when interacting with people in the community. She reported that people treat you according to the way you treat yourself, and by not underestimating yourself, you are teaching the community to treat you the same as other able-bodied individuals.

Participant 3: what I can say is that for the community to react on you battling it is the way you treat yourself or you take yourself. But if you have that personality, that strong personality not underestimating yourself the community takes you well as other people…

The next sub-category which emerged was that **people differ in how they treat people with disabilities**. All the participants reported conflicting experiences when mobilizing in the community and reported that it depended on the people they came across. Some members of the community were described to be supportive and friendly; however, all five the participants also reported experiences where people distanced themselves from them and were unwilling to assist when they were struggling. These experiences were described to contribute to the difficulties they

face when going places because the treatment from other community members was described to be as inconsistent and unpredictable as the quality of terrain in the outside world.

> *Participant 4: I think it depends on the people that you find there. Some of them are very accommodating, but some of them are not. It depends on the people.*

> *Participant 1: It depends on the people also. Some people are welcoming and friendly, some will just act like weird…*

> *Participant 3: There are people who will be good for you, there are people who won't be good for you so like you just accept whatever comes.*

The second category which developed within this theme was that the participants' personal attitude towards their disability influenced their coping strategies. It was found that **self-acceptance promotes perseverance**. Three of the five participants shared the sentiment that if you accept and believe in yourself it is easier to overcome and learn or grow from the challenges within the external world.

> *Participant 2: As long as you accept yourself there is nothing that can go wrong…first of all you need to accept yourself so that everything [is] going to be easy for you.*

> *Participant 3: Living with a disability is sort of a challenge, but I can't say it's a challenge as such because as long as you accept yourself and you love yourself before expecting other people to love you and you have that self-confidence on yourself yeah, it's fine*

Furthermore, it was noted that **time of disability in a lifespan** may be associated with better coping strategies**.** The participants with disability from birth were noted to cope better than those who experienced disability later in life. Two of the participants living with disability from birth were noted to be better equipped with regards to overcoming physical environmental, transport, employment and social challenges. This was evident in the demographic questionnaire where these two participants reported using public transport whereas the other three participants relied solely on private transport since acquiring their disability. Furthermore, these individuals were observed to be more motivated, adaptable, and confident in their abilities in and around their homes and broader community.

> *Participant 3: …some people don't take us as we are the same as them, they underestimate us somehow, but then I still take that as a challenge…that makes me grow.*

Participant 5: The experience that I have is like believing in yourself. Sometimes it can be hard when you're going to places, because most people won't be willing to help you. They will just look at you even if you are struggling. But then, I learned not to give up on that, keep trying until I reach where I need to be.

It was noted in participant three's remarks that she had observed a difference in the level of acceptance between those who had a disability from birth and those who acquired a disability later in life.

Participant 3: …some people get disability when they are old, and then for them it is difficult to accept it, and then they will think that no it is the end of life…

When comparing the participants, the individuals with disability later in life were also noted to be more socially isolated and did not have any work history since their disability. This was observed to be attributed to feeling as if they have limited prospects, and that there is a level of security and freedom at home compared to the community environment.

Participant 4: Yes, I'm more at home because at home I feel like I am free. I can move myself. I can do everything for myself without assistance.

Participants with disability later in life were noted to grieve their former life or the person they were before becoming disabled. Their accounts often hinted towards a comparison of their life before and after disability. This may be a personal barrier to the experience or perception of accessibility, as well as in being able to cope with the challenges the external world may bring.

Participant 4: It is difficult to be disabled, because [you] can't do the things you were doing before. You can't do them like you were doing them before.

Participant 1: …yeah it's hard, because like I'm not...like my life, it's not like before

Participant 2: …one day I will be [name] again, and I will go back to work again

In contrast, the participants with disability from birth, did not report this comparison and instead of looking back at what was, they were observed to be able to accept their life as it is. Their perception of themselves as individuals as well as the challenges they face as a person with a disability was observed to be different to the participants with disability later in life.

4.4 Summary of findings

This study aimed to explore the experiences and perceptions of wheelchair users with regards to accessibility. Three themes emerged from the accounts of the five participants. The first theme, “Not able to go where I want to go”, demonstrated the physical, attitudinal, and social factors that play a role in either hindering or facilitating accessibility. It was found that structural barriers such as limited space, rough terrain, and design of buildings or homes affected the participants’ ability to mobilise in their wheelchairs without requiring assistance from someone else. Furthermore, public transport was noted to have challenges with regards to cost (i.e. paying double for their wheelchair), design (i.e. too high for independent transfers, and no space for the wheelchair), and drivers attitudes (i.e. being impatient with wheelchair users due to time constraints). The second theme, “With others, I can go wherever I want to go”, highlighted the importance of social and familial support in accessing and participating in the community. Participants described this support to be essential to their participation in tasks they want and need to do, as well as to overcome transport challenges when needing to access public facilities such as clinic, churches and shopping malls. Lastly, the third theme that emerged was “Attitude towards disability impacts participation”. Within this theme, the participants revealed that the community often underestimates their abilities or makes automatic negative assumptions of people with disabilities. Participants described often feeling unwelcome and excluded within the community, which was particularly notable in the public transport system. The three themes that developed in this study demonstrated the complexity of accessibility, particularly in low-middle income communities.

CHAPTER 5 DISCUSSION

5.1 Introduction

This chapter will discuss the results addressing the experiences and perceived factors influencing accessibility of the participants within the study. The discussion and interpretation of the results will incorporate concepts aligned with the PEO and barriers and facilitators in the environment for occupational performance. The focus will be on the key findings related to physical and social environmental factors, and the role each plays as either a barrier or facilitator to participation.

5.2 Demographics

Disability is shown to increase with age (i.e. from 45 – 85+ years) in South Africa (Statistics South Africa, 2016b), however, this study represents women who acquired their disability from birth or at the young ages of 27, 32 and 33 years old. Furthermore, disability is also more prevalent among females compared to males in South Africa (Statistics South Africa, 2014, 2016b), and in the Gauteng province specifically, this was also found to be the case (Statistics South Africa, 2016a). For this reason, this study included only female wheelchair users and gained insight into their unique experiences as women with disability. This study demonstrates that the impact of 'triple oppression', as described by Naidu et al. (2005), may still be prevalent amongst black women with disabilities in South Africa. Despite the 2001 education White Paper 6 aiming to build an inclusive education system by 2021, this study provided evidence that this has sadly not been successfully achieved. One participant's accounts of her experience of being denied the opportunity to receive her matric certificate revealed that discrimination and exclusion in education still exists (Khumalo & Hodgson, 2017). Similar experiences related to the inequalities found in the schooling system were also found in the study by Rule and Modipa, (2011), and thus highlights that inaccessibility has a far reaching impact on the livelihoods of people with disabilities.

Although the participants were all of employable ages (i.e. between 25 and 47), four of the five participants reported to be unemployed with one being only part-time employed. This offers supporting evidence for studies that show PWD, and more so WWD, are less likely to be employed which consequently exacerbates their vulnerability to poverty (Emmett, 2006; Mitra, Posarac & Vick, 2011; World Health Organisation and the World Bank, 2011; Mitra & Sambamoorthi, 2014). The inequalities in employment of WWD are also highlighted in the results from the World Health Survey which revealed the employment rate of men with disabilities to be

52.8% whereas a mere 19.6% was seen amongst WWD (World Health Organisation and the World Bank, 2011). Some studies also describe the discrimination and disparities WWD face in both the access to and quality of healthcare services (Matin et al., 2021). While this study confirms the experience of reduced access to healthcare, limited findings emerged with regards to the quality of the service received. Further to this, the increased vulnerability of WWD to violence has also been reported in literature (Naidu et al., 2005); however, this study cannot confirm nor deny these findings.

5.3 Environmental factors

In this study, the environment has a significant impact on an individual's degree of disability (World Health Organisation and the World Bank, 2011) with all the participants describing environmental factors as either facilitating or hindering their daily functioning, and consequently their disability experience. The PEO model describes the environment and the person to be interdependent, and hence, the interaction between these two components influences the overall experience of disability (Law et al., 1996). This is also highlighted in the ICF where environmental factors and a person's health condition(s) are shown to be interconnected and have a mutual effect on a person's disability (WHO 2001) (World Health Organization, 2001). Individuals using wheelchairs are faced with many challenges within our inaccessible world, particularly as a result of physical, social and attitudinal barriers in the home and community environment (Chappell & Johannsmeier, 2009; Hussey, MacLachlan & Mji, 2017). This study provided unique insights into facilitative and/or inhibitory physical and social environmental factors women with disabilities experience in resource-constrained urban communities.

5.3.1 Physical environment

The first objective of the study was to explore the experiences and perceptions of wheelchair users regarding: the physical environmental factors influencing accessibility in a resource-constrained urban community in Johannesburg.

The impact of the physical environment was evident in the participants' reports that structural characteristics of the environment affect their ability to go where they want or need to go. The accessibility of the physical environment influenced their attachment of meaning to certain spaces and contributed to whether or not they chose to or were able to access public facilities and services (Brien et al., 2002). Whether it is in the home or during the journey from home to destinations such as clinics or churches, the participants are plagued with ongoing visible and

invisible obstacles preventing occupational performance in health maintenance and religious observance in these environments. The findings in this study reveal that wheelchair users in resource-constrained urban areas face considerable challenges when it comes to accessibility, irrespective of urban built infrastructure (Vergunst et al., 2015). Similar to other studies done in South Africa (Grut et al., 2012; Hussey, MacLachlan & Mji, 2017; Mji et al., 2017; Vergunst et al., 2017), poor quality of infrastructure and inaccessible transport services were identified as the primary physical barriers to accessibility for wheelchair users. Therefore, in order to promote the occupational performance of people with disabilities living in resource constrained contexts, improved adherence to existing policies and standards related to physical infrastructure needs to be better advocated for.

Three key structural features; having enough space, quality of surfaces and access to ramps, emerged as essential to promoting freedom of movement within the physical environment, but these are observed to be especially lacking in resource-constrained contexts. The Department of Public Works, (2001) and the 2008 South African National Buildings Regulations and Building Standard Act (Act No. 103 of 1977) stipulates the recommended accessible design features for various indoor and outdoor spaces, however, as seen in this study and that of Joseph et al. (2016), this ideal standard has not been consistently implemented in South Africa. The disregard for the needs of PWD, and more specifically in the study participants community, is evident in the failure to mention any adherence to the recommended standards in the 2010 Diepsloot Urban Development and Business Plan (Topham & 26'10 South Architects, 2010). Furthermore, this study found that wheelchair users, primarily those living in resource constrained conditions, suffer the effects of inaccessibility and poor service delivery before they have even left their home. This is apparent in the lack of consideration for the needs of wheelchair users in the RDP application process (Mbovane, 2018) . Despite providing a description of disability and physical requirements within the home, one participant reported her RDP home, and more specifically the bathroom, to be inaccessible and difficult to use. Thus, her environment makes one of the more essential occupations, self-care difficult to perform since a lack of sufficient turning space or optimal positioning of amenities makes it almost impossible for wheelchair users to perform their self-care tasks safely and efficiently.

In addition to the spatial setup and design, access to ramps and level ground was also identified as essential to promoting a sense of independence and competence within the home. Without these elements, participants described being reliant on others and not being able to do what they want to do according to their own time. One participant highlighted the positive impact of a ramp

and level ground when she described how the cement ramp and pathway from her front door to the entrance gate allowed her to greet guests who came to visit and open the gate without requiring assistance from her family. This seemingly small aspect of accessibility in her home facilitated her performance in the occupation of social participation and gave her a feeling of agency around her home environment. Although the support of family was described to be essential when living in an inaccessible physical environment, this dependence on others was also found to create a feeling of a loss of freedom amongst the participants. This experience of lack of choice and control was described by Reid et al. (2003) to be a unique vulnerability faced by women with disabilities as they perform their home related and mothering tasks. Living in resource-constrained circumstances also brings many additional challenges that affects more than the physical functioning of women with disabilities. One participant, who lives in an informal shack, highlighted this experience when she described feeling unsafe in her home, particularly during poor weather conditions. This is noted to be a common experience for people living in the Diepsloot community (Eliseev & Seale, 2006; Staff Reporter, 2006; Enoch, 2016; GroundUp, 2016; Marupeng & Sobuwa, 2020), and adds to the vulnerability of wheelchair users as the inaccessible environment makes it difficult to escape if it becomes dangerous, affecting the occupation of safety and emergency maintenance. Thus, together with the impact on wheelchair users' ease of mobility, it was found that an inaccessible home can also have consequential effects on their sense of security and overall emotional wellbeing. The implementation of accessibility standards within the home environment is hence an important facilitating factor for the promotion of personal autonomy as well as the successful community integration and participation of female wheelchair users.

The findings from this study also shed light on the problematic system of wheelchair service delivery for PWD in South Africa (Visagie, Duffield & Unger, 2015; Visagie et al., 2020). All the participants in this study were issued with four-wheel folding frame wheelchairs which are suitable for indoor use, but are not appropriate for the rough outdoor terrain present in their resource-constrained setting (Visagie et al., 2015). Independent mobility facilitates access to education, work, and healthcare; however, the findings from this study indicates that having a wheelchair does not automatically ensure independent functional and community mobility or social participation. This may be understood to be the case for two reasons. Firstly, the poor quality of terrain impacts efficiency and functionality of the wheelchair, and secondly, the wheelchairs supplied are not aligned with the needs of the person or the reality of the inaccessible terrain (World Health Organisation, 2008; Mcintyre, 2010). This was also highlighted by the community-

based rehabilitation (CBR) workers in the Ugandan-based study by Seymour, Geiger and Scheffler, (2019) who described similar challenges related to wheelchair services. Consistent with results from this study, Visagie et al., (2015) found that having an inappropriate wheelchair still provides some autonomy and support in daily tasks, but simultaneuosly perpertuates the users exclusion from society by failing to align with the realities of the environment and occupational needs of the individual. As described by Armstrong et al. (2008), a wheelchair is a catalyst to increased independent function and community integration, but it is not an end in itself. Thus, although having any wheelchair does offer some freedom in a person's functional mobility required for engagement in other occupations , it is only truly a facilitator to accessing and participating in the community if the wheelchair, the environment and the individual's occupational needs are aligned.

Once outside the home, the challenges associated with inaccessible terrain and structural design unfortunately continue impacting community mobility. As a result of inconsistent or otherwise non-existent pedestrian sidewalks, participants reported limited space for their wheelchairs and hence being forced to take the risky alternative of sharing the road with motor vehicles. Along with this being a safety issue, the roads are not of an ideal standard either, with challenges such as potholes, rubbish and gravel also making it difficult, if not impossible, to propel a wheelchair. The inconsistency of the implementation of accessibility standards, and hence the unpredictability of the physical environment adds to the feeling of vulnerability when leaving the familiarity of the home environment. This makes going places a discouraging experience because there is no certainty as to whether or not the route and end destination is accessible. Having to continuously overcome these barriers when going places is very taxing and was found to be one of the reasons for social isolation amongst the participants. Physical barriers are reported as a common occurrence in many resource-constrained settings and are some of the main limiting factors for successful engagement in the occupation of community mobility and integration (Venter et al., 2002; Aldersey et al., 2018). In order to overcome geographical and infrastructural barriers, and to promote inclusion within the community, the participants described the need for alternative transport that specifically caters for wheelchair users.

The 2000 National Land Transport Act of South Africa stipulates that the diverse needs of all passengers must be considered in the planning and provision of public transport infrastructure and services; however, this study provides evidence that this has yet to be successfully achieved. Although efforts such as the rapid bus transit system, Rea Vaya, has attempted to improve transport services in Johannesburg, this too has not been implemented as planned in the

participants context. Consistent with multiple studies (Venter et al., 2002; Savill et al., 2003; Lister & Dhunpath, 2016), public transport was highlighted by all the participants as the biggest challenge faced by PWD. Mini-bus taxis are the predominant means of transport within the participants setting but are described to be inaccessible to wheelchair users due to both physical and attitudinal barriers. The design of the vehicles make it almost impossible to transfer in or out without the assistance of the drivers or passengers (Savill et al., 2003). The participants describe the taxis to be too high which adds to the frustration of having to rely on other people when they would prefer to manage their transfers independently. The spatial characteristics, particularly with regards to there being no space for the wheelchair inside the vehicle, also emerged as a contributing factor to the unpleasant experience of using public transport. As a result of the limited space, the wheelchair either has to be carried on the participants' laps or alternatively they are expected to pay double transport costs which causes financial strain (Vergunst et al., 2015). Therefore, from this study, one can see that the challenges faced by the participants within the transport system is multi-layered, and requires solutions on both a physical and social level.

The purpose of travelling in and around the community is to interact with opportunities or people at the destination, and hence accessibility is an essential core concept in transportation (Venter, 2017). The barriers experienced when using minibus taxis lead to the participants' avoiding the service all together, and as a result having to either hire private transport which is more expensive, or to rely even more on family members to assist with lifts when they are available. Rather than having to request support and feel like an inconvenience to the family, not participating is at times the preferred option (Seymour, Geiger & Scheffler, 2019). A significant desire to participate in occupations outside the home was described by all the participants; however, the multitude of obstacles faced not only on route, but also at their destination make it feel impossible to achieve. Velho, (2018) also found barriers in public transport to have a direct impact on wheelchair users' attempts to leave their home, and to consequently result in social isolation. Inaccessible transport impacts the participants' community mobility, but more significantly on their overall community integration and prospects for socioeconomic improvement (Maunder et al., 2015).

Inaccessible buildings, such as those without ramps, restricts entry for wheelchairs, and ultimately excludes the participants from accessing resources, and participating in occupations such as education or work. This was particularly evident in one of the participant's accounts of having to crawl up more than one flight of stairs in order to enter and exit her place of employment affecting her human rights and dignity when engaging in the occupation of work. Similarly, in the South African studies by Wordsworth (2003) and Maja et al. (2011), inaccessible buildings and

infrastructure was also found to be the primary barrier to the employment of PWD. Churches and clinics came up most often amongst the participants' as having limited access predominantly due to no ramps being available. In the instances where no ramps are provided, the participants are faced with either having to stay outside or alternatively undergo the uncomfortable situation of being picked up and carried in their wheelchair. Furthermore, the participants described being deprived of leisure occupations related to enjoyment such as sporting or recreational activities which cater for PWD. This was noted to not only be an issue of access, but also a problem of insufficient provision for both disabled and non-disabled people in resource-constrained contexts (Venter et al., 2002). In contrast to these places, one public facility which emerged to be most accommodating for wheelchair users were shopping malls. Despite the challenges of overcrowding, shopping malls were described to have better standards of access, particularly with regards to the bathrooms. Thus, even though the journey to get there is a challenge, the shopping malls provide some level of certainty due to their better compliance with accessibility standards and allow for independent engagement in self-care and shopping activities.

This study found that the physical environment offers more barriers than facilitators to accessibility for wheelchair users in under-resourced communities such as in the participants' context. As seen in the PEO model, a mutual relationship exists between the person and their environment. Therefore, since the physical environment in the study context has many barriers, one can see the disharmony this creates within the person-environment relationship, as well as the overall occupational performance. The only facilitators mentioned were the accessibility standards implemented in shopping malls, and most significantly was the physical assistance and alternative transport provided by the participants' family members which aided in overcoming physical environmental barriers and facilitated occupational participation.

5.3.2. Social environment

The second objective of the study was to explore the experiences and perceptions of wheelchair users regarding the social environmental factors influencing accessibility in a resource-constrained urban community in Johannesburg.

Unlike the physical environment, the social environment emerged to offer more of a balance between the barriers and facilitators to accessibility for the participants. Without a strong social support system, the participants described the struggles faced by PWD to be exacerbated. This was also found to be the case in the study by Mji et al. (2017) where a lack of family support was

found to be a barrier to accessing public healthcare services. With the help from others, the participants can go wherever they want to go and, in some ways, this offered a level of freedom in their inaccessible structural environment. A supportive social environment was found to be essential to occupational performance as well as the access to and participation in resource-constrained communities such as Diepsloot. This was evident in a participant report about her previous colleague assisting with transport once weekly after work so she could participate in a table tennis club for wheelchair users. Although relying on the assistance of others to overcome physical barriers is coupled with feelings of frustration, the participants described having help from those closest to them to be a vital asset in their lives (Barclay et al., 2016).

This study found the support of family to be one of the biggest facilitators to wheelchair users' access, and more specifically in overcoming the barriers presented in the physical environment. In contrast to Mji et al. (2017), all the participants reported positively on their family and the appreciation they feel for them and the assistance they provide. With the help from family, the participants can perform home-related or self-care tasks they do not manage to do alone, as well as access public facilities such as shopping malls, churches and clinics. Family members facilitate access to the community either through assisting with pushing the wheelchair over inaccessible terrain or by providing alternative transport in their own private vehicles. The facilitative role of family members was also revealed to potentially influence the level of support received from other members of the community. This was highlighted by one participant who shared that if a person's family does not support them, no one will. Thus, lack of family support may be a contributing factor to social exclusion which, as described by Hussey, MacLachlan and Mji, (2017), contributes to the poverty experienced by PWD in South Africa. The presence of social exclusion amongst PWD was further highlighted by a participant's report that PWD may be kept hidden from the community. She shared that she was able to develop a positive sense of self-worth, and confidence in who she is because she was not kept hidden by her mother and instead felt fully supported by her family. Therefore, it is evident from the findings in this study that family support is not only an important facilitator for occupational performance and community integration, but also for the person's socioemotional wellbeing and self-concept.

Community attitudes towards disability was also found to impact on the participants' participation and contribute to the experience of social exclusion. Despite feeling included within their families, a level of inconsistency was noted in the support for PWD within the broader community. All of the participants described experiences where community members' actions or behaviours made them feel unwelcome. This was particularly evident within the public transport system where the

participants' reported on being treated differently compared to the able-bodied passengers. One participant described a difficult experience where she was treated differently to the other able-bodied passengers which left her feeling embarrassed and discriminated against and contributed to her avoiding the use of taxis as her means of transport. The inaccessibility of transport both physically, financially and socially consequently affects access to employment, community resources, and ultimately the inclusion within society. The review by Sze and Christensen, (2017), which was based in the United States, United Kingdom, and Hong Kong, also found accessible transport to be a vital facilitator for community integration, access to urban resources as well as for the promotion of quality of life. The challenges of transport are therefore not only isolated to the physical design elements of the vehicle, but also include the 'invisible' barriers such as drivers' attitudes. Insight into the negative attitudes of taxi drivers is apparent in their unwillingness to take the time to wait for the participants to approach, enter or exit the vehicle. The drivers were reported to be in a rush and particularly impatient during peak times which highlights the prioritisation of revenue over the accommodation of users with reduced physical mobility (Lister & Dhunpath, 2016). The experiences of frustration, humiliation and discrimination at the hands of drivers was revealed to cause considerable strain when attempting to access the community which further highlights the need for improved community awareness and education on disability.

Challenges related to community attitudes was found in participants' reports of PWD being underestimated, specifically with regards to wheelchair users being assumed to have cognitive fallouts and incapable of being productive members of society. This study, along with that of Joseph et al. (2016), found PWD to share a strong desire to be viewed as equal and more specifically as individuals who can offer valuable contributions to society. Negative preconceived perceptions or misassumptions of wheelchair users, and PWD in general, add to the participants difficulties when accessing places or services and impacts on their quality of engagement in social participation and within the community (Barclay et al., 2016). The participants' reports of stigma and negative perceptions of PWD in South Africa are also supported in the study by Hussey, MacLachlan and Mji, (2017) where attitudes were found to be a direct cause or contributing factor to the inaccessibility of healthcare. Further to this, underestimating the abilities of wheelchair users was found to also potentially impact on access to the occupation of education. One participant revealed that she was unable to complete her matric as a result of being seen as incapable despite the fact that she does not present with cognitive disabilities. This provides further confirmation for literature which shows that PWD experience inequalities in the education system (Matshedisho, 2007; Chiwandire & Vincent, 2017; Khumalo & Hodgson, 2017). In spite of

the 2016 White Paper on the Rights of People with Disabilities, and the 1997 Integrated National Disability Strategy, this study together with that of Cramm et al. (2012) found that PWD continue to be burdened by not only physical inaccessibility but also the predominant misconceptions and negative social attitudes towards disability.

Although a predominant negative attitude towards disability was evident in this study, contrasting findings also emerged from the participants' descriptions of positive experiences in the community. It was found that people differ in how they treat PWD, and ultimately, as described by the participants', it depends on the people they come across. This variability of attitudes was highlighted in one participant's report that some people perceive wheelchair users as people who aren't productive members of society, while others treat them as a fellow human beings who are just as capable as able-bodied individuals in performing their occupations. Similar experiences related to the social barriers and facilitators experienced by wheelchair users were also described by the participants in the Bangladesh-based study by Aldersey et al. (2018). One particular area of the community these conflicting experiences were found, was in the public transport system. While the taxi drivers were not always willing to help, the passengers, and more specifically female passengers, were found to be more accommodating. One participant shared that the female passengers would shift up and squeeze in to make space for her wheelchair so that she does not have to pay double transport fees. Therefore, amongst the negative experiences, there are also moments of kindness and care from strangers which provide a sense of inclusion and social support while performing occupations the community.

There are undoubtedly many challenges related to community attitudes, however, two possible solutions were offered by one of the study participants. She reported that actively building relationships and providing education on disability to the members of the community could aid in changing the false perceptions of PWD. Rule and Modipa, (2011) also discussed the importance of countering society's negative perceptions of disability through offering awareness-building workshops on disability within communities. This solution is also supported within article 8 of the Convention on the Rights of Persons with Disabilities (CRPD) which stipulates that it is the duty of State Parties to promote awareness of the contributions and capabilities of PWD as well as to combat stereotypes and prejudices associated with disability (United Nations, 2006). The second solution to improving the community's perception of disability was reported to be through leading by example. The study participant shared that community members learn to treat a person with a disability by the way they treat themselves, and that by not underestimating herself, she was able to teach those around her to treat her the same as able-bodied individuals. This highlights that

some of the facilitators for access are perhaps not only found in the external environment, but also in the personal qualities which reside within the individual (Joseph et al., 2016; Battalio et al., 2017).

This study found that an individual's personal attitude towards disability impacts on their ability to cope with the demands of the environment and hence also affects their access to and participation in their occupations. This finding is supported in the PEO model where individual qualities are described to influence the way in which a person interacts with the environment and performs their occupations (Law et al., 1996). Three of the participants shared the importance of self-acceptance and how this is a facilitator for perseverance when faced with difficult challenges. By not underestimating their own capabilities, these individuals described being able to grow and learn from their struggles which makes living with a disability in an inaccessible world more possible. Similar findings were also found in the study by Joseph et al. (2016) where individuals who experienced traumatic spinal cord injuries reported successful participation and reintegration to be dependent on one's ability to deal with the "new-self", and to identify possible facilitators. Thus, to navigate the attitudinal barriers and to optimally engage with the community, PWD are perhaps required to develop strong sense of self and an extra level of resilience to negotiate challenges.

Together with the personal attitude towards having a disability, this study also found that the time of disability in the participants' lifespan may influence the way in which they cope with their disability and the barriers within the environment. It was noted that compared to the three participants who experienced their disability later in life, the two participants who acquired their disability at birth coped better with the physical environmental challenges. Despite the barriers they reported to experience, both these women described believing in themselves, not giving up, and instead seeing the challenges they face as an opportunity to grow. In contrast, the participants with disability later in life were noted to grieve their former self and to describe a comparison of their life before and after disability. This was observed to be a barrier to fully accepting their new-self and adjusting to their life as it is now. The challenges related to acceptance following unexpectedly acquiring a disability was also noted in other studies by (Joseph et al. (2016), Terrill et al. (2016), and Battalio et al. (2017). Since the women with disability from birth haven't had this experience of a 'before and after life', it was noted to make them better equipped to overcome environmental challenges as they don't know life to be any different. This absence of comparison could, therefore, be a reason for their positive personal attitude and level of self-acceptance, as well as another potential intrinsic facilitator for managing the inaccessibility of the outside world.

This study found that, within resource-constrained communities such as the participants' context, the social environment offers essential facilitators to overcoming the barriers evident in the physical environment. Through the help from others, both family and strangers, the participants can participate in valued occupations of self-care, health maintenance, and community and functional mobility. Having social support was found to bring some balance to the imbalance created by the inaccessible physical environment, and is an important enabler of occupational performance. Together with external social support, the intrinsic qualities of the person such as coping strategies, and level of acceptance and adjustment to disability was also found to influence participation in chosen occupations. These findings are supported by the PEO model which emphasises the equal influence that the environment as well as the person has on the overall quality occupational performance.

5.4 Limitations of the Study

This study included a small sample size and all the participants were only from one resource-constrained urban community in Johannesburg. For this reason, the findings may not be transferable to all female wheelchair users, however, transferability to wheelchair users living in resource-constrained contexts may be possible due to the similarities of physical and social inaccessibility apparent in other communities in South Africa. Furthermore, the study only included female wheelchair users, and despite previous literature supporting the findings, the experiences of the participants may not be generalizable to the male population. In spite of the Covid-19 pandemic causing restrictions within the data collection process, such as access to a larger number of suitable participants and the completion of a transect walk, rich data was still obtained through the audio, visual, and observational means. However, considering the interviews were only conducted in English, this could influence the quality of the data obtained as the participants were not communicating in their home-language. Due to the qualitative, explorative design applied, this study provides more detailed insight into the lived experiences and realities of female wheelchair users' living in inaccessible, under-resourced, urban communities.

CHAPTER 6 CONCLUSION

6.1 Main Findings

This study found that, although South Africa is a signatory of the CRPD which aims to protect the rights of PWD, wheelchair users in resource-constrained communities are still facing a multitude of barriers to accessibility. The predominant barriers to access exist within the physical environment where infrastructural and transport designs are not aligned with the recommended standards such as the Department of Public Works, (2001), the 2008 South African National Buildings Regulations and Building Standard Act (Act No. 103 of 1977), and the 2000 National Land Transport Act. Structural challenges related to not having enough space for the wheelchair, poor quality of terrain, and the absence of ramps to enter facilities or buildings were found to be some of the main limiting factors to accessibility. Challenges related to the misalignment between the wheelchair, the needs of the individual, and the demands of the environment were evident, and was found to contribute to the struggles experienced in the occupation of community mobility and participation. In the public transport system, space for the wheelchair was also found to be a problem along with the design of the vehicle being too high which hence makes transfers almost impossible. As a result of these barriers, avoiding the service or place was found to often be the preferred option, and this may be a contributing factor to social isolation being a common experience amongst PWD. Due to the interconnected nature of the person and the environment, the restrictions within the physical environment in turn create barriers to participation in meaningful and essential occupations such as health maintenance, social participation, and work.

Although the social environment wasn't without its own barriers, it was found to offer more facilitators to access than the physical environment. Negative community attitudes towards PWD was found to be prevalent, and this was particularly noticeable in participant reports of feeling unwelcome and often being underestimated by the community. In contrast to these experiences, however, it was found to also depend on the people the participants came across. Moments of support and kindness were also described, and this was shown to create a sense of inclusion within the community. The most prominent facilitator to access for wheelchair users in the resource-constrained context of the study, was found to be the support of family. Not only do family assist in overcoming the physical environmental barriers, but they were also found to play an important role in promoting occupational performance, community integration and the development of a positive self-concept. The intrinsic qualities of the individual was also found to be a facilitator to access with personal attitude towards disability being noted to influence their

coping strategies towards the challenges they face in the environment. Furthermore, the time of disability in the person's lifespan was also shown to influence coping strategies. Acquiring a disability from childhood was observed to positively influence the acceptance of and adjustment to disability, as well as their perception of the barriers they experience on a daily basis. The individuals with disability from birth don't appear to experience grief for their former self or the comparison of life before disability, and this was found to be a possible contributing factor to a positive personal attitude towards navigating an inaccessible world.

6.2 Recommendations

6.2.1 Recommendations for clinical practice

With the physical environmental barriers remaining prevalent in South Africa's resource-constrained communities, the importance of advocacy for the rights of PWD cannot be overlooked. A supportive social environment assists in overcoming the challenges of inaccessibility in the physical environment, and hence, developing community awareness and combatting negative attitudes towards disability is essential to the community integration and occupational performance of PWD. Furthermore, since this study found that the intrinsic qualities of the individual such as attitude towards disability and level of acceptance can influence access and participation, healthcare professionals have an important role in the education and promotion of their clients' socio-emotional wellbeing strategies.

6.2.2 Recommendations for further research

The inaccessibility of the physical environment is well supported in literature, and hence further qualitative research into the lived experiences of wheelchair users will provide more insight into the impact of this inaccessibility on an individual level, and assist in identifying and prioritising realistic solutions within the South African context. Further research into possible accessibility facilitators within the social environment as well as the intrinsic qualities of the individual, may also assist in guiding the social supports required within the community. A study with a larger sample size and the inclusion of participants from more than one resource-constrained community will allow for more transferability of results, and assist in providing a deeper understanding of the unique realities faced by female wheelchair users.

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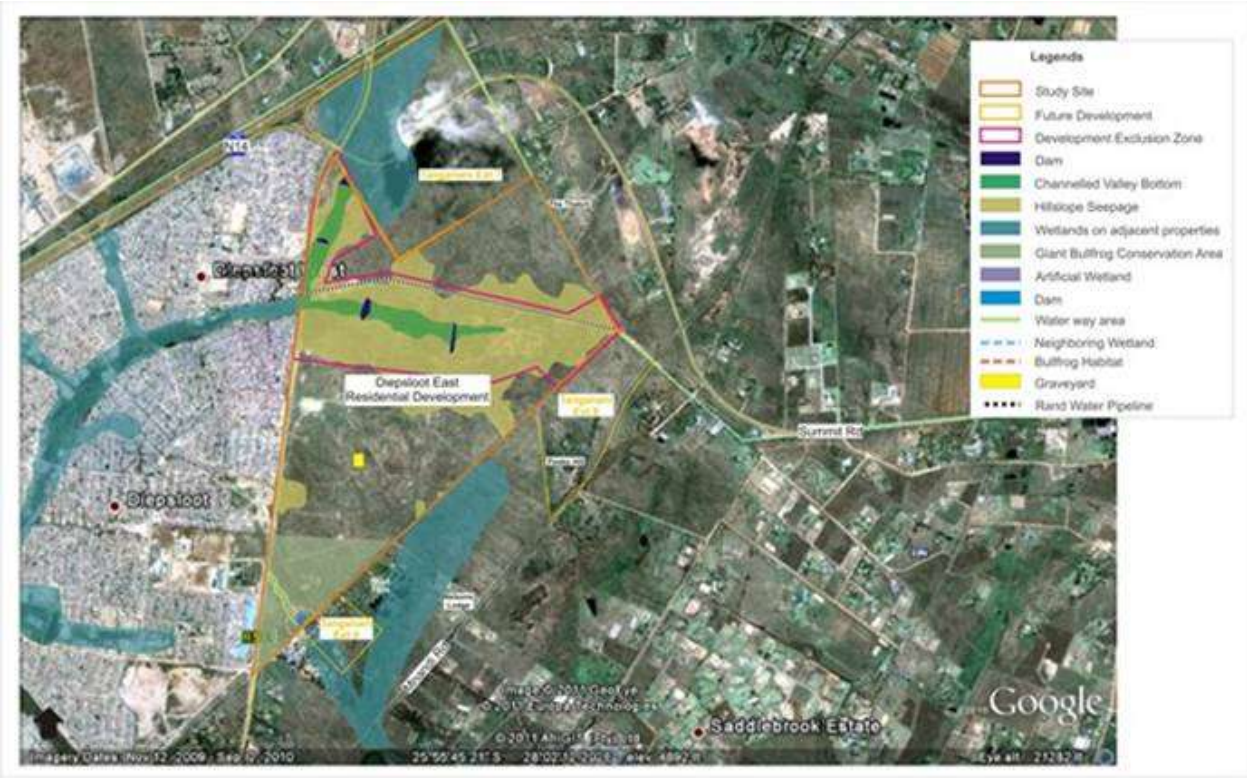
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ANNEXURE A: Context of study



ANNEXURE B: Demographic questionnaire

Participant number: Date:

Age: Diagnosis:

1. Medical history:

2. Where were you admitted for rehabilitation?

3. What was your length of stay at the rehabilitation centre?

4. Date of discharge from rehabilitation centre?

5. What equipment were you given?

6. Who funded or paid for your equipment?

7. Do you feel your wheelchair is appropriate for your environment?

8. What occupations (work or activities) do you participate in on a daily basis?

9. Is your wheelchair appropriate for your daily activities or occupations?

10. Can you self-propel your wheelchair?

What mode of transport do you use to access your community?

ANNEXURE C: Interview schedule

1. Could you please tell me about your experience with disability?
    - Probe: When did you get your disability/How long have you lived with a disability?
2. What are the effects of living with a disability on your participation in your daily activities or occupations?
    - Probe: Are you able to participate in activities that you enjoy?
    - Probe: What barriers do you face when wanting to participate in work or community related activities?
    - Probe: What facilitators do you experience in your participation in work or community activities?
    - Probe: Do you feel included or connected to your community?
3. How easy is it to get around within your home?
4. What is your experience on the roads/paths that you use on a daily basis?
    - Probe: What are the types of surfaces or terrain you face?
    - Probe: How do you manage ramps or curbs and raw sewerage or other waste?
    - Probe: How does your wheelchair manage over the terrain?
5. Tell me about your experience using public transport?
    - Probe: What kind of transport do you use?
    - Probe: Can you tell me about how you access the vehicle?
    - Probe: Are the drivers or other passengers supportive?
6. What public facilities do you need to access? How do you manage accessing these public facilities?
    - Probe: what is your experience using bathrooms or toilets?
    - Probe: what barriers or limitations do you face when wanting to access your community resources?
    - Probe: What facilitators or support do you experience when accessing your community resources?
7. How do your community members respond to people with disabilities in your community?
    - Probe: How has your community treated you since your injury/illness? Have you faced any social challenges?
    - Probe: Is there stigma related to disability in your community?
    - Probe: Is there a level of support in your community for people with disability?
8. How does accessibility in your environment impact your life?
    - What are the main barriers do you face on a daily basis?
    - What facilitators or support do you have in the environment?

9. Is there anything else about accessibility that we haven't already talked about and would like to share?

ANNEXURE D: Photographs





















ANNEXURE E: Ethics certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research & Post Graduate Affairs)

TO: Mlles S Edwards and F Sinnett
School of Therapeutic Sciences
Department of Occupational Therapy
Medical School
University

E-mail: syd6312@gmail.com

CC: Supervisor: Dr D Franzsen <Denise.Franzsen@wits.ac.za>
and <HREC-Medical.ResearchOffice@wits.ac.za>

FROM: Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2019/11/28

REF: *R14/49*

PROTOCOL NO: **M190947** *(This is your ethics application study reference number. Please quote this reference number in all correspondence relating to this study)*

PROJECT TITLE: *Accessibility of low-income urban communities for wheelchair users in the South African context*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to the Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps

ANNEXURE F: Letter to and permission from the Bona Lesedi Disability Centre Manager



Department of Occupational Therapy
Wits Education Campus

School of Therapeutic Sciences, Faculty of Health Sciences, 7 York Road, Parktown, 2193, South Africa
Tel: +27 11 717 3701 | Fax: +27 717 3709 | Email: leilane.bogoshi@wits.ac.za | **www.wits.ac.za**

Mr Agrippa Thabede

The Manager

Bona Lesedi Disability Centre

crn 381 Ingonyama Drive and Tlou Steet,

Extension 2,

Diepsloot,

2189

Dear Mr Thabede

Re: Assistance to recruit participants for a research study

I Sydney Edwards am an MSc (Occupational therapy) student at Wits University, and I am currently commencing a research report looking to explore accessibility of low-income urban communities for wheelchair users in the South African context.

I'd like to explore the experiences wheelchair users face within the Diepsloot and Cosmos City community, specifically in terms of the environmental and attitudinal factors which influence their community access.

I am hoping you will be able to assist me in recruiting suitable candidates to participate who use wheelchairs on a daily basis, for the completion of one-on-one interviews and a guided walk along their routes of access in the community, which will take approximately 90 minutes in total. I would like to request that you recommend someone who is knowledgeable about the areas to accompany us on the walk as a guide. The community guide will be compensated for his assistance at a rate of R200 per hour.

The following individuals are required:

- People who are 18 years or older
- Individuals permanently confined to a wheelchair, and who can push their own wheelchair independently.
- People who have been discharged for at least 6 months after acute rehabilitation
- Individuals who can understand and speak English.

Your assistance would be greatly appreciated.

This study has ethical clearance from the Human Research Ethics Committee at the University of the Witwatersrand. For any ethical concerns or questions, please contact the chairperson of the Human Research Ethics Committee at the University of Witwatersrand, Professor Clement Penny via the administrative offices: Ms. Z Ndlovu/ Mr Rhulani Mkansi, Tel: 011 717 2700/2656/1234/1252, or email: Zanele.ndlovu@wits.ac.za; Rhulani.mkansi@wits.ac.za.

If you need any other information, you can contact myself or my supervisors:

Principal Researcher	**Supervisor**	**Co-Supervisor**
Sydney Edwards	Dr Denise Franzsen	Ms Faye Sinnett
syd6312@gmail.com	Department of occupational therapy	Department of occupational therapy
0822667816	University of the Witwatersrand, Johannesburg	University of the Witwatersrand, Johannesburg
	0117173701	011 717 3701
	Denise.Franzsen@wits.ac.za	Faye.Sinnett@wits.ac.za

Kind regards,

Sydney Edwards

Bona Lesedi
"See the light"

12 November 2019

Assistance to recruit participants for a research study

To whom it may concern

Bona Lesedi Disability Centre is a non-profit organisation that deals with persons who have intellectual and/or physical disabilities. The Centre was established in 1999 in the area of Diepslooot and relocated to 14 Koedoe road &du Toit Street Centurion as a community based rehabilitation centre.

This communique serve to inform you and your department that Bona Lesedi Disability Centre has given permission to Sydney Edwards to explore the experiences wheelchair users face within the Diepsloot and Cosmos City community.

Sincerely,



Aggripa Thabede
Centre Manager

ANNEXURE G: Information sheet

INFORMATION SHEET

Study title: Accessibility of resource-constrained urban communities for female wheelchair users in the South African context

Hello,

I, Sydney Edwards, am an MSc (Occupational therapy) student at Wits University, and I am doing research looking to find out how easy it is to move around in a wheelchair in your community. In this research I want to find out about your experiences looking at the environmental and the attitude of other people.

I am inviting you to take part in a research study to assist me in understanding your experiences as a wheelchair user in your community, and to identify any challenges or facilitators you face daily.

What is involved in the study:

I will ask you to complete some information about yourself and your wheelchair use on a form which will take about 5 minutes to complete. I will help you if necessary. Then, I will ask you questions about your experiences of using a wheelchair in your community. This will be in an interview format for about one hour. The interviews will take place at the Bona Lesedi Disability Centre, and a suitable day and time for the interview will be arranged with you beforehand. I am asking your permission to audio record the interview, as I cannot write fast enough to write down all your answers to the questions. I would then like to accompany you on a walk through an area you go to often (e.g. shops, taverns, churches etc.) and see how you manage with the roads, buildings and people you have to deal with regularly. I will ask questions and you will be asked to explain to me what is easy for you and what you find difficult and you would like to change. I would like your permission to take photographs or will ask you to take photographs of what is easy and difficult for you. This will take about 30 minutes. The photographs will only be used for study purposes to give a real-life understanding of what you experience every day. No copies will not be printed out for personal use, and I will not include your face or any identifiable features of the environment (e.g. businesses) by blacking or blurring it out.

How will confidentiality be ensured:

If you agree to take part in the research, please note that participation is voluntary. You can refuse to take part or can decide to withdraw from the study at any time without penalty or consequences.

How will the information be used:

All the information will remain anonymous and no names will be used in the write up of the research or analysis of the information. If something you said is especially important to explain the experiences of wheelchair-users in your community, I may ask permission to use a quote from your interview, without your

name or anything that may identify you when I write up the results of the study. Information will be stored safely and securely on Wits University's electronic servers and all your identifying information will be removed from the information I get from the interview and the transcripts. I will keep your consent forms that contain your name separately from any other documents. Your name or other information that may identify you, will not be made public at all. None of the information from the study will be used for any other reasons than for the study. After the study is completed, the audio recordings will be erased within either two years of the publication of the research findings, or six years, if no publications arise from this research

Ethics information:

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

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

Feedback on the study will be available on request.

Reimbursements:

Participants will be reimbursed for travel fees to the clinic at a base rate of R50 for a return trip.

Contact details of researcher/s:

- Sydney Edwards, Principal Investigator, telephone no. 0822667816, or by e-mail at syd6312@gmail.com,
- Denise Franzsen, Supervisor, on telephone no. 0117173701, or by e-mail at denise.franzsen@wits.ac.za
- Faye Sinnett, Co-supervisor, on telephone no. 011 717-3701, or by email at faye.sinnett@wits.ac.za

If you have any further questions, please feel free to contact me.

Thank you.

Sydney Edwards (B. Occupational Therapy)

ANNEXURE H: Participant consent form



PARTICIPANT CONSENT SHEET

Project title: Accessibility of resource-constrained urban communities for female wheelchair users in the South African context

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
2. I was given time to read it, or had it read to me, in the language I best understand;
3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;
5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;
6. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained
7. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Contact details:

- Sydney Edwards, Principal Investigator, telephone no. 0822667816, or by e-mail at syd6312@gmail.com,
- Denise Franzsen, Supervisor, on telephone no. 0117173701, or by e-mail at denise.franzsen@wits.ac.za
- Faye Sinnett, Co-supervisor, on telephone no. 011 717-3701, or by email at faye.sinnett@wits.ac.za

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Name of participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:

Name of Witness: _____
Signature: _____
Date: _____

ANNEXURE I: Participant consent form for audio recording



CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION

Project title: Accessibility of resource-constrained urban communities for female wheelchair users in the South African context

I hereby consent to audio recording of the interview.

I understand that:

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

Name of participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:

Name of Witness: _____
Signature: _____
Date: _____

ANNEXURE J: Participant consent form for photographs



CONSENT FORM FOR VISUAL RECORDING (PHOTOGRAPH) OF STUDY PARTICIPATION

Project title: Accessibility of resource-constrained urban communities for female wheelchair users in the South African context

I hereby consent to visual recording of the interview, and transect walk in the form of photographs.

I understand that:

- The recording will be stored in a secure location (a locked cupboard or password protected computer) with restricted access to the researcher and the research supervisor.
- The recording will be transcribed and any information that could identify me will be removed
- My face and voice will not be identifiable in any visual recording
- The recordings will normally be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years, if no publications arise from this research, or:
- The film, with all identifying information directly linked to me removed, will be stored permanently and may be used for future research
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research.

Name of participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:

Name of Witness: _____
Signature: _____
Date: _____

ANNEXURE K: Turnitin similarity report

S Edwards- 2252563- Msc Research report 2021

ORIGINALITY REPORT

6%	4%	3%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	"The United Nations Convention on the Rights of Persons with Disabilities", Springer Science and Business Media LLC, 2017 Publication	1%
2	hdl.handle.net Internet Source	<1%
3	mafiadoc.com Internet Source	<1%
4	www.uj.ac.za Internet Source	<1%
5	Christoffel J. Venter, Thomas E. Rickert, David A. C. Maunder. "From Basic Rights to Full Access: Elements of Current Accessibility Practice in Developing Countries", Transportation Research Record: Journal of the Transportation Research Board, 2003 Publication	<1%
6	dcidj.org Internet Source	<1%
7	researchspace.ukzn.ac.za	