



Hunger Meets Healthcare: Investigating the Barriers to Public Healthcare Access for Food Insecure Patients in a Low-Resourced Cape Town Suburb

Dissertation presented for the degree of Master of Philosophy in Environmental and Geographical Science

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Abstract

Food insecurity is a significant barrier to public healthcare in South Africa, affecting childhood development, non-communicable disease (NCD) management, and the complexities of HIV/AIDS and Tuberculosis (TB) care. Addressing the social variables impacting health within South Africa remains a challenge for the formal health system. Low-income neighbourhoods, affected by rapid urban development and historical marginalisation, continue to grapple with poverty, hunger, housing instability, and poor health outcomes. Inadequate access to nutritious food creates profound challenges within public healthcare. Addressing these challenges necessitates not only targeted interventions, but also systemic changes in healthcare policies and enhanced collaboration between community support services and the formal health system. This study aims to examine the perspectives of healthcare workers regarding hunger as a barrier to healthcare. It investigates how a community clinic and social support services collaborate to address issues related to hunger, malnutrition, food insecurity, and health equity. This thesis is contextualised through two conceptual frameworks: UNICEF's systems-thinking approach to maternal and child nutrition, and the World Health Organisation's (WHO) Social Determinants of Health (SDOH) framework.

Key findings from this case study reveal that food insecurity significantly impedes patients' adherence to TB and HIV/AIDS medication regimens. Diet-related issues contribute to the lack of improvement in patients with high blood pressure and diabetes who are on medication, demonstrating a direct link between poor diets and the ineffectiveness of stand-alone treatment. Additionally, there is a disconnect in basic health information, limiting patients' understanding and agency over their illnesses. Health stigma is prevalent, underscoring the need for support groups, and the absence of socio-economic context in medical staff training affects their initial contextual knowledge on the social issues faced by patients within the area as well as knowledge on available social services offered in the area. Addressing food insecurity and related barriers is crucial for improving healthcare access and outcomes. Effective communication and integration within healthcare and community support systems are essential to address the complex nature of these issues. This research highlights the need for healthcare models that incorporate a social perspective to effectively address the challenges faced by individuals in low-income areas.

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List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
CBS	Community Based Services
CHW	Community Health Worker
CNP	Certified Nurse Practitioner
CSDH	Commission on Social Determinants of Health
CSG	Child Support Grant
DALYs	Disability-adjusted Life Years
DOTS	Directly Observed Therapy Short Course
Dr-NCD	Diet-related Non-communicable Disease
ENA	Enrolled Nurse Auxiliary
EPWP	Extended Public Works Programme
HiAP	Health in All Policies
HIV	Human Immunodeficiency Virus
HSRC	Human Sciences Research Council
LMIC	Low- and Middle-Income Countries
MDR-TB	Multi-drug Resistant Tuberculosis
NCD	Non-communicable Disease
NR-NCD	Nutrition-related Non-communicable Disease
NSLP	National School Lunch Program
NTP	Nutrition Therapeutic Programme
PN	Professional Nurse
SDOH	Social Determinants of Health
SNAP	Supplemental Nutrition Assistance Program
TB	Tuberculosis
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization
WIC	Special Supplemental Nutrition Program for Women, Infants and Children
WBOTS	Word-Based Outreach Teams
XDR-TB	Extensively Drug-Resistant Tuberculosis

Chapter 1

Introduction and Study Background

Globally food insecurity exacerbates poor health outcomes and medication non-adherence. Therefore food insecurity is increasingly being acknowledged as a barrier to healthcare, as limited food access and competing resource demands make it more difficult for patients to adhere to care and treatment recommendations (Young et al., 2014). Within the South African context, individuals living in informal settlements face inadequate living conditions and high burdens of disease, and these spaces continue to grow due to rapid urban growth (Wiemann et al., 2020). South Africa faces a quadruple burden of disease, marked by high rates of HIV/AIDS, maternal and child mortality, injuries and violence, and NCDs (Ndinda et al, 2018; Cloete, 2018). Coupled with this is the double epidemic of TB and HIV/ADS where co-infection occurs (Development Bank of South Africa, 2008). Compounding these factors is the impact of Social Determinants of Health (SDOH), such as food insecurity, on equitable access to healthcare. Socio-economic effects on health have short- and long-term impacts on individual and community healthcare, therefore SDOH are crucial for addressing health equity in public health care (Braveman and Gottlieb, 2014).

SDOH are the structural and social conditions such as, income, housing, education and employment, which impact people's wellbeing and contribute to unequal health outcomes (WHO, 2025). SDOH are marked by structural determinants such as social, political and economic factors, which impact individuals socio-economic position. These structural determinants directly impact SDOH, referred to as intermediary determinants by the WHO (WHO, 2010). These factors consequently impact individuals' equitable access to the healthcare system (WHO, 2010). Furthermore, social status impacts individuals' position within social hierarchies and these hierarchies impact their vulnerability and exposure to illnesses (WHO, 2010). Access is directly tied to equity where intermediary determinants of health such as geographical access to services, financial constraints, food insecurity, non-culturally appropriate care and limited health resources reduce equity in healthcare provision (Crooks and Andrews, 2009; WHO, 2010). Additionally, South Africa faces the triple burden of malnutrition, marked by undernutrition, macronutrient deficiencies and overnutrition, like other low-and middle-income countries (LMICS) (Sanders et al., 2019). These forms of malnutrition often overlap and result from poor diets and limited access to healthcare services

(UNICEF, 2020). Although some nutrition outcomes can be addressed through individual systems, most require a multi-system approach (UNICEF, 2020).

Through a comprehensive review of literature this thesis uses two conceptual frameworks, UNICEF's Systems Approach to Maternal and Child Nutrition and WHO's Social Determinants of Health framework, as theoretical lenses to investigate the barriers food insecure patients face to healthcare access in a localised South African context. This is done through a qualitative methodology where a single case study approach, using semi-structured interviews and field observations, is used to unpack these challenges from the perspectives of healthcare workers and local NGOs providing support to formal healthcare workers. It was beyond the scope of a master's thesis to get the perspectives of community members due to ethical and time constraints. Additionally, the core of the objectives was about understanding the perspectives of health workers and therefore did not include community members. This study used an integrated approach of these two conceptual frameworks to understand localised, context-specific issues and the role Community Healthcare Workers (CHWs) and social support play in bridging the gap between communities and healthcare systems. By combining these frameworks within a single community clinic setting, the research offers a comprehensive understanding of how systemic and structural barriers intersect in this community, while highlighting the critical need for multi-sectoral collaboration to identify and address these complex challenges effectively.

My interest in this study evolved out of my honours research which focused on food insecurity and agency and dignity in grassroot-led organisations in a low-income suburb of Cape Town.

This work led to a conversation with a public healthcare dentist about hunger and food insecurity management in the public healthcare sector. She reflected on the challenges of providing care for food insecure patients as they were unable to digest anaesthetic due to their hunger and therefore could not receive the care they needed. The dentist told patients that if they could purchase and consume a banana from the street vendor outside the clinic, they could keep their appointment. However, patients expressed they could not afford to do so. This signalled the gravity of the problem to this new doctor. As a result of this conversation, I began my own inquiry into the issue of public health equity and the SDOH affecting healthcare in Cape Town's urban low-income neighbourhoods. The doctors' insights, along

with my previous work on community social services, led to the use of UNICEF's and WHO's conceptual frameworks to guide my study.

1.1 Aim

This research aims to look at the perspectives of formal and community-based healthcare workers on the issue of the impediment of hunger in accessing public healthcare among patients. The primary aim is to gain insights into the broader array of barriers to public healthcare access faced by food-insecure patients and to investigate the extent to which community clinics and other social service systems collaborate to address these overarching concerns associated with hunger, malnutrition, food security, and health equity.

1.2 Objectives

1. To what extent do healthcare practitioners view hunger and food insecurity as barriers to healthcare treatment?
2. To what degree do the different key stakeholders' (doctors and nurses) knowledge/attitude/perceptions regarding the nutritional condition of their patients (such as hunger and malnutrition), shapes their provision of care and treatment?
3. What pathways do healthcare practitioners use to connect hungry patients to community support services, and what triggers referral?

1.3 Structure of Dissertation

Chapter 1 introduces the study by setting the study context. It provides an overview of the conceptual frameworks and study design used, how the study contributes to the broader literature, what drew me to the study topic, and the study aim and objectives.

Chapter 2 provides an in-depth review of the broader literature. The chapter begins by unpacking the conceptual frameworks, health equity, SDOH, and the evolution of food and nutrition security definitions and impact on health outcomes. It then moves on to look at how food insecurity acts as a barrier to HIV/AIDS, TB and NCD care. The final section looks at Community Health Workers (CHWs), Stigma and Social Support.

Chapter 3 describes the research methodology by first giving a site background and then moving into the study design, limitations and ethical considerations.

Chapter 4 comprises an in-depth analysis of the research findings which were thematically analysed.

Chapter 5 provides a critical discussion of the research findings in the same chronological order as the findings chapter. In this chapter the findings are situated in the broader literature and contextualised through the two conceptual frameworks used within the study and provides recommendations for future research.

Chapter 6 is the concluding chapter and provides concluding remarks on the study findings and its contribution to the broader literature.

Chapter 2

Literature Review

This literature review adopts a structured analysis rooted in two conceptual frameworks: UNICEF'S systems-thinking approach to maternal and child nutrition and WHO'S SDOH. These frameworks provide an integrative foundation for examining the diverse and interconnected factors shaping health outcomes within the study context, aligned with the broader literature on health inequities.

The review begins by establishing these guiding frameworks, setting a theoretical basis for analysing the intersecting drivers of health disparities. Systems-thinking, as outlined in UNICEF'S 2020 nutrition strategy, adopts a multi-systems approach that considers the interconnected roles of food, healthcare, water, sanitation, education, and social protection systems in maternal and child nutrition (UNICEF, 2020). This approach builds on UNICEF'S previous work by addressing the "triple burden" of malnutrition, marked by undernutrition, micronutrient deficiencies, and overnutrition. The systemic perspective offered by this framework aligns closely with the WHO'S SDOH framework, which conceptualises health as being shaped by social, economic, and environmental determinants influenced by structures of power, privilege, and access (WHO, 2010).

Following this theoretical grounding, each section of the review is structured to reflect these frameworks, providing a comprehensive understanding of health inequities. The first section examines health equity and the SDOH within urban environments, emphasising spatial and socio-economic disparities in healthcare access, particularly within informal settlements. This discussion reinforces the SDOH framework by underscoring how social and economic structures shape healthcare access across populations.

The review then addresses food and nutrition security, tracing its evolution from a focus on food supply to more holistic considerations of accessibility, cultural relevance, and nutritional adequacy. This section highlights the systems-thinking approach by examining the interdependencies among various sectors, such as food, healthcare, and social protection, and their combined impact on health outcomes.

In subsequent sections, the review explores the implications of food insecurity on HIV/AIDS, TB, and NCDs and the perspective of nutrition and food security through the life course. These sections illustrate the dual application of Systems Thinking and SDOH by analysing how systemic inadequacies perpetuate poor health outcomes, especially among vulnerable populations.

The final section considers the role of CHWs and social support in addressing these systemic challenges identifying them as the bridge between communities and health systems. Here, the review ties back to both frameworks by emphasising the potential of community-based initiatives to mitigate inequities, showcasing how collaborative, multi-system approaches can alleviate barriers to healthcare and enhance health equity.

By structuring the review in this way, each section builds upon and deepens the understanding of how Systems Thinking and SDOH frameworks illustrate the root causes of health inequities. Together, these frameworks support a cohesive analysis of the interconnected systems that shape health outcomes in the study context.

2.1 Conceptual Frameworks: Systems-Thinking and Social Determinants of Health

Instead of viewing the research area as a silo, systems-thinking serves as a valuable tool in interdisciplinary research to understand the various components that comprise a system

(Duboz et al., 2018). This conceptual framework emerged from the recognition of the need for holistic learning within the field. Arnold and Wade (2015) described systems-thinking as a set of skills that enhances the ability to identify and comprehend systems, predict their behaviours, and plan changes to achieve desired outcomes. By addressing complex problems where cognitive limitations and preconceptions can hinder understanding, systems-thinking enables researchers to grasp the intricate dynamics at play and facilitate meaningful change or gain a better understanding of the complexities at hand (Duboz et al., 2018).

As part of UNICEF's nutrition strategy from 2020-2030, they came up with a conceptual framework, informed by systems-thinking, on the Determinants of Maternal and Child Nutrition (UNICEF, 2020). This framework builds on their 1990 framework on causes of Child Malnutrition, which guided their nutrition programming over the past decade. This new framework differs in three key areas. Firstly, it recognises the shifting nature of child malnutrition, which encompasses the triple burden of undernutrition (stunting and wasting), macronutrient deficiencies (deficiencies in vital vitamins), and overnutrition (overweight and obesity). These various forms of malnutrition frequently overlap and primarily result from poor diets along with limited access to adequate care practices and essential health services (UNICEF, 2020). Secondly, it identifies that diets and care have an impact on the immediate determinants of maternal and child nutrition (UNICEF, 2020). Thirdly, it adopts a constructive perspective on the factors that support good nutrition in women and children, offering insights into the determinants of adequate nutrition (UNICEF, 2020).



Figure 1a: UNICEF's Systems Approach to Maternal and Child Nutrition Diagram

This framework is grounded in a systems approach to improving nutrition outcomes (UNICEF, 2020). The conceptual framework is similar to the WHO's SDOH framework but with a nutrition focus, however this thesis will focus on using their systems approach to nutrition as a guide along with the WHO's SDOH framework. UNICEF's framework looks to strengthen five key systems that impact child nutrition. These include the food, health, water and sanitation systems, education, and social protection systems, as seen in figure 1a (UNICEF, 2020). Addressing the changing landscape of child malnutrition calls for a renewed global approach that provides supportive diets, services, and practices for children, adolescents, and women, fostering nutrition-centred development across all life stages and environments (UNICEF, 2020).

While some nutrition outcomes can be met through individual systems, most require a multi-system collaboration to guarantee access to nutritious diets, sufficient nutrition services, and healthy practices for all children, adolescents, and women across the life cycle (UNICEF, 2020). This approach looks at the interconnectedness and interactions between the five systems to mitigate the notion that the determinants of malnutrition follow straightforward linear pathways (UNICEF, 2020). The aim is to better equip and hold the five systems accountable to address the goal of improving nutrition in children, adolescents and women and by addressing the triple burden of malnutrition (UNICEF, 2020).

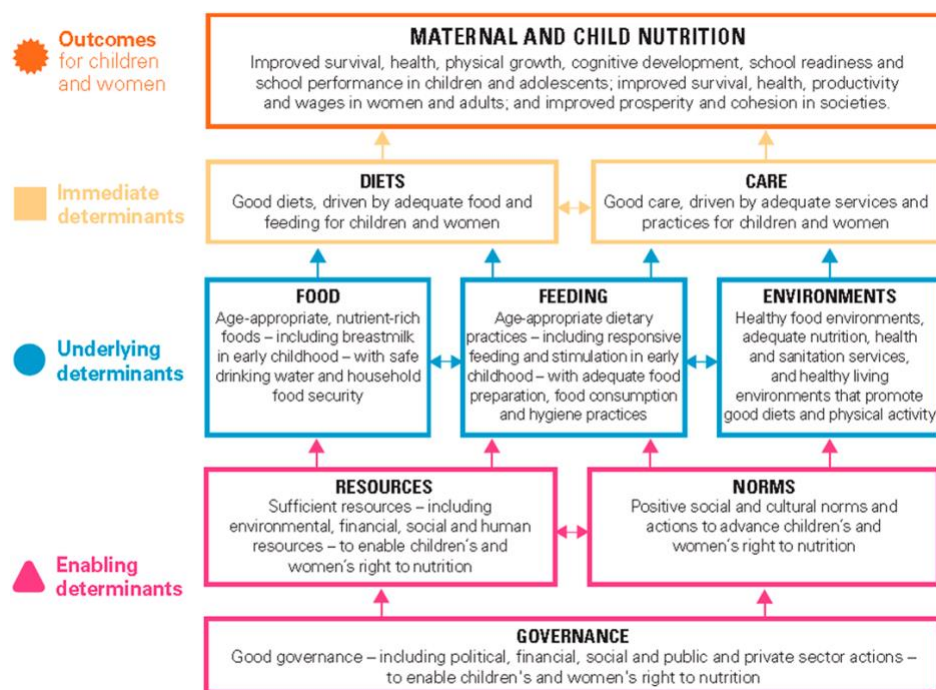


Figure 1b: UNICEF's Conceptual Framework on Maternal and Child Nutrition

As shown in figure 1b, UNICEF's Conceptual Framework on the Determinants of Maternal and Child Nutrition presents four tiers. The first tier, at the base of the diagram, is enabling determinants. These begin with good governance, including economic, social, public and private action, that uphold children's and women's right to nutrition (UNICEF, 2020). Good governance then shapes the availability of resources and norms which impact and interact with each other. Sufficient resources (environmental, financial, social and human) are necessary to enable children's and women's rights to nutrition, and positive social and cultural norms are needed to advance their right to nutrition (UNICEF, 2020).

The second tier is underlying determinants. In the diagram we see that enabling determinants impact underlying determinants. Underlying determinants include access to food that is age-appropriate, nutrient dense, as well as clean drinking water; appropriate feeding and hygiene practices; and healthy food environments that provide adequate nutrition, health and sanitation services to promote a healthy lifestyle. All these factors impact each other and impact the third tier of the framework, immediate determinants (UNICEF, 2020).

Immediate determinants consist of good diets and good care which foster adequate food and services for children and women, these factors also influence each other (UNICEF, 2020). The final tier of the framework is outcomes for children and women that are expected to be

seen if all other factors in the previous tiers are met. Meeting maternal and child nutrition needs would result in improved survival, mental and physical health, and other socio-economic factors such as wages, as well as factors that attribute to general wellbeing such as having belonging in society (UNICEF, 2020).

The next framework that will be discussed is WHO's SDOH framework.

The WHO's SDOH framework was developed by the Commission on SDOH to address the complexity of health (WHO, 2010). A primary goal of this framework is to clarify the distinction between different levels of causation, explaining how social hierarchies are formed and the resulting conditions that shape daily life (WHO, 2010).

An important takeaway from previous health agendas is the tendency of international health policies to shift between two approaches: one that emphasises technology-driven medical care and public health interventions, and another that recognises health as a social issue requiring more intricate intersectoral policy actions. In this context, the commission sought to restore the second perspective, reinforcing WHO's constitutional commitments to health equity and social justice (WHO, 2010). When health is framed as a social issue, it can be understood in terms of social justice, allowing health equity to serve as a guiding principle for understanding health (WHO, 2010).

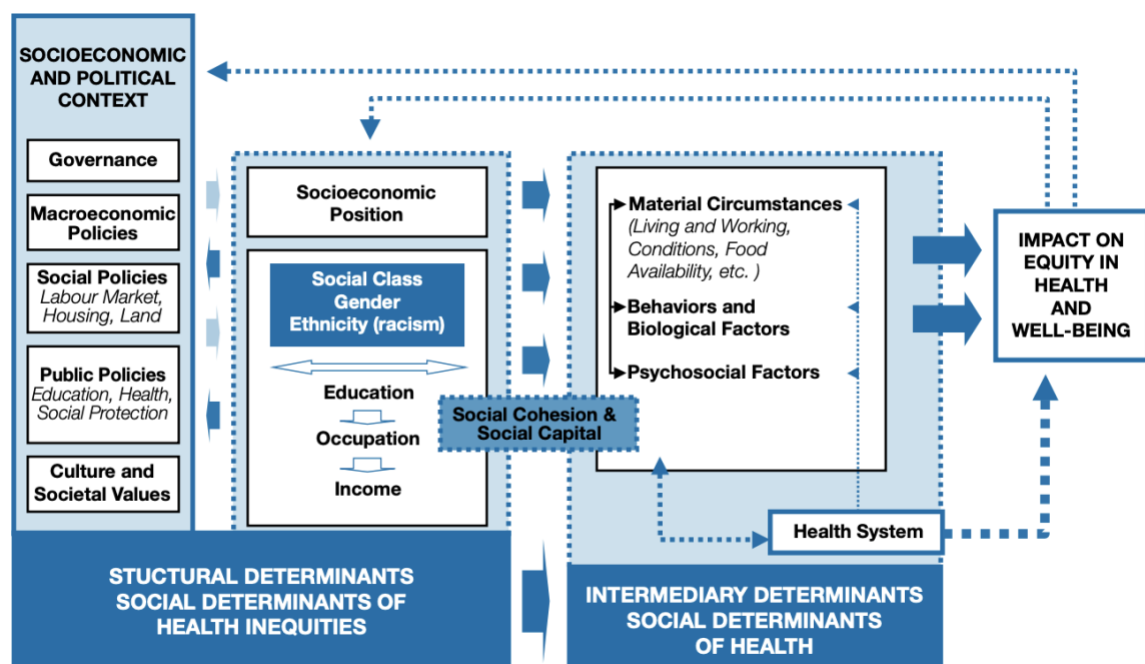


Figure 2: WHO's CSDH Framework

The CSDH (Commission of Social Determinants of Health) framework incorporates theories of the social production of health, which include overlapping approaches such as psychosocial approaches, the political economy of health, and eco-social frameworks (WHO, 2010). It illustrates how social, economic, and political factors lead to socioeconomic positions, structuring populations by income, education, occupation, gender, race/ethnicity, and other factors. These elements impact the SDOH, referred to as intermediary determinants in the framework (WHO, 2010). Consequently, individuals' positions within social hierarchies, influenced by their social status, affect their exposure and vulnerability to illnesses. Additionally, illness can adversely impact a person's social position, such as their ability to work (WHO, 2010).

The term "context" encompasses all the social and political systems that create and maintain social hierarchies, including jobs, schools, government, and cultural values. A crucial factor affecting health is the welfare state and its policies for resource distribution, particularly when such policies are absent (WHO, 2010).

In this framework, structural mechanisms are defined as the systems that create social classes and determine an individual's socio-economic status, influencing their power, prestige, and access to resources. These mechanisms connect to the main institutions and processes within the economic and political environment (WHO, 2010).

When discussing health equity, the concepts of context, structural mechanisms, and individuals' socio-economic positions are collectively referred to as "structural determinants." These factors contribute to "SDOH inequities," influencing health outcomes through various intermediary factors and underscoring the essential role of structural elements in shaping health (WHO, 2010).

The main categories of intermediary determinants of health include:

1. **Material circumstances:** This includes factors such as the quality of housing, neighbourhood conditions, financial resources for purchasing healthy food and essentials, and the physical environment of workplaces (WHO, 2010).

2. **Psychosocial circumstances:** This category encompasses daily stressors, challenging living conditions, interpersonal relationships, and the availability of social support and coping strategies (WHO, 2010).
3. **Behavioural and biological factors:** This includes aspects such as nutrition, physical activity levels, and patterns of substance use (e.g., tobacco and alcohol), which can vary among different social groups, along with genetic influences (WHO, 2010).

The CSDH framework distinguishes itself from earlier models by recognising the health system itself as a SDOH. This perspective highlights the critical role of access to healthcare, significantly impacting individuals' exposure to and susceptibility to health problems. Furthermore, the health system is vital in influencing the diverse effects of illness on individuals' lives (WHO, 2010). The following section will explore the role of health equity and SDOH in urban environments.

2.2 Health Equity and Social Determinants of Health

Community, Equity, and Access are three fundamental aspects of Public Health Care (PHC) systems. Each term holds geographical implications, making it essential to view these concepts through a geographical lens for effective PHC research and practice (Crooks and Andrews, 2009). The concept of Community in PHC is particularly significant because it distinguishes this model from other healthcare service delivery approaches (Crooks and Andrews 2009; Litsios, 2004). PHC needs to be localised to community-specific needs while addressing larger regional, national and international health concerns (Crooks and Andrews, 2009). Wiles and Rosenberg (2009) argue that the geographical scale significantly influences the organisation and delivery of care. For example, the way PHC is conceptualised at a broad level, such as within a provincial budget, can affect how it is implemented and experienced at a more localised level, such as within a community clinic (Crooks and Andrews, 2009; Wiles and Rosenberg 2009). Furthermore, the provision of such care relies on whether individuals within a community have equitable access to healthcare services and whether this access is not impeded by systematic discrimination based on individual or societal factors as seen within the SDOH framework (Crooks and Andrews, 2009).

The concept of *Distributional Equity* highlights the expectation that health services will be allocated throughout communities in a way that is sensitive to geographical and socio-economic factors, though this ideal is often unmet (Crooks and Andrews, 2009). Additionally, access is fundamentally tied to equity. For instance, obstacles like inadequate geographical access to services, financial constraints, lack of culturally appropriate care, and limited availability of necessary health treatments reduce the equity with which PHC is provided, and are known as intermediary determinants of health in the SDOH framework (Crooks and Andrews, 2009; WHO, 2010). This understanding correlates to the 1946 WHO constitution's broader view of health, which encompasses not just the absence of disease but also social and economic well-being (Tucker, 2013; WHO, 1946). The WHO via the Declaration of Alma-Ata 1978 echoed this sentiment, advocating for equitable and accessible care to overcome health disparities within communities (Crooks and Andrews, 2009). This perspective was reinforced by the UN General Assembly's 1948 declaration which stated that health is a basic human right (Tucker, 2013; United Nations, 1948). Additionally, in 2003, the emphasis on social justice as a matter of life or death highlighted the critical role of health equity in service delivery (Tucker, 2013). Therefore when social issues are viewed through a social justice lens, health equity can become a guiding principle in understanding health (WHO, 2010).

Building on Alma-Ata, the Ottawa Charter for Health Promotion, introduced in 1986, reflected the rising global movements advocating for health equity (Weimann et al., 2020). It underscored that the prerequisites for health were shelter, peace, education, food, a stable ecosystem, income, sustainable resources, social justice and equity (WHO, 1986). Furthermore, the Ottawa Charter emphasised how the social service systems around clinics and healthcare services all play a role in community health. The Charter's mantra of "all for one and one for all" reflects the need for comprehensive social support systems, such as community kitchens, to ensure equitable community health (WHO, 1986). The Charter encouraged public health reforms to support health policies in several social areas such as housing and the development of healthy environments (Weimann et al., 2020). This understanding aligns with the conceptual framework of a systems approach, whereby all systems within an environment need to be considered in conjunction to understand the local context. Health equity is a central theme in literature on the SDOH, therefore the next part of this review examines SDOH in an urban context and their impact on health outcomes.

2.2.1 Social Determinants of Health

Informal settlements, marked by inadequate living conditions and high disease burdens, continue to spread due to the rapid urban growth in the global South. At the same time, the international agenda stresses the importance of intersectional efforts to address the SDOH. However, in these contexts, there is still a lack of understanding regarding policymakers' knowledge of SDOH (Weimann et al., 2020). The South African Constitution has enshrined the right to access sufficient food, water, and social security in its Bill of Rights since 1996 (Department of Agriculture, Forestry and Fisheries, 2014; Constitution of the Republic of South Africa, 1996). Despite these constitutional rights, housing instability and food insecurity remain significant barriers to accessing equitable healthcare for individuals in low-income areas (Ma et al., 2008). These issues are understood as material circumstances which are intermediary determinants of health within the CSDH framework (WHO, 2010). Food insecurity and poor health are linked to increased hospitalisations and rising levels of illness in both children and adults, including acute illness and chronic conditions (Ma et al., 2008; Alaimo et al., 2001; Cook et al., 2006; Siefert et al., 2004; Vozoris and Tarasuk, 2003). Moreover, NCDs are the leading cause of global mortality. While unhealthy diets are a major risk factor for developing an NCD; the rise in NCD is closely tied to the impact of food and urban environments on public health (Weimann et al., 2021). This is because food environments in low-income areas are dominated by cheap, energy-dense food that is readily accessible, while nutritious foods have become increasingly expensive and difficult for low-income households to obtain (FAO et al., 2023). Food insecurity is also associated with challenges in disease management and medication adherence (Makelarski, et al., 2015; Seligman et al., 2007; Berkowitz et al., 2013; Sattler and Lee, 2013). Although the impact of poverty on health is well established, the effects of income and education on health access are often overlooked in healthcare discussions (Braveman and Gottlieb, 2014).

Urban Health and SDOH are interconnected concepts used to understand the variables within urban spaces that affect health (Mumm et al., 2017). Understanding the relationship between NCDs and SDOH can reveal the potential for policy changes that address health disparities in low-income communities by framing NCD inside global and African diet-related policy papers (Weimann et al., 2021). However, while the Health in All Policies (HiAP) approach has been implemented in high income countries, it has yet to be introduced into African policies, a space where this type of policy integration is needed as the rate of NCD and

malnutrition rise in LMICs (Weimann et al., 2021; Baum et al., 2014; Gyasi and Phillips, 2019). However, the Western Cape Government (WCG) has adopted a Whole of Society Approach which looks at promoting integrated management across all levels within the WCG, the private sector and civil society, to promote socio-economic and human development (Wiemann et al., 2020; Western Cape Government Department of the Premier, 2019).

Socio-economic effects on health play out in the long and short term, as access to nutritious and fresh foods, recreational activity access, income, housing, and education all play a role in individual and community healthcare. Therefore, SDOH are essential for addressing health equity within PHC (Braveman and Gottlieb, 2014). For example, stress related to socio-economic disadvantages can lead to physiological changes over time, known as Allostatic Load, which negatively impacts health (Braveman and Gottlieb, 2014; McEwen, 1998). Early-life socio-economic disadvantages have been found to directly impact vulnerability to disease in adolescents, independent of later-life socio-economic status (Braveman and Gottlieb, 2014).

Where we see a disconnect within healthcare practitioners and the complexities of SDOH, is that healthcare practitioners are not trained in social work, which unfortunately does not help provide holistic healthcare in low-income areas that experience layered factors that contribute to individuals' health (Braveman and Gottlieb, 2014). This underscores the need for PHC and CHW programmes to develop strategies that identify and address SDOH through health promotion and referral systems to social services (Braveman and Gottlieb, 2014). This perspective supports the argument that addressing diet-related NCDs (dr-NCDs) in low-income areas requires a broader approach than just focusing on individual behaviours (Hunter-Adams and Battersby, 2020).

The WHO SDOH Global Commission recognised two significant issues in equitable healthcare access: lifestyle drift and the overconcentration in public health care (Marmot and Allen, 2014; WHO, 2008). Lifestyle drift refers to the overemphasis on individual health behaviours such as smoking and drinking, which detracts from addressing broader structural factors like poverty (Marmot and Allen, 2014).

Participants in Weimann et al. 's (2020) study argue that PHC should not primarily focus on individual physical health through curative methods but should instead focus on proactive intersectional measures that take into account the wider socio-economic factors within urban environments that impact health. Marmot and Allen (2014) agree with this perspective, further explaining that the healthcare focus should be directed to universal access to high quality healthcare and equitable outcomes, in order to address and challenge healthcare inequalities (Marmot and Allen, 2014). Recognising that technical solutions alone were insufficient to address health inequalities, the WHO established the SDOH Commission in 2005 to tackle these challenges by fostering global knowledge networks and encouraging community participation with the goal of informing health policies globally (WHO, 2008).

Addressing health equity within PHC systems requires a comprehensive understanding of the interconnectedness between community, equity, and access, all of which have geographical and socio-economic implications (Crooks and Andrews, 2009). By employing a systems thinking lens, it becomes evident that health outcomes are shaped not only by individual and community-specific factors but also by the broader environmental, social, and policy contexts in which these factors operate. This perspective underscores the need for integrated policies and practices that consider the full spectrum of SDOH, thereby promoting equitable and sustainable health outcomes. The next section will discuss the evolution of food and nutrition security definitions in research and policy discourse.

2.3 Food and Nutrition Security

The concept of food security has evolved since its emergence in the mid 1970s. Initially emerging in the mid-1970s amid global food crises, early definitions focused on ensuring stable food supplies at national and international levels. This supply-oriented approach reflected changes in the global food economy and led to the establishment of new institutional frameworks during the 1974 World Food Conference (Clay, 2002). The original 1974 World Food Summit definition of food security was “*availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices.*” (United Nations, 1975).

Subsequent redefinitions in the 1980s and 1990s expanded the concept to include access to food by vulnerable populations and the dynamics of chronic and transitory food insecurity.

The World Bank's 1986 report introduced distinctions between these forms of insecurity, emphasising ongoing poverty and temporary crises as key factors (Clay, 2002; World Bank, 1986). By the mid-1990s, food security encompassed broader concerns such as food safety, nutritional balance, and social and cultural preferences, reflecting its complex nature (Clay, 2002).

The 1996 World Food Summit marked a significant shift with a comprehensive definition stating that “*food security exists when all individuals, households, and communities have continuous access to sufficient, safe, and nutritious food for an active and healthy life*” (Clay, 2002; FAO, 1996). This definition was further refined in 2001 to include social and economic access (Clay, 2002; FAO, 2002).

Sen's (1981) work underscored the importance of entitlements in ensuring food access, particularly for vulnerable groups. Despite these broad definitions, practical responses often prioritised simpler goals like poverty reduction, as seen by the 1996 World Food Summit which set global targets to halve hunger by 2015 (Clay, 2002).

To date, the current definition for food security is: “*food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.*” (FAO, 2002). In summary, food security now addresses individual and household nutritional well-being and the vulnerabilities, both chronic and temporary, that threaten access to adequate food.

This section highlights that food security is a complex and evolving concept, subject to ongoing debate and lacking a universally agreed definition. The concept has evolved significantly, reflecting various dimensions and perspectives (Mbambo, 2021; Maxwell, 2001; Devereux, 2016). Early views emphasised availability as a critical factor in food insecurity (Mbambo, 2021; Maxwell, 2001), while contemporary studies on food environments challenge this by stressing that achieving food security involves more than just increasing food production (Connell et al., 2020; Capone et al., 2014; Ingram et al., 2012; Rosegrant and Cline, 2003). Therefore, a comprehensive definition of food security must encompass multiple dimensions and preferences.

This section on food and nutrition security is important for highlighting hunger and food insecurity as significant barriers to healthcare access. Changing definitions demonstrate that food security involves not only the availability of food but also ensuring consistent access to safe, nutritious, and affordable food necessary for maintaining a healthy lifestyle (Clay, 2002; FAO, 1996). These developments are relevant in understanding the connections between food and nutrition security as social barriers to healthcare access. The history of food insecurity definitions and the recognition of its impact on health outcomes provide a foundation for examining how SDOH impact healthcare access. Global health frameworks, such as the Alma-Ata Declaration and the Ottawa Charter for Health Promotion, underscore the importance of food as a prerequisite for health and the broader efforts to address health equity (Weimann et al., 2020; WHO, 1986). This context helps situate the section on food security within the broader literature review, which explores the social barriers faced by food-insecure populations in accessing healthcare. Therefore it is important to note the pillars of food security.

2.3.1 The Pillars of Food Security

According to the FAO, food security rests on four essential pillars:

1. **Food Availability:** This pillar emphasises the sufficient supply of food of appropriate quality, which can be sourced through domestic production or imports, including food aid (FAO, 2006).
2. **Food Access:** This pillar focuses on individuals' ability to acquire food through adequate resources or entitlements. Entitlements encompass the range of commodity bundles that individuals can command, influenced by legal, political, economic, and social arrangements within their community (FAO, 2006).
3. **Utilisation:** Utilisation involves the proper consumption of food to achieve nutritional well-being, including access to clean water, sanitation, and healthcare. This pillar underscores the role of non-food inputs in enhancing food security (FAO, 2006).
4. **Stability:** Food security necessitates consistent access to adequate food over time, without the risk of losing access due to sudden shocks (e.g., economic decline or climate crises) or

cyclical events (e.g., seasonal fluctuations). Stability encompasses both the availability and access dimensions of food security (FAO, 2006).

These pillars have been instrumental in guiding food security policies globally. However, the High-Level Panel of Experts on Food Security and Nutrition has proposed adding two additional pillars, agency and sustainability, to ensure sustainable food security for present and future generations, who possess the capacity to shape their own circumstances (Clapp et al., 2022). The following section will unpack nutrition security as there is growing research which notes that nutrition security should be understood in conjunction with food security (Hwalla et al., 2016).

2.3.3 Nutrition Security

Nutrition is a crucial aspect of food security, with growing research emphasising its inclusion within the four pillars of food security (Hwalla et al., 2016). While food availability is essential, access often presents a greater challenge, particularly regarding nutrition. Access depends on income and resources to purchase food that promotes a nutritious diet, meaning that a sufficient supply of food within a household does not automatically ensure food security. For individuals facing malnutrition, access remains a more significant barrier than availability (Hwalla et al., 2016; World Bank, 2007).

The pillar of utilisation encompasses several factors related to how the body utilises various nutrients. This includes the importance of hygienic food preparation, the adoption of healthy eating habits, and the consumption of a diverse diet that provides all essential nutrients and is properly distributed within a household (Hwalla et al., 2016). Effective food utilisation significantly impacts individuals' nutritional status by ensuring adequate daily intakes of calories and nutrients (Hwalla et al., 2016).

Stability addresses the sustainability of the previous three pillars over time, underscoring that all four dimensions must be considered collectively to achieve food security (Hwalla et al., 2016). According to the FAO (2012), nutrition security involves ensuring that all household members have access to a nutritious diet containing essential nutrients and water, combined with a clean environment and adequate healthcare services to support a healthy and active life. This definition highlights the health aspect of food security and underscores the importance of the nutritional status of individuals and communities (Hwalla et al., 2016;

FAO, 2012). It also identifies the importance of a multi-sectoral collaboration for achieving nutrition security (UNICEF, 2020).

The outcomes of malnutrition among obese and overweight individuals illustrate the complexity of the relationship between food and nutrition security. Obesity can occur in food-insecure populations for various reasons (Hwalla et al., 2016). For instance, low-income households may resort to purchasing inexpensive, high-calorie foods that are low in nutrients to maintain a consistent food supply, thus sacrificing quality for quantity (Hwalla et al., 2016; Darmon et al., 2002). These material circumstances impact patients' overall health and access to care (WHO, 2010).

Overall, food security is intrinsically linked to nutrition security; achieving one is seen to be impossible without the other according to Hwalla et al. (2016). Nutrition security extends beyond simply providing sufficient energy; it necessitates a variety of macronutrients and micronutrients essential for health and disease prevention. Recognising this vital relationship, experts increasingly advocate for the term "food and nutrition security" to highlight the combined significance of both concepts in meeting the food and health needs of populations (Hwalla et al., 2016).

2.4 Impact of Food Insecurity on HIV/AIDS, TB, and NCD Care: Barriers to Medication Adherence and Disease Management

Food insecurity is linked to disease mismanagement and medication non-adherence (Makelarski et al., 2015). Food insecurity is increasingly being recognised as a healthcare barrier due to inadequate food access and competing resource demands increasingly hindering HIV-positive patients from following care and treatment recommendations (Young et al., 2014). Healthcare providers in South Africa and Kenya have identified food insecurity as one of the most critical barriers to antiretroviral therapy (ART)¹ adherence (Young et al., 2014; Goudge and Ngoma, 2011; Nagata et al., 2012). This positions food insecurity within the WHO SDOH framework as a material circumstance under intermediary determinants of health (WHO, 2010).

¹ ART refers to the treatment regimen for HIV/AIDS, while ARVs refer to the medication used in HIV/AIDS treatment.

A significant factor exacerbating ART non-adherence is hunger, which is aggravated by the side effects of ARVs. When patients are hungry and take ARVs, they experience intensified side effects such as headaches, nausea, stomach pain, shivers, tremors, fatigue, sweating, and elevated heart rate. This discomfort from the medication when combined with hunger discourages patients from adhering to their treatment regimen (Young et al., 2014; Cornelius et al., 2017). Therefore, interventions addressing food insecurity could enhance ART adherence (Young et al., 2014). The recognition that social barriers such as hunger disrupt healthcare delivery underscores the value of systems collaboration, as advocated by UNICEF's systems approach to maternal and child nutrition (UNICEF, 2020).

Additionally, food insecurity and HIV are termed "syndemic," which means they interact negatively with each other through social and biological interactions (Young et al., 2014; Singer, 2009). Food and nutrition insecurity increases vulnerability to contracting HIV and worsens clinical outcomes for those already infected (Young et al., 2014). Moreover, advanced HIV-related illnesses hinder patients' ability to earn income and access food, perpetuating a cycle where food insecurity both causes and worsens health outcomes (Young et al., 2014). The relationship between social constraints and health outcomes illustrates the reciprocal impact of illness on social well-being and equitable access to care, aligning with the WHO SDOH framework's understanding of the intermediary determinants of health (WHO, 2010).

Building on this understanding of the syndemic nature of food and nutrition insecurity and HIV, both Young et al. (2014) and Wang et al. (2020) highlight that patients face barriers to HIV/AIDS care at multiple levels: individual, household, institutional, and community. Individually, factors like low education, lack of HIV knowledge, fears of job or family status loss, poor quality of life, low income, depression, HIV stigma, and sociodemographic issues can reduce ART adherence (Wang et al., 2020). Additional barriers to ART adherence include food insecurity, drug use, high pill dose, and treatment fatigue (Wang et al., 2020). These barriers are understood as material circumstances and behavioural and biological factors within the WHO SDOH framework categorisation of intermediary determinants of health (WHO, 2010).

At the household level, unstable housing and financial constraints pose significant barriers to ART adherence. Evidence suggests that women in poorer households have less access to

essential healthcare services like antenatal care, critical for HIV-positive mothers unaware of their status and untreated (Young et al., 2014). This identifies the impact of social hierarchies on health outcomes (WHO, 2010). Furthermore, the pressure to share ARVs within households creates another layer of difficulty, as it is crucial for patients to follow their own tailored ARV regimens based on their specific viral loads (Young et al., 2014). These barriers illustrate the impact that structural mechanisms have on people's socio-economic status, which impacts their equitable access to healthcare (WHO, 2010), as illustrated in the WHO's SDOH framework.

At an institutional level, barriers include long travel distances, crowded and understaffed clinics, extended waiting periods, and high user fees (Young et al., 2014). Even attending 'free' clinics incurs costs due to lost work opportunities and travel expenses, exacerbating ARV medication access issues. Furthermore, competing resource demands may result in ARVs being sold or traded for food or other resources which further exacerbates the issue of non-adherence (Young et al., 2014; Crane et al., 2006; Weiser et al., 2010; Uzochukwu et al., 2009). These barriers highlight how structural and economic determinants within the SDOH framework impact healthcare accessibility.

Lastly, community-level barriers include HIV-related stigma, gender inequalities, weak food systems, political and economic crises, and widespread poverty (Young et al., 2014). These barriers further demonstrate how social determinants shape healthcare access and underscores the interconnectedness of different systems' and their influence on health outcomes. These intersecting barriers complicate adherence at various levels, including child dynamics, caregiver and household traits, medications specifics, community and cultural context. This complexity particularly affects paediatric cases, where children may be unaware of their HIV status and the necessity of medication adherence (Young et al., 2014).

While the barriers to ART at multiple levels have been discussed, it is important to distinguish between food insecurity and poverty. Although they are closely correlated, they are not interchangeable. A household may have a stable income yet still struggle to reliably access adequate and nutritious food. For individuals living with HIV, this distinction is crucial because food insecurity affects health outcomes through pathways that are not fully captured by socio-economic indicators. Food insecure individuals living with HIV experience multiple challenges, including poorer viral load suppression and declining CD4 counts, lower

body mass index to increased infection susceptibility, heightened hospitalisation and lower quality of life and mortality (Young et al., 2014; Weiser et al., 2009; Wang et al., 2011; McMahon et al., 2011; Normen et al., 2005; Weiser et al., 2012; Weiser et al., 2009). Importantly, even when socio-economic factors are addressed, food insecurity remains strongly associated with HIV-related deaths because it has distinct biological and behavioural pathways of harm that extend beyond general measures of socio-economic status (Young et al., 2014; Weiser et al., 2012; Peretti-Watel et al., 2006; Kalichman et al., 2010).

Young et al. (2014) highlight the broad impact of food insecurity on HIV/AIDS care. Complementing this, Weiser et al. (2010) provided specific examples of how food insecurity disrupts HIV/AIDS care. Their study identified five ways food insecurity disrupts HIV/AIDS care: 1) ARVs increase hunger; 2) ARV side effects worsen without food; 3) patients are advised to take ARVs with food (resulting in patients not taking their medication in the absence of food); 4) competing costs between food and healthcare; and 5) patients may forget or be unable to take ARV doses while seeking or working for food (Weiser et al., 2010).

While these studies address the immediate barriers faced by patients, Birn (2011) extends this discussion by pointing out that many HIV/AIDS prevention strategies prioritise sexual education in sub-Saharan Africa, often neglecting the broader structural socio-economic issues such as nutrition, housing, employment, and social services access, factors that significantly impact treatment, care and management (Birn, 2011). This disconnect underscores the importance of a systems-thinking approach and an acknowledgment of the impact broader socio-economic issues have on disease progression. This is especially pertinent in South Africa where the "quadruple burden of disease" includes high rates of HIV/AIDS, maternal and child mortality, injuries and violence, and non-communicable diseases (NCDs) (Ndinda et al., 2018; Cloete, 2018).

The World Food Program advocates for integrating food assistance into HIV/AIDS programmes. While research on the specific impact of hunger on ARV therapy effectiveness is limited, it is evident that social factors such as food insecurity significantly affect ART adherence (Weiser et al., 2010; Seume-Fosso et al., 2004; United Nations Administrative Committee on Coordination, Sub-Committee on Nutrition, 2001; World Food Program, 2003; WHO, 2003; United Nations General Assembly, 2006). Without proper adherence, the effectiveness of ART is diminished, underscoring the critical need to address these broader

socio-economic issues to enhance treatment outcomes. The World Food Program's advocacy for integrating food assistance into HIV/AIDS programmes aligns with this understanding, highlighting the importance of addressing food insecurity to improve ART adherence and overall treatment efficacy.

Food supplementation shows promise in improving ART adherence, but its effectiveness in addressing food insecurity and further enhancing adherence remains uncertain among researchers (Young et al., 2014; van Oosterhout et al., 2010; Cantrell et al., 2008; Yager et al., 2011). Issues include whether food assistance should focus on treating malnutrition or be seen as a long-term strategy to support ART effectiveness. Different countries and situations may require varied food supplement packages, and determining their optimal duration is crucial. While supplementation provides nutritional support, it may not fully resolve concerns about stable food access and risks fostering dependency on food aid (Young et al., 2014; van Oosterhout et al., 2010; Cantrell et al., 2008; Yager et al., 2011). These concerns highlight the importance of a multi-sectoral collaboration when addressing the complexities of nutrition and health outcomes (UNICEF, 2020).

Scher et al. (2022) identified that efforts to address food insecurity through targeted interventions has shown promising results. For instance, a trial programme in Michigan tested if a food supplementation intervention could assist patients in an outpatient clinic setting, demonstrating potential benefits for vulnerable patients (Scher et al., 2022). The Henry Ford Health System partnered with the Gleaners Community Foodbank of South-eastern Michigan to screen internal medicine patients for food insecurity and deliver food parcels to them (Scher et al., 2022). After a 12-month trial, researchers observed a notable reduction in emergency unit visits and hospitalisations among the intervention group compared to the control group (Scher et al., 2022). While this pilot programme does not speak specifically about food support for HIV patients, it suggests that community-health system partnerships that address food security can potentially reduce healthcare utilisation (Scher et al., 2022), therefore identifying the need for a multi-sectoral approach to combat poor nutrition outcomes (UNICEF, 2020).

In addition to food supplementation, social support plays a critical role in managing ART adherence. Watkins et al. (2021) highlight that CHWs are instrumental in promoting adherence, especially in regions affected by TB and HIV epidemics. CHWs are the bridge

between community members and the healthcare system. In regions affected by structural poverty, food insecurity, and healthcare system mistrust, CHWs build trust with patients and provide home-based care. Additionally, they address stigma associated with HIV/AIDS and TB, a challenge further exacerbated by the Covid-19 pandemic (Watkins et al., 2021).

Weiser et al. (2010) identified gender dynamics as another complex layer affecting food distribution within households. Often, men receive preferential access to food, even when women are the ones suffering from HIV/AIDS. In Weiser et al.'s (2010) study, an HIV widow highlighted these disparities, noting that before marriage, parents instruct daughters to prioritise feeding their husbands, regardless of personal health. Women, who are more likely than men to be widowed or separated, face significant challenges in accessing food, particularly if they are primary caregivers for family members affected by AIDS. Additionally, some women fear losing food security if they leave their relationships (Weiser et al., 2010). Therefore, addressing gender disparities in food insecurity is essential for improving HIV/AIDS medication adherence and should be a key focus of HIV/AIDS programmes (Weiser et al., 2010). Within the SDOH framework, gender is recognised as a structural social determinant that influences their socio-economic positions (WHO, 2010). Therefore it has an impact on intermediary determinants of health such as food insecurity, which impacts equitable access to healthcare (WHO, 2010).

When basic needs such as food and housing are not adequately met, individuals living with HIV face significant challenges in building support systems and developing adherence skills. Ensuring the provision of these essential resources not only enhances support but also bolsters self-efficacy, thereby improving ART adherence (Cornelius et al., 2017). Additionally, the presence of robust social support systems has been shown to positively impact ART adherence, further underscoring the importance of comprehensive approaches in HIV/AIDS care (Wang et al., 2020).

In conclusion, food insecurity significantly impacts ART adherence, exacerbating medication side effects and creating barriers to consistent treatment (Young et al., 2014; Weiser et al., 2010). Addressing these issues through food assistance and social support is crucial for improving adherence and overall treatment outcomes (Cornelius et al., 2017; Wang et al., 2020). However, comprehensive strategies must also consider broader socio-economic and structural factors to effectively enhance ART efficacy and patient well-being. This

acknowledgement of the interplay between social issues and health outcomes aligns with the conceptual frameworks outlined by UNICEF and WHO. These frameworks emphasise that healthcare challenges cannot be addressed in isolation but require an integrated approach that recognises the interconnected nature of social and structural determinants (UNICEF, 2020; WHO, 2010).

2.4.1 Food Insecurity as a Barrier to TB Care

Although the connection between food insecurity and HIV/AIDS has been extensively studied, the relationship between food insecurity and TB is less studied, particularly concerning non-nutritional factors, such as the impact on mental health and high risk health behaviours (Balinda et al., 2019). TB claims approximately one million lives annually and affects millions more, profoundly impacting families and communities (Vanleeuw et al., 2022; WHO, 2020). Vanleeuw et al. (2022), WHO (2005), and Lonnroth et al. (2009) collectively highlight the cyclical relationship between TB and socio-economic conditions. Vanleeuw et al. (2022) describe TB as a prime example of the "poverty disease trap", where the risk of contracting TB is closely tied to intermediary SDOH like income poverty, food scarcity, HIV, overcrowding, lack of social support, drug use, and undernutrition (WHO, 2010). This is supported by the WHO (2005) and Lonnroth et al. (2009), who emphasise that socio-economic factors not only increase individuals' vulnerability to contracting TB, but once TB is contracted, the disease itself exacerbates income loss, further entrenching individuals in poverty. This creates a vicious cycle where TB and socio-economic conditions continuously reinforce each other, making those affected even more vulnerable over time. As highlighted in the WHO SDOH framework, individuals' positions within social hierarchies have an impact on their social status which in turn impacts their susceptibility and risk of contracting different illnesses (WHO, 2010). The perspectives of these authors highlight that TB and poverty are mutually reinforcing, creating a vicious cycle that is difficult to break.

This cyclical relationship is starkly evident in South Africa's TB epidemic. TB cases increased from 150,000 in 2000 to 350,000 in 2007, coinciding with a case detection rate target of 70% being met for the first time in 2006 (Development Bank of South Africa, 2008). However, only one-third of TB patients were tested for HIV that year, highlighting a critical gap in management of the dual HIV and TB epidemic in South Africa (Development Bank of South Africa, 2008). This gap is particularly concerning given the high treatment default rates

and the uncured and unreported TB cases, which means that 74% of TB cases are not adequately managed by the health system. In 2021, South Africa reported 304,000 TB cases, yet only 108,375 were officially recorded, leaving 111,625 cases unaccounted for (SANAC, 2023). While TB cases declined since 2007, over 50% of cases remained unreported, posing a persistent challenge. Additionally, 53% of TB patients were coinfecting with HIV in 2021, with 89% of these individuals already on ART (SANAC, 2023).

As one of the top 10 countries with the highest TB burden, South Africa's epidemic is driven by factors such as poverty, healthcare disparities and migration (SANAC, 2023). Additionally, undernutrition is a significant risk factor for active TB, as it compromises the immune system and correlates with increased TB incidence (SANAC, 2023). Therefore, nutritional supplements are a major non-medical expense for TB patients, underscoring the need for targeted TB interventions to provide appropriate nutritional support (SANAC, 2023).

South Africa's TB challenges reflect a global pattern where the disease disproportionately affects impoverished populations. In India, TB incident rates are four times higher among those with a low standard of living compared to households with a high standard of living (Ayiraveetil et al., 2020). Similarly, food insecurity is most severe at the time of diagnosis in households facing low food availability and undernutrition, a pattern seen in both South Africa and India (Ayiraveetil et al., 2020). This example once again highlights the impact that intermediary determinants of health have on individuals' access to equitable healthcare, while highlighting the need for a multi-sectoral approach to addressing health outcomes (WHO, 2010; UNICEF, 2020).

2.4.2 Challenges in TB Treatment and Adherence

The WHO's Directly Observed Therapy, Short Course (DOTS) strategy for TB control considers medication non-adherence as a patient-centric issue rather than a healthcare system issue. However, patients' failure to complete or comply with treatment often reflects barriers to accessing care, such as drug affordability, time off work, and travel to clinics. Therefore, TB control programmes should focus on addressing social factors impacting medication adherence, moving beyond a purely biomedical model (Selgelid et al., 2010; Hurtig et al., 1999). The focus on the impact of social factors on healthcare is what the SDOH framework looked to address, as the need for social justice as a leading concept in healthcare was

identified so that health equity can be used as a guiding principle in healthcare policies (WHO, 2010).

Wiemann et al. (2020) agrees with SANAC (2023) and Ayiraveetil et al. (2020) that lower socioeconomic communities face higher TB risks due to undernutrition. Additionally, Wiemann et al. (2020) highlights that overcrowding also contributes to these risks, suggesting that an ecological approach is increasingly recognised as necessary for addressing the burden of TB related to these SDOH. Islam et al. (2013) and Ludwick et al. (2020) further build on Wiemann et al.'s (2020) findings by demonstrating that research in Bangladesh underscores the crucial role of CHWs in enhancing TB case detection and supporting medication adherence. Cometto et al. (2018) supports this view, noting that CHWs are now globally recognised as instrumental in the public health sector. This underscores the importance of addressing various forms of malnutrition and their impact on TB.

Food insecurity has long been recognised to increase the risk of developing active TB (Balinda et al., 2019). Forms of malnutrition linked to TB include: undernutrition, protein-energy malnutrition, micronutrient deficiencies, and overweight/obesity (Balinda et al., 2019). Research from Latvia shows that underweight individuals ($\text{BMI} < 18.5 \text{ kg/m}^2$) undergoing MDR-TB treatment are more likely to exhibit advanced disease and face higher risks of adverse effects and mortality compared to those with normal or higher weights (Balinda et al., 2019; Podewils et al., 2011). Additionally, a review of six cohort studies found an inverse correlation between BMI and TB incidence within the 18.5-30 kg/m^2 range, with each unit increase in BMI associated with a 14% reduction in TB incidence (Balinda et al., 2019; Lonnroth et al., 2010). Undernutrition contributes to TB progression, drug toxicity, drug malabsorption, and increased mortality or disease relapse (Ayiraveetil et al., 2020). Although a lot of research focuses on underweight and TB, the role of food and nutrition insecurity in the relationship between TB and other illnesses such as diabetes mellitus remains underexplored, especially as diabetes mellitus cases are rising rapidly in high-TB prevalence areas (Balinda et al., 2019).

2.4.3 Impact of Food Insecurity on TB Treatment

Despite operational TB programmes within South Africa's District Health System, social and structural barriers to care continue to impact equitable and comprehensive healthcare delivery. For example, Nxumalo et al. (2016) documented CHWs' accounts of patients facing significant healthcare barriers. One patient struggled with medication adherence due to side effects from taking TB medication on an empty stomach, which was exacerbated by the clinic's lack of food assistance, while another patient discontinued their medication due to food insecurity, opting for traditional remedies instead. These cases demonstrate that health systems with limited integration lack the capacity to address patients' social circumstances.

Similarly, Vanleeuw et al. (2022) identified comparable challenges faced by patients in their study, where patients who took TB medication without food experienced symptoms such as vomiting and nausea. Additionally, patients within the same study reported fatigue and leg swelling during the first two weeks of treatment, which made travelling to the clinic challenging (Vanleeuw et al., 2022). Doctors have confirmed that access to nutritious food is crucial for TB recovery, but patients often lack the means to purchase basic food supplies, let alone have access to a balanced diet (Vanleeuw et al., 2022).

To further exacerbate the challenges faced by TB patients, research in Swaziland found that TB medication increased patients' appetites, leading food-insecure patients to frequently discontinue treatment due to food shortages (Vanleeuw et al., 2022; Claros et al., 2014). Providing food assistance has been shown to improve medication adherence, ensure treatment completion, and reduce TB-associated morbidity and mortality (Vanleeuw et al., 2022; De Pee et al., 2014; Balinda et al., 2019). Furthermore, social protection programmes can enhance family resilience by reducing vulnerability and supporting coping strategies (Vanleeuw et al., 2022).

Building on the established cyclical relationship between TB, poverty, and food insecurity, it becomes clear that addressing these issues requires a nuanced understanding of their interplay through an SDOH framework, and multi-sectoral approach (WHO, 2010; UNICEF, 2020). Despite substantial evidence linking food insecurity with TB, particularly in terms of treatment adherence and disease progression, gaps in research remain regarding non-nutritional factors and the nuanced effects of food insecurity on TB. (Balinda et al., 2019). Although much of the literature supports a clear understanding of how food insecurity

exacerbates TB outcomes, including increased appetite leading to treatment discontinuation (Vanleeuw et al., 2022; Claros et al., 2014), and the positive impact of food assistance on treatment adherence (Vanleeuw et al., 2022; De Pee et al., 2014; Balinda et al., 2019), Balinda et al. (2019) rightly call for further research to deepen our comprehension of these dynamics.

In South Africa, where TB remains a major public health challenge, the WHO's recognition of the reciprocal relationship between TB and poverty highlights the compounded impact on families and households (Vanleeuw et al., 2022; WHO, 2015). Although disability grants are available for TB patients, research reveals a significant gap in access, with only 5% of drug-sensitive and 44% of drug-resistant TB patients receiving these grants, despite the clear association between TB, unemployment, and poverty (Vanleeuw et al., 2022; Foster et al., 2015; Barter et al., 2012; Ramma et al., 2015; Erlinger et al., 2019; Ukwaja et al., 2012). This disparity underscores the importance of understanding and addressing food insecurity within TB programmes. The literature illustrates that enhancing our knowledge of how food insecurity affects TB can improve the integration of a SDOH framework into existing TB interventions, thereby strengthening the overall response to this disease (Balinda et al., 2019; WHO, 2010).

2.4.4 Food Insecurity as a Risk Factor for NCD

NCDs are defined as chronic conditions that are non-transmittable, such as cancer, cardiovascular disease, chronic lung disease and diabetes, and are the leading cause of mortality globally (Kim et al., 2013; Wiemann et al., 2021). While the rise in NCDs is closely linked to unhealthy diets, particularly in urban environments where food systems often fail to provide accessible and nutritious options, recognising the link between urban built and food environments is essential for developing intersectional approaches and health policies to combat the NCD burden effectively (Wiemann et al., 2021). The majority of nutrition outcomes require multi-sectoral collaboration to address nutrition access needs across the life cycle of individuals (UNICEF, 2020).

Global health policies aim to tackle NCDs through prevention, early detection, and management of risk factors. Among these strategies, addressing risk factors such as diets, is

considered the most effective approach for managing NCDs (Kim et al., 2013). In the context of the African continent, NCD should be a noted factor in food security agendas, using malnutrition as a key factor in intersectoral action to improve access to nutritious foods in LMIC African countries (Wiemann et al., 2021). Furthermore, food insecurity should be a prominent component of dr-NCD prevention programmes as individuals' socio-economic positions, influenced by social, economic and political factors, have a profound impact on their access to equitable healthcare (Nkambule et al., 2021).

dr-NCD's forms part of the quadruple burden of disease in South Africa (Hunter-Adams and Battersby, 2020). Food insecurity, recognised by the WHO and the United Nations General Assembly as a global health crisis, is intricately linked to the development of metabolic risk factors associated with dr-NCDs. These metabolic risk factors are increasingly being linked to morbidity and mortality rates of dr-NCDs, such as diabetes and cardiovascular disease, globally (Nkambule et al., 2021; WHO, 2017; Lele et al., 2019; WHO, 2016). In South Africa, this shift in the burden of disease is evident in the 2000 burden of disease index estimates, where NCDs such as stroke, asthma, and diabetes emerged as leading causes of disability-adjusted life years (DALYs), accounting for 33% of deaths in 2000 (Development Bank of South Africa, 2008). Further illustrating this global trend, in 2017 metabolic risk factors were responsible for an estimated 10.4 million deaths, and approximately 2.18 million DALYs globally (Nkambule et al., 2021; Roth et al., 2018). In the Western Cape, NCDs accounted for half of premature deaths in 2018, with diabetes identified as the second leading cause of natural death in South Africa after TB (Cloete, 2018; Spotlight, 2018). The strain dr-NCDs place on individuals, households, and the healthcare system in South Africa underscores the urgent need for integrated approaches to address these interconnected challenges (Hunter-Adams and Battersby, 2020). Therefore UNICEF's systems approach to nutrition identifies the correlation between the food, health, water and sanitation, education and social protection systems, in addressing the determinants of malnutrition, as it does not follow linear pathways (UNICEF, 2020).

The significant impact of food insecurity on health outcomes is well-documented, with extended periods of food insecurity contributing to conditions such as kidney disease, obesity, and diabetes. This connection is often exacerbated by coping strategies like delaying or skipping medical care, rationing food, and consuming inexpensive, nutrient-poor foods,

leading to malnutrition, which further heightens the risk of poor health and worsening chronic conditions (Scher et al., 2022).

The life course perspective addresses how exposures to environmental (biological, physical, social, and behavioural) factors, in conjunction with life experiences throughout one's whole life, impact individual health outcomes and the health outcomes of future generations (Herman et al., 2014). Nutrition from pre-conception to adulthood involves all these factors and can shape an individual's or population's health pathways through generations (Herman et al., 2014). Thus, there is a need for populations to have access to micronutrient-dense foods, opportunities to balance energy intake through adequate physical activity, and macro-level environments that aid in the development of critical life phases (Herman et al., 2014).

Nutrition is crucial for development, health, and disease prevention. There are critical periods within the lifespan where optimal nutrition plays a role in the trajectory of someone's health. These include the prenatal stage, infancy, early childhood, and adolescence. Positive or negative exposure to nutrition during pregnancy affects the neurodevelopment of the foetus (Herman et al., 2014). During infancy, the "when, what, and how" a child is fed impacts their health and development (Herman et al., 2014). For example, breastfeeding can reduce perinatal mortality and morbidity (from otitis media, eczema, and diarrhoea) and rates of childhood ailments (such as leukaemia and sudden infant death syndrome). There is also a correlation between breastfeeding and a decrease in prevalent chronic diseases in the child's life later on, including asthma, obesity, and type 2 diabetes (Herman et al., 2014; Larnkjaer et al., 2010).

While the timeline is an important component of the life course perspective, so is equity (Herman et al., 2014). This is where nutrition and food insecurity come into play, as current and past inequalities in nutritional intake are underlying causes of future health disparities (Herman et al., 2014). The connection between food insecurity and health and nutrition was first documented in the life course of adults, but is now being associated with poor health outcomes in children and pregnant women who are food insecure (Herman et al., 2014 ;Rose, 1999; Dixon et al., 2001; Kirkpatrick et al., 2010). Additionally, one's environment has a massive impact on nutrition throughout the life course and health impacts (Herman et al., 2014). The social environment comprises family, friends, and peers who influence values, attitudes, and preferences towards foods and food-related behaviours. The physical environment comprises the home, childcare, school, workplace, neighbourhoods, and

locations for food sourcing, such as grocery stores, restaurants, and fast-food chains (Herman et al., 2014).

Therefore, the food security pillars of availability and accessibility are crucial for having a nutritious diet, yet inequalities continue to negatively impact the ability to maintain nutritious diets throughout the lifespan (Herman et al., 2014). An example of this is a "food swamp", which is an area with a large access to energy-dense foods, which is associated with heightened risks of obesity and poor diets (Herman et al., 2014).

Children growing up in impoverished conditions face shortages of essential micronutrients, leading to long-lasting effects on their health and cognitive development (Development Bank of South Africa, 2008). Therefore, programmes that provide parent education, breastfeeding support, and nutritional supplementation are essential to improve child nutrition during their first 1000 days of life (Development Bank of South Africa, 2008). However, governance and policy gaps can exacerbate food and nutrition insecurity and impact public health outcomes. Therefore, the welfare state's role in influencing health outcomes is critical as it governs policies for resource distribution, especially where such policies are non-existent (WHO, 2010).

Nisbett (2023) argues that malnutrition is often defined as a lack or excess of particular foods and nutrients that impact health. However, in global health research, it is viewed more broadly as being associated with a range of critical health conditions that weaken and strain the body. Poor nutrient intake affects the immune system and physiological functioning (Nisbett, 2023). This broader perspective reveals that NCDs, such as diabetes and heart disease, are epidemiologically linked to poor nutrition in children (Nisbett, 2023).

Billimek et al. (2012) highlight how food insecurity in the US creates a substantial barrier for patients with type 2 diabetes, as financial constraints force them to choose between food and medical expenses, often resulting in delayed prescription refills. This situation is not unique to high-income countries; Nkambule et al. (2021) emphasise that in sub-Saharan Africa, where food insecurity affects approximately 257 million people, roughly one-third of the population, there is an urgent need for regular screening and management of food insecurity within clinical settings. This approach would facilitate early detection and intervention for dr-NCD, helping to mitigate the severe health outcomes associated with food insecurity.

Health practitioners in South Africa still primarily focus on patients' individual responsibilities to change their diets and adhere to treatment, instead of taking into consideration the SDOH (Hunter-Adams and Battersby, 2020). A distinct lack of connection between social services coupled with a lack of dietitians within the Western Cape means physicians provide rapid, anecdotal dietary advice (Hunter-Adams and Battersby, 2020). Shortcomings within health systems and social services make reflexive practice very difficult. Although patients in this study linked dr-NCDs to social factors like the food system, transportation, and employment or unemployment, highlighting the role of SDOH in equitable access to healthcare, healthcare practitioners often attributed these conditions to insufficient knowledge or poor personal choices (Hunter-Adams and Battersby, 2020). Therefore an understanding of the SDOH framework is important when contextualising the cause of patients' disease outcomes.

Food insecurity causes people to adapt by eating less nutritious food in an effort to cope, which leads to nutrition insecurity (Nkambule et al., 2021; Jomaa et al., 2017; Seligman et al., 2010). Although these coping strategies are used as an initial buffer to alleviate food insecurity, the long-term health effects are detrimental and can result in malnutrition which creates vulnerability to developing dr-NCD (Nkambule et al., 2021; WHO, 2017; Mahmoodi et al., 2017; Laraia, 2013). The transition from nutrient-dense to nutrient-poor foods has been linked to rising rates of childhood obesity, coronary heart disease, type 2 diabetes mellitus, and certain cancers, collectively termed nutrition-related NCDs (NR-NCD) (McIntyre et al., 2011). This shift highlights the significant role of dietary changes in the increasing prevalence of NCDs, particularly diabetes and hypertension, as discussed by Hunter-Adams and Battersby (2020).

This situation is exacerbated by the quadruple burden of disease, marked by high rates of HIV/AIDS, maternal and child mortality, violence-induced injuries, and NCDs (Adams, 2019; Ndinda, 2018). The challenge is compounded by the double burden of malnutrition and obesity, which further strains the healthcare system (Adams, 2019; Juma et al., 2018; Markle et al., 2018). This overlapping burden highlights the urgent need for a more integrated approach to healthcare that addresses both NCDs and malnutrition.

The healthcare system's challenges are significant, with CHWs lacking adequate training in managing NCDs, and public health facilities facing underfunding, understaffing, and high patient loads (Adams, 2019; Kautzky and Tollman., 2008; Mullan et al., 2011; Tsolekile, 2018). These deficiencies in the healthcare infrastructure make it difficult to address the complex needs of patients with NCDs effectively. However Scher et al. (2022) offers a potential solution suggesting that subsistence grants could reduce healthcare service utilisation, including emergency care and hospital admissions. Although this data is from the US, it highlights a relevant parallel for South Africa's food and healthcare context. Improved food security through social support measures could potentially alleviate some pressures on the healthcare system and contribute to improved NCD management.

In summary, multiple SDOH significantly hinder the management of NCDs, TB, and HIV/AIDS. Among these barriers, stigma poses a substantial obstacle to effective treatment and care. Understanding the roles of CHWs, the impact of stigma, and the importance of social support is crucial for addressing these challenges. Therefore, the next section will delve into how CHWs can support patients, their place in the healthcare system, and the challenges they face on the front lines, as well as strategies for stigma mitigation and enhancing social support to build a more robust healthcare system.

2.5 Community Health Workers, Stigma and Social Support

A link worker, also known as a CHW, is a non-health or social care professional who works in primary care practices, communities, or volunteer organisations to help communities access health and social care services (Kiely et al., 2020). Through social prescribing, CHWs connect community members with complex needs to non-medical community services to improve their health and well-being (Kiely et al., 2020).

The WHO 1978 Alma-Ata Declaration marked a pivotal shift in global healthcare thinking from disease and technology specific programmes of the 1950-1960s to a “health for all” approach (Medcalf et al., 2018). CHWs were instrumental in this policy shift, serving as prominent symbols for the Health For All initiative (Medcalf et al., 2018). In 1975, UNICEF and the WHO conducted a joint study to explore alternative methods for meeting basic health needs in developing countries, where conventional health services were insufficient to address public healthcare requirements. The report suggested that the international agencies

implement a plan to expand primary healthcare access in these regions, focusing particularly on underserved groups such as rural and remote populations, residents of informal settlements, and migrant communities (Medcalf et al., 2018). It is now globally recognised that CHWs are an essential component of public healthcare as they contribute to preventative, promotive, and curative care across a range of health issues such as reproductive care, infectious diseases, and NCDs (Cometto et al., 2018). Furthermore, CHWs have been crucial in bringing patients back into care who have defaulted from their treatment or lost trust in the formal healthcare system.

South Africa has a long history of CHW programmes predating 1994; however, after 1994 the health system shifted towards a more medically oriented PHC model. But due to rising HIV incidences and increasing social and health burdens the government was prompted to reinstate CHW programmes, which were mainly run through NGOs and other community partnerships (Stansert Katzen et al., 2024).

By the early 2000s many provinces began placing CHWs under the Expanded Public Works Programme (EPWP), using it as a mechanism to fund their work. Although the EPWP was designed to create temporary employment, in practice it positioned CHWs as volunteers receiving stipends rather than salaries, leaving them without standard labour protections or employment benefits, an issue that remains highly contested (Nxumalo et al., 2016; Timm et al., 2020).

In 2011 the “Re-engineering of Primary Healthcare” initiative introduced a revised CHW model through Ward-Based Outreach Teams (WBOTs) (Nxumalo et al., 2016; Stansert Katzen et al., 2024). This model was later formalised through the Ward-Based Primary Healthcare Outreach Teams (WBPHCOT) Policy Framework (National Department of Health, 2018). Under this structure, teams of around six CHWs are linked to a primary healthcare facility, supervised by clinic managers and an outreach team leader, and allocated responsibility for specific households within a ward (National Department of Health, 2018; Stansert Katzen et al., 2024). Key components of their work include household registration and profiling; health promotion and screening for HIV, TB NCDs, pregnancy, and early childhood development; referrals and follow-ups for patients lost to care; adherence support for chronic conditions; linkages to social services (food parcels, child support grants, social workers) (National Department of Health, 2018).

Despite this national framework CHW programme arrangements continue to differ across provinces. For example, in the Eastern Cape CHWs are hired by the Department of Health, whereas in the Western Cape the government has partnered with local NGOs who are contracted to run CHW programmes (Stansert Katzen et al., 2024). Both programmes have their advantages and disadvantages. One of the disadvantages of the government-NGO partnership is that because CHWs are not employed by the Department of Health it is more challenging for them to be recognised in the formal health system than those employed in WBOTs (Stansert Katzen et al., 2024). However, under the WBOT structure, even though CHWs are paid by the Department of Health and are government employees, who are closer to the formal health care sector, they are still not formally recognised as being proper members of the healthcare workforce.

Malatji et al. (2024) further illustrates that CHWs, whether employed through the department of health or NGOs, still face challenges such as limited job security, minimal stipends, and lack of formal employment status with the Health Department. In a country with strong union activity, informal groups of CHWs continue to protest for improved working conditions (Malatji et al., 2024).

2.5.1 CHWs and Health Systems

Although CHWs form the frontline for the PCH system, their limited access to resources contributes to hindering their ability to address household needs within the field and for households to benefit from existing services (Nxumalo et al., 2016). For example, patients often report being unable to adhere to their medication due to hunger, illustrating the broader issue of inadequate integration of community needs within health systems.

In a case study across South Africa, CHWs reported checking in at clinics each morning to obtain a list of non-compliant patients to follow up on. Once in the community they screened and profiled patients who could not access the clinic for varying reasons, performed drug counselling at the clinic and provided medication for patients who weren't able to queue at the clinic (Timm et al., 2020). In some cases where patients did not have food to take medication or access to hygiene supplies, CHWs brought them supplies from their own homes (Timm et al., 2020). Although this is not part of their official job description, CHWs often go above and beyond to address patients' needs due to social barriers and high rates of medication non-adherence (Timm et al., 2020). Thus, CHWs play a critical role in helping

patients return to care systems and re-establish trust in healthcare services (Watkins et al., 2021).

2.5.1.1 Role of CHWs in Addressing Food Insecurity

CHWs provide a direct link for practitioners to the inner workings of the community. They are trusted by community members because they engage closely with them and understand the social dynamics and language used in community spaces (López-Ejeda et al., 2019). CHWs are used to mitigate healthcare worker shortages in low-income areas and provide a means of access to healthcare (Stansert Katzen et al., 2022; López-Ejeda et al., 2019). In impoverished areas, there are high levels of NCDs, and CHWs step in to bring patients back into care who have fallen out with the healthcare system due to stigma and poverty (Watkins et al., 2021). Additionally, Nxumalo et al. (2016) identified that chronic care patients in South Africa, who showed poor adherence to treatment due to a lack of food, experienced poor access and continuity of care. In this case study across South Africa, CHWs from three different programmes reported that household food insecurity was a significant barrier to healthcare. One strategy they employed to address this issue involved providing patients with information on how to apply for grants to help them secure funds to purchase food and subsequently adhere to treatment (Nxumalo et al., 2016). These activities correspond with the WBPHCOT emphasis on social service linkage.

Globally, CHWs also play a role in identifying and referring cases of severe acute malnutrition. However, constraints such as supply shortages and limited clinic capacity hinder effective follow-up (López-Ejeda et al., 2019). The South African literature similarly highlights that CHWs cannot resolve food insecurity alone; their work merely exposes the underlying social and structural inequities that health systems struggle to address.

2.5.1.2 Challenges Faced by CHWs

Communication between CHWs and practitioners has historically been ineffective due to hierarchical relationships causing tension within communication networks. Nxumalo et al. (2016) and Timm et al. (2020) both highlight how these hierarchies contribute to the undervaluation of CHWs, who juggle the dual role of healthcare workers and social workers within communities without receiving adequate recognition or benefits such as adequate pay, standardised uniforms, pensions, or formal licensing or registration with the Health

Professions Council of South Africa. CHWs provide essential support to the health system, forming the backbone of our society's health and economic stability. Additionally, CHWs face significant safety risks due to their work environment. According to Timm et al. (2020) and Andrews et al. (2019), working in private homes, which are not classified within the public domain under South African Labour Law, exposes CHWs to various occupational hazards, including sexual assault, being held hostage, and violence. Additionally Watkins et al. (2021) highlight that CHWs face significant personal safety concerns due to a lack of protective gear for handling TB cases. Furthermore they have reported being attacked by aggressive dogs and dealing with challenging situations involving patients with mental health issues.

CHWs often assume multiple roles, dealing with complex social issues such as alcoholism, drug use, and physical abuse. Watkins et al. (2021) underscore that the trauma involved in witnessing extreme poverty and the inability to provide adequate support for undocumented patients further exacerbates the difficulties faced by CHWs. This is reflected in their experiences, where despite their best efforts, they often cannot offer tangible assistance beyond providing information and filling out forms. They frequently contact social workers and police for intervention, but follow-through is often lacking, primarily due to patients being undocumented (Watkins et al., 2021). "You are breaking their hearts because you can't give them anything, besides filling in the registration form and asking: 'is there someone with TB? Is there someone working?,' when there is no food. You can't even say I will get food parcels, there is nothing." (Watkins et al., 2021:5). Furthermore, despite CHWs fulfilling multiple roles in communities, they remain at the lowest level of the health system. Their challenging working conditions, poor employment terms, inadequate equipment, and low wages undermine their effectiveness and foster distrust in the very health system they support (Watkins et al., 2021).

Pre-2017, CHWs in South Africa were being paid below minimum wage. To date, CHWs in several areas still receive low stipends, particularly those who are employed by NGOs contracted by the government (Malatji et al., 2024). A 2017 study indicated that paying CHWs a minimum wage and equipping them with the necessary resources could save the health department R29.9-billion and increase the GDP by R426.8-billion through increased employment and better public health outcomes (Daviaud et al., 2018). The CHW programme, partially funded by the government at about R2-billion a year, needed an additional R6.8-

billion annually to pay CHWs a stipend of R3,500 and ensure they received proper training and resources (Daviaud et al., 2018). This investment would be offset by long-term savings and economic benefits, as increased employment and better health outcomes would enhance productivity over 10 years (Daviaud et al., 2018).

2.5.1.3 Impact of CHWs on Health Outcomes

CHWs have also demonstrated their effectiveness in decreasing child mortality rates and improving maternal care in low-income areas (Stansert Katzen et al., 2022). In South Africa, CHWs are crucial in reaching underserved populations that the public health system often misses (Timm et al., 2020). Trained to provide antenatal and postnatal care, track immunisation and medication adherence, and screen for malnutrition, TB, substance abuse, and gender-based violence, CHWs offer a broad range of services (Watkins et al., 2021).

For instance, in Gauteng, CHWs deliver medication to patients unable to collect it themselves, provide home-based care, follow up defaulting patients and offer health education on various topics including HIV/AIDS, TB, and cervical cancer (Nxumalo et al., 2016). In contrast, in the Eastern Cape, CHWs address child and youth care related to HIV/AIDS and connect neglected or abused individuals to health and legal services. In 2016, CHWs in the Eastern Cape also provided essential daily support such as meal provision, accompanying children to school, and assisting child-headed households with household chores (Nxumalo et al., 2016). These examples underscore the critical role CHWs play in overcoming social and poverty-related barriers to healthcare that extend beyond clinic settings.

By bridging the gap in trust between patients and the formal healthcare system, CHWs play a vital role in vulnerable communities where institutional trust is often diminished due to a lack of support (Watkins et al., 2021). This comprehensive approach underscores the importance of integrating CHWs into the broader health system to enhance their effectiveness and address the multifaceted needs of the communities they serve as they are an important component in executing a SDOH framework.

While CHWs play a pivotal role in bridging gaps in healthcare, addressing the effects of stigma and ensuring robust social support systems are equally crucial for improving health outcomes. Stigma can undermine the effectiveness of healthcare interventions, exacerbating

barriers to care and reinforcing health disparities. Likewise, comprehensive social services are essential for creating a resilient healthcare system that supports individuals beyond the clinical setting. The following sections will delve into how stigma affects health outcomes and why integrating social support services is vital for strengthening overall healthcare efforts.

2.5.2 Stigma Related to Food Insecurity and Health Outcomes

Stigma is a SDOH that affects access to healthcare, making it crucial to examine its impact. Most research on stigma is based on Erving Goffman's work, which defines stigma as a demeaning social label that alters an individual's self-image and excludes them from full social acceptance (Wouters et al., 2020; Goffman, 1963). Stigma affects people through experiences of discrimination, stereotyping, separation, status loss and threats to personal and social identity (Major et al., 2005; Hatzenbuehler et al., 2013). These experiences collectively contribute to a broader understanding of stigma beyond just discrimination (Hatzenbuehler et al., 2013). These understandings of stigma have been adapted into healthcare to understand the health associated risks of stigma (Rai et al., 2020). The stress resulting from these experiences, along with coping strategies, can significantly influence a person's self-esteem and health outcomes (Major et al., 2005). Stress and coping strategies are defined as psychosocial circumstances, which are intermediary determinants of health that directly impact equitable access to healthcare (WHO, 2010). Moreover, stigma directly hinders access to quality healthcare and nutrition, as individuals encounter unsupportive physical and social environments (Major et al., 2005; Clark et al., 1999; Harrell, 2000; Link and Phelan., 2001). If stigma is recognised as a significant source of stress and social disadvantage that affects overall population health, it can be understood within the same framework as other SDOH (Hatzenbuehler et al., 2013). This recognition aligns stigma with other factors that contribute to health disparities and outcomes. Furthermore, stigma is not only a stressor but also a contributing factor to higher morbidity and mortality rates at the population level (Hatzenbuehler et al., 2013). As a result, research highlights the crucial role of social support in mitigating stigma, since stigma-induced social isolation can have detrimental effects on public health (Hatzenbuehler et al., 2013; Cohen et al., 1985; Kawachi et al., 2001).

Internalising HIV-related stigma can hinder an individual's ability to manage HIV effectively, particularly through adherence to treatment regimens (Turan et al., 2016). HIV-related stigma consists of two dimensions: enacted stigma, which includes past experiences of discrimination; and perceived stigma, which refers to the feeling of being stigmatised within one's community (Turan et al., 2016). Understanding how these stigmas are internalised and recognised as prevalent beliefs within a community is essential for understanding the link between stigma and medication non-adherence (Turan et al., 2016; Lee et al., 2002; Earnshaw et al., 2009; Earnshaw et al., 2013). Turan et al. (2016) contribute to the literature on stigma by showing that lower social support and increased loneliness, both linked to heightened depression, mediate the relationship between internalised HIV stigma and reduced medication adherence. This effect is particularly pronounced among women from racial/ethnic minority groups in their US-based study. Shin et al. (2018), Ramjee et al. (2013) and Akena et al. (2012) enhance this understanding by highlighting that, in many social and cultural contexts worldwide, women are expected to adhere to gender-specific moral traditions, including sexual purity. As a result, an HIV-positive status may cause women to delay testing and treatment. This socio-economic position impacts women's access to equitable healthcare (WHO, 2010). Additionally, there is a complex interplay between HIV stigma and food insecurity, with studies showing that internalised stigma is associated with increased food insecurity (Shin et al., 2018; Tsai et al., 2011). Stigma may restrict access to traditional forms of social support, such as borrowing money or food from relatives, leading to financial difficulties and food insecurity, particularly among women (Shin et al., 2018; Tsai et al., 2011). Furthermore, food insecurity affects health by causing nutritional deficiencies that impair the immune system, increasing susceptibility to opportunistic infections, potentially contributing to higher rates of HIV-related mortality (Shin et al., 2018; Weiser et al., 2011; Koethe et al., 2016). Additionally, weight loss and undernutrition can exacerbate the catabolic effects of HIV infection, potentially leading to increased toxicity and decreased effectiveness of HIV medications (Shin et al., 2018; Faintuch et al., 2006).

In South Africa, the dual epidemic of HIV and TB is accompanied by a complex interplay of disease-related stigma, with 73% of TB cases also being HIV-positive (Wouters et al., 2020). Due to this disease overlap, individuals may engage in 'covering' by emphasising the more socially accepted disease (TB) to avoid the stigma associated with the less-accepted disease (HIV). This results in overlapping stigma, where HIV-positive individuals use TB as a strategy to manage the stigma attached to their HIV status. However, this approach can make

TB patients more vulnerable to stigma related to both diseases, exacerbating their overall situation (Wouters et al., 2020; Daftary, 2012). Although Wouters et al. (2020) suggest that TB is perceived as more socially accepted compared to HIV, Datiko et al. (2020) found that health workers often perceive TB as being a result of bad behaviour, similar to the perception of HIV found in Wouters et al.'s (2020) study. However, both studies agree that the stigma associated with TB and HIV increases patients' vulnerability, as negative connotations and victim-blaming attitudes impact both diseases (Datiko et al., 2020; Wouters et al., 2020).

Moreover, stigma tends to be more widespread among individuals who are poor, less educated, women, and those from socially disadvantaged communities (Datiko et al., 2020). Therefore, it is identified that socio-economic position and social hierarchies directly impact individuals equitable access to healthcare (WHO, 2010). For example, in Ethiopia, fear and stigma surrounding TB are prevalent both in how communities view TB patients and how patients self-stigmatise. This stigma is connected to factors such as education, awareness about TB, and economic status, which differ by region. As a result, TB patients often face isolation, a lack of support, and job loss due to cultural attitudes (Datiko et al., 2020), therefore identifying the impact of structural mechanisms on individual health outcomes is also key (WHO, 2010).

Although the association between stigma and infectious diseases is a well-established global concern, emerging literature is beginning to highlight the impact of stigma on NCDs (Rai et al., 2020). However, stigma related to NCDs does not receive the same attention as infectious disease stigma, as evidenced by its limited focus in policies, research, and care practices concerning NCDs (Rai et al., 2020). Individuals living with conditions such as cancer, cardiovascular disease, chronic respiratory disease, and diabetes often exhibit stigma through avoidance and isolation, or encounter discrimination in social, educational, employment, or healthcare environments (Rai et al., 2020; Berger et al., 2011 ; Browne et al., 2013 ; Dyer, 2008; Stergiou-Kita et al., 2016). These feelings of stigmatisation can hinder patients from seeking care or disclosing their health status, which negatively affects the treatment and management of their illnesses (Rai et al., 2020; Berger et al., 2011; Stergiou-Kita et al., 2016; Andrews et al., 2013; Kato et al., 2017). Therefore the need for stigma interventions is crucial.

Stigma intervention can occur at both an interpersonal and structural level (Akyirem et al., 2024). Intrapersonal interventions encompass cognitive exercises, stress management, enhancing self-efficacy, building communication skills, and listening to patients' stories. Contact-based interventions involve mass media campaigns and training programmes for healthcare professionals (Akyirem et al., 2024). Structural interventions focus on eliminating barriers to accessing care by creating a more welcoming healthcare environment through empathy training for healthcare professionals and altering collective norms about NCDs through widespread education campaigns (Akyirem et al., 2024). Support groups are another effective way of reducing stigma as patients can come together and share their experiences and coping skills, as well as offer support for other people living with the same disease (Shiri et al., 2020). In addition to disease-related stigma, individuals often face intersecting stigmas tied to other social factors, such as food insecurity, which complicates access to care and support, as noted by Shin et al. (2018). This intersectionality extends further, as the stigma surrounding food insecurity can also contribute to mental-health challenges.

Food insecurity is known to adversely affect mental health, which is a stigmatised and often inaccessible aspect of healthcare in Africa (Trudell et al., 2021). Trudell et al. (2021) identify that food insecurity has a detrimental effect on mental health throughout Africa, affecting all genders and age groups in every region analysed in their study. Moreover, the research indicates a bidirectional relationship, where increased food insecurity is associated with a higher likelihood of mental-health problems (Trudell et al., 2021). Both Trudell et al. (2021) and Fielding-Miller et al. (2015) highlight the connection between poverty, food insecurity, poor mental health, and increased stigma, linking these factors to bullying and a heightened risk of physical or mental abuse at home. Fielding-Miller et al. (2015), notes that in South Africa, informal safety nets like loans for food or money from neighbours and family members play a crucial role in social support. However, individuals who are ill or perceived as being unable to escape poverty are often excluded from these networks, mirroring the observations made by Tsai et al. (2011) in Uganda. This exclusion underscores the importance of a multi-sectoral approach to health outcomes, especially in welfare states where policies influence resource distribution (UNICEF, 2020; WHO, 2010). Therefore the next section will look at social protection.

2.5.3 Social Protection

Robust social services are essential for building a resilient healthcare system that extends beyond medical care, and it is important to examine their role in promoting equitable access to care. The economic system plays a key role in addressing health disparities. Factors such as employment opportunities, funding for public services and social infrastructure, social protection programmes, and access to education all contribute significantly to shaping equitable health outcomes (WHO, 2025). Social protection encompasses social welfare funds (grants and public works programmes), food distribution, and healthcare services, all of which serve as safety nets to help impoverished families escape poverty or prevent further decline (Asaki et al., 2011).

In South Africa tax-funded social grants provide cash or food transfers to populations outside the formal labour market who are unable to access private insurance or adequate benefits (Nzabamwita and Dinbabo, 2022). These grants are South Africa's main social safety net, aiding in the reduction of household poverty and income inequality (Nzabamwita and Dinbabo, 2022). Cash transfer programmes are not only poverty alleviation tools but are also health-promoting interventions that help reduce inequality in access to care, nutrition, education, labour supply and livelihoods (World Bank, 2021).

Key cash transfer programmes include the Child Support Grant (CSG), the Disability Grant, and the Social Relief of Distress Grant. The CSG is aimed at improving health, nutrition, and child development in poor communities. The CSG supports mothers and child caregivers in low-income families from childbirth until the child turns 18 years old (Luthuli et al., 2022). This grant is particularly crucial for marginalised women, who often face reduced income-earning capacity and increased financial burdens due to childbearing, especially in female-headed households where they are the sole providers for their children (Luthuli et al., 2022). The Disability Grant provides financial support for individuals unable to work due to physical or mental disabilities (Government of the Republic of South Africa, n.d). The Social Relief of Distress Grant provides temporary support to those in acute need through food vouchers, food parcels or cash (Government of the Republic of South Africa, n.d).

The World Bank's Social Assistance Assessment, confirmed that South Africa's grant system deeply influences nutrition, health, and educational outcomes by providing a reliable income base for the poorest households (World Bank, 2021).

South Africa's social assistance system is robust compared to other upper middle-income countries, accounting for 15,4% of total government spending in 2021, with significant allocation to the pensioners grant and child-focused grants (World Bank, 2021).

Furthermore, strong social services have a positive impact on food security and ART adherence. Emotional support from families can mitigate the stress associated with food insecurity, while informational support, providing practical advice and resource awareness, can significantly improve ART adherence even amidst food insecurity (Wang et al., 2020). Additionally, research indicates that receiving social grants is associated with slower cognitive decline and lower mortality over time in older adults (Rosenberg et al., 2024). These outcomes reflect how social grants not only meet immediate material needs but also contribute to long-term resilience and health equity by moderating the impact of social determinants like poverty and food insecurity. Collectively, these findings highlight the essential role of comprehensive social support in building resilient and effective healthcare systems, which are critical for achieving health equity and addressing SDOH.

2.6 Conclusion

This chapter has looked at the complex interplay of health outcomes through the lenses of Systems Thinking and SDOH. The frameworks have guided the understanding of how various intersectional factors contribute to health disparities, particularly within an urban environment. A significant finding across this chapter is the role community health workers play as the bridge between underserved communities and the healthcare system by fostering access to care. Additionally, the impact of food insecurity on medication adherence and other health outcomes identifies the need for targeted interventions that adopt a Systems Thinking approach to understand the social determinants affecting equitable healthcare access. To explore these dynamics in the South Africa context, this study employs a qualitative methodology with a single case study approach. The next chapter will discuss the

methodological processes used to collect and analyse the data from a clinic in a low-resourced suburb of Cape Town, South Africa.

Chapter 3

Methodology

This chapter outlines the methods used to investigate the perspectives of healthcare workers on the barriers food-insecure patients face when accessing healthcare and the extent to which the clinic and social services collaborate to address these barriers. A qualitative research design was chosen to understand the extent to which practitioners viewed hunger and food insecurity as barriers to healthcare; practitioners' knowledge, attitudes, and perceptions on nutritional conditions and how this effects the treatment they provide; what referral pathways are used to connect hungry patients to community support services; and what triggers these referrals. The study was conducted in a community clinic located in a low-resourced suburb of Cape Town, where intersectional socio-economic barriers impact healthcare access. The first section gives context to the systemic and health challenges community members face. The following section outlines the study design and methods used to address the study aim and objectives. Using a single case study approach, data was collected through clinic observations and semi-structured interviews with healthcare workers and community workers from one clinic and two NGOs. This data was then thematically analysed using the NVivo software. The last two sections look at the study limitations and ethical considerations. This methodology aligns with the study's conceptual frameworks through a comprehensive analysis of the complex factors influencing healthcare outcomes, while bringing the nuances of localised lived experiences into the conversation.

3.1 Study Site

The sampled township was established in the 1990s as a response to housing shortages in a nearby settlement and was originally designed to accommodate 750 families. Since its formation, the population has grown significantly, with the 2011 Census recording 21,904 residents, though unofficial estimates place the current population at over 30,000 (Statistics South Africa, 2012; Living Hope, n.d). The population is predominantly Black African,

accounting for 91% of its residents. Due to the unavailability of more recent ward-level data from the 2022 Census, the 2011 statistics remain the most accurate reference point for understanding the demographic composition of the area.

Essential infrastructure, including a school and clinic, was introduced in 1995. There is one clinic in the area that services the entire community. The clinic attends to around 4,000 patients a month (information from Participant 15, a senior clinic staff member). In terms of education, only 35% of residents aged 20 and older have completed a matric qualification or higher. The unemployment rate, officially recorded at 30.96% in 2011, is likely much higher, with more recent estimates suggesting it could range from 70-80%, reflecting the broader socio-economic challenges faced by this community (STATS SA, 2012; Living Hope, n.d). Additionally, high levels of crime and incidents of xenophobia have been reported, alongside other social issues such as substance abuse, domestic violence, and the strain placed on the education system due to overcrowded schools (Living Hope, n.d).

The economic conditions of the township are characterised by widespread poverty. According to the 2011 Census, 82% of households earn less than R3,200 per month, and 21.8% of individuals report no income at all. The high crime rate further contributes to the social and economic difficulties faced by residents (Living Hope, n.d). More than 50% of the children who come to the clinic are foreign nationals. Although they have access to public health services, their parents are unable to apply for child grants or any other kind of grant (information from Participant 15, a senior clinic staff member).

Housing and infrastructure are similarly under pressure. While 26.6% of households live in formal dwellings, compared to the 87.5% of households living in formal dwellings in the larger Cape Town area (STATS SA, 2012; STATS SA, 2023); the rapid population growth has led to a rise in informal housing, with many structures built on surrounding wetland areas. This expansion has created significant risks for residents, particularly during the winter months when flooding is common due to rising water levels. Informal settlements are vulnerable to environmental hazards due to a lack of infrastructure and the lower-grade level of building materials used for houses in Cape Town, South Africa (Drivdal, 2016). On the Cape Flats, many informal settlements flood yearly due to the high water table and heavy rainfall in the area (Drivdal, 2016). During dry periods, the proximity of homes makes them vulnerable to fires, which frequently destroy large numbers of dwellings (Living Hope, n.d). The spread of fires in informal settlements is significant across the whole of Cape Town and

is often attributed to the proximity of dwellings (Gibson et al., 2021). There is a lot of waste lying open in the community which is a health hazard, and there is a lot of cross-infection of TB due to the proximity of houses. It is hard to counter TB numbers due to overcrowding (information from Participant 15, a senior clinic staff member).

The township also faces severe public health challenges. HIV prevalence is notably high, with approximately one in four adults living with the virus, and infection rates are continuing to rise, particularly among women (Desmond Tutu Foundation, n.d). An estimated 23-28% of the population is living with HIV, and many of those individuals are co-infected with TB (Living Hope, n.d). 20% of children are contracting TB by the age of five with 80% of individuals testing positive for TB by adulthood (University of Cape Town, 2019). It is hard to counter TB numbers due to overcrowding (information from Participant 15, a senior clinic staff member).

In South Africa at large, the HIV prevalence is around 12.7% of the total population. In 2024, approximately 8 million people were living with HIV; among those individuals, 16.68% of adults between the ages of 15-49 were HIV positive (STATS SA, 2024). The Western Cape had the lowest rates of HIV compared to other provinces, with a prevalence of 7.4% in 2022, meaning 540,000 people were living with HIV in the Western Cape in 2022 (HSRC, 2024). In the Cape Town metropolitan area, 13.3% of the population are TB positive (Western Cape Government, n.d).

These socio-economic and public health statistics highlight the significant challenges faced by this community, providing critical context for understanding the living conditions in the area. The site was selected due to prior research knowledge of the area, and ethical clearance being given for the specific clinic site. This site also presented as an interesting case study due to the NGOs surrounding the clinic, large and small, which ran programmes in and around the clinic. Additionally, the clinics run by the Western Cape Department of Health were inundated by researchers and therefore were not taking on any more research projects within those specific sites, however this clinic was run by the City of Cape Town, and was accepting research projects within the clinic and study area.

3.2 Study Design

This research employs a qualitative approach, incorporating observations, semi-structured interviews, and thematic analysis to explore the experiences of healthcare professionals, CHWs, and individuals working in the NGO sector of social services. The study focuses on understanding the interaction between clinics and community-based social services, specifically examining whether these entities operate in silos, or collaborate to address social barriers such as hunger and malnutrition.

Key areas of investigation include how healthcare practitioners, and social service workers' (CHWs and Community Champions) knowledge, perceptions, and attitudes toward hunger and malnutrition influence patient treatment, how these issues are addressed in the clinical setting, and the referral pathways used for patients experiencing social barriers.

The study aims to understand the complex factors influencing healthcare delivery in low-income neighbourhoods and identify mitigation strategies employed by practitioners. This localised insight into patient health constraints is to be compared with broader literature on health equity, food and nutrition insecurity, socio-economic challenges, and medication adherence. Through a single case study approach, this research seeks to provide a nuanced understanding of the intersection between healthcare and social services in the community. The research followed a qualitative methodology, where clinic observations were conducted, followed by semi-structured interviews with clinic staff (nurses, a doctor, a dietitian, and an HIV counsellor), CHWs employed by a local NGO (referred to as NGO1 from here on out), and community champions for a local NGO (referred to as NGO2 from here on out). After the fieldwork was conducted, the data was thematically analysed.

3.2.1 Case Study

The case study site is located in a City of Cape Town run clinic, utilising a qualitative case study approach as the primary methodology.

The decision to conduct a single case study was driven by several factors. This research emerged from a discussion with a doctor (dentist) completing their Required Community Service year at a Western Cape Provincial Clinic, directly informing the study's aim. Although the case study site differs from the clinic where the doctor worked, it faces similar

socio-economic challenges. This facility includes various health professionals and a team of community health care workers collaborating with the clinic.

Using a single case study enables a focused investigation of existing phenomena within their specific context (Baxter and Jack, 2008). This qualitative case study method facilitates an in-depth examination of the phenomenon in real-life settings, employing multiple data sources, such as observations and interviews, to capture diverse perspectives and provide a comprehensive understanding of the issues faced within this setting (Baxter and Jack, 2008; Yin, 2013). By concentrating on a specific context, this approach offers nuanced insights that can be connected to the broader academic literature. Linking the findings of this case study to existing research underscores how it supports or addresses gaps in current knowledge. This relationship not only strengthens the study's conclusions, but also enhances its contribution to the wider body of knowledge (Yin, 2013).

Case studies are effective in providing a compelling narrative that highlights specific social situations or issues (Gbrich, 1999). In the context of this research, the use of a case study is particularly significant, as the original thesis concept originated from the localised narrative of a specific clinic within a neighbouring suburb.

3.2.2 Study Sample

The study site was at a City of Cape Town clinic, which is one of 94 healthcare facilities run by the City of Cape Town. The study sample comprises 15 participants, drawn from both healthcare professionals and community-based social service workers associated with NGOs 1 and 2. Participants were selected based on their roles within the clinic and community-based organisations, with guidance from the clinic's head nurse and two NGO managers to avoid disruption to their work schedules.

- Healthcare Professionals:
 - One doctor who works at the clinic on most days, though she is part of a rotating team of doctors assigned to different clinics.
 - Three nurses who work full-time at the City Clinic in various departments, including the TB unit, child growth monitoring, HIV care, and general patient care.

- One dietitian employed by the Western Cape who visits the clinic once a month as part of her outreach services. She is one of 10 dietitians working across the entire Western Cape public health sector.
- One HIV counsellor employed at the clinic.
- One senior clinic staff member.
- Community Healthcare Workers (CHWs): Four CHWs employed by NGO1 and managed by the organisation. Their salaries are funded by the Western Cape government.
- Community Champions: Three individuals employed by NGO2. They hold workshops in the community but are not formal healthcare professionals or government employees.
- NGO and Clinic Management:
 - A meeting was held with the manager of NGO1 to understand the programmes they run.
 - Another meeting was conducted with the clinic manager in charge in 2024 to understand the clinic's programmes and to coordinate logistics for data collection.
 - An interview was held with the founder of NGO2 to gain insights into their operations.

Participants were identified during meetings with the two NGO managers and the clinic's head nurse. These individuals provided recommendations for who could be interviewed and determined the best time to conduct the interviews without interrupting their workflow. Additionally, I reached out to the dietitian directly, based on contact details provided by the clinic manager, and interviewed her via Zoom.

All interviews were conducted in private, either in consultation rooms at the clinic, at the offices of the community healthcare workers, at the NGO2 office, or via Zoom. The interviews were all completed in less than 30 minutes.

3.2.3 Observations and Semi-Structured Interviews

There were two phases of fieldwork within this study; phase one included clinic observations and phase two included semi-structured interviews with clinic staff, CHWs from a local NGO

(referred to as NGO1 from here on out), and community champions (workers) from a community-led NGO (referred to as NGO2 from here on out). The clinic observations began by brokering access to the site with the clinic manager. During the meeting with the clinic manager, she was presented with the study's ethical clearance from UCT's Health Department and from the City of Cape Town and the details of the study were outlined. Once she approved of the study being conducted at the clinic, observations and interviews were able to take place. Observations were conducted in the clinic's waiting room at various times of the day over the course of one week. During this time, I sat in the waiting room observing the number of patients in the waiting room, the gender and age demographic of patients, and the waiting time between patients being called in for consultation. Additionally, I walked around the clinic looking for posters on food and nutrition. The clinic's surroundings were also noted while walking through different areas of the facility. Two separate meetings were set up with the NGO managers to broker access into their organisations. During these meetings the study was explained, ethical clearance forms were presented and clearance for interviewing their organisation's employees was given. Once phase one was completed, phase two commenced. Interviews took place with 15 participants over the course of 2024 up until January 2025. All participants were interviewed privately at their place of work, and Participant 13, the Dietitian, was interviewed over a private Zoom call. Once participants had signed their consent forms, 13 out of the 15 interviews were recorded for transcription purposes only.

Phase One: Clinic Observations

Observations took place in March 2024, which is the beginning of autumn in Cape Town. The weather outside was cold and rainy, however inside the clinic, it was hot and poorly ventilated. There was consistent coughing throughout the clinic with only a few patients wearing masks. The toilets were also in poor condition, seats were missing, there was little to no toilet paper, no soap and the toilets did not flush. When it rained, no vendors were present outside, but on dry days, a vendor selling vegetables, peanuts, and chips was set up outside the clinic. When I returned to the clinic in January of 2024, during summer, the street vendor was outside selling fruits, vegetables and nuts which were purchased the previous day. The food observed being eaten by patients while waiting included white bread rolls, deep-fried chips, and crisps. The first floor of the clinic consists of 13 patient consulting rooms (seven clinician rooms, three HIV consulting rooms, one TB room, one prep room, and one

emergency room), a reception and waiting area, a pharmacy, a kitchen, toilets, a DOTs room, and a courtyard. The second floor of the clinic is restricted for staff members and has a meeting room.

The majority of clinic patients were women with children and babies, accounting for about two-thirds of the patient population. Part of the female demographic included mothers breastfeeding babies while waiting for their appointment. The remaining third consisted of men, primarily middle-aged and young adults. The clinic was open five days a week to all patients with varying medical needs and twice a month, patients in chronic illness clubs (groups of people with the same illness) came for their appointments of medication refills.

Patients could prebook their appointments and waited up to three hours to be seen, as per national waiting time standards. Observations indicated that patient names were being called at approximately 10-minute intervals. Patients would begin at reception, then they would see an enrolled nursing assistant (ENA) for general checks such as blood pressure, then they would move on to a consulting room with a clinician, and then they would be sent to the pharmacy. In 2024 the clinician staff on duty consisted of one doctor, seven professional nurses, one enrolled nurse, one ENA, four counsellors, and a dietitian who visited the clinic once a month (figure 3). A poster in the clinic provided information on the colour codes used to designate various service areas for the primary health service streams, such as HIV, TB, and NCDs, while another poster detailed the number of staff on duty and the expected waiting times (figure 3).

I returned to the clinic in January 2025. During this visit the new senior staff member in charge informed me that the clinician staff included one doctor, three certified nurse practitioners (CNPs), three professional nurses (PNs) with one vacancy, one enrolled nurse and one ENA. This meant that there were six nurses working at the clinic in 2025 as opposed to seven in 2024. During the interview process in 2024 I was informed that the psychologist had left and the post had not been filled yet, however, during my 2025 visit I was informed that a newly appointment psychologist began working at the clinic from December 2024 who works at the clinic every first Tuesday of the month and every third Wednesday of the month. I also observed a security guard stationed at the clinic entrance and examined the clinic's operational aspects. During my time there in 2024, I noted the arrival of one community health worker and one ambulance.



AVERAGE WAITING TIME FOR SERVICES 3 HOURS.

STAFF ON DUTY

STAFF	NORMAL	TODAY
DOCTOR	1	
PROFESSIONAL NURSE	7	
ENROLLED NURSE	1	
ENROLLED NURSING ASSISTANT	1	
COUNSELLORS	4	
PHARMACIST	1	
PBPA	2	
CLERKS	3	

Figure 3: Primary Care Services Streams and Staff on Duty

Posters and Educational Materials

Out of 59 posters there were two posters focused on food and nutrition in 2024 (figure 4), and three in 2025 (figure 4 and figure 5), as well as one pamphlet on sugar control for diabetes which was dispensed by the nurses (figure 6). Additionally, all of the posters on nutrition were in English.

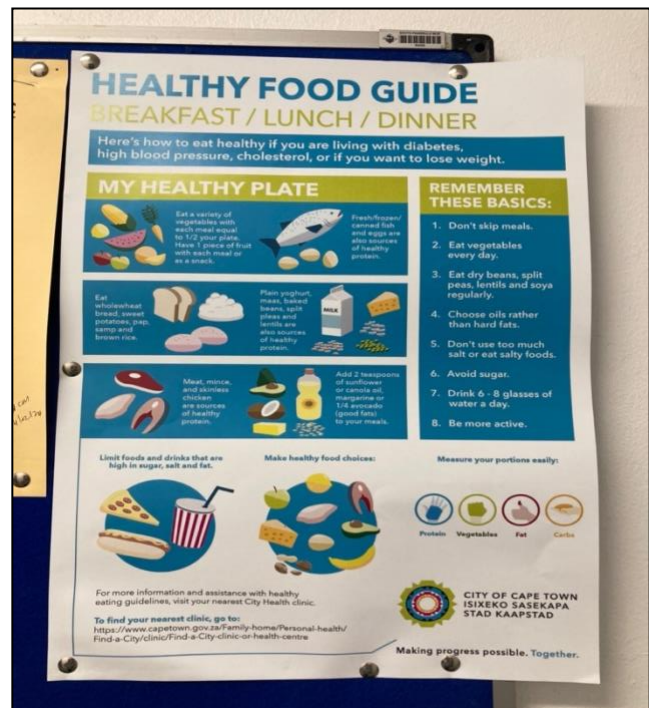


Figure 4: Nutrition posters in the clinic in 2024 (poster two was no longer there in 2025)



Figure 5: Nutrition posters in the clinic in 2025



Figure 6: Pamphlet on sugar control for diabetes (2024)

Out of the 59 posters, four were on community development. One of the posters was promoting the services offered by NGO2 (figure 7), and two posters were on job training opportunities (figure 8).



Figure 7: Poster on the services offered by NGO2

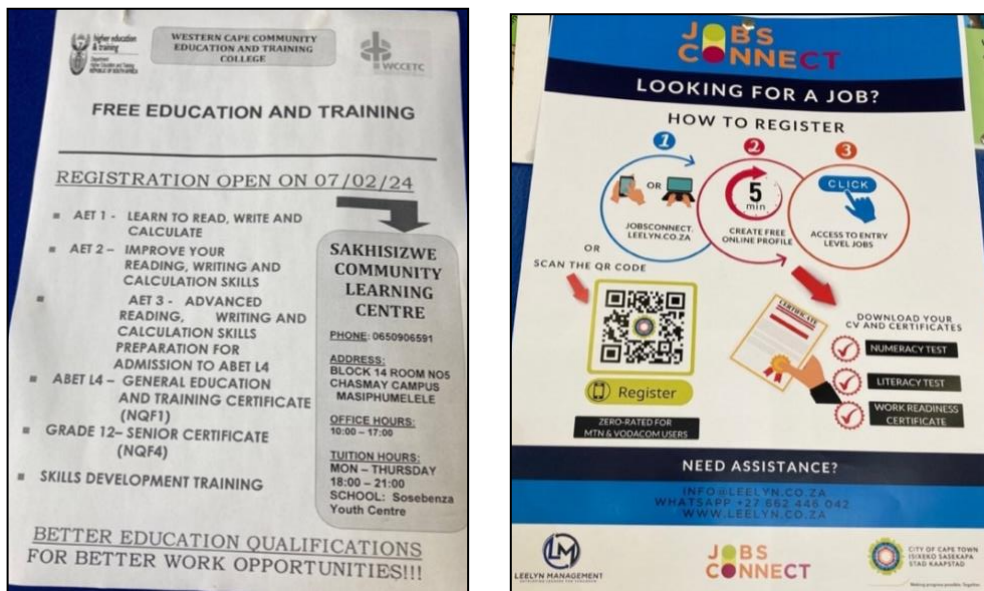


Figure 8: Posters on education training and an online job portal

The remainder of the posters in the clinic were on disease prevention and education, sexual education, paediatric care, youth health services, pregnancy education, and clinic operations. The majority of these posters were in English, Afrikaans, and isiXhosa.

During my clinic visit in 2025, participant 15, a senior clinic staff member, showed me the clinic's plan for reducing drug-sensitive TB cases in 2025. In this plan they look at social determinants of health and clinic operations. Figure 9 shows the clinic's aim for reducing drug-sensitive TB (DSTB) defaulters from 22% to 18% by May 2025. Figure 10 identifies the causes of patient defaulting within the community. Figure 11 unpacks how the clinic will address the rates of defaulting. Figure 12 looks at the clinic's proposed interventions for achieving their aim statement in figure 9.

The image shows a handwritten aim statement on a piece of paper. The text reads: 'We aim to DECREASE % of DSTB INTERRUPTERS'. Below this, it says 'From: 22 (12pts) %' and 'To: 18 %'. At the bottom, it says 'May 2025'.

Figure 9: Clinic's aim statement

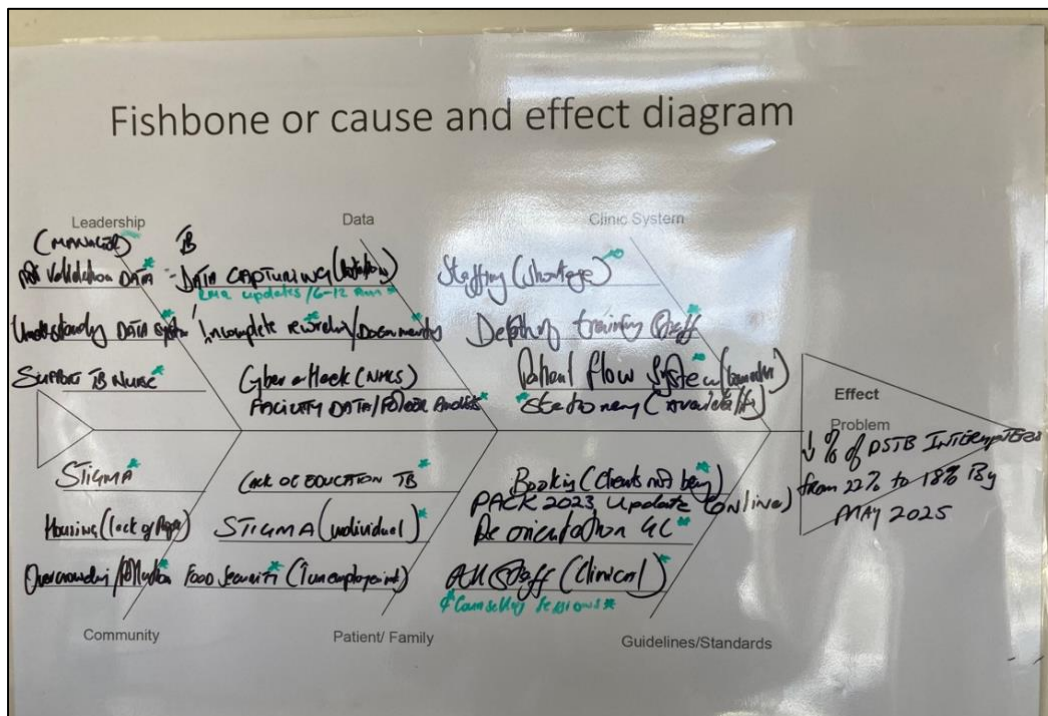


Figure 10: Cause and effect diagram for addressing rates of TB defaulting

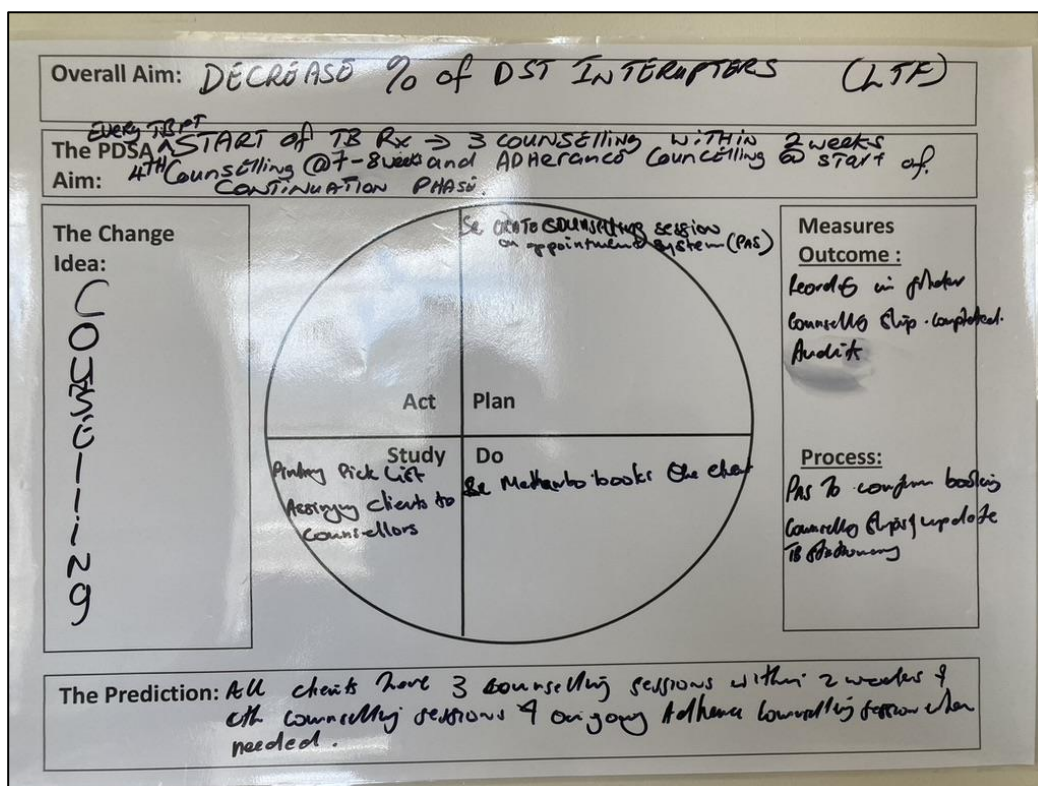


Figure 11: Diagram for addressing rates of TB defaulting

1. Use of TIAL [BIBLICAL]

- X2 - No Outcome
↓
LHO Refused

A

3. Audits - folder Audits By Clinic
Staff + mx - @ facility meeting.

4. TRAINING → Staff → Guidelines
→ SPD
→ RMR
→ 1 on 1

Phase two: Semi-Structured Interviews

All participants were asked a series of questions that were aimed at answering the study's objectives. The clinic staff were asked basic demographic questions about their field and how long they have worked in public health and if they lived in the community. These questions were asked to give background on their knowledge and experience of the community and the public health care space. To understand the barriers patients faced when accessing healthcare, participants were asked questions that related to how patients' hunger and malnutrition impacts their treatment access and medication adherence, and if the clinic provides any food for patients. To address objective two, clinicians were asked questions around their nutrition training sufficiency, their ability to identify and address hunger or malnutrition, and if they

were given any induction into the socio-economic climate of the community and available community services. To address the final objective, clinicians were asked about their referral systems and the availability of support groups at the clinic. Due to the dietitian's specialisation in nutrition, she was asked a few additional questions relating to her frequency at the clinic; her training on nutrition; if there is ongoing training for staff on SDOH and nutrition; and if she saw connections between food insecurity and NCD, food insecurity and HIV, and food insecurity and stigma.

To address objective one, the community health workers were asked questions around how hunger and malnutrition impacts their patients' access to treatment, and if hunger and malnutrition are an issue within the community. To address objective two, they were asked about their hunger and malnutrition training if they feel hunger and malnutrition is an important factor in health. To address objective three and understand what types of support are offered in community services, they were asked about what their role entails, if they have a referral system with the clinic and other social services, and if their organisation offers support groups for patients.

Community champions were asked questions about their perceptions of hunger and malnutrition and the impact of hunger and malnutrition on medication adherence to address objectives one and two. To address objective three, they were asked how they got into their work, how they decide what to teach, what services they provide and their referral pathways with the clinic and other social services.

The NGO2 founder and clinic senior staff member was asked questions based on a need for clarification from previous interviews with the other participants, and themes that came out of previous interviews.

3.2.4 Thematic Analysis

The data collected for this research study was organised and analysed using thematic analysis. According to King (2004), thematic analysis is effective for emphasising the key components of a large data set as it encourages researchers to adopt a structured approach to data management, resulting in a coherent and organised final report. The thematic analysis process was conducted in six stages, as outlined by Nowell et al. (2017), and utilised the

NVivo software. These stages include: (1) getting familiar with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) producing the final report (Nowell et al., 2017).

NVivo was utilised throughout the project for both the literature review and data analysis. For the literature review, all relevant papers were imported into NVivo and manually coded based on key terms and concepts. For example, the text search function was used to identify terms and broader contexts related to NCDs, HIV, and Health Equity. These references were then coded under the corresponding text search prompts to organise the literature for further analysis. In the results section, interview responses were similarly coded according to themes that emerged from the research objectives and interviews, such as medication adherence, economic factors, and stigma.

3.3 Limitations

One of the primary limitations of this study was the significant time required to obtain ethical approval, which took eight months. The approval process involved multiple steps: first through the National Health Department, then the Western Cape Health Department, and finally the City of Cape Town Health Department. Initially, I applied to conduct my research at a provincial clinic that was integral to the conceptualisation of the study, as it was the clinic where a community dentist had shared her challenges in providing care to food-insecure patients. However, my application was denied due to the clinic already accommodating too many researchers. While this posed a limitation, it also provided valuable insight into the systemic challenges faced by patients across different communities. The clinic where the research was eventually conducted faced similar socio-economic issues to those at the original site, reinforcing the relevance of the study.

Time constraints also posed a limitation. As this was a two-year master's programme, and ethical approval took eight months, I was limited to conducting a single round of interviews. While I had initially planned for only one round, a follow-up round could have clarified some of the inconsistencies in participants' responses.

These inconsistencies themselves emerged as both a limitation and a key finding. Participants provided differing perspectives on various aspects, such as the availability of support groups, training, food parcel distribution at the clinic, and the social services offered in the area. This

divergence highlighted communication gaps between practitioners, and practitioners and NGO staff, as well as the strain on overworked and under-resourced healthcare workers. This finding speaks to the broader systemic challenges within the healthcare and social support infrastructure.

This study was limited by its sample size. While the localised perspective of this study was crucial, future research which engages with multiple clinics across different locations in South Africa would provide a better understanding of the impacts of food insecurity on public healthcare access in South Africa at large. As this clinic was a City clinic, it only examined one local government healthcare structure and did not look at provincial and national health structures at large. However the insights from the dietitian, a Western Cape Health Department employee, did provide some insight into the nutritional healthcare provided provincially. An additional limitation was finding out what barriers patients face from the perspective of healthcare workers and community workers. Further studies which look at the perspectives of patients, healthcare workers and community workers could add a more in-depth understanding on the barriers patients face when accessing public healthcare. However, it was beyond the scope of this study to include patient interviews due to the logistical and time constraints associated with obtaining ethical approval. Furthermore, the primary objectives of the study were to explore healthcare worker perspectives.

3.4 Ethical Considerations

Ethical issues are a critical component of any research, particularly when working with human participants on sensitive topics. While the clinic involved in this study is a City-administered facility, the research adhered to both the University of Cape Town's ethical guidelines and the ethical approval framework established by the City of Cape Town.

Ethical approval was obtained from the UCT Health Science Department (HREC ref: 484/2023), the City of Cape Town Health Department (Ref: 10994), and email consent was received from the NGO founders to interview their employees. Anonymity and informed consent were prioritised, and the study aimed to avoid extractive practices. All participants were provided with and signed an informed consent form prior to the interview, and the form was explained to them in detail before signing.

To protect participants from any potential negative repercussions, they were assigned numerical identifiers. For similar reasons, the name of the research area and clinic have been deliberately omitted. Given that there is only one main clinic and one NGO employing community health workers in the area, it was essential to ensure the anonymity of the study site.

Interviews were recorded solely for transcription purposes, with consent obtained beforehand, and all interviews were conducted in private. Study data were stored on my personal computer and the UCT OneDrive platform under my personal student account, with access restricted to me as the primary researcher. This data will be retained for five years following data collection.

It is important to acknowledge my positionality as a researcher. I am a white, cis-gendered female South African, raised in the Southern Suburbs of Cape Town. Coming from an upper-middle-class background, with parents who were journalists involved in anti-apartheid reporting in the 1980s, I have been afforded privileges that shape my perspective and approach to research. These privileges have given me access to education, resources, and opportunities that differ from the realities of those within the community I engage with in my study.

As I conducted interviews in my home language, which is not the first language of most of my participants, I was mindful of the power dynamics created by this and the possible limitations in fully capturing participants' experiences. While the option to conduct interviews in their home languages was offered, I recognise that the language choice may have influenced how participants expressed themselves and may have impacted the data collection process.

Throughout the research, I remained conscious of how my positionality might influence my interpretations and interactions. By acknowledging these dynamics, I aimed to mitigate bias and ensure that participants' voices were centred in a respectful and equitable manner.

This study is not a representation of patients lived experiences, but rather a first step toward understanding the complex challenges faced by practitioners and their accounts of what food-insecure patients face in low-income areas of South Africa (Hooks, 2014).

3.5 Conclusion

In conclusion, this chapter outlined the qualitative research design used to investigate the perspectives of healthcare workers on the barriers food-insecure patients face when accessing healthcare. The use of clinic observations and semi-structured interviews was crucial to capturing the nuanced insights on practitioners' views and knowledge of the socio-economic and structural barriers patients, practitioners and community workers face, and the referral systems they use. The findings that came out of this methodological approach were complex and extensive and require a continuous reflexive process within the analysis. The following chapter will discuss the study findings which were used to address the study's aim and objectives.

Chapter 4

Results

The results of this study are organised into three main themes: Treatment Interrupted, Navigating Hunger in Care, and Bridging the Gap, each with five sub-themes to address the study objectives. The first theme, treatment interrupted, explores the social barriers patients face when accessing healthcare services, including the clinic and CHWs. This leads into the second theme, navigating hunger in care, which unpacks the knowledge, perceptions, and attitudes of practitioners towards patients' hunger and malnutrition. The final theme, bridging the gap, explores the steps participants take in providing additional support to patients' outside of treatment. These themes follow logical progressions, from individual patient barriers, which flow into understanding practitioners' knowledge and training around these challenges and concluding with the strategies used to connect patients with additional resources. Through these themes it will become clear that hunger is a unifying factor that impacts all parts of the treatment and social support process. It must be noted that while the term 'treatment defaulting' is frequently used throughout this study, Participant 15, a senior clinic staff member, noted in 2025 that the more inclusive term now being used for defaulting patients is 'treatment interrupters' or 'lost to follow up from treatment'.

4.1 Treatment Interrupted: Hunger as a Barrier to Healthcare Access

A key theme identified in the study was “treatment interrupted” where the connection between hunger and medication non-adherence was made. All the participants linked medication non-adherence to hunger, as patients reported experiencing side effects from their medication that were exacerbated by hunger. This often led to patients stopping their treatment plans. Hunger acts as both a physical and psychological barrier, worsening the already challenging task of managing chronic illnesses such as TB and HIV/AIDS. Participants provided detailed accounts of how these challenges manifest in their daily healthcare practices and community work. This theme unpacks the social barriers patients face when accessing healthcare, aligning with the first objective of this study: *To what extent do healthcare practitioners view hunger and food insecurity as barriers to healthcare treatment?*

A prevalent issue raised by participants was the link between taking medication on an empty stomach and how this deters patients from continuing with treatment. Participant 8, a doctor, expressed that hunger impacts medication adherence for both TB and HIV patients, and spoke on the escalation of treatment and the cycle that develops when hunger is not addressed.

“So, actually a lot at this facility, and it interferes with their compliance with their medicines. A lot of the patients here will actually default, especially because this clinic has a high HIV and TB burden. A lot of them will default on both of those medicines because they just have no food to take it with. And if they don't have food, they say that it makes them sick, or it makes them vomit, and so they would rather not take it. This then impacts them, because they end up having to be on drug resistant TB meds, or second line HIV treatment, and then the process just gets worse. Then it becomes worse and worse to the extent where we have quite a few patients on our third line of ARVs. And again, if they now are going to default because of a lack of food, where do we go from there?”

The doctor highlights that the clinic has a high TB and HIV rate and that there is a high rate of food insecurity within this community. What is noted here is that the medical response is to increase the medication doses, which does not address the root cause of the issue. If patients default on the final escalation of treatment, it is clear that the pathway taken to

address the issue is not working. Her question of “*where do we go from here?*” is pivotal as it highlights the inherent limitation within the clinic's ability to support its patients. The doctor's question emphasises the circularity of the issue: without addressing the intermediary determinant of health which is hunger, higher doses of medication will not resolve the underlying problem of non-adherence. The clinic does not have the resources to provide food, and thus, the cycle of non-adherence continues. The doctor's question calls attention to the systemic gap where social determinants like food insecurity are acknowledged by practitioners within the clinic, but not integrated into the broader healthcare model for holistic treatment. Without addressing hunger directly, the practitioners are forced to escalate treatment, without a sustainable solution for the root cause of the problem.

To add to the understanding of this systemic gap, Participant 15, a senior clinic staff member, explained the impact of this structural constraint on nurses. She expressed that a lot of fingers are pointed at nurses to solve peoples issues, for example why they are dispensing medication when patients are interrupting their treatment. However, she wanted to know where other departments are, like Social Development, Home Affairs, Housing, and Water and Sanitation, as she identified that nurses can't give people jobs or provide them with food.

An additional inhouse clinical solution is to send defaulting HIV patients to the HIV counsellor as the first point of contact. Here they will try to identify why the patient is defaulting, and often revert to educating the patient on the importance of sticking to treatment plans.

Participant 9, an HIV counsellor: “*When they're taking the medication, they complain about being hungry, they don't have food, so they can't take their medication, so they default because of that. So whenever they come to the clinic, they start by me if they've defaulted. I educate them, then the hunger part comes in that I couldn't take my medication because I don't have food at home.*”

What is clear is that a lack of education around treatment plans is not the issue at hand, it is food insecurity. This indicates that while patients may have the knowledge and understanding of the importance of their treatment, they do not have the resources to be able to comply with their treatment. This presents a disconnect in the healthcare system: the counsellor is tasked with addressing adherence issues, but the solution they provide, education, is insufficient when the cause is food insecurity. This misalignment highlights a broader systemic issue

where hunger is not adequately addressed within the clinic setting due to their limitations, and therefore, the core issue that causes defaulting remains unresolved.

While hunger is widely understood by participants as the cause of medication side effects, Participant 13, a dietitian, had a different perspective on the relationship between hunger and medication adherence. She suggested that the side effects of medication which are understood to be exacerbated by hunger, could actually be hunger-induced symptoms felt independently from medication use.

“If they've been told that you need to maybe eat before you take the medication, then they think, okay, well, I don't have food, so I can't take my medication. Sometimes they also link that feeling with the medication, that feeling is terrible, but it could just be that they haven't eaten, so then they have this concept that it's the medication doing that to them. So then they obviously don't end up taking it.”

This connection is interesting as it doesn't challenge the root cause of the issue, hunger, but questions the connotation that hunger increases the side effects of medication. It also questions what education patients have been given on the interactions between their medication and food. Whether it's the side effects of hunger, medication side effects exacerbated by hunger, or both, patients continue to default from treatment due to insufficient food.

While some patients can take medication on an empty stomach with no side effects, for many, side effects can hinder treatment adherence in the early stages as explained by Participant 12, a certified nurse practitioner: *“If you've been taking it for a while, then you shouldn't have any side effects. It also depends on the person. Because some people say, no, I'm fine. I can drink my tablet without eating anything...”*

Additionally, participants expressed that TB treatment not only worsens medication side effects when taken without food, but the medication actually increases hunger levels after prolonged use. This causality was explained by Participant 10, a nurse practitioner, in the TB unit.

“Most of the time people say they can't take their tablets because they are hungry and they don't have food at home... The TB medication makes them hungry. You eat a lot when you're taking the meds, and for some of them they are not working. The side effects on its own make

you sick, if you are eating or not... You vomit, have nausea, dizziness, feel tired, want to sleep. This is the first few days you have started, then after two weeks, once the medication is in your system, then it makes you eat a lot. You wake up at night looking for food. But unfortunately we can't provide food."

This statement clearly shows how hunger and medication interact. The increased hunger from TB medication is concerning for food-insecure patients as it increases the likelihood of defaulting from treatment due to their limited access to food. Although clinic staff are aware of the issues food-insecure patients face, the clinic does not provide food support. This highlights a gap in care because when hunger needs go unmet, a cycle of incomplete treatment is created. This bidirectional relationship explains how hunger becomes a barrier to effective care and contributes to worse health outcomes such as susceptibility to drug resistant TB as explained by Participant 11, an enrolled nurse.

"We say, you haven't been here for three weeks, where have you been? You haven't taken your medication. They say, I didn't have food, so how can I take my medication? My medication is laying there at home. I'm just feeling sick. And then when I see the weight dropping, the person is just laying there sick, so that is the main thing. If they don't eat, they won't take the medication. So they have to get a stronger dosage. Which makes them more sensitive to drug resistant TB."

Participant 11 points out that part of the defaulting process is patients missing regular clinic visits due to this negative cycle created between hunger and medication use. When the patient returns to the clinic after an extended period, the nurse can see that they have lost weight. This weight loss is understood to result from both malnourishment and a worsening condition, as hunger leads to treatment defaulting. The clinical response to defaulting is increasing medication doses to treat the worsening TB condition. However, the root cause of the problem is hunger, which cannot be addressed at the clinic. Increased medication doses do not decrease the likelihood of defaulting as expressed by the doctor who identified that patients continue to default from treatment even on stronger doses of TB and HIV treatment. However stronger doses of medication and defaulting does increase the risk of contracting drug resistant TB, which is exacerbated by the effects of hunger and malnutrition on their body.

An additional issue noted by participant 15, a senior clinic staff member, was that often TB patients stop treatment after two months, either because of the side effects which they did not have full knowledge of because they didn't go to all their counselling sessions, or because they start feeling better. Due to this their vulnerability to later stage TB or MDR-TB increases.

A connection was made between the health implications of nutrition on disease vulnerability by the dietitian. When asked about the link between food insecurity and TB, HIV, and NCDs in patients, Participant 13, a dietitian responded: *"I definitely see the connection. That's actually the majority of our patients that we see that is often the link... Most of my patients with TB and HIV have some form of food insecurity, which makes it even harder. I think it's a play on each other. If you have food insecurity, you obviously are not getting the right nutrients to support your immune system. And that makes you more susceptible to TB and other infections..."*

This quote underscores the bidirectional relationship between food and nutrition insecurity and health outcomes. This is identified by the impact insufficient nutrition has on weakening patients' immune systems, which increases their susceptibility to opportunistic diseases such as TB. This is particularly dangerous for HIV-positive patients as a lowered immune system and the contraction of opportunistic diseases can be fatal. This insight is significant for public health strategies, as it identifies the importance of food assistance and nutritional support as part of comprehensive care plans for patients with TB, HIV and NCDs.

If HIV patients do not take their ARVs then their viral loads will increase, however if the medication is causing them to feel ill due to their hunger, they are more likely to stop taking it, resulting in rising viral loads. Participant 12, a certified nurse practitioner, discussed the connection between hunger and HIV medication adherence.

"Normally I see mostly HIV positive clients. So they sometimes default on treatment because they're hungry, they can't drink medication on an empty stomach. So that can also have an impact on the adherence of the client. The viral load does go up if you don't take your medication, but we just advise them. But at least here in this community, there are social services, like here, next door (NGO1), where they can get food."

Participant 12 introduces an important contrast to the quote by Participant 10 who discussed the clinic's inability to provide food for patients with the alternative of sending patients to

NGO2 for food assistance. Here patients' hunger is noted as a barrier to care and the solution given for this is the availability of community-based social services in the area who can assist patients in accessing food to alleviate some of the challenges they face related to hunger and medication adherence. However, despite the availability and mention of these services, patients still struggle to adhere to treatment plans due to their hunger. These quotes demonstrate how food insecurity is not merely a social issue that sits outside of the healthcare system, but something that has a direct impact on the clinical processes and treatments within the clinic itself. This ongoing challenge reinforces that food insecurity is a social determinant of health that is intricately tied to clinical care, affecting both patient well-being and treatment effectiveness. The connection made by the nurse between the patients' needs and the role of external social services ties into the theme of "referral pathways" which is discussed later in this analysis.

While it is clear the issue of hunger is not being resolved within the clinic setting, it also appears to be hard to address in the social service setting. This is demonstrated by a CHW who has resorted to providing patients with food from their own home so that they can take their medication. Participant 6, a CHW: *"You know you try by all means as a CHW... If I've got something in my house I'll give it to that person. If it's bread, I'll say you must take this bread and go to the clinic and get your medication and take your medication."*

This approach to addressing the patients' needs identifies a gap in existing food support resources. Despite working for an organisation that provides cooked meals at 13 different locations, the CHW is providing food from her own home due to the widespread need seen within her community. She is going outside of her professional expectations to provide a short-term solution to a larger socio-economic issue. This approach is unsustainable and points towards the limitations within the social service space when confronted with the high demand for food assistance.

A different opinion on medication non-adherence came from Participant 7, a CHW, who hinted that there are other factors that impact patients' treatment adherence. *"Some have food and some don't. Other people do have food but they don't want to take their medication. That is why I don't know. Food or no food, people still aren't taking their medication."* While this statement does not diminish the fact that hunger remains a key barrier to medication adherence, it identifies that patients face intersecting barriers to equitable healthcare access. This however confuses the CHW as she previously noted that although some patients stop

taking their treatment, treatment is the best solution. This emphasises the complexity of medication non-adherence and underscores the need for comprehensive strategies to support patient care.

Participants working for NGO2 also experienced people defaulting from treatment due to their hunger. Although they are not working in the healthcare space like the clinic staff and CHWs, they can see the impact of food insecurity on medication adherence on patrons of their organisation.

Participant 2, a community champion, highlighted this connection in her work at NGO2's soup kitchen. *"I've noticed that a lot of people don't have food, especially breakfast... So they just take their tablets and then sometimes they will shake... They say I can't take it. Some medication can make you dizzy, so you need to eat."* Participant 3, a community champion: *"Some people end up defaulting because they don't have anything to eat. So they think, why should I take the medication? I'll vomit and feel bad."* These quotes highlight a negative connotation between hunger and medication, where taking medication on an empty stomach is associated with exacerbated side effects. This contributes to a harmful cycle, where this experience of exacerbated side effects leads to defaulting, which then results in worsening health outcomes as expressed by all participants within this study.

Connected to hunger as a barrier to treatment is a lack of family support, which can further impede patients' ability to adhere to their treatment regimen.

4.1.1 Treatment Interrupted: Lack of Family Support as a Barrier to Healthcare Access

A lack of family support emerged as a significant sub-theme of "hunger as a barrier to healthcare", with financial support being the main type of family support identified as lacking. This sub-theme identifies the interplay between food insecurity and TB medication adherence, where the absence of family support exacerbates the challenges of medication adherence faced by food insecure patients.

Participant 10, a nurse practitioner, explained how a lack of family support compounds the difficulties faced by food-insecure patients. *"The ones that are on TB treatment, they say they*

can't take their tablets. They say, we are hungry. We don't have food at home, no one to buy food for us."

This quote underscores the critical link between hunger and healthcare access as identified in the previous theme. Patients expressed that their inability to adhere to their treatment stems from hunger, which is not only due to a lack of physical food, but also from the absence of familial financial support to secure adequate food. The reference to having "no one to buy food" identifies the financial and social dimensions of support required for effective TB treatment adherence for food-insecure patients.

Participant 6, a CHW, observed this same need when visiting patients' homes: *"TB medication, it just makes you more and more hungry. Most of the patients don't even get support from their families. Some of the houses, you can see that these people do have something to eat, but they don't get enough support."*

This quote has highlighted that while some food may be available in some households, it is insufficient to meet the needs of TB patients, especially in the context where TB medication is seen to increase hunger. The statement that patients "don't get enough support" underscores that even with some food availability, a critical link is the lack of support to ensure that patients have enough food to manage their hunger and effectively adhere to their treatment. This suggests that the issue is not solely about the availability of food, but also the resources and assistance required to meet the specific nutritional needs of TB patients. A lack of social capital, such as extended family or adult children living outside of the household, impacts food allocation for patients. Food is a common channel for implementing social capital and therefore the family food environment has an impact on the agency around food of the personal food environment (Ambikapathi et al., 2024). The family food environment affects the choices of the personal food environment through resource availability and economic, cultural, religious and gender structures (Ambikapathi et al., 2024). Household wealth also impacts the availability of support, as a loss of income can impact the distribution of food in a household (Ambikapathi et al., 2024).

This central theme of hunger carries through into the next section, where the connection between economic factors and food access is unpacked, adding to a broader understanding of food insecurity as an intermediary determinant of health that impacts equitable healthcare access.

4.1.2 Treatment Interrupted: Economic Factors as a Barrier to Healthcare Access

A sub-theme of “treatment interrupted” was the impact of economic factors on hunger and healthcare access. Participants consistently highlighted how economic difficulties exacerbate issues related to hunger, healthcare access and medication adherence. Income generation methods identified in this theme were crime, sex work, domestic work within the community, recycling and grants.

Participant 3, a community champion, discussed the impact of hunger on community members and their coping they use in response.

“I think it’s a big issue and it has different results, for different households. So I think it’s a big issue, especially in this community. There is crime, so stealing because people need money for food. Also people are using themselves, like they sleep with people and that like, using their body, and you can get HIV.”

This quote identifies hunger as a driving force that can lead people to partake in high-risk activities to meet their basic needs which can cause disease vulnerability. This idea that hunger impacts households differently points to the varied coping mechanisms people adopt and how this impacts their access to resources. Participant 9, an HIV counsellor, also spoke about crime as a coping strategy for food scarcity, identifying that a lack of food has a psychological impact on patients as they are not “not thinking straight” if they have resorted to stealing to be able to access food.

Participant 9, an HIV counsellor, described the broader impact of economic constraints on community support networks: *“... There’s no jobs in this community and we are crowded, we are so full in this community. So there is not much that is going on. So everyone is living for themselves. Everyone is going their own way to look after their families. So we don’t look at each other. It’s money. Even the money I get is not enough for me to go and help others, so I will just sit and look. Like there is nothing I can do.”*

The state of survival to generate an income creates financial isolation as people are solely focused on supporting their own families and cannot extend that support due to limited funds. This understanding is strengthened by her experience of feeling she does not earn enough to

support others outside of her family, even with a stable job at the clinic. She spoke about the connection between money, food and healthcare.

“If you get a job, then you will have food in your house, then you will come to the clinic. The transport to the clinic is not bad because it is close. But for those who choose to go to the hospital, then it is outside this community so you have to pay for transport. So then for those patients we have to make a plan. If you are planning to go outside of this community are you able to go on your dates there, are there any obstacles that can keep you from not going and getting your medication... ”

The first association made here is that when patients have a job, they have increased access to money to buy food, which results in them visiting the clinic. This speaks to a hierarchy of priorities, when the main need of income is met then the needs of food and healthcare can be addressed. Another dynamic is potential obstacles, such as transport costs, that patients may face if they choose to get their medication from the nearby hospital instead of the clinic. Patients may choose to seek healthcare outside of their community to avoid being seen at the local clinic by community members due to stigma, or because the wait times may be less at the hospital (these are two topics that will be discussed in later themes).

Participant 13, a dietitian: *“...If you’re sick, you’re unable to maybe go to work to get money for food. So they are definitely connected in some way”*. This example illustrates how food and nutrition insecurity, compounded by economic challenges, initiates a cycle of vulnerability where poor nutrition leads to illness, and illness perpetuates economic hardship.

The impact of economic constraints on patient well-being was further elaborated by Participant 6, a CHW: *“Hunger is especially an issue. Most of the people that I work with, they are not working, they are on medication, on TB treatment, some of them they are on ARVs, they are not working and don’t even get social care... It is deeply painful. Most of them don’t even get support from their family members. So it is a big issue.”*

The connection between unemployment and being on treatment ties into the first theme, where it was identified that hunger exacerbates medication side effects. This is compounded by insufficient income to purchase food and limited social capital, which further hinders patients’ adherence to treatment. The use of the words “deeply painful” conveys the emotional experience of CHWs when faced with these complex and intertwined social and health issues patients are experiencing. There is this understanding that patients are left with

little to no resources to manage their illnesses. This ties into themes to follow which look at the perceptions, attitudes, and knowledge of practitioners. Participant 5, a different CHW spoke on the same issue, expressing that unemployed patients come to their organisation to seek food aid when they cannot afford to purchase food themselves.

Participant 6, a CHW, described how people in the community generate money locally: *“They collect tins, so they can sell the tins to get something to eat. They are recycling them. Some of them knock on each house in the community to do laundry so they can get R20 for something to eat... Most of the parents get a social grant for their kids, but it is only 500 rand. And that 500 rand you can’t buy food with, because in that 500 rand grant you must buy some lunch for your kids, you must pay for transport for your kids. So you must attend a primary school here in this community. If it’s in another community, you also pay transport, and transport has gone up. So all the grant money is going to school”*.

This quote reiterates that food access is one of the driving forces for income generation, highlighting local forms of economic opportunity that community members engage in. Additionally this quote illustrates that the child grant money is insufficient to cover both education and food costs for the child and household, which impacts the overall household food security. Additionally, Participant 15, a senior clinic staff member, noted that over 50% of the children who come to the clinic are foreign nationals. Therefore, despite having access to public health services, their parents are unable to apply for a child grant or any other kind of grant.

Participant 1, a community champion, highlighted the limitations of the disability grant as another key connection between money, food, and healthcare access: *“The social worker NGO where we built a community garden is dealing with disabled people. Whereby those people, they need to take the medication, but where are they getting the food? Because those people are not working. Maybe they depend on their grants, which is the grant that they need to use to feed their families.”*

Participant 1 is speaking about disabled people who get food assistance from a local social worker NGO to meet their needs. If these individuals depend on a disability grant, it is understood that the money goes towards feeding their families and not towards their own food and healthcare needs. Therefore there are value negotiations seen due to competing needs within the household (Ambikapathi et al., 2024). If household resources are scarce the

well-being of the disabled person is impacted (Ambikapathi et al., 2024). Therefore the family food environment impacts the agency and choice of the individual food environment (Ambikapathi et al., 2024). Due to this the disabled person relies on community support structures to support their food needs (Ambikapathi et al., 2024). The grant cannot solely go to addressing the needs of the disabled person as it needs to support their families as well. While the grant has the potential to meet the needs of the disabled person, it is not sufficient to address the socio-economic realities surrounding the grant holder.

Economic constraints affecting food-insecure patients compound the challenges they face around food and healthcare access. The following theme, clinic wait times as a barrier to healthcare access, is another barrier patients face when accessing healthcare, alongside food insecurity and economic constraints.

4.1.3 Treatment Interrupted: Clinic Wait Times as a Barrier to Healthcare Access

A sub-theme of “treatment interrupted” was long wait times at clinics. This issue was discussed by two CHWs when they were asked about reasons patients might avoid visiting the clinic and by a senior clinic staff member.

Participant 5, a CHW, described how extended wait times contribute to patients' reluctance to seek care. *“Some of the patients don’t go to the clinic. They say they are scared to go to the clinic because they are going to the clinic where they are staying for a long time. They say the nurses are shouting at me, but I tell them when they are going they need to be patient. I say you must take the day and you must know that it is not only you in the clinic, there’s a lot of people in the clinic. You must wait till the doctor has called your name. Because when you are not going to the clinic, you stay at home, and you get more sick. So it’s better to go to the clinic.”*

The use of the emotive word ‘scared’ captures patients' anxieties associated with spending an entire day in the clinic which could be related to missing work or other pressing responsibilities, as well as their experiences with nurses. Participant 5’s account highlights how being shouted at by nurses may reinforce this anxiety and contribute to patients’ reluctance to seek care. Although the benefit of attending the clinic is expressed to patients, the immediate nature of financial and social pressures often takes precedence over the long-

term benefits of seeking medical care. Although the HIV counsellor previously noted that employed patients are more willing to tend to their medical needs, she noted that they often seek care outside of the community. Therefore, employed people may seek care outside of the community or not seek care at all because they do not have time to sit in long queues at the clinic.

Participant 7, a CHW, discussed patient hesitancy towards clinics, specifically highlighting the reluctance among youth. *“Some of the people go, but others don't want to. Yho! They always have long stories, some of them say it takes a long time at the clinic... Because really really, the young ones, they don't want to go. We always recall them, they say yho, clinic, too long of a queue, to sit there all day. Yho they talk their stories, yho ah ha shame.”*

Participant 7's tone, marked using “yho” and “ah ha shame”, suggests frustration with the younger clients that are having to be recalled back into the healthcare system. For younger patients the cost of time spent at the clinic may outweigh the benefits of addressing health issues. This illustrates how structural constraints and demand within the public health system (e.g long wait times) intersect with individual attitudes or priorities which results in disengagement from care. Her dismissive framing of younger patients' concerns as “long stories” indicates that the participant views their reasoning as excuses and unjustified, suggesting a tension between the participant's perspective and patients' constraints. This dynamic reflects broader challenges of aligning healthcare accessibility with patients' social, psychological, and financial priorities. These accounts from CHWs highlight a critical barrier impacting patients' access and adherence to treatment.

Participant 15, a senior clinic staff member, gave an internal account as to why patients experienced long wait times. She explained that the issues impacting waiting times were understaffing and overstretched staff, files being misfiled, and the fact that the clinic is the only clinic in the area that serves a community of over 30,000 people. The clinic sees around 3,500 to 4,000 patients a month. Although she acknowledged wait times as an issue for patients, she explained that the clinic performs patient waiting time surveys and there are different waiting times for different health areas. Additionally she noted that patients can pre-book appointments, however while they can wait up to three hours to see a practitioner, the clinic is within the national accepted time of three hours for wait times. If patients wait longer they are able to file a complaint.

4.1.4 Treatment Interrupted: Stigma as a Barrier to Healthcare

Stigma emerged as a significant barrier to healthcare and a sub-theme of “treatment interrupted”, particularly in relation to medication adherence and the fear of community judgement regarding illness status.

Participant 13, a dietitian, discussed the impact of stigma on patients' willingness to take medication and seek assistance. “... *I know a lot of patients not wanting to take medication because if people see that they've taken the medication they can see obviously that they have HIV. It is not the exact same with food insecurity... You get a lot of patients that know about the NTP programme supplements because they have a friend or neighbour who was on it. But they want to know about it, and they'll often be quite direct with you. They will be like, Can I get the supplements?*”

This quote indicates there is no secrecy or stigma attached to using nutrition supplements as there is around HIV treatment, despite them both being medical treatments. However there are indications of stigma around food insecurity in the food aid space. Participant 7, a CHW, noted that when patients are provided with resources such as community kitchens and food parcels to help them take their medication, they do not always utilise this support: “...*We tell them, you must go to the clinic, fetch your medication, then go straight to one of our community kitchens to fetch food there. They can also come here to our office to get some rice. Some of them will come, some won't. And they won't tell you why they won't come. Maybe it is stigma, serious.*” While patients might be comfortable privately asking for nutritional support at the clinic, they may not feel comfortable being seen using community kitchens due to perceived community stigma.

Participant 7, a CHW: “*Some of them, they stopped taking medication. And when you ask them why, they said I don't have food. You see, they talk too much stories and different stories and there's no solution because treatment is the best way...* ”

This example also highlights the CHWs frustration towards clients, as reflected in the phrase “they talk too much stories and different stories”. This sentiment underscores that even when treatment is seen as the best course of action to deal with illness and patients are informed about the social services available to them, barriers such as stigma can still impact their utilisation of these services.

Disease stigma is evident in patients' reluctance to allow CHWs into their homes due to the concern that they will be labelled as sick by their neighbours. This creates a significant challenge for CHWs when trying to give patients access to mobile healthcare.

Participant 6, a CHW: *“Some of them, they don't want to open the door. Some of them are just staring at us, calling us names, all of them. There is a male that one day told us that it's because of stigma. When you stay in the township, they don't want to see people like us. If we enter your house, obviously people are going to talk. They are going to say that person is HIV positive. Although that person maybe just wants information from us. So that is why most of the people don't want to take their medications because of the stigma of the township.”*

Additionally, Participant 6 brought up a gender-related observation in terms of medication adherence and recalls for defaulting patients: *“It's mainly men, It's a lot of males that are refusing. Even when you recall them.”* Participant 4, a CHW, linked long waiting times and disease stigma as overlapping barriers to care: *“There is lots of stigma of CHWs and the clinic. They think CHWs only go and see infectious people and they are scared to go to the clinic for the wait time and because they will be seen as a sick person.”*

Both participants illustrate how stigma surrounding illness can lead to avoidance of both healthcare services and health workers, exacerbating the challenges faced by patients, and the challenges CHWs face when trying to provide care. Stigma is an additional barrier to treatment non-adherence alongside hunger.

The previous example of patients being reluctant to go to the clinic as they do not want to be viewed as sick was also brought up by Participant 9, an HIV counsellor. She discussed how stigma affects patients' willingness to use the clinic and to collect their medication from the medication dispensary trailer outside the clinic: *“We know each other too much in this community, so they are hiding their status. So they would rather go outside of the community for care. There is still stigma; if we are working in the trailer, some patients will call us to the side and ask if you can please give them their medication because they don't want to be seen. The way the trailer is standing is just in the public, and they think people know what is in their medication pack. Not knowing there is different medication in the pack, because we distribute high blood pressure meds, pumps, sugar, eczema, every medication is there. Those packs you see there are heavy, but the way people are, they think everyone who goes there is collecting ARVs, but it's not like that. We just put it all in the same type of packet. I think this*

is because they (medical staff) are trying not to discriminate against anyone, but still people think if you get this pack then it means you are on HIV medication.”

This quote relates back to the section on economic constraints to healthcare. In the earlier section, the HIV counsellor said that patients go outside of the community to collect their medication. This quote identifies that one of the reasons for this is because of stigma. Additionally, this quote identifies the unintended consequences of using generic packaging for medications in an effort to prevent discrimination. This example underscores how well-meaning practices, such as generic packaging, can inadvertently perpetuate stigma when broader societal attitudes and perceptions are not addressed simultaneously.

Participant 15, a senior clinic staff member, added insight behind the use of the medication trailer. She stated that the trailer is used in an effort to declutter the amount of patients inside the clinic. It is also an effort to reduce waiting times, so that those who need to collect medication can collect from outside the clinic and it does not disrupt their work day. However, the complication was seen with patient stigma as noted by Participant 9, the HIV counsellor.

Overall, the interviews reveal that stigma significantly influences patients' interactions with healthcare services, impacting their willingness to seek care, adhere to treatment, and accept assistance. This stigma not only affects their medication adherence but also influences their participation in food support programmes and their interactions with healthcare providers.

4.2 Navigating Hunger in Care: Clinician Training on Socio-Economic Climate

A key theme within the research was “navigating hunger in care” where clinician training on the socio-economic climate of the community was unpacked. The clinic staff were asked whether they had received any introduction to the socio-economic climate surrounding their workplace and whether an induction would be useful to understand what were the main issues patients faced and what social services were available to them. All clinic staff indicated that they had not had any induction, with many expressing the need for such training. This theme aligns with the second objective of this study: *How does practitioners' knowledge, attitudes,*

and perceptions regarding the nutritional condition (hunger and malnutrition) of their patients affect the treatment they can provide for patients?

Participant 11, an enrolled nurse, described her initial experience of working at the clinic: *“So when I took the post nobody told me what the place was like. I thought this place is not what it's supposed to be like; it was really bad. I was shocked and scared; I wanted to leave... Eventually, I saw that part of me working here was to give health education, which made me think I should stay. We are given no induction whatsoever about what it's like here.”*

Participant 11's experience provides a perspective on the importance of socio-economic context in a healthcare setting. Her initial feeling of shock and fear emphasise the need for an induction to prepare practitioners for the challenges they might encounter. Without this induction, practitioners may feel unsafe and unsupported which could lead to them not wanting to continue with the job. Practitioners who are informed about the socio-economic climate of their job, report benefits to both themselves and their patients.

Practitioners were also asked if they believed that information about the socio-economic context of the community would be helpful, to which all participants agreed it would. Regarding the potential benefits of information on social services in the area, the dietitian, Participant 13, responded: *“Yes, 100 percent because I find like a year goes by, and then, for instance, there's another two service options that I just found out about. I was like, Oh, when did they start? And then you realise, no, they've been there for a year. So you don't always keep up unless people are communicating with you. So it would be great if those things were updated and there was somewhere, like a poster with the new places that you can go to for food or social service options. I think that the social context would be really beneficial because, I mean, not every community is the exact same. So it would be great to have that basic understanding.”*

The constant changes in available service options, coupled with a lack of clear communication channels between these services and the clinic, make it difficult for practitioners to stay informed about the options available. The use of a board with up-to-date services would give practitioners more up-to-date referral options and empower patients by giving them a central space to learn about available services to meet their needs outside of the

clinic. Additionally, the dietitian expressed the need for an induction to the community, which highlights the impact that social issues have on healthcare provision and adaptation.

This is supported by participants indicating that the information they receive about available services typically comes from proactive efforts, such as consulting social workers, other staff members, or even patients. For instance, Participant 8, a doctor, shared: *“So basically, I even found these out by asking patients. I speak to the nurses that mainly stay here, and then they will give me the info about where to refer patients.”*

This pattern of seeking out information through direct efforts identifies a gap in the public health system where a lack of integrated communication means that practitioners have to actively seek out knowledge about local services to assist their patients. This leaves practitioners to navigate their work environments without systemic support and highlights the need for an integrated systems approach to healthcare which utilises a social determinants of health framework.

4.2.1 Navigating Hunger in Care: Food and Nutrition Training Sufficiency

A sub-theme of “navigating hunger in care” was the sufficiency of clinician and CHW training on food and nutrition, as food insecurity came out as a main socio-economic barrier faced by patients within the community. An interesting result of this theme was that participants who received the same training had different opinions as to whether they thought their training on food and nutrition was sufficient.

Participant 8, a doctor, had expressed having minimal nutrition training: *“Honestly, very briefly, and I would say probably we're more trained with babies to, to pick that up, like looking for, um, severe acute malnutrition, moderate acute. Adults, not really. Like, we, they, they teach us to look for wasting and they, some obvious signs. And then obviously managing it. Hardly any training at all. It's mainly referred to the dietitian. And kids, like, as well. Like, It's a little, we get a little bit more training there, um, but again it's to work mainly with the dietitian.”*

While doctors are taught to look for basic signs of malnourishment in children, they are not trained to pick up the signs in adults if they are not obvious. The issue with this is that

patients are only flagged for needing nutritional assistance when their condition is severe. This is then compounded by patients being referred to the dietitian when practitioners do not feel equipped to deal with their condition as the dietitian visits the clinic once a month and has a two-month waiting list.

Participant 13, a dietitian, spoke on this issue and her nutrition training sufficiency: *“We were actually very much taught about prevention and trying to catch a person before it gets to the point that they are now like underweight or malnourished. So especially with children, obviously with the growth charts, we are always making sure that they are growing on par and also just educating nurses and that, because they're the ones that mainly see them most of the time. The patients only get referred to us usually when there's an issue. So it's just about also educating the nurses and doing training with them so that they can pick up the children earlier if they are defaulting on the growth chart and then referring to us... I would say, we definitely were equipped, but I don't think we are the only people that need to be equipped like, as I said, the nurses and those that see them would need to be. Nurses can also put the child or the adult or whoever, onto NTP themselves. We try to educate them that we are not the only ones that can start them on NTP. Otherwise, we're only going to see a child in two months and they should have started on NTP like two months ago and that child's going to be admitted in hospital by then. And then usually what we say is give the supplements and then they can watch the trend, if they are still not gaining weight then do obviously an urgent referral to the dietitian... So we do as dietitians, when we have meetings, we do try and plan that we can do an in-service training. So I can just give a small quick training at the clinic or often we'll try and see what the need is that we've noticed. And often it's growth monitoring and promotion that nurses need to be more aware of. And so we'll plan like a two-day training for that year, where all the nurses or even doctors, we open it up to them as well, can come to the training... But the thing is it is a struggle to get them to come because nurses can't leave their spot because they're understaffed. So we do provide it, it might only be once or twice a year, but then even when we do provide it, it's not always full to capacity.”*

The dietitian expressed that her training on nutrition and early detection for malnutrition was sufficient, which is affirming but unsurprising. Within this quote however, she highlights three key points: there is inhouse training provided for nurses on aspects of nutritional care that the dietitian identifies as requiring further attention at the clinic; the dietitian should not

be the only health professional equipped to pick up early signs of nutrition deficiencies; and while training is offered it is often inaccessible to all clinic staff due to understaffing.

Although clinic nurses said they did get training on nutrition, some expressed they learnt about it in the field while others spoke about City-mandated training on malnutrition. Participant 10, nurse practitioner: *“No, they don't talk a lot. Most of the time we find it in the field that there is a problem. Yes, they do teach us about everything, like BMI and stuff. But when it comes to the community, we will deal with these things. It's not a lot. You will find it when you go to do your practical, you see. Why this child is like this? Why is this like this? They say to see this one needs his NTP. Sometimes you're surprised. What is NTP? What are they talking about? Then they explain to me.”*

Despite NTP being an important supplement for people who are malnourished, it is not taught about in their training. This is where the dietitian training becomes vital as she expressed that patients not put on NTP in time end up in hospital.

Participant 11, enrolled nurse, spoke on the training they received during nursing school and on the training the City of Cape Town provides: *“Not really (nutrition training in nursing school), but if you work for City they send you for these trainings, like for nutrition training and all that. So when I started at City that's the first training I went to.”*

This quote reiterates that formal nursing training does properly teach nurses about the early warning signs of malnutrition and the appropriate treatment plans to follow. However she does explain that nutrition training is given when you become a City employee. All the nurses within the clinic are employed by the City, as it is a City clinic, so it is interesting that Participant 11 speaks about City training but Participant 10 expresses they didn't really get any training and had to learn on the job.

Participant 12, a certified nurse practitioner, gave a more in-depth description on what nutrition training is given to nurses and what tools they use to diagnose patients. However she reiterated that the training on nutrition they receive is a small portion of their overall training. *“Yes we do. When they're losing weight. Starting to lose weight, but that could be anything. It could mean that the patient may have TB or something. So you must try to exclude. But for us to determine if the patient is underweight, we do check the BMI and the MWAG. So that's*

what we're using to, to see if the patient is underweight. It's a small portion of our training. The diet part of it, yes, and we also do give the health education to patients with regard to their healthy diet. Yes, mostly when they come and then you diagnose them for the first time with the diabetes or you diagnose with the blood pressure."

These three quotes identify the gap in the nutritional education given to nurses despite them working in public clinics where malnutrition is a widespread issue faced by patients.

Nurses and doctors need to be trained on the early warning signs of malnutrition by learning how to monitor growth charts and administer NTP as they are the first line of contact for patients. If a patient's condition gets worse, then the dietitian should be the second line of contact. If nurses and doctors were given proper training on nutrition, then patients would receive more equitable care. This need is especially significant in South Africa where food and nutrition insecurity is so prominent. A compounding factor is that despite bi-yearly training courses being given by dietitians to clinic staff, understaffing often prevents these training sessions from reaching all the necessary staff. Over-stretched staff is a critical issue that impacts the detection and treatment of malnutrition in patients. Therefore, the nutritional knowledge gap is perpetuated by this dual systemic inadequacy.

Within NGO1, perceptions among CHWs of training adequacy varied. While some CHWs felt their training was sufficient, others expressed concerns about its insufficiency.

Participant 4, a CHW, spoke through what some of their training incorporates. *"Yes we get training, we talk to patients about their hunger, we use plate charts, and have afternoon education sessions with patients who have diabetes and other chronic illnesses... I still need more training, a refresher course."*

This quote speaks to both the strengths and limitations of the current training provided to CHWs. Firstly, she explains that they talk to patients about their hunger. This is important as it indicates that they are engaging with the causes of patients hunger before giving dietary advice. She then referred to the use of a plate chart which is a simple but effective diagram which shows that half your plate should be filled with vegetables, a quarter with protein and a quarter with starch. This diagram is a simple education tool for visually understanding how to get in a balanced diet. The third important component she speaks to is the education session for patients with NCDs like diabetes, where food and nutrition is crucial for managing their

condition, as well as other chronic illnesses. This indicates that CHWs get foundational training on nutrition and its role in health. While these tools can be effective for general nutritional guidance and education, they may not fully account for the complexities of patients' individual circumstances, such as food affordability, access, and cultural preferences.

Despite these procedures she still expresses the need for more training. This indicates a gap in the initial training's depth and sustainability. This indicates that they do not have the appropriate tools to create tailored interventions for patients. This perspective highlights the importance of ongoing capacity building for CHWs, especially when working in a climate with high rates of TB, HIV, and food insecurity. The provision of refresher courses and more advanced training on nutrition and the impacts of food insecurity could aid CHWs in providing individualised care which bridges the gap between generalised education tools and the specific challenges faced by their patients. This gap in education tools and patient realities was unpacked by Participant 7, a CHW.

"I need more training. Because sometimes the other client, the sugar diabetic, and you see we are black people, and when you tell the people, you must eat veg they say it's too expensive, but when we say veg is not expensive, it's just in their mind that it's expensive. But you see the people, they want to eat junk food and it affects them. They say, I can't eat leaves only. I want pap and meat. And when you see the meat, yho, it's fatty. They don't want chicken na ah... I need more information. Even for myself. For the patient and for myself."

This quote highlights the disconnect between the nutritional advice CHWs are trained to give and the cultural and financial realities of the patients. The cultural disconnect is evident between the training and the client's preference of eating pap (maize meal) and meat, expressing they can't live on leaves only. There don't seem to be the tools in place to incorporate these culturally recognised foods into the prescribed nutritional education of CHWs, showing a lack of depth and adaptability of their current training material. The CHWs perception of patients' eating habits is made clear through her statement "they want to eat junk and it affects them" as none of the foods she listed are widely perceived to be junk foods. This underscores the need for training that recognises the significance of cultural differences when giving nutritional advice and addresses the nuanced situations that CHWs are exposed to, where their current training may not be having the desired outcome. The need

for more training expressed by the CHW underscores that the training material is not being perceived well, is insufficient, and that it cannot solely address the concerns of patients.

4.2.2 Navigating Hunger in Care: Dietary Recommendations are impacted by Food Access

A sub-theme of “navigating hunger in care” that came out of the research was how dietary recommendations are impacted by food access. In this theme links were made between food access and challenges in providing dietary advice, as well as the misuse of the Nutritional Therapeutic Programme (NTP) as a food replacement by food insecure patients.

Participant 13, a dietitian, noted, *"So in terms of food insecurity, it makes it hard because, obviously if they don't have food, it's hard to give them the right recommendations. It depends now what kind of patient they are. If it's because they're coming to you for malnutrition, then we need to see what is the cause. Is it due to a medical condition like TB/HIV, or is it because there's food insecurity on top of that. So with food insecurity, it becomes more of a social issue."*

This quote highlights two significant challenges. Firstly, when food insecurity is the cause of nutritional deficiencies, practitioners face barriers in providing appropriate dietary recommendations because the root cause of nutritional deficiencies is not lack of nutritional knowledge or education, but rather the absence of access to adequate food, as highlighted earlier by the HIV counsellor. Secondly, if nutritional deficiencies stem from a combination of medical conditions, such as TB and HIV, and food insecurity, practitioners face additional obstacles in providing advice as food insecurity is viewed as a social issue that falls outside of the treatment parameters of practitioners.

These challenges link back to the theme of “hunger as a barrier to healthcare” where the doctor asked, “where do we go from here?” in reference to patients defaulting from medication due to hunger. This highlights a gap in healthcare systems where practitioners recognise the impact of food insecurity on patients, but lack the tools and systems to address food insecurity directly.

These findings emphasise the need for an integrated systems approach to malnutrition and healthcare which incorporates a social determinants of health framework. While food

insecurity is often viewed as a social issue, this research suggests it should also be framed as a public health issue. By equipping clinics with the resources to address food insecurity in collaboration with social services, practitioners can provide holistic care that addresses both the medical and social determinants of health. This approach would mitigate the challenges practitioners face in managing patients with overlapping medical and social vulnerabilities.

High levels of food and nutrition insecurity in this community has led to the misuse of the medical supplement NTP. NTP is being used as a meal replacement instead of its intended function as a nutritional supplement. Participant 13, a dietitian, explained, *"There is also a programme called the nutrition therapeutic program, which is for patients that are either underweight or have lost weight due to a medical condition. We would give them the supplements, but if they've got food insecurity at home, these supplements become a meal replacement and they actually don't end up gaining weight."*

This example illustrates how food insecurity prevents nutritional supplements from being effective, demonstrating yet another area of treatment where food insecurity poses a barrier. Additionally, the individual is compromised within the family unit when the family is experiencing food insecurity. The link between food insecurity and the complications of NTP treatment misuse was also highlighted in further detail by Participant 11, an enrolled nurse.

"If I see the child is not gaining weight, I would ask the mother, don't you get a SASSA grant, and she would say yes but this and that. So I will say, yes, ok, there is food insecurity here. So if the child got NTP porridge from me, and the child is not gaining weight, it means other children or the rest of the family are also eating the porridge". She further elaborated the problem : *"...The porridge is for the baby, but they have other kids to feed as well. But we can't give extra, as it is for this child, it's like medication".*

She further highlighted the broader implications: *"It's even the same for the adults, if you give adults porridge, the children, the grandchildren, would eat the porridge, and this adult wouldn't gain weight. They will say, my children didn't have something to eat, so I had to give the porridge to them. They were hungry, there was nothing. But then they will come back in the middle of the month for more, and I have to tell them that this porridge is supposed to last the whole month, so they have to come back every month for it. You can't come in the middle of the month and say my porridge is finished, I need more. So there really is no food, they are just eating the porridge."*

The participants' insight underscores the severity of the food insecurity problem, illustrating how it disrupts not only the nutritional support intended for individual patients but also how it affects entire families and complicates the management of resources. NTP cannot be used to address food insecurity, but the misuse of NTP highlights that there need to be more robust procedures in place to help families who are experiencing food insecurity with food support, so that patients on NTP are able to receive their full treatment. It also highlights the larger issue at play, which is that food insecurity is widespread within this community, and to try and manage this, patients are resorting to sharing individual NTP supplements across entire family units.

4.3 Bridging the Gap: Frequency of Doctors and Dietitians at the Clinic

The theme 'bridging the gap' was a prominent theme within the research. This theme looks to understand what steps are used between the clinic and social services to address patient needs that cannot be solved medically. A sub-theme of bridging the gap was "frequency of doctors and dietitians at the clinic". This final theme ties into objective 3 to understand if a systems approach is being used within the clinic setting: *What pathways do practitioners use to connect hungry patients to community support services and what triggers referral?*

At the clinic, in addition to the nursing staff and HIV counsellors, there is one doctor who visits daily and a dietitian who comes once a month. Participant 8, the doctor, described their schedule: *"One doctor a day....so depending on our staffing, we are generally assigned here."*

She explained that doctors are managed and rotated across different clinics: *"I'm here most of the time, but if there's a shortage, they can send me out, and sometimes this community may not have a doctor. If I'm not here, it's other members of my team. We're supposed to have a doctor every day; however, there may be one or two days a week without one."*

This quote highlights several points related to healthcare access and delivery within the community. The rotation of doctors across different clinics and intermittent absences, as described by Participant 8, reflect resource constraints within the healthcare systems. The reliance on a single doctor per day and the reality that there may be days where the clinic is without a doctor puts additional pressure on nurses to take on the bulk of patients while disrupting the continuity of care which can result in delays in diagnosis, treatment, and

follow-ups for chronic conditions such as TB, HIV and NCDs. Furthermore, infrequent visits from specialised practitioners, such as a dietitian, further limits the comprehensive care available to patients.

For example, Participant 13, the dietitian, discussed their limited availability: *“I’m only at this clinic once a month and then I mainly see my patients at the hospital.”*

Participant 13 went on to highlight the severe shortage of dietitians across the Western Cape and its impact on patient care. Across the Western Cape substructure, which includes Atlantis, Wesfleur Hospital, all the way to Lady Michaelis, Retreat, False Bay, and Dunoon there are only 10 dietitians. She explained that her role at the clinic is part of a community outreach initiative, as she primarily serves hospital patients and only visits the clinic once a month. This limited availability is compounded by the region's critical shortage of dietitians.

The shortage stems from systemic issues, including budget constraints exacerbated by post-Covid-19 budget cuts. Participant 13 noted that government officials, responsible for staffing decisions, either freeze posts or hire temporary locums for a few days when vacancies arise. This lack of investment reflects a disparity in how dietitians' roles are perceived; while some officials recognise the need for dietitians, others don't prioritise these roles due to financial limitations.

This shortage creates significant barriers to care for vulnerable populations, as patients must often wait months to access a dietitian. As a result, many patients are only referred to a dietitian when their nutritional issues have already worsened, as previously discussed under the theme of "practitioner training sufficiency on nutrition." The infrequent presence of a dietitian at the clinic also means that only a fraction of patients requiring nutritional care can be treated if other practitioners do not attend to patients' nutritional needs due to nutritional training insufficiencies. Additionally, at the time of the study, there was no longer a psychologist working at the clinic.

Participant 10, a nurse practitioner, mentioned that the clinic used to have a psychologist, but the position has not been filled since the previous psychologist left. However as of December 2024 the position was filled.

These examples underscore broader systemic failures in resource allocation and the prioritisation of healthcare personnel. Addressing these issues requires a more robust and

equitable healthcare system that can meet the nutritional and broader health needs of the community effectively.

4.3.1 Bridging the Gap: Referral Pathways

Referral pathways was a significant sub-theme of ‘bridging the gap’ that came out of the results. Referral pathways are understood as what participants do to provide further social assistance for patients by putting them in contact with community services.

When clinic staff were asked about their approach to treating hunger and malnutrition and the referral pathways they follow, all the nurses indicated that they refer patients to the dietitian, while two nurses specifically mentioned placing patients on NTP and then referring them to the dietitian if they are not improving on the treatment. The doctor similarly noted that they primarily refer patients to the dietitian, while the HIV counsellor mentioned referring patients to either the nurses or the dietitian.

However, Participant 13, the dietitian, highlighted the challenge of managing long waiting lists, which can extend up to two months. However due to the dietitian’s limited availability at the clinic, she expressed the need for other clinicians to start patients who are eligible on NTP. To address this, they provide training to the clinicians. In the early section on “food and nutrition training sufficiency” the dietitian explained that she tries to have meetings and training sessions with clinic staff but due to their limited availability and the sessions not being mandatory, it seems that the majority of patients still get referred to the dietitian. If the patient's needs fall outside of the dietitian's scope, she consults with a social worker.

Participant 13, the dietitian: *"So, I had to go speak to the social worker because otherwise I wouldn't have known about the community services in the area. She's the one who knows what's happening in the community and where to refer. She kind of gave me the information on that. Also there's a community-based services (CBS) form you can fill out that offers services, including things like nutrition or checking up on a patient to ensure they've been assisted—maybe with a food parcel or something. We'll often send that form so the patient doesn't get lost in the system. It's an online form, whether we're at the hospital or clinic, and the community-based services on their side will get it. They'll then visit the patients at their homes to check on whatever the case may be."*

CBS referral forms are used to close the gap. These forms are put in the system online and CHWs are sent to patients if clinicians want support for the patient at home or to make sure they are not defaulting from treatment. Then there is a separate form for social workers if it is a specific social work case.

In addition to referring patients to the dietitian, clinic staff members also refer patients for SASSA grants, to social workers, or to NGO1 across the road. It seems that NGO1 is the main community service organisation being referred to despite other organisations in the area running similar programmes for food aid.

When patients do not qualify for a SASSA grant, practitioners refer them to NGO1 for food assistance. However, it seems that NGO1 is not always able to address this need as patients have come back to practitioners saying they were not helped. This highlights two key issues. Firstly, it appears that NGO1 is not able to provide enough food support for patients being referred to them, and this could be because they are the primary food aid organisation being referred to and therefore the demand is larger than the supply. This could be attributed to convenience because the organisation is the closest to the clinic, or because clinicians are unaware of other food aid services within the area. Secondly, it points out that the food aid being provided in the area is not sufficient to meet the community needs due to a lack of supply or a lack of food aid organisations, highlighting a larger systemic issue.

Additionally, nurses used to reach out to NGO1 for food parcels for multi-drug resistant TB (MDR-TB) patients, but the parcels sent were too small to help the patients for an extended period of time. It also seems that this service is no longer being provided to the clinic. Participant 15, a senior clinic staff member, explained that the potential reason for food parcels not being provided for MDR-TB patients anymore is because in 2022/2023 the government cut funding for TB counsellors at NGOs and tried to move them into positions of community workers. This caused some counsellors to leave, but also meant that NGO1's direct contact with MDR-TB patients was cut, which affected their ability to supply parcels at the clinic and impacted communication on MDR-TB patients between the NGO1 and the clinic. It was a very abrupt change and they are still recovering from it. The reason the clinic still has HIV counsellors is because they are privately employed.

Participant 11, an enrolled nurse, explained that the reasons most patients get referred to NGO1 is due to its proximity to the clinic. *"It is only (NGO1) because it is actually the*

closest. So the whole community is eating from their soup kitchen. There are different soup kitchens, but they're all funded by the NGO1. So, they know exactly who's supposed to get food and deliver it to the person." However, the founder of NGO2 explained that while NGO1 is the only one that provides food parcels, there are two other community kitchen organisations as well as community gardens in the area that community members can go to.

There are more than 15 soup kitchens known within the community, 13 run by NGO1, one by the social worker organisation and one by NGO2 which runs a collective of kitchens. While participants do also refer patients to the social worker organisation it seems that majority of referrals are sent to NGO1. However Participant 15, a senior clinic staff member, explained that as of 2025 they are aware of the location of NGO2's community kitchens and are working at strengthening connections with both NGO1 and NGO2.

Internally patients get referred to the dietitian for nutrition issues. Externally there is a referral system between CHWs and the clinic and vice versa for defaulting patients. Then patients are referred to NGO1 and the social worker organisation for food aid and social service needs. In 2024 practitioners did not refer patients to NGO2, however it seems this may change in 2025 due to Participant 15's update on creating a better connection with NGO2. According to all participants, those three organisations are the only food-support providers in the area.

The CHWs explained that there are established referral pathways between them and the clinic. They either record patients' hunger status based on what patients share with them and pass that information on to the clinic, or the clinic refers CHWs to visit patients who are defaulting from treatment. CHWs also refer patients to social support programmes run by their organisation.

It remains unclear whether the community champions communicate issues identified during their workshops back to the clinic.

Participant 1, a community champion working with a boys' group at a different clinic from the clinic within the study, explained his experience: *"We've got a really good connection with the manager because she saw the need for the community champions, but she was sceptical at first."*

Community champions working at the clinic in this study expressed not having a relationship with clinic staff, attributing it to the busy environment. Participant 3, a community champion running breastfeeding workshops, stated: *“No, we haven't spoken to them about what is brought up in these sessions... so we don't normally, like, we don't have a relationship because it's very busy; it's always full.”* But they expressed having a good relationship with the clinic manager who provided the community champions with a space to have one-on-one sessions with new mothers. In contrast, Participant 2, a community champion, described having a good relationship with one of the older nurses who repeated what is taught in the community champion information sessions at the clinic over the intercom to the patients in the waiting room. She obtained this information from listening to what the community champions taught in the waiting room and then repeated it over the intercom. *“...We have another sister that we like too much. She is this gogo. She likes to go there to the intercom, and then you will listen to her. She will teach the same thing we are teaching.”*

These examples highlight a disconnect in communication between community champions and clinic staff regarding patient issues raised during health education sessions. Despite having a good relationship with two staff members, community champions do not relay the patients' concerns back to the staff members due to the perception that clinic staff do not have time to have feedback sessions.

4.3.2 Bridging the Gap: Support Groups

A sub-theme of ‘bridging the gap’ that came out of the results was support groups. CHWs and clinic staff were asked whether there are any support groups for patients experiencing food insecurity, or for different illnesses, to understand the type of social support networks available to patients.

The interview results revealed that there are no specific support groups for patients facing food and nutrition insecurity. While there are clubs for HIV and AIDS patients, these clubs do not offer counselling or health education; instead, they function as a system for patients to receive check-ups and medication on designated days. However, many participants mentioned that they provide one-on-one health information and that support groups would be beneficial to patients. TB patients are expected to have four counselling sessions. The TB counselling covers all issues around treatment and treatment information, however if the

counsellor picks up that issues relating to interrupted treatment are psychological issues, then patients get referred to the psychologist. The dietitian expressed that there are support groups for patients with diabetes that she runs, and the CHWs and community champions explained that they have different groups and workshops that their organisations run. However, this was not mentioned by any of the nurses or the doctor.

Participant 11, an enrolled nurse: *“No, we don’t have people coming out for a day, like diabetes day, we have to give the health education as we see the patient. We used to have that for breastfeeding mothers, Tuesday was breastfeeding day for mothers, pregnant women, and newlyweds, but we don’t have one specifically for nutrition or diabetes.”*

This quote expresses that there were breastfeeding groups at some point in time, but they are no longer running. However, a community champion explained that they run breastfeeding sessions at the clinic once a month and nutrition sessions for chronic patients which are run out of the clinic waiting room. At the time of the interviews in March 2024, the breastfeeding workshops had not yet started up again, however the NGO2 founder confirmed that they did start up again in the months following the interviews.

Participant 3, a community champion: *“We went to work with the clinic. We started at clinic to help there and then we had our talks on Monday and Wednesdays, but Mondays we used to make one-on-one so that we can have a private chat with moms to get to know them and how we can help them. We asked for the space to the sister in charge, and then she was happy to help us in everything that we wanted. Then we had our garden there to sit there to relax with the moms, to talk to them how we can help them, and they came. They were interested. They wanted to spend time with us, and we got the results from what we were doing. Then some days, we stand there in front (in the waiting room) and we asked them to listen because we wanted to pass what we learned from our workshops and from our training. We also got the training from the dietitian... So we did well at the clinic and then we saw that we are doing well. Then we came up with a plan that we must establish the breastfeeding support group. Yeah, then we had challenges here and there, but it came to be a success in June 2023.”*

This quote highlights the success community champions had in engaging with mothers around breastfeeding and child nutrition. Their information sessions and one-on-one sessions at the clinic developed into the creation of breastfeeding support groups in June 2023.

Participant 3, a community champion, added to this by explaining what is taught in these sessions and where they are held: *“For mothers, we speak about the first thousand days... The breastfeeding group, we don't run it at the clinic. We use the community hall, and also we go to other organisations, and the Safe House. We had our breastfeeding support group once a month, which was last year.”*

Participant 2, a community champion: *“In a breastfeeding site, we go to the clinic and other organisations twice a month... In the last session, we are tracking to see if they are doing what we are telling them... We can see that they don't have time. They're up and down. So we are sitting there, we are making a difference.”*

The community champions also run nutrition information sessions in the clinic for chronic patients. These sessions discuss nutrition, eating habits and the importance of exercise.

Participant 3, a community champion: *“We also have our chronic patients. and for chronic patients, we speak about how to cook your food, about healthy eating, portions of your food... we raise nutrition and how they can balance their diet, which foods are good for them, and what they can do, like walking around the house for 20 minutes... The nutrition one for chronic patients is at the clinic. When the patients are there, we do our talks in the waiting room. Because like, there are many people at the clinic, so we often go and then present. When we are done, we ask questions and answer questions on the spot... ”*

While the community champion explained that they do run nutrition information sessions at the clinic, Participant 11, an enrolled nurse, and Participant 8, a doctor, expressed that there are no support groups at the clinic. However, the sessions run by the community champions are expressed to target what Participant 11 says is needed at the clinic. This could indicate that either they are unaware of the information sessions run by community champions, or that these sessions are not viewed as legitimate as they are not done by trained healthcare workers or official CHWs .

Participant 11, an enrolled nurse, emphasised the potential impact of such sessions: *“A counselling group would be helpful, because you come here, people are on medication for diabetes and hypertension, that's the main factor, and it's been years since they have been on this medication, with no change. So if there is someone who could come and give them health education... We have clubs for patients on ARVs, but to just have a day where they could come and get counselled and get health education, where the dietitian could come speak to*

them, where they could say ‘if I’m eating whatever, my sugar has dropped, this is what I’m doing, I’m walking now instead of taking a taxi’, stuff like that. That would be a huge help because it’s young children with hypertension, and I’m like, how can they have hypertension so young?”

Counter to what Participant 11 expressed, the dietitian explained that she does run diabetes days at the clinic and that there are other diabetes support groups in the areas. This illustrates a disparity in awareness and implementation of such programmes within the same health system.

When the concept of support groups for those struggling with food and nutrition insecurity was brought up with the NGO2 founder, she expressed intrigue in the idea and commented that it may end up looking more like a community meeting than a support group, pointing to the widespread need within the community. Participant 15, a senior clinic staff member, raised the issue of breaking POPIA (Protection of Personal Information Act) if the clinic provided support groups. She thought that they would be beneficial for those who are out with their status, but could cause POPIA issues for those who are not, so it might not be the right space for those patients.

CHWs explained that they provide one-on-one health education and counselling and that there are support groups offered at their headquarters, a 15-minute walk from the clinic.

Participant 6, a CHW: *“They do have support groups up there at our headquarters (NGO1). I can say it’s better to go there because it’s out of the way. And we do one-on-one with patients when we visit their homes.”*

However, Participant 7, a CHW, said that there are no longer support groups but one-on-one counselling is available at the headquarters: *“No, no. Maybe in previous years, but now there isn’t. Yes, we do have counselling groups. It’s one-on-one. But you can go to headquarters up there for private counselling.”*

These two quotes illustrate another gap in communication - while both the CHWs work for the same organisation, they have different opinions on what is offered in terms of support groups at NGO1. This discrepancy suggests a lack of clear, consistent communication about the services currently available, which can lead to confusion among staff and potentially hinder patients’ access to appropriate support, highlighting a disconnect in health equity.

This results section highlights three key findings. Firstly, the clinic itself, apart from the dietitian, does not run support groups for patients, despite the need being seen by staff. Secondly, support groups and health educational sessions are provided within the community and at the clinic by NGO1 and NGO2, but this does not seem to be known by some of the clinic or NGO2 staff members or is not acknowledged as legitimate due to community champions not being trained healthcare workers. Lastly, there is a significant gap in communication both within the clinic staff and within the NGO staff, as well as between clinic staff and NGO staff, regarding the availability and location of these support groups. These findings emphasise the need for improved coordination and communication to ensure that patients can effectively access the support groups they require.

4.3.3 Bridging the Gap: Health Education

Health education developed as a sub-theme of ‘bridging the gap’. Patient education on disease management and nutrition emerged as a significant theme during interviews, with participants highlighting the challenges and benefits of structured education sessions alongside one-on-one health education that is given by clinic staff and CHWs.

The dietitian spoke on the importance of educating patients about affordable healthy eating options, challenging common misconceptions about the cost of health foods:

Participant 13: *“There's a lot at the clinic (patients with NCDs). One of your main ones would be diabetes, or even high blood pressure. And when you look at their diet, you can see that their diet's purely just staple starch food. So like your pap, your white bread, and a lot of refined carbohydrates. So you can definitely see that food insecurity does play a role there, but also education. I think everyone thinks that healthy eating is way more expensive than unhealthy eating. And I think just educating them that there are ways around it. You can still, for instance, buy beans, lentils, which is a protein source, high in fibre. You don't necessarily have to always go for chicken and that kind of thing to get in your protein. You can go that way and it's a lot cheaper or just educating them on simple ways to do things like, instead of buying a two litre Coke, you can rather buy a bag of carrots and some spinach or whatever. And that's what we also get taught throughout our studies, is making sure that what you provide them with is relevant to their culture. I mean, we see a lot of like, for instance, a lot*

of the patients in the community eating more like say the pap and that, but it's actually just educating that they can still have the pap in smaller portions. But actually, for example, heating it up waiting for it to cool down actually makes it a low GI so you can still eat it. We don't want to take it away from you and say you can't eat that, but we want you to do that kind of with it to make it low GI, and let's see how we can maybe add in more vegetables. So definitely just more education around it and balancing it. For diabetes and high blood pressure you need to be reducing your salt intake to help and also try to see that your weight is at a good weight because carrying extra weight can push your blood pressure up."

The dietitian's insights highlight the crucial role of culturally relevant education in helping patients make healthier choices within their means to manage their chronic illnesses. Participant 13, a dietitian, continued to say: *"The thing is if you don't change your diet what's going to happen is your medication dose is just going to slowly start increasing and increasing."* If patients do not receive the tools and knowledge around the connection between diet and chronic illnesses, their medication will continue to increase but their conditions will not improve.

These quotes connect back to the section on "nutrition training and sufficiency" where the CHWs expressed challenges in addressing patients' perceived ideas around healthy foods. The difference here is that the dietitian has the specialised tools to give education that fits into patients' cultural preference and budget, whereas the CHW expressed they did not.

Participant 2, a community champion, shared their journey in becoming a community champion after learning the importance of proper nutrition and breastfeeding through university-led workshops which were part of a research project looking at nutrition education in ECD and primary schools. They recounted a personal experience with expired formula and how it motivated them to educate others through the breastfeeding workshops: *"There was a workshop with mothers and I learnt a lot because I wasn't breastfeeding my child, and I learnt the child gets a lot from breast milk, breast milk has lots of nutrition, our body is like a factory. I was like 'wow this workshop is good for me'. My child didn't eat well and I didn't know what to give her. I used to practise what they were teaching us, blending veggies and I think in two weeks I saw a change in my child. Then we discussed how we can bring the information to the community as lots of children are malnourished and the clinic is always*

full, the children are sick, they are getting diarrhoea and the dietitian only comes to the clinic once a month and there are a lot of people who are in the queue to see her.”

This quote highlights the impact nutritional education had on mothers as part of a university-led research project. These workshops led to community champions establishing breastfeeding workshops for other community members. They saw the need within their community due to the lack of resources in the clinic as the dietitian only visits once a month. While the dietitian has the tools to address patient needs, her limited availability created a gap for the development of NGO-led breastfeeding workshops.

Participant 2, community champion added: *“For the breastfeeding workshops, we tell them how to express the breast milk, how to store the breast milk that is expressed in the fridge... How to clean your cups, that you must wash your hands before you express milk... The position of the child, how it is important to eat the right food when we are breastfeeding because what we are eating is coming to your child... So we are raising awareness. Because the other mums, they are drinking when they are breastfeeding, they are smoking, so we are telling them it’s not good. If you are breastfeeding, you are pregnant, you must abstain. And they didn’t know. They were shocked... it will affect the child’s brain.”*

This quote highlights the need for basic education for new mothers and parents in the community. A need that is being met through these breastfeeding workshops. Her story reflects the importance of education and support and how personal experiences with health education can lead to community advocacy and support.

The knowledge shared in the initial university-led workshops also led to Participant 2 conducting her own research at the local spaza shop (colloquially known as Baraka Shops in the community) after noticing issues with the quality and freshness of the products.

Participant 2, a community champion: *“At that time I was not working, I’m getting a little money, I’m getting a child grant. They asked if we check the expiry dates at the baraka shops. I said sometimes we don’t check, we trust they check... I had incidents when I found out I bought morvite (instant porridge) and the morvite was not good, it was off, I was angry. I had to take the morvite back, but when I checked the date it was fine. When I checked at the baraka, I said no, baraka it is too hot in here. There are too many lights and the space is too*

small... The food for our children is getting spoilt, even the Purity... He did not fight, he understood and I got my money back."

Her experience highlights the challenges of accessing quality food in low-income communities when food safety is compromised by poor storage conditions. Her experience underscores the significance of health and food safety education. By understanding these issues, individuals can gain the agency to ensure safer food purchases and advocate for improved conditions in their communities.

CHWs from NGO2 emphasised the role of one-on-one education on disease prevention.

Participant 6 spoke about educating TB patients on how to protect children living in their household from contracting TB through one-on-one education sessions: *"We educate them about TB and how to take care of themselves because if there that person's got TB and there are small kids around the house like eight years and upwards, we tell them they can go to the clinic to get a pill to take once a week for three months to stop the children from getting TB, but most of the people are just getting scared."*

The CHW's explanation that community members get scared around the health information given on TB prevention for children indicates that they may not take the recommended measures to protect children from contracting TB through collecting the TB prevention pill from the clinic.

Participant 7 highlighted a critical issue in HIV/AIDS education among youth, specifically in groups of teens where misinformation led to dangerous practices: *"If they have HIV... Maybe it's a friend group of five or seven... Then one will go to the clinic to fetch medication, then they all share that medication... They told us it's the same, but hayibo it's not the same because your immune system is different, and you get different doses."*

This quote speaks about a group of teens sharing one friend's ARV medication, not knowing the significance of medication strengths for different viral loads which underscores the importance of tailored education to address specific community needs and prevent harmful practices, particularly among vulnerable youth populations.

4.3.4 Bridging the Gap: Types of Social Support

The last sub-theme that came out of ‘bridging the gap’ was types of social support within the area. There are various types of social support offered within the community, the three main organisations that community members can receive social support from are the social worker house across from the clinic, and NGO1 and 2. Support ranges from health education, life skills programmes, breastfeeding workshops, community kitchens and community gardens, moms and tots group, social workers, and farmer days.

The community champions run various programmes, three of which were frequently mentioned: a group for young men, breastfeeding workshops, and a workshop for individuals with chronic illnesses. These programmes focus on promoting healthy eating and teaching life skills.

The group for young men is hosted at a clinic within the study site, although not at the main clinic. Participant 1, a community champion, described the content and goals of the sessions: *“At first, I taught about nutrition because they didn’t know the food they were eating wasn’t right, and they didn’t understand portion sizes. Now that some of the boys are older and working, I’m teaching them about budgeting and growing home gardens. I teach them how to cook vegetables from their gardens without losing nutrients... We have lesson plans for each week, it can be on things like hygiene, safety, gardening, and body care. It’s more of a discussion than a lesson. I will just introduce the topic, and we will see where it goes... We run the men-only group every Friday. Fridays are men’s days at the clinic because men feel shy about coming in if there are ladies inside, so they will say they are not going there to the clinic. So, we run the programme all day, repeating sessions for those who can’t come in the morning. Then they will just come to check their status or ask whatever they want to the doctor.”*

This quote highlights the importance of targeted support groups for young men to educate them on their nutrition and to give them a safe space to express their needs.

Participant 1 also highlighted a gap in government support for community education, emphasising the importance of community-led initiatives: *“We run these programmes because we see the need. The government didn’t supply community champions. People don’t have information or knowledge. The doctors aren’t there for that; they just give you a*

pamphlet. For example single mothers don't have time to read those... So we sit down and narrate, narrate whatever it will be."

This quote reinforces the importance of community-led efforts in addressing educational deficiencies. The perception that health education is not within the traditional role of medical staff and the need for said education has caused community organisations to take proactive measures in educating community members directly. This relates back to the section on "support groups" where another community champion also spoke about narrating education pamphlets to mothers who did not have the capacity to engage with the material themselves.

Together, these examples demonstrate how community champions are essential in bridging the educational gaps, ensuring that vital health information is accessible and understandable for all community members. Additional programmes to the breastfeeding workshop and the boys group were mentioned by Participant 3. "We have an after-school programme, a life skills programme for kids, and a community kitchen."

The community champions also run nutrition programmes in ECD centres. These programmes have successfully influenced what children bring in their lunchboxes and their knowledge of healthy eating, with the aim that children will pass this knowledge on to their families. As noted by Participant 2, a community champion: *"The children have power... they are young, so when they grow up, they won't forget what they've learned, and they will pass it on to their parents."*

In addition, people in the community can take vegetables from the community champions' garden in exchange for one hour of work. The champions have successfully initiated over 100 community gardens in total. If community champions cannot address all the needs of people within these different programmes, they refer them to other social services within the area. They are also trying to build a relationship with NGO1 to partner on the breastfeeding workshops. Participant 3: *"We're now trying to initiate a good relationship with the grassroots organisation, because they already have a breastfeeding support group , so we want to join."*

At NGO1, CHWs fill patients' containers with food from the soup kitchens if they know that patients cannot go themselves. Some of the programmes run by the organisation mentioned by the CHWs were a moms and tots group, social workers, soup kitchens, life skills, first 1,000 days, and farmer days. NGO1 supplies the ingredients for multiple soup kitchens

within the area. The CHWs use the network of their organisation to refer patients if they cannot attend to their needs individually. At the social worker organisation, they run a group for disabled people, supply cooked meals every day and have a community garden.

While the community organisations seem to run some similar groups, there does not seem to be any collaboration or communication between the two organisations, besides Participant 3 expressing interest in working together on the breastfeeding workshops.

Despite the social and structural constraints patients are facing, the clinic is working on a way forward to address the issues patients face in 2025. Participant 15, a senior clinic staff member, explained that their statement aim for the year is to decrease drug-sensitive TB defaulting patients from 22% to 18% by May 2025. To do this they plan to look at the social determinants of health such as stigma, housing, overcrowding, lack of education and food insecurity that are impacting patient rates of defaulting. Additional structural issues they aim to address which came out in this study are staffing shortages, depth of training and a structured number of counselling sessions needed for every TB patient. This is a crucial finding as it shows the integration of an SDOH framework in practice within the clinic.

4.4 Conclusion

This chapter reveals three key themes identified in the findings: “treatment interrupted”, “navigating hunger in care”, and “bridging the gap”. Each theme underscores the profound impact food and nutrition security have on patients’ access to equitable healthcare. The first theme identifies multiple social determinants of health which impact patients’ adherence to treatment regimens and the impact of competing resources, and the family and individual food environments on health outcomes. The second theme looks at nutrition training sufficiency of healthcare workers, inductions on the local socio-economic climate, and the impact of food instability on dietary recommendations. The final theme delves into clinician availability, referral pathways, support groups, patient disease education and types of social support.

The findings highlight that while practitioners often acknowledge the challenges food insecure patients face when adhering to treatment, they often lack the training and resources to address these issues effectively. This gap emphasises the need for integrated approaches

that use multi-sectoral collaboration and consider the SDOH within healthcare practice. However it also acknowledges there is a need for more robust support, despite the presence of systems working together and an understanding of the SDOH impacting patients. Furthermore, systemic issues such as understaffing, poor communication, and food support not being part of the healthcare model further exacerbates the challenges patients, practitioners, and community workers face. These insights will be further examined and unpacked in the next chapter.

Chapter 5

Discussion

The aim of this study was to look at the perspective of healthcare workers on the issue of the impediment of hunger in accessing public healthcare among patients. The primary aim was to gain insights into the broader array of barriers to public healthcare access faced by food-insecure patients and to investigate the extent to which community clinics and other social service systems collaborate to address these overarching concerns associated with hunger, malnutrition, food security, and health equity.

This was achieved by first investigating what barriers patients face in accessing healthcare. Once these barriers were identified, it was important to understand the knowledge healthcare workers had on nutrition and the impacts of food insecurity on dietary recommendations. Finally, it was important to understand how to bridge the gap between patient and practitioner barriers through referral pathways, support groups, patient education, and social support.

In this chapter I unpack how the findings of this study link with the WHO's SDOH framework and UNICEF's systems thinking framework. Figure 13 illustrates how the different findings align with the SDOH framework.

The purpose of this chapter is to discuss the findings of the study and situate them within the broader literature through the lenses of the conceptual frameworks that guided this study. In this chapter, the three main themes identified in the results, "treatment interrupted", "navigating hunger in care", and "bridging the gap", will be analysed in the same

chronological order as the findings chapter. The final part of the chapter will reflect on my contributions to the broader literature and potential recommendations for future research.

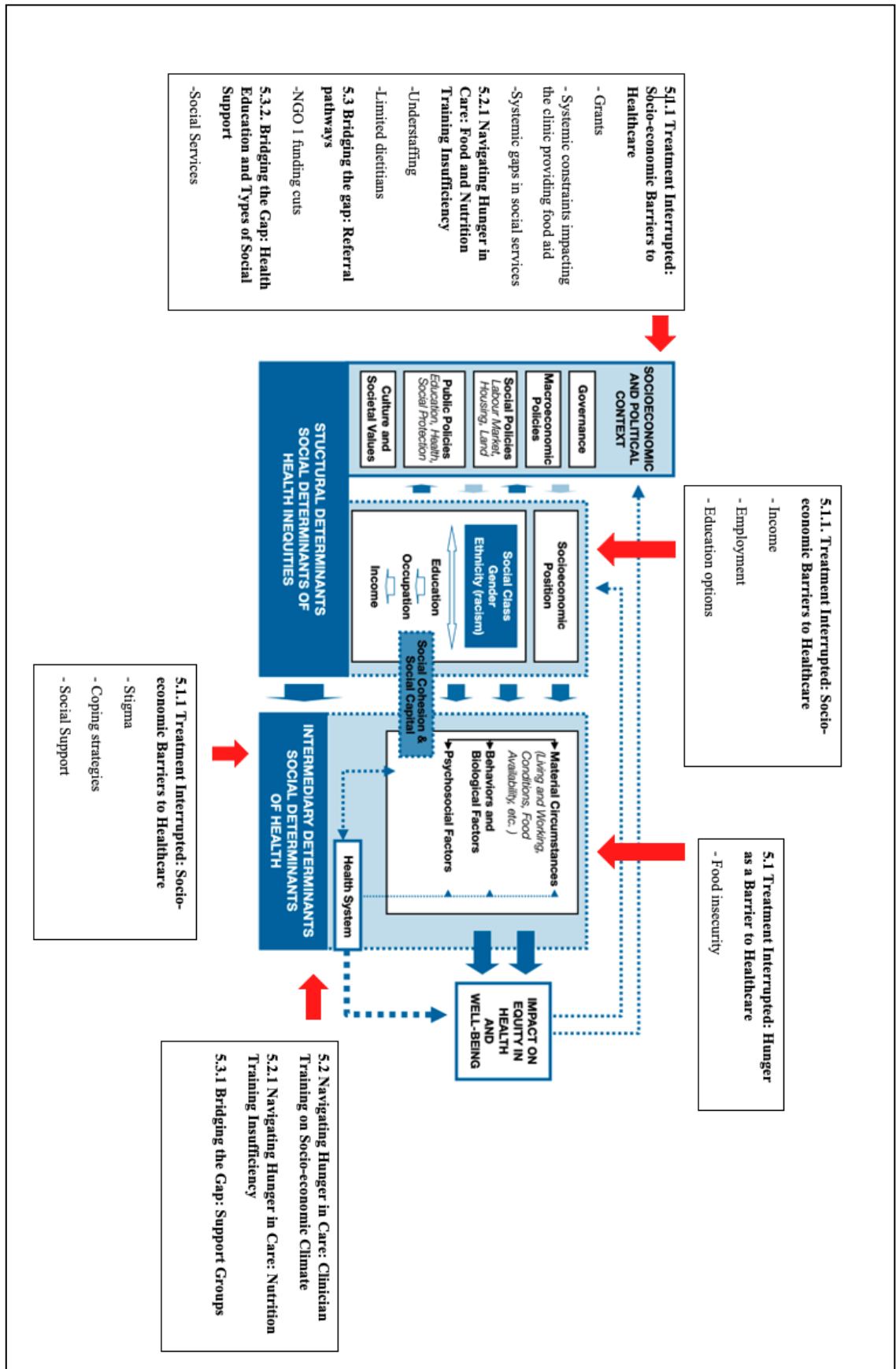


Figure 13: WHO's CSDH Framework Annotated

5.1 Treatment Interrupted: Hunger as a Barrier to Healthcare

Food insecurity was identified as a main barrier to treatment within this study. It was widely understood that hunger exacerbated TB and HIV medication side effects leading to treatment defaulting, which aligns with the broader literature (Young et al., 2014; Nxumalo et al., 2016; Cornelius et al., 2017). Notably, the clinic had a high TB and HIV burden, reflecting the broader context of South Africa where the country faces a dual burden of these diseases as 53% of TB patients in the country are also HIV positive (SANAC, 2023). TB and HIV medication side effects included nausea, vomiting, and fatigue, and TB medication increased patients' hunger. The study findings only noted an increase of hunger on TB medication; however, the broader literature identifies that hunger increases the side effects of both TB and ARV treatment (Vanleeuw et al., 2022; Claros et al., 2014; Weisier et al., 2010). These findings support existing literature which identifies that food insecurity correlates with disease mismanagement and reduced adherence to treatment regimens (Makelarski et al., 2015).

This study highlights the syndemic relationship between food insecurity, TB and HIV, a concept which is explored in existing research on the relationship between food insecurity and HIV (Young et al., 2014; Singer, 2009). This cyclical dynamic, where food insecurity contributes to worse clinical outcomes and poor health impacts food insecurity, highlights the multifaceted challenges patients face.

One of these challenges, identified in this study, was weight loss from malnutrition and worsening health conditions in food-insecure TB patients who defaulted on treatment. This finding aligns with research from Latvia, which shows that patients who are on MDR-TB treatment and are underweight ($\text{BMI} < 18.5 \text{ kg/m}^2$) are more likely to have advanced TB and have a higher risk of negative effects and mortality than those who are not underweight (Balinda et al., 2019; Podewils et al., 2011). The connection between undernutrition and TB progression and relapse is further emphasised by Ayiraveetil et al. (2020), highlighting the severe impact of poor nutrition on TB treatment outcomes.

Additionally, Participant 13, the dietitian, emphasised that poor nutrition from food insecurity weakens patients' immune systems, making them more vulnerable to TB and other opportunistic infections. This finding aligns with Vanleeuw et al (2022), who reported that doctors confirmed the vital role of nutrition for TB recovery; but highlighted that food

insecurity prevents patients from being able to afford a balanced diet. As a result food insecurity is gaining recognition as a significant barrier that hinders patients' ability to adhere to treatment (Young et al., 2014).

As shown in figure 13, the WHO SDOH framework identifies food insecurity as a material and structural inequality which is an intermediary determinant of health. Hunger limits patients' ability to engage with healthcare effectively, compounding vulnerabilities and perpetuating poor health outcomes (WHO, 2010).

Although food insecurity was acknowledged as a barrier to treatment by clinicians in this study, systemic constraints prevented them from providing food assistance for patients. Instead the clinical response focused on increasing medication doses and disease education, which failed to address hunger as the root cause of defaulting. The same limitations were observed in a Johannesburg-based study, where patients defaulting from treatment due to food insecurity did not receive food assistance from the clinic either (Nxumalo et al., 2016). This approach reflects the WHO's DOTS strategy for TB control, which emphasises patient education and adherence support, but frames medication non-adherence as primarily a patient-centric issue rather than a systemic one (Selgelid et al., 2010; Hurtig et al., 1999). However, as Selgelid et al. (2010) and Hurtig et al. (1999) argue, non-adherence often stems from broader social barriers. These findings suggest that TB control programmes must expand their focus to address social determinants of health and barriers to access, to move beyond a purely biomedical model (Selgelid et al., 2010; Hurtig et al., 1999).

This inadequate response to defaulting in this study was identified to potentially increase patients' vulnerability to disease progression, with TB patients at risk of drug-resistant TB, and HIV patients at risk of increased viral loads, thereby exposing a systemic gap in care. Several studies have highlighted that HIV-positive patients facing food insecurity are more likely to have higher viral loads, declining CD4 counts, greater susceptibility to infections, higher rates of hospitalisation, and a reduced quality of life (Young et al., 2014; Weiser et al., 2009, 2012; Wang et al., 2011; McMahon et al., 2011; Normen et al., 2005). In a comprehensive framework, the health system functions as an intermediary determinant, shaping both personal and non-personal healthcare delivery (WHO, 2010). It can play a crucial role in reducing disparities in exposure and vulnerability by enhancing equitable access to care and promoting intersectoral collaboration to improve overall health. For

example, food supplementation programmes can help address geographical barriers to healthcare access (WHO, 2010).

Additionally, this study noted systemic gaps in the social service system, as they had limited capacity to offer effective support due to the widespread need for food assistance within the community. This supports existing research, which indicates that food supplementation programmes can improve adherence, but their overall effectiveness in addressing food insecurity and supporting long-term adherence remains unclear (Young et al., 2014; van Oosterhout et al., 2010; Cantrell et al., 2008; Yager et al., 2011). As shown in figure 13, social protection forms part of the structural determinants of health as public policies can mitigate the impact of socioeconomic position on health outcomes (WHO, 2010). Therefore, social support systems must be strengthened to provide sustained assistance that can bridge the gap created by differing social determinants and enhance the overall capacity of care; while highlighting the broader need for strengthened food environments. These examples underscore the need for a systems-thinking approach to health that incorporates a SDOH framework.

The conceptual frameworks guiding this study provide a lens to understand the systemic nature of the barriers to treatment identified by participants. UNICEF's framework highlights the interdependencies between food, health, education, and social protection systems, emphasising that health outcomes cannot be addressed in isolation (UNICEF, 2020). This is evident in patients struggling to adhere to treatment due to food insecurity, which demonstrates that health outcomes are shaped by intersecting systems of support. As identified in the findings, nurses are held accountable for dispensing medication to patients who are defaulting from treatment due to hunger, however patients are not receiving support from systems outside of healthcare.

These frameworks reinforce the need for holistic healthcare models that incorporate a multi-systems approach that prioritises social determinants alongside clinical interventions.

5.1.1 Treatment interrupted: Socio-economic Barriers to Healthcare

In addition to hunger, the results from this study identified the broader socio-economic constraints community members face, which impact their access to food and healthcare. Widespread levels of unemployment and low-income levels in the community were

identified, which contributed to levels of food insecurity and medication non-adherence. This result corresponds with previous studies that highlight financial constraints as one of the barriers which directly reduces equity in public healthcare provision (Crooks and Andrews, 2009). Therefore, the Ottawa charter includes food and income as prerequisites to health (WHO, 1986), emphasising that health should not be viewed merely as the absence of disease, but also include socio-economic well-being in its definition (Tucker, 2013; WHO, 1946).

Due to the high levels of unemployment and food insecurity within the community, some of the coping strategies identified by participants were illicit activities such as sex work and crime to gain access to money for food. These activities were described as health risks as they made people vulnerable to diseases such as HIV, and crime-related injuries. These coping strategies are understood to be psychosocial circumstances which are intermediary determinants of health (WHO, 2010). Different social groups face varying levels of exposure to challenging and stressful life experiences, which can affect their ability to cope on a daily basis. These difficulties contribute to persistent patterns of health inequalities overtime (WHO, 2010).

A lack of job availability and overcrowding was understood to cause people to experience financial isolation due to their own need for survival and inability to extend support to other community members. Additionally, some patients with TB or HIV were unable to work due to their illness, which exacerbated their food insecurity and negatively affected their treatment adherence. In turn, poor treatment outcomes further hindered their ability to work, and often these patients received no social support to break this cycle. This is understood in the literature as a loss of livelihood and affects families' food security and food choices (Ambikapathi et al., 2024). This finding highlights the perpetuation of the poverty disease trap, where socio-economic issues create vulnerability to contracting diseases such as TB (Vanleeuw et al., 2022). In turn, disease exacerbates income loss, and further pushes people into poverty (WHO, 2005; Lonnroth et al., 2009). The results further noted that if patients have a job, then they will have food in their house which in turn means they will visit the clinic. This finding underscores how meeting basic needs, such as food and income, is often a prerequisite for accessing healthcare. Similarly, value negotiations highlight how households with scarce resources must prioritise competing needs which can influence the allocation of support and impact the well-being of individual family members (Ambikapathi et al., 2024).

This set of findings highlights the feedback loop seen within the SDOH framework, as shown in figure 13, where socioeconomic inequalities impact health and health impacts social economic position. Additionally, diseases like TB and HIV/AIDS can impact an individual's socioeconomic position through physical means and through factors such as stigma and discrimination, which will be unpacked further in this section (WHO, 2010). Additionally, when you look at the impact of income on health outcomes, the term health selection is important. Health selection identifies that being poor does not cause illness; instead, poor health decreases an individual's income and financial opportunities (WHO, 2010). Furthermore, at a neo-material micro level, income inequality limits the economic resources available to impoverished individuals, reducing their capacity to avoid health risks, obtain the necessary treatment for injuries and illness, and reduce the risk of illness (WHO, 2010).

Compounding these issues, this study highlighted the insufficiency of grants. The child grant available to parents was insufficient to cover all costs associated with childcare. The Child Support Grant is an unconditional cash transfer aimed at aiding in health, nutrition, and child development (Luthi et al., 2022). However, it was noted that once the grant money has been used to cover school lunches and transport costs, there is no money left to buy food for the child or household. Due to the need for food and the increasing cost of transport, there is an impact seen on where children are able to attend school. Additionally, not all poor households are able to access the grant due to residency status. One of the participants indicated that over 50% of children who attended the clinic are foreign nationals, which created a barrier to grant uptake. This has an impact on the long-term health outcomes of these children, as the literature indicates that socioeconomic disadvantage experienced at a young age has a direct impact on disease vulnerability in adolescents, regardless of their socio-economic status as an adult (Braveman and Gottlieb, 2014).

Policy changes have attempted to reduce exclusion. Following reports of undocumented children dying from hunger, the Social Assistance Act 13 of 2004 was amended to allow applications for the CSG even when caregivers did not have an ID document and the child did not have a birth certificate (Mojela, 2023). In 2012 the regulations were further expanded to include migrants with refugee status, who became eligible to receive the grant along with South Africans and migrants with permanent residency status (Nzabamwita and Dinbabo, 2022). However asylum seekers who are undocumented are not eligible for social assistance (Nzabamwita and Dinbabo, 2022). The same regulations apply for other social support grants

such as the CSG Top-Up Grant, the Foster Care Grant, the Care Dependency Grant, the Disability Grant, and the Old Age Pension Grant (Legal Resource Centre, 2023). Additionally, literature on migration in South Africa show that migrant and unaccompanied migrant children face serious barriers linked to documentation and access to essential services. By 2020, an estimated 642, 000 migrant, refugee and displaced children were living in South African, with majority of them not having formal documentation: making South Africa the home to the largest population of migrant children on the continent. Furthermore, while undocumented adults are frequently deported in South Africa, national guidelines prohibit the deportation of undocumented children (Zhou and Matlakala, 2024). Therefore, while undocumented children are eligible to receive the CSG caregivers may not apply for it due to fear of residency status being questioned or being unaware of the new regulation changes.

Furthermore, although poverty's influence on health is widely recognised, the specific roles of income and education in shaping access to healthcare frequently receive less attention in healthcare discourse (Braveman and Gottlieb, 2014). Education can be viewed through a life course framework as a factor that reflects early life socio-economic position (WHO, 2010).

Similar results were seen with the disability grant. Participant 1, a community champion, noted that the grant is used to cover household expenses which causes the disabled person to rely on social support services for food and other aid. This finding identifies that the money allocation for grants does not take into account the economic responsibilities and socio-economic realities of grant holders. This finding aligns with the broader literature which identifies that individuals' agency over food is compromised within the family food environment when resources are scarce (Ambikapathi et al., 2024). It is also important to note that many patients, especially those living with HIV/AIDS, TB or other NCDs, face difficulties in accessing the disability grant. One key reason for this challenge is that the Social Assistance Act does not clearly define the term disability, leaving eligibility decisions to the interpretation of medical assessors and their medical report (Kidd et al., 2018; Govender et al, 2015). To address this, SASSA has created guidelines for the medical assessment, stating that individuals with chronic illnesses such as HIV, TB and NCDs, which can be managed by medication, are not necessarily eligible because eligibility is based on functional impairment (Kidd et al., 2018). These guidelines are an added barrier for patients with chronic illnesses. Furthermore, patients with HIV who fit the criteria are only eligible

for the temporary disability grant and must be reassessed every six-months (Govender et al, 2015). This is because when patients are receiving ART and their CD4 count begins to rise and their functional status improves, leading to the loss of grant eligibility as they are deemed fit to work. Thus, there has been ongoing calls to create a Chronic Illness Grant to deal with the challenges patients with chronic illnesses face in accessing and maintaining social protection through the disability grant (Govender et al, 2015).

As shown in figure 13, grants are a component of social policies, which serve as structural determinants of health that impact socioeconomic position and healthcare access and outcomes (WHO, 2010). These structural determinants, in turn, impact intermediary determinants such as food access and social support.

Due to these socio-economic and structural barriers, this study identified the importance of financial support from families for food insecure patients to manage their treatment. Family support was brought up in the context of patients receiving little to no support, which impacted their ability to adhere to treatment. Although participants in this study specifically spoke about family support for TB patients, the same need is seen for HIV patients within the broader literature. Food plays a central role in fostering social connection and building networks, serving as a practical means of utilising social capital. There is often a dependence on social networks like family members, adult children, neighbours, or friends to enable the food choices of people living with HIV. For instance, people living with HIV may receive money or food from children who no longer live at home (Ambikapathi et al., 2024; Hardon et al., 2007). In this study, food-insecure TB patients who did not receive assistance from family members defaulted from treatment due to their hunger. This aligns with the broader literature which states that often in resource-constrained contexts, family support is intermittent. However, the absence of family support directly impacts the well-being of those managing their illness as there are established connections seen between disease progression, food access and family support in HIV patients (Ambikapathi et al., 2024; Belsey, 2006; Aberman et al., 2014).

As shown in figure 13, coping strategies, such as family support, influence material circumstances like food access. Together, these intermediary determinants affect health outcomes. This, in turn, feeds back into the broader loop, where structural determinants

continue to shape health outcomes and socioeconomic position, as impoverished areas tend to have higher rates of illness (WHO, 2010).

An additional socio-economic barrier to care faced by patients was long wait times at the clinic. Patients disclosed to CHWs that they were reluctant to attend the clinic due to the time it took to receive treatment and the negative interactions they had in the past with nurses. This barrier is recognised in the broader literature as an institutional barrier to care (Young et al., 2014). Although clinics are free, there are costs involved in seeking care, such as lost work opportunities and travel expenses, which can impact medication adherence (Young et al., 2014; Crane et al., 2006; Weiser et al., 2010; Uzochukwu et al., 2009). These institutional barriers therefore impact patients who decide to seek care outside of the community. To try and mitigate against these institutional barriers Participant 9, the HIV counsellor, works with patients to make sure they can overcome these barriers if they choose to seek care outside of the community. This finding is in line with the broader literature, which indicates that ART adherence is challenging for employed people living with HIV due to the need for frequent clinic visits (Ambikapathi et al., 2024). Therefore, patients may seek care outside of the community due to long wait times at the clinic. Additionally, these healthcare burdens impact patients' food choices as the costs surrounding treatment impact their available cash to purchase nutritious foods (Ambikapathi et al., 2024). Therefore, there is a direct relationship between treatment compliance and the financial barriers associated with seeking care (Selgelid et al., 2010; Hurtig et al., 1999).

Tied to long wait times being a barrier to treatment was stigma, specifically HIV stigma. Stigma is known as a community-level barrier to equitable healthcare access and impacts patients in different ways (Young et al., 2014). The first impact of stigma, noted in this study, was patients not wanting to take or collect their medication due to fear of being labelled HIV positive. This finding is consistent with the broader literature, which notes that internalised HIV stigma can significantly impair an individual's capacity to manage their condition, particularly through adherence to treatment regimens (Turan et al., 2016). Despite the clinic trying to mitigate against stigma by dispensing all medication in generic packaging, the stigma attached to HIV was deeply entrenched, and resulted in patients believing that all the medication being dispensed in these packages were ARVs, or would have been perceived by community members as ARVs.

HIV-related stigma can take various forms, such as direct experiences of discrimination (enacted stigma) or the perception that one is viewed negatively by others in the community (perceived stigma), both of which can shape how individuals navigate their condition (Turan et al., 2016). Therefore, recognising how stigma is internalised and entrenched as a common belief in communities is crucial for understanding its impact on medication adherence (Turner et al., 2016; Lee et al., 2002; Earnshaw et al., 2009; Earnshaw et al., 2013). As shown in figure 13, stigma is a psychosocial factor, which is an intermediary determinant that impacts health outcomes and health system engagement (WHO, 2010).

The impact of stigma was also seen outside of the clinic by CHWs. The findings indicated that patients often avoid engaging with CHWs and the clinic due to their fear of being stigmatised. This was expressed through not wanting to be seen with CHWs in their home, and not wanting to be seen at the clinic, which wasn't avoidable due to long wait times. This avoidance is not uncommon or unfounded, as stigma significantly impacts individuals through discrimination, stereotyping, threats to social and personal identity and status loss within the community (Major et al., 2005; Hatzenbuehler et al., 2013).

However, CHWs play an important role in promoting adherence to treatment, particularly in communities grappling with TB and HIV epidemics. CHWs build trust with patients by providing home-based care and addressing the stigma linked to HIV/AIDS and TB, issues made more severe by structural poverty, food insecurity, and healthcare system mistrust (Watkins et al., 2021). However, this was identified as a challenge in this study as CHWs reported that patients didn't want to let them into their homes and often resorted to inappropriate language to get CHWs to leave. This underscores the challenges CHWs face in trying to re-engage patients with the healthcare system. Despite these challenges CHWs face, previous research notes that social support is crucial in mitigating stigma, as isolation caused by stigma has harmful effects on public health (Hatzenbuehler et al., 2013; Cohen et al., 1985; Kawachi et al., 2001).

Due to this stigma, some patients opted to go outside of the community for care. This however has an impact on the costs associated with treatment such as travel expenses as mentioned previously. Therefore, individual barriers to healthcare such as HIV stigma, fear of job loss and low income can hinder ART adherence (Wang et al., 2020). This example highlights how the interplay of SDOH impact health outcomes.

Although there was consensus across participants that stigma impacts health outcomes, there were differing opinions on stigma surrounding food aid. Participant 13, the dietitian, stated that patients openly asked for the NTP supplement (a medication) if they had seen their neighbours using it. However, a CHW explained that some defaulting patients won't collect food aid, even when it is offered as a means to adhere to their medication regimes. This difference in opinion may be due to the environment in which aid is given. Patients see dietitians privately, whereas collecting food aid from social services is done in a public setting. This reflects the multifaceted nature of stigma which can negatively impact support and social capital (Ambikapathi et al., 2024; Aransiola et al., 2014). Individuals often experience intersectional stigmas related to social factors, alongside disease stigma which further complicates their access to care and support (Shin et al., 2018). Additionally, the stress related to stigma coupled with coping strategies, impacts individuals' access to healthcare and nutritional support (Major et al., 2005; Clark et al., 1999; Harrell, 2000; Link and Phelan., 2001).

This section highlights how intersecting structural and intermediary determinants of health, such as low income, food insecurity, education constraints, family support, and stigma have a detrimental effect on equitable access to care. These factors impact long- and short-term health outcomes as access to nutritious foods, income and education all play a role in individual and community healthcare. Therefore, a SDOH framework is necessary to address health equity within the public healthcare space (Braveman and Gottlieb, 2014).

The CSDH framework emphasises how social, economic, and political factors shape individuals' socio-economic positions, which are influenced by factors such as income, education, gender, and race/ethnicity. These social factors determine exposure and vulnerability to illness, with people's positions within social hierarchies affecting their access to health resources and care. Additionally, illness can further impact one's social position, often limiting their ability to work. This framework underscores the complex interaction between SDOH and the broader structural conditions that shape health outcomes as seen within this study (WHO, 2010).

5.2 Navigating Hunger in Care: Clinician Training on Socio-economic Climate

The previous section discussed the barriers to care patients faced within the study site. This section will focus on the capabilities of practitioners and NGOs 1 and 2 in addressing these barriers, while also examining the structural challenges they face in addressing patient-related barriers to care.

This study highlighted significant gaps in the socio-economic orientation provided to clinic practitioners when they began their roles at the clinic. This lack of induction impacted their initial understanding of the social challenges faced by the community and often left practitioners feeling unprepared and unsupported. Without an introduction to the local socio-economic context and updated information on available social services, practitioners were left to seek this information independently. These findings point to the need for formalised socio-economic inductions to better equip healthcare staff in addressing community-specific barriers to care, emphasising the need for a SDOH framework in public healthcare.

All the practitioners felt they needed an induction on the social issues faced by the community as not every community faces the same constraints. This finding aligns with the broader literature which states that public healthcare needs to be tailored to localised needs of specific communities, while simultaneously considering broader health concerns at a regional, national, and global level (Crooks and Andrews, 2009). This is due to the fact that geographical scale impacts the organisation and delivery of care (Wiles and Rosenberg, 2009). These points tie back to figure 13, where the health system is seen as an intermediary determinant of health. Educating practitioners on the socio-economic barriers patients face can improve care delivery, ultimately contributing to reducing health disparities, as the health system plays a key role in mitigating inequalities through equitable policies (WHO, 2010).

The lack of induction meant that practitioners often had to go out of their way to find out from other staff members, social workers, and patients what social service options were available to patients in the community. This finding aligns with the broader literature, which emphasises that effective healthcare delivery depends on ensuring individuals within the community have equitable access to services. However, this access can be hindered by systemic barriers, which can be rooted in both individual and broader societal factors (Crooks and Andrews, 2009).

Due to the levels of food insecurity and medication non-adherence in this community, it is clear that a systems approach is needed as most nutrition outcomes need to be met through multi-system collaboration (UNICEF, 2020). This integrated perspective highlights the interconnected nature of the systems involved, moving beyond the simplistic view that malnutrition follows a linear path (UNICEF, 2020). In order for practitioners to utilise the systems around them, they need to be aware of their availability within the community they work in, as well as have an understanding of the localised SDOH that impact their patients.

5.2.1 Navigating Hunger in Care: Food and Nutrition Training Sufficiency

A prominent theme that came out of the research was nutrition training insufficiencies which pose a major barrier to care in a community with high levels of food and nutrition insecurity. The clinicians expressed that they only received basic nutritional training, while the CHWs expressed challenges with the training they received, and a need for additional training and refresher courses. The only healthcare worker who felt their training was sufficient was the dietitian, which was expected. This insufficiency impacted clinicians' ability to look for early warning signs of malnutrition and resulted in many patients being referred to the dietitian for assistance. This posed an issue for the dietitian as they only visited the clinic once a month and often had a two-month waiting list, which impacted patients' immediate access to nutritional assistance. Among the CHWs, some of the challenges they experienced were patients not being receptive to their dietary advice due to economic or cultural reasons. Additionally due to the limitation of the CHWs' training on nutrition, some felt ill-equipped to help patients with individualised issues.

For example, Participant 8, the doctor, expressed that their training on nutrition was brief, and they were only taught to pick up moderate to acute signs of malnutrition predominantly in children, and how to manage malnutrition, expressing that they hardly got any training on such issues. Part of their training was being taught to work with the dietitian, through a referral basis. However, due to the overload of dietitians, this solution is not effective for proper nutritional care. This finding is consistent with previous literature, which indicates that despite medical professional bodies globally recommending medical professionals to use nutrition care knowledge to support patients with chronic diseases that are impacted by poor nutrition, a gap is seen between the nutrition knowledge, skills, and attitudes needed to

provide such care, and the nutritional education taught to medical students (Crowley et al., 2019). Additionally, feelings of unpreparedness and inadequate nutrition training has been a prominent theme over the past five decades in nutrition education literature, as medical students do not feel adequately equipped to provide nutritional care to support patients, despite the crucial need for such education (Crowley et al., 2019). Therefore, a new approach is needed to address the gap seen between evidence and practice in medical nutrition education to curb the growing prevalence of poor dietary intake (Crowley et al., 2019).

A similar consensus around training was expressed by the nurses, where they collectively highlighted insufficiencies in their training. All the nurses expressed that they received basic nutritional training during nursing school, with one nurse noting that the City provides nutrition training to its employees. As a City-run clinic, this means that all of the nurses should have gone through this training. However, a different nurse expressed that most of their nutritional training is learnt in the field.

If malnourished patients have not been put on NTP by the nurses or doctor, they often end up needing hospitalisation by the time they see the dietitian. Therefore, the dietitian offers in-service training on growth monitoring and promotion over a two-day period once a year. This aligns with the broader literature as the care of severely malnourished children largely depends on nurses, yet a gap in their knowledge hinders effective management (Puoane et al., 2006). This is a concern as food insecurity is a major issue seen within the health sector (Scher et al., 2022). The broader literature identifies that nursing curricula in South Africa provide minimal training on severe malnutrition and need to be updated to include WHO treatment guidelines and training on associated physiological changes. Therefore, it is also crucial for nursing staff to receive in-service training to improve treatment practices (Puoane et al., 2006). However due to the nursing staff being understaffed and overstretched, this becomes a challenge within the clinic as they are the sole provider to a community of over 30,000 people, meaning not all nurses are able to attend the in-house training. Moreover, these structural issues impact patients' equitable access to healthcare.

These findings highlight a gap in the nutrition training among healthcare workers, aligning with the health system as an intermediary determinant that impacts health disparities, as shown in figure 13 (WHO, 2010). Additionally, the understaffing of nurses and dietitians

reflects structural determinants that affect healthcare access and contribute to health inequalities (who, 2010).

Outside of the clinic space, CHWs provide nutrition education to patients. However, CHWs found this training to be basic and needed additional courses to address patients' individual needs. For example, providing advice for patients with diabetes posed a challenge for them. Additional challenges included the disconnect between the nutritional education provided to patients and their experiences, such as perceiving healthier foods as more expensive and finding the recommended dietary swaps unfamiliar or unappealing. This aligns with the literature which identifies that financial constraints and culturally inappropriate care limit treatment availability and reduce equitable access to care (Crooks and Andres, 2009). Additionally, the results and the broader literature align by noting that CHWs do not receive adequate training to address NCDs, like diabetes, which contributes to the significant challenges faced within the healthcare system (Adams, 2019; Kautzky and Tollman., 2008; Mullan et al., 2011; Tsolekile, 2018).

Hunter-Adams and Battersby (2020) found that patients linked dr-NCDs to social issues, while practitioners understood dr-NCDs as a by-product of poor personal choices and limited knowledge. The same issue was observed in this study, as patients expressed concerns relating to SDOH, such as the cost of food, while the CHWs linked their experiences to food choice behaviours. Therefore, the findings in this section align with the broader literature which identifies that the shortcomings in nutrition care seen within the health system and social services makes reflexive practice challenging (Hunter-Adams and Battersby, 2020).

These findings highlight a gap in nutritional training among healthcare workers and social service workers, which directly impacts healthcare delivery and health outcomes. Additionally, the understaffing of dietitians in the Western Cape reflects resource constraints that create access barriers, reinforcing health inequalities (WHO, 2010). This limited availability of trained nutrition professionals reflects broader gaps in health policies and governance, reinforcing structural determinants of health (WHO, 2010).

5.2.2 Navigation Hunger in Care: Dietary Recommendations are Impacted by Food Stability

Following on from nutrition training insufficiency, the realities of providing dietary recommendations to food-insecure patients and the misuse of NTP treatment as a meal replacement was identified as a barrier to healthcare in this study.

For example, Participant 13, the dietitian, explained that if a patient was malnourished she needed to assess whether the cause was from a medical condition such as HIV or TB, or if it stemmed from food insecurity, or a combination of both factors. Therefore, dietary recommendations for food-insecure patients become complicated, as food behaviours do not solely stem from the need for nutritional knowledge, but from social factors such as food access. This aligns with the broader literature which identifies that food access is tied to income and resources necessary to purchase food to obtain a nutritious diet. However, an adequate food supply in a household does not mean an individual is food secure, as the nutritional quality of food plays a critical role. Therefore, for individuals experiencing malnutrition, the problem lies more in accessibility than in the physical availability of food (Hwalla et al., 2016; World Bank, 2007). This disparity is particularly evident in low-income households where limited resources often lead to coping strategies where quantity is prioritised over quality to maintain a consistent supply of food (Hwalla et al., 2016; Darmon et al., 2002).

Participant 13, the dietitian, further explained that when food insecurity is the cause of malnutrition, it becomes complex in a clinical context as she viewed food insecurity as a social issue. This ties back into the theme of ‘treatment interrupted: hunger as a barrier to healthcare’, where Participant 8, the doctor, highlighted the systemic gap in care where patients defaulted due to hunger, and the clinic’s response was limited to increasing medication instead of addressing their food needs. Therefore, framing health as a social issue is essential for recognising its connection to social justice, which in turn allows health equity to be used as a guiding principle for understanding health outcomes (WHO, 2010).

Another example of food insecurity presenting as a barrier to care was in NTP treatment. NTP is prescribed to patients who are underweight or losing weight due to a medical condition. However if the patient is also food insecure, the NTP supplement is used as a meal

replacement, instead of its intended use as a supplement, which then prevents the medication from assisting the patient to gain weight. A compounding factor identified in this study was that children and adults on NTP often do not gain weight due to their treatment being shared among other family members to cope with household food insecurity.

This result emphasises that food insecurity is a significant issue within the community, which compromises nutritional support for individuals and has an impact on resource management within households. A significant challenge in addressing the complexities of SDOH identified in the broader literature is the gap in practitioners' training as they are not equipped with social work skills. This limitation often results in fragmented care, particularly in low-income areas where intersectional factors significantly impact health outcomes, as seen in this study (Braveman and Gottlieb, 2014).

Although the broader literature states that public health systems and CHW programmes need to incorporate health promotion and establish referral pathways to social services to enable a more comprehensive approach to addressing SDOH (Braveman and Gottlieb, 2014), the next section highlights that the clinic and CHWs do have established referral pathways, yet SDOH are still not being fully addressed due to larger systemic issues.

5.3 Bridging the Gap: Referral Pathways

Different types of referral systems were identified within the study. The results identified that in the clinic there was a dependency on referrals to the dietitian to treat patients with malnutrition. Due to inadequate nutrition training, the dietitian had become the first contact for referrals for the majority of malnutrition cases. Additionally, patients were referred for SASSA grants, to the social worker organisation next to the clinic, or to NGO1 for food aid support. The use of referrals outside of the clinic aligns with the Ottawa Charter which highlights the importance of a systems approach to health, and the need for comprehensive social service systems surrounding clinics, like community kitchens, to ensure equitable community health outcomes (WHO, 1986). However, social services in this community still struggle to meet the needs of all patients and community members, highlighting the need for stronger integration and a more robust system to address community needs. While these referral mechanisms are crucial for addressing SDOH, they also reveal weakness in health

system integration and the need for multi-sectoral collaboration, as emphasised in UNICEF's systems approach (UNICEF, 2020).

Additionally, clinicians are able to use the CBS form to bridge the gaps in care, as these forms are sent to CHWs to recall defaulting patients. This finding is important as the broader literature states that CHWs serve as a vital link between practitioners and the community as they are able to gain trust through close engagement and understanding of local dynamics and language (López-Ejeda et al., 2019). In addition to CBS forms, Participant 13, the dietitian, consulted with a social worker for cases outside of her expertise and to leverage their knowledge of community resources. This result is important because the broader literature states that if the basic needs of HIV patients go unmet, they face challenges in creating support systems and adherence skills (Cornelius et al., 2017).

Due to the limited knowledge of available food aid resources in the area among clinicians, and the relationship they have to NGO1, all patients were referred to NGO1 or the social worker organisation for food aid assistance. However, NGO1 had stopped supplying food parcels for TB patients at the clinic, a service that was previously offered, but cut due to government budget cuts of MRD-TB patient counsellors in NGOs. However, when this service was offered, the food parcels provided were insufficient in quantity to meet patient needs. Patients had also reported back to practitioners that they did not receive food aid from NGO1 despite the clinicians' referral. This limitation identifies the need for social services to become more robust, while acknowledging the impact government funding has on their ability to be robust. This, in turn, underscores the impact of structural determinants on health, as shown in figure 13 (WHO, 2010). Additionally, the lack of integration between the clinic and multiple food aid services limits the effectiveness of existing resources. This aligns with the broader literature which identifies that robust social support systems play an important role in ART adherence and can improve family resilience through aiding in the reduction of vulnerability and supporting coping strategies, therefore comprehensive approaches to care are essential (Wang et al., 2020; Vanleeuw et al., 2022).

Furthermore, the results highlighted an absence of mechanisms for community champions to relay patient concerns to clinic staff due to the perception that staff members were too busy, which discouraged feedback-sharing. This lack of communication hindered practitioners from having a full scope of understanding of patients' needs that came out of these sessions.

Therefore, scheduled feedback sessions or informal debriefings could enhance collaborative care.

This finding correlates with the broader literature which highlights that due to hierarchical relationships between CHWs and practitioners, tensions have historically arisen, impacting communication networks (Nxumalo et al., 2016; Timm et al., 2020). Although this study found communication tensions between community champions and practitioners, the results found in Nxumal et al. (2016) and Timm et al. (2020) studies show a similar outcome.

The findings in this section indicated that while referral pathways exist between the clinic and surrounding social services, they need improvement. The collaboration between the clinic and social services demonstrates an effort toward intersectoral collaboration; however, the limited awareness among clinicians about food aid options highlights a lack of structured multi-sectoral coordination.

From a SDOH perspective, these challenges stem from health system limitations, inadequate intersectoral coordination, and the influence of broader policy decisions on service provision (WHO, 2010). In the context of UNICEF's framework, the lack of a structured multi-sectoral approach to food security within the healthcare sector limits the potential of these referral pathways to effectively address health inequalities.

The next section will look at support groups offered by the clinic and social service NGOs to understand how these organisations further aid patients in managing their illnesses and the social determinants which impact their health outcomes.

5.3.1 Bridging the Gap: Support Groups

The results from the study identified a lack of consensus on what support groups were offered in the area. Although the doctor and enrolled nurse spoke of the lack of support groups at the clinic, the dietitian explained that she ran support groups for diabetic patients, and community champions ran information sessions for breastfeeding and chronic patients at the clinic. CHWs explained that they provide one-on-one health education and that support groups are offered at their headquarters for patients. However one CHW did not think their

organisation offered support groups. Informational support can considerably improve ART adherence even if a patient is experiencing food insecurity (Wang et al., 2020). Therefore knowledge on available support groups is vital.

The community champions ran breastfeeding workshops outside of the clinic and nutrition education sessions within the clinic waiting room for new parents and for chronic patients. However, the enrolled nurse was under the impression that the breastfeeding sessions were no longer operational and that there was a need for chronic disease support groups. This disconnect could have been caused by the practitioner not viewing community champions as healthcare workers, and therefore deeming their health sessions illegitimate. However these sessions aided patients in accessing health information in an accessible way. This aligns with the broader literature which notes that health promoters are trained to deliver health education and counselling, offering additional support for patients needing to incorporate healthier lifestyles (Parker et al., 2011). To increase their impact, it is essential to increase awareness of their roles among patients and practitioners, facilitate referrals, and expand their availability across all public healthcare facilities (Parker et al., 2011). Furthermore, the importance of these breastfeeding sessions aligns with the broader literature which highlights that nutrition is essential for development, health, and disease prevention, with critical periods like pregnancy, infancy, childhood, and adolescence shaping long-term health outcomes. Breastfeeding reduces the risks of prenatal mortality, childhood illnesses, and NCDs like type 2 diabetes in adulthood (Herman et al., 2014; Larnkjaer et al., 2010). Therefore, the breastfeeding workshops and education sessions given by the community champions are a crucial part of health education.

The disparity in awareness of existing programmes between participants highlights a crucial gap in communication. For example, clinic staff were not aware of available support and health education sessions provided at the clinic, and CHWs had differing opinions as to whether support groups were offered at their headquarters. These communication gaps have an effect on patients' access to support and exacerbate health inequalities. This lack of communication further undermines the effectiveness of existing programmes and creates missed opportunities for addressing nutrition and chronic illness management. Despite Participant 15, the senior staff member, saying that clinic-run support groups would hinge on the POPI Act if patients were not out with their status, the broader literature identifies that

support groups are vital in aiding in the reduction of stigma when patients are able to share their lived experiences and coping skills (Shiri et al., 2020).

Improving communication channels between the clinic and social service organisations could improve patients' access to available resources. Additionally, the formalisation of communication channels and the more effective integration of support groups into the clinic operations could assist in addressing the identified needs of patients. These findings identify the need for robust intersectoral collaboration and communication.

The health sector has the capacity to reduce worsening health outcomes by implementing support programmes that support social reintegration. As indicated in figure 13, these initiatives contribute to participation and empowerment which are essential factors in pro-equity health policies (WHO, 2010).

The final section of this discussion will look at health education and types of social support offered in the study site.

5.3.2 Bridging the Gap: Health Education and Types of Social Support

The results indicated that there are many patients with NCDs at the clinic who experience food insecurity. Through providing health education that is culturally and financially appropriate, Participant 13, the dietitian, was able to provide tailored advice for patients to address their nutrition to support chronic illness needs, as tailored nutrition assistance aids in chronic disease management and a reduction in medication increases. Extended periods of food insecurity lead to NCDs like diabetes, obesity and kidney disease (Scher et al., 2022). This connection is further impacted by coping strategies such as delaying or skipping medical care, rationing food, and consuming nutrient-poor foods which lead to malnutrition and worsening health conditions (Sher et al., 2022).

However, the challenge that arose was the two month waiting list to see the dietitian for this tailored advice, compounded with CHW training insufficiency to address patients' individualised needs as identified in the earlier theme, 'nutrition training sufficiency'. This issue is concerning as addressing NCD risk factors such as diet is seen as the most effective way to address NCD management (Kim et al., 2013).

Within the social service space, community champions provided different workshops centered around health education. Due to a previous research project on childhood nutrition within the community, community champions attended workshops on the importance of breastfeeding and childhood nutrition. Through seeing the positive impacts of these workshops on their own children's health, and identifying the need for other mothers in the community to receive the same guidance due to limited clinic resources, they began to run breastfeeding workshops in the community. This outcome identifies the role that health education has in fostering community engagement and support in managing health outcomes. Children raised in low-income and poorly resourced areas often experience micronutrient deficiencies which have long-term effects on their health and cognitive growth. Therefore health-education initiatives on breastfeeding and nutrition are crucial for enhancing child nutrition during the first 1,000 days of life (Development Bank of South Africa, 2008). Additionally, the challenges faced by Participant 2, a community champion, in accessing quality food due to poor storage conditions in local spaza shops, highlighted the importance of health and food safety education to advocate for better conditions in the community. The community champions now run programmes with local shops and street vendors on safe food preparation and storage.

CHWs at NGO1 also provided patients with health education. They provided one-on-one health education on TB prevention and HIV. This finding aligns with the broader literature, which identified that, CHWs provide health education on different topics, including HIV/AIDS, which highlights the critical role CHWs play in addressing social barriers to healthcare outside of the clinic setting (Nxumalo et al., 2016). These findings emphasise the importance of a systems approach to health, where the intersection between health, education and social protection are understood to provide holistic care (UNICEF, 2020).

In addition to available health education for patients, different types of social support offered in the community were discussed. NGO1 offered food aid through food parcels and their soup kitchens, and CHWs collected and delivered full containers of food to patients who could not access the soup kitchens. In addition to food aid and one-on-one health education and counselling, they ran a moms and tots group, had in-house social workers, they ran life skills workshops, first thousand days workshops, and held farmer days where community members could purchase affordable, locally produced produce. The social worker

organisation supports disabled community members and provides food aid through their soup kitchen and community garden. These findings are important as social protection has been shown to enhance HIV prevention, support treatment adherence, improve healthcare access, and empower women while tackling the structural inequalities that contribute to the HIV epidemic (Asaki et al., 2011; UNAIDS, 2010).

The three most frequently mentioned support programmes run by the community champions were their breastfeeding workshops, group for young men, and nutrition education for patients with chronic illnesses. They also ran a community garden initiative and a soup kitchen, among other programmes like life skills for children. This aligns with the broader literature, which identifies that by recognising social protection gaps, women in low-resourced areas have created their own programmes to address socio-economic barriers faced by community members and to develop a more effective social support system. These community-driven efforts are incredibly important for addressing localised needs, and contribute to broader, more inclusive views on social protection (Asaki et al., 2011). Although the support options offered by these three organisations were extensive, and despite running similar programmes, there was a lack of communication or collaboration seen between the three organisations.

These findings tie into the SDOH framework, as shown in figure 13, as the health sector is able to address health inequalities through things like support groups and social support, which reduce vulnerability to health effects and exposures. Additionally, the health sector can reduce inequality levels among impoverished individuals by mediation factors such as the impact of nutrition on health (WHO, 2010).

5.4 Conclusion and Recommendations

In summary, this study highlights the multifaceted social and structural barriers patients face to equitable healthcare access, as perceived by healthcare workers and community workers. This chapter highlighted the systemic challenges that arise from inadequate nutrition training, limited community resources, and an overstretched and understaffed clinic. These barriers not only impact the quality of care provided but perpetuate a cycle of health inequalities. Although practitioners are aware of the SDOH patients face, they do not have the structural mechanisms to address the root issues of medication non-adherence. Notably, while the

health and social systems are working together in this case study, they do not have resources from their systems to create robust multi-sectoral collaboration. To effectively address these issues, a collaborative approach to healthcare is essential.

Empowering healthcare workers with the necessary training, resources and staff would enable them to better understand and respond to the socio-economic factors impacting patients. Therefore more research needs to be done on the impacts of social and structural barriers to medication adherence and the role hunger plays in resource-constrained areas, as well as the impact a multi-sectoral approach would have on improving the SDOH that present as barriers to equitable healthcare access. These recommendations aim to bridge the gaps identified in this study to promote equitable healthcare access and improved health outcomes for vulnerable populations.

Chapter 6

Conclusion

This study aimed to understand the barriers food-insecure patients face when accessing healthcare by investigating the perspectives of healthcare and community workers. Additionally, it aimed to understand how the clinic and social services work together to address these gaps. Based on the findings, it can be concluded that community members face multiple barriers to care, such as food insecurity, socio-economic factors, and stigma. Additionally, it can be concluded that collaboration is seen through referral pathways, which are used to connect food-insecure patients to community services. Additionally, the study has uncovered the systemic constraints faced by the healthcare and social service sectors.

Furthermore, this study has highlighted the complexity of equitable healthcare access in a resource-constrained environment which has experienced historical inequalities and rapid urbanisation. The findings have shown that socio-economic issues such as food insecurity, income poverty, unemployment, inability to work due to illness, ineffective grant systems and stigma all impact patients' adherence to TB and HIV treatment. This result came from the perspectives of healthcare practitioners and social service workers, and therefore addresses objective one of the study, which looked to understand their perspectives on the barriers patients face to healthcare.

Objective two looked to understand the impact of healthcare worker and social service workers knowledge, attitudes, and perceptions on providing holistic care for food-insecure patients. The study found that due to a lack of introduction to the socio-economic climate and available resources in the community practitioners had to seek this information on their own, which impacted practitioners feeling supported by the health system and patients access to community resources. The study also found that healthcare practitioners and social service workers knowledge on nutritional care were minimal, which impacted their ability to provide holistic care. Additionally, making dietary recommendations for food insecure patients posed as a challenge.

Objective three looked to understand what referral pathways practitioners used if they could not address patient needs. The results showed that although referral pathways were seen between the clinic and social services, they were impacted by practitioner knowledge, and communication gaps between organisations. Furthermore the findings illustrated that although there is extensive research on the impacts of food insecurity on medication adherence in TB and HIV patients, and on the importance of social support structures to mitigate against social issues being a barrier to healthcare, patients in resource-constrained areas still struggle to access equitable healthcare. This remains a challenge even in the presence of auxiliary workers, due to a lack of resources and overstretched healthcare staff and compounding health issues and resource constraints. The additional findings in the theme ‘Bridging the Gap’ unpacked the availability and knowledge of support groups, health education and types of social services, which tied into addressing objective three.

This study has used the application of two widely recognised conceptual frameworks, UNICEF’s Systems Approach to Nutrition and WHO’s SDOH framework, as theoretical lenses within the context of public healthcare access and food insecurity in South Africa. By using UNICEF’s systems-thinking framework, this study highlights the interconnectedness of multiple systems, namely, food, healthcare, education, and social protection, and their collective impact on medication adherence and health outcomes. Through the use of this framework, this study shows how food insecurity, when viewed through a systems lens, emerges as both a consequence of structural failures and a key determinant of poor health outcomes in managing TB, HIV, malnutrition and NCDs. This approach aligns with

UNICEF's conceptual framework by shifting the narrative of treating malnutrition as an isolated issue to understanding it as a consequence of systemic interdependencies.

The use of WHO's SDOH framework within a single case study expands on its relevance through linking intermediary determinants, such as material circumstances, psychosocial conditions, and health system access, with lived experiences of food-insecure patients from the perspective of healthcare and community workers who serve their community.

Therefore this study contributes to the literature by illustrating how these determinants of health manifest in a real-world setting where limited access to nutritious food, among other barriers, exacerbates medication non-adherence and poor disease management. Additionally, the study underscores the role of structural determinants of health, such as systemic inequalities like under-resourced and over-subscribed clinics and social service organisations, and social hierarchies which perpetuate health disparities. It therefore aligns with the SDOH framework's emphasis on addressing health inequalities through a social justice lens.

A key contribution of this study was the integrative application of these two frameworks to a localised, context-specific problem. This integration contributes to a more holistic understanding of how systemic and structural barriers intersect, while acknowledging that multi-sectoral collaboration is needed to provide practical pathways to identify and address these complex issues. By bridging these frameworks, this thesis highlights the importance of auxiliary workers and social support systems as vital mechanisms to mitigate the impact of food insecurity on healthcare access and outcomes, while acknowledging the structural issues they face in trying to mitigate the impact of food insecurity.

This study also identifies a need for more robust nutrition training for healthcare workers, aligning with global research, and robust communication channels between clinics and social support services. However, it acknowledges that while healthcare workers in this site are aware of the social determinants impacting patients, and do utilise systems collaboration, they are constrained by systemic barriers. This study contributes to the literature by providing a case study which highlights the need for a shift of focus from individual behaviours to understanding the impact of systemic and structural factors that shape healthcare access in food-insecure communities. Additionally this study contributes to the growing body of knowledge that advocates for the incorporation of food security and an SDOH understanding

into public healthcare strategies, particularly in areas with high burdens of TB, HIV, and NCDs.

In summary, this thesis extends the theoretical utilisation of these two conceptual frameworks by situating them within the South African context, offering both a localised perspective and broader implication for global health research in low-resourced areas.

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