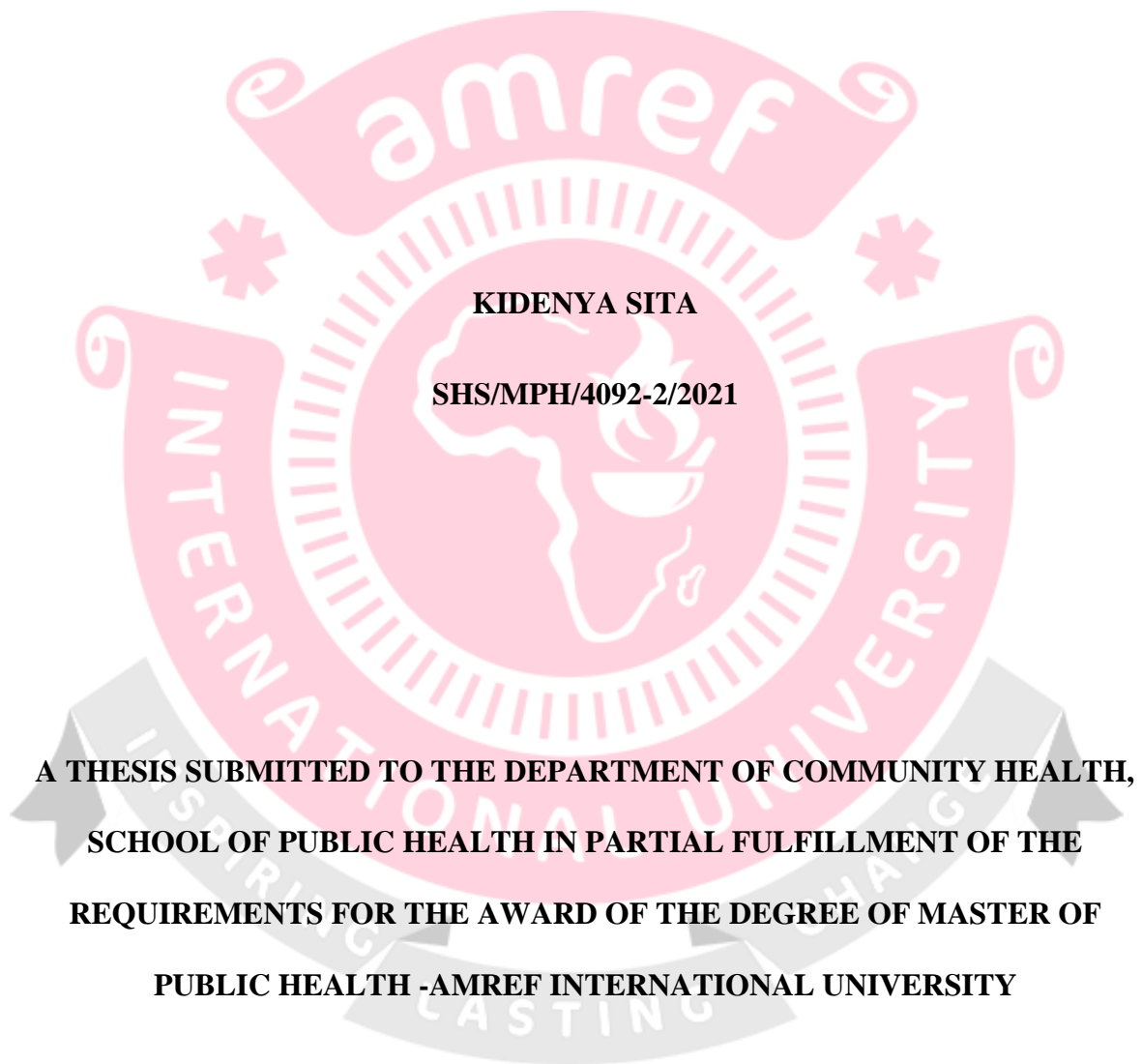


**FACTORS CONTRIBUTING TO DEFAULTING ON ANTIRETROVIRAL
THERAPY AMONG PEOPLE LIVING WITH HIV IN SELECTED HEALTH
FACILITIES IN MASWA DISTRICT, TANZANIA**



KIDENYA SITA

SHS/MPH/4092-2/2021

**A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH,
SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF
PUBLIC HEALTH -AMREF INTERNATIONAL UNIVERSITY**

JULY 2025

DECLARATION AND APPROVAL

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This thesis is my original work and has not been presented for a degree in any other university or any other award.

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DEDICATION

To my beloved family, whose unwavering support and endless encouragement have been the cornerstone of my journey. Your love, patience, and faith in me have been my guiding light, giving me strength and hope through every challenge and success encountered during this research project. Without your constant presence and belief in my abilities, this achievement would not have been possible.

This work is dedicated to you.



ABSTRACT

Background: Retention in antiretroviral therapy (ART) is essential for achieving viral suppression and improving health outcomes among people living with HIV (PLHIV). However, ART default remains a significant challenge, particularly in resource-limited settings such as Maswa District, Tanzania. This study aimed to identify the factors contributing to ART default among PLHIV attending selected healthcare facilities in the district.

Methods: A cross-sectional study with a mixed-methods retrospective approach was conducted. Quantitative data were extracted from electronic medical records of 2,602 HIV-positive individuals who initiated ART between January 2020 and December 2022. Descriptive statistics and inferential statistics were conducted. Analysis, were conducted using SPSS version 25 to determine predictors of ART default. Qualitative data were collected through in-depth interviews (IDIs) with nine ART clients and key informant interviews (KIIs) with five healthcare providers. Thematic analysis was performed to explore barriers and enablers of ART retention.

Results: The ART default rate was 22.8%. Quantitative analysis identified key predictors of default, including older age (above 35 years), marital status (divorced or separated, advanced disease stage at enrollment (WHO Stage 4), and unsuppressed HIV viral loads. Clients in these categories had significantly higher odds of discontinuing ART compared to their counterparts. Qualitative findings from IDIs revealed that stigma, lack of ART knowledge, financial constraints, and long distances to health facilities were major barriers to ART retention. KIIs with healthcare providers highlighted challenges such as inadequate staffing, high patient loads, and inconsistent follow-up mechanisms. However, both ART clients and healthcare providers emphasized that social support from family and community members, timely linkage to care, and integrated healthcare services were key facilitators of retention.

Conclusion and Recommendations: Findings underscore the need for targeted interventions to improve ART retention. Strengthening patient education, implementing stigma-reduction programs, and integrating ART services into primary healthcare can enhance adherence. Healthcare providers should adopt individualized adherence support strategies, while policymakers should focus on system-wide improvements to streamline ART service delivery. Further research should explore long-term retention trends and evaluate the impact of tailored interventions to reduce ART default and improve treatment outcomes in Tanzania.

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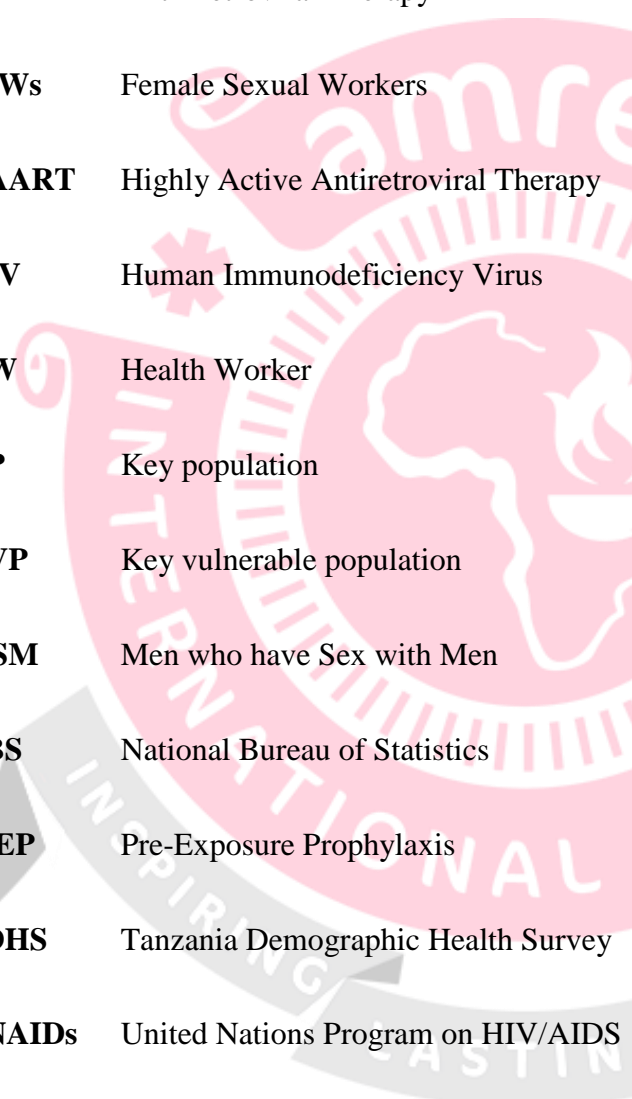


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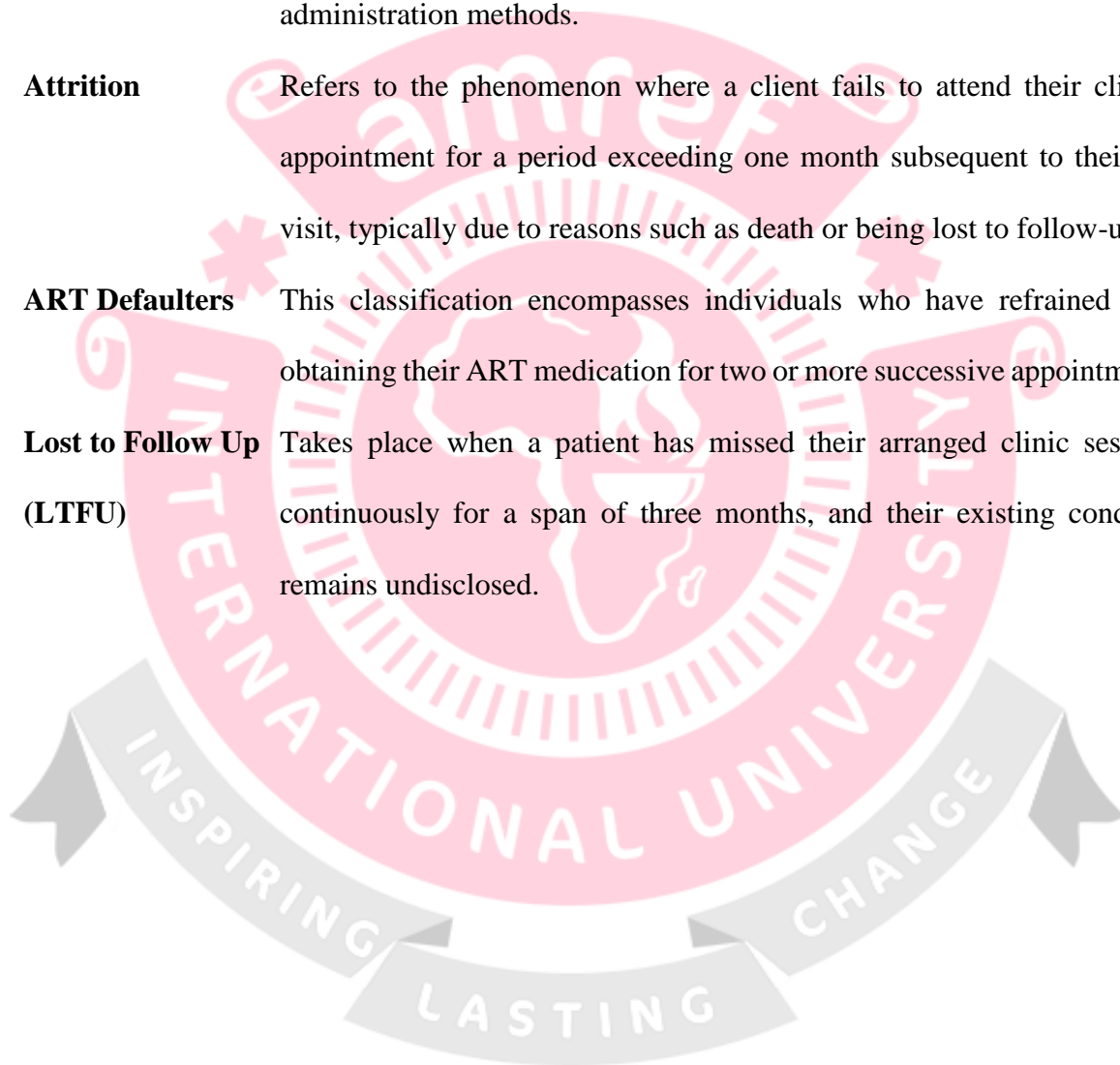
LIST OF ABBREVIATIONS



AIDS	Acquired Immunodeficiency Syndrome
AMIU	AMREF International University
ART	Anti-Retroviral Therapy
FSWs	Female Sexual Workers
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
HW	Health Worker
KP	Key population
KVP	Key vulnerable population
MSM	Men who have Sex with Men
NBS	National Bureau of Statistics
PrEP	Pre-Exposure Prophylaxis
TDHS	Tanzania Demographic Health Survey
UNAIDS	United Nations Program on HIV/AIDS
VL	Viral Load
WHO	World Health Organization

OPERATIONAL DEFINITIONS

- Adherence** Refers to the alignment between a patient's actions and the healthcare recommendations they receive. It entails the proper utilization of medications, adhering to prescribed schedules, dosage amounts, and administration methods.
- Attrition** Refers to the phenomenon where a client fails to attend their clinic appointment for a period exceeding one month subsequent to their last visit, typically due to reasons such as death or being lost to follow-up.
- ART Defaulters** This classification encompasses individuals who have refrained from obtaining their ART medication for two or more successive appointments.
- Lost to Follow Up (LTFU)** Takes place when a patient has missed their arranged clinic session continuously for a span of three months, and their existing condition remains undisclosed.



CHAPTER 1: INTRODUCTION

1.1 Overview

This chapter provides the basic information related to the major themes of the study such as background to the problem, statement of the problem, research objectives, and research questions, significance of the study and organization of the dissertation.

1.2 Background of the Study

The issue of defaulting on antiretroviral therapy (ART) among people living with HIV (PLWHIV) represents a significant global and local public health challenge. ART is a cornerstone of HIV management, enabling individuals to achieve viral suppression, improve their quality of life, and reduce the risk of HIV transmission. However, defaulting on ART undermines these outcomes, leading to increased risks of drug resistance, disease progression, and further HIV transmission. This poses a substantial obstacle to meeting global and national targets, such as the UNAIDS 95-95-95 goals, which aim to ensure that 95% of PLWHIV know their status, 95% of those diagnosed receive ART, and 95% of those on treatment achieve viral suppression by 2030 (UNAIDS, 2023; WHO, 2023). Addressing the factors contributing to ART defaulting is therefore critical for improving retention rates and ensuring the success of HIV treatment programs.

Over the past decade, significant progress has been made in increasing the availability of HIV preventive measures and essential ART in resource-limited regions. This progress has led to a notable decrease in new HIV cases and a reduction in health complications and deaths attributed to HIV (UNAIDS, 2021; WHO, 2020; National AIDS Control Programme, 2020).

The HIV Care and Treatment Surge framework provides a comprehensive understanding of the various stages of care for PLWHIV, including diagnosis, linkage to care, active participation in care, sustained engagement, initiation of treatment, and achieving viral suppression (Haberer, 2022, Fox & Rosen, 2015). Despite these advancements, research shows that many PLWHIV disengage from care within the first few years of starting treatment (Haberer et al., 2017). Retention rates vary across different settings, with 12-month retention ranging from 64% to 94%, and 60-month retention dropping to around 60% in resource-limited countries (Fox & Rosen, 2015). This highlights the persistent challenge of ensuring long-term engagement in HIV care, particularly in low- and middle-income countries.

Globally, HIV remains a major public health issue, with approximately 39 million people living with the virus in 2022 (UNAIDS, 2023). While ART access has expanded significantly, retention in care remains a challenge, particularly in Sub-Saharan Africa, which bears the highest burden of HIV. In high-income countries, retention rates are generally higher due to stronger healthcare systems and social support structures. However, in Sub-Saharan Africa, retention rates are much lower, with 12-month retention ranging from 64% to 94% and long-term retention dropping to around 60% (Fox & Rosen, 2015; WHO, 2023). These figures underscore the systemic and patient-level barriers that must be addressed to improve ART adherence in resource-limited settings.

In Tanzania, a significant burden of HIV persists. In 2020, an estimated 1.7 million people were living with HIV, with about 1.4 million receiving ART (National AIDS Control Programme, 2020). ART coverage among adults and children was around 82%, reflecting significant progress in scaling up treatment (National AIDS Control Programme, 2020). However, retention rates remain suboptimal, particularly in rural areas. For example, in

regions like Simiyu, where Maswa District is located, challenges such as transportation issues, stigma, and inadequate healthcare infrastructure exacerbate the problem (National AIDS Control Programme, 2021). This highlights the need for localized research to understand the specific factors contributing to ART defaulting in these areas.

The evolution of HIV treatment programs has shifted from merely increasing access to ART to addressing retention challenges as ART coverage expands. Governments, international organizations like WHO and UNAIDS, healthcare providers, and community-based organizations all play key roles in tackling ART defaulting. Despite their efforts, barriers like stigma, poverty, and healthcare system inadequacies persist. In Tanzania, for example, stigma remains a significant challenge to retention, with many PLWHIV fearing discrimination if their status is revealed (National AIDS Control Programme, 2021). Furthermore, transportation barriers and the long distances to healthcare facilities disproportionately affect rural populations, contributing to higher default rates.

Maintaining engagement in HIV care is crucial for maximizing the benefits of treatment, including monitoring treatment response, preventing HIV-related complications, and providing additional services (Haberer et al., 2017). Despite this, retention rates in HIV care are often suboptimal, with only 50-75% of HIV-positive individuals in the United States meeting national retention standards (CDC, 2019). The initial phases of ART therapy are high-risk periods for attrition, with studies reporting attrition rates of up to 21% within the first six months in low- and middle-income countries (Fox & Rosen, 2015; WHO, 2020). Understanding the factors contributing to attrition and poor retention is essential for developing sustainable strategies to improve retention rates. Factors such as demographic and clinical characteristics, patient-reported barriers like concerns about confidentiality, social

stigma, transportation challenges, and available support systems have been identified (Fox & Rosen, 2015; WHO, 2020; UNAIDS, 2021).

In Tanzania, the HIV epidemic has seen notable progress in recent years. The country has achieved significant milestones in ART coverage and viral load suppression. However, challenges remain in ensuring sustained engagement in care. The Tanzania HIV Impact Survey (THIS) 2022-2023 reported that 82.7% of adults living with HIV were aware of their status, 97.9% were on ART, and 94.3% had achieved viral load suppression (PHIA Project, 2024). Despite these achievements, retention in care remains a challenge, particularly in rural areas like Maswa District. A Tanzanian study highlighted defaulter rates ranging from 0.9% to 19%, with loss to follow-up (LTFU) and mortality as the primary causes (Mfinanga et al., 2017). A study in Simiyu Region identified transportation costs and lack of family support as major contributors to ART defaulting (National AIDS Control Programme, 2021).

ART defaulting presents a significant public health threat by undermining HIV treatment programs and increasing the burden on healthcare systems. Defaulting increases the risk of drug resistance, disease progression, and HIV transmission, negatively affecting individuals and burdening economies. In Tanzania, for example, managing advanced HIV disease is much costlier than providing routine ART (WHO, 2023). Furthermore, defaulting disproportionately impacts vulnerable groups, including women, children, and rural communities, deepening existing health inequities.

A situational analysis reveals that ART defaulting is influenced by a complex mix of individual and systemic factors. Patient-level barriers include stigma, lack of social support, and economic challenges. Systemic barriers involve insufficient healthcare infrastructure,

long distances to facilities, and medication shortages. In Maswa District, for example, PLWHIV often travel long distances to access ART, and frequent stockouts of medications discourage consistent adherence (National AIDS Control Programme, 2021). Addressing these challenges requires a comprehensive approach that strengthens healthcare systems, reduces stigma, and provides social and economic support to PLWHIV.

This study aims to investigate the factors contributing to ART defaulting among PLWHIV in Maswa District, Tanzania. By identifying these factors, the study seeks to inform targeted interventions to improve retention in care and enhance health outcomes for PLWHIV. The findings will contribute to the global effort to end HIV as a public health threat and ensure equitable access to treatment for all PLWHIV.

1.3 Problem Statement

Despite the transformative impact of antiretroviral therapy (ART) in turning HIV/AIDS into a manageable chronic condition, treatment discontinuation remains a significant public health challenge. Defaulting on ART compromises treatment efficacy increases the risk of drug resistance and contributes to higher rates of HIV transmission (Mills et al., 2014). In Tanzania, although ART coverage has expanded, retention in care remains suboptimal, with defaulter rates ranging from 0.9% to 19% (Mfinanga et al., 2017). This issue is particularly pronounced in rural areas like Maswa District, where inadequate healthcare infrastructure, lack of standardized appointment systems, and limited patient-tracking mechanisms exacerbate the problem (Fox & Rosen, 2015). If unaddressed, high default rates will continue to undermine the success of ART programs, increase healthcare costs, and hinder progress toward achieving the UNAIDS 95-95-95 targets.

Despite progress in understanding ART retention challenges in other regions of Tanzania, there is a notable lack of documented evidence on the predictors of ART defaulting in the Simiyu region, particularly in Maswa District. While existing studies identify factors such as stigma, transportation challenges, and poor healthcare infrastructure as contributors to attrition, these have not been thoroughly investigated in this specific context (UNAIDS, 2020). This study seeks to address this gap by identifying the determinants of ART defaulting among people living with HIV (PLHIV) attending care and treatment clinics in Maswa District. By doing so, it aims to provide actionable insights to improve retention rates and enhance the overall effectiveness of HIV treatment programs in the region.

1.4. Research Questions

- i. What is the proportion of individuals who default on ART among PLHIV receiving ART within 24 months after initiating treatment?
- ii. What are the underlying factors contributing to ART default among PLHIV within 24 months after initiating treatment?
- iii. What are the obstacles and enablers to retention among ART Clients Attending Care and Treatment Clinics in the Selected Health Facilities in Maswa District, North-Western Tanzania?

1.5. Research Objectives

1.5.1. Broad Objective

To determine the factors influencing ART default among clients attending Care and Treatment Clinics in selected health facilities in Maswa District, North-Western Tanzania, within 24 months of ART initiation.

1.5.2. Specific Objectives

- i. To determine the default rate among Clients Attending Care and Treatment Clinics in Selected Health Facilities in Maswa District, North-Western Tanzania.
- ii. To identify the predictors of ART default among Clients Attending Care and Treatment Clinics in Selected Health Facilities in Maswa District, North-Western Tanzania.
- iii. To investigate the barriers and facilitators to adherence and retention on ART among clients attending Care and Treatment Clinics in selected health facilities in Maswa District, North-Western Tanzania.

1.6 Justification of the Study

The findings of this study will provide new insights into the specific drivers of ART default in Maswa District, an area where previous studies have primarily focused on general healthcare challenges rather than a detailed analysis of ART adherence patterns. While ART default is a recognized issue in Tanzania, this study will uniquely identify the interplay between socio-demographic factors, healthcare system barriers, and psychosocial influences that contribute to non-adherence in this rural setting. Unlike previous studies that primarily quantify loss to follow-up, this research will integrate both quantitative data from electronic medical records and qualitative insights from patients and healthcare providers, offering a deeper understanding of the lived experiences of ART clients and the systemic gaps that hinder retention.

Additionally, by highlighting the role of specific factors such as entry through Voluntary Counseling and Testing (VCT), marital status, and advanced disease stage in ART default, this study will inform targeted interventions tailored to high-risk groups. The findings will

directly contribute to national HIV control strategies by providing evidence-based recommendations for strengthening ART adherence programs, enhancing counseling services, and integrating support systems within rural healthcare settings. Furthermore, this research will support Tanzania's efforts to achieve the UNAIDS 95-95-95 targets by addressing a key barrier to viral suppression treatment continuity. The study's comprehensive approach will ensure that its recommendations are practical and adaptable to similar rural contexts, making a valuable contribution to both policy and practice in HIV/AIDS management.

1.7 Significance of the Study

The findings of this study will contribute to a deeper understanding of ART adherence challenges and default rates among PLHIV in Maswa District, Tanzania. They will provide valuable insights into the key factors influencing ART default, including socio-demographic characteristics, healthcare system barriers, and psychosocial factors. These findings will benefit ART clients by informing interventions that address stigma, economic hardships, and healthcare access issues, ultimately improving treatment retention and health outcomes. Healthcare providers will be guided in strengthening adherence support mechanisms, patient follow-up strategies, and service integration. From a policy perspective, the study will highlight the need for targeted interventions such as community-based adherence programs, enhanced counseling services, and improved healthcare infrastructure to promote long-term retention. The practical implications will include optimizing ART service delivery, streamline patient monitoring, and integrate digital health solutions to improve adherence tracking. Furthermore, the findings will inform future research on long-term ART retention trends and intervention effectiveness, contributing to the overall improvement of HIV treatment programs in Tanzania.

1.8 Scope of the Study

This study was conducted in selected health facilities within Maswa District, North-Western Tanzania, a rural area characterized by limited healthcare access and a high burden of HIV. The study targeted adult HIV-positive clients aged 18 years and above who initiated ART between January 2020 and December 2022.

1.9 Assumptions

This study was guided by the following assumptions:

- i. Participants would provide accurate and honest responses during interviews, reflecting their real experiences with ART adherence.
- ii. The electronic medical records (EMR) system used to extract quantitative data contained comprehensive and accurate records of ART initiation, follow-up, and default trends for the study period.
- iii. Healthcare delivery practices across the selected health facilities were sufficiently standardized to allow for comparable analysis of ART adherence trends.
- iv. The study setting, representative of rural Tanzania, provides findings that are transferable to similar low-resource contexts in Sub-Saharan Africa.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter is about presenting the review of the related literature that has been drawn from different readings concerning adherence to antiretroviral treatment regime and retention to care and treatment. The chapter consists of theoretical review, empirical literature reviews, research gap and conceptual framework.

2.2 Theoretical Review

The Ecological Framework provides a useful theoretical lens for understanding the factors influencing ART default and retention among people living with HIV (PLHIV) in Maswa District, Tanzania. Originally developed by Bronfenbrenner, the model emphasizes the interaction between individuals and their environment, illustrating how health behaviors are shaped by multiple levels of influence. This framework is relevant in the context of ART adherence, as it allows for an exploration of barriers and facilitators at the individual, interpersonal, institutional, community, and policy levels. Studies in recent years have increasingly applied this model to assess ART retention, highlighting the need for multi-level interventions (Kalayu & Tomas, 2021; Uzochukwu et al., 2024). Given the persistent challenge of treatment discontinuation in Tanzania, this study employs the ecological framework to identify factors influencing ART retention and inform strategies to improve adherence among PLHIV in Maswa.

At the individual level, factors such as knowledge, beliefs, and attitudes toward ART influence adherence. Studies have shown that misconceptions about ART and low health literacy contribute to treatment interruptions (Moges et al., 2024). Interpersonal factors, including family and peer support, also play a critical role in retention. Research by Kimera et al. (2023) found that social support systems significantly impact ART adherence, particularly in rural settings where stigma remains a barrier. Institutional factors, such as clinic accessibility and healthcare worker attitudes, influence engagement in care. A study in Tanzania by Nyamhanga et al. (2017) emphasized the role of healthcare infrastructure and service quality in retention outcomes. At the community level, stigma and cultural beliefs continue to affect ART uptake, with recent research highlighting the need for community-driven interventions to address these challenges (Musheke et al., 2016).

Finally, policy-level factors, such as national ART guidelines and funding mechanisms, shape the broader landscape of HIV care. The UNAIDS 95-95-95 initiative remains a key policy driver, yet gaps in implementation persist, particularly in rural districts like Maswa (UNAIDS, 2023). By applying the ecological framework, this study seeks to provide a comprehensive understanding of ART default and inform targeted interventions to enhance retention in HIV care.

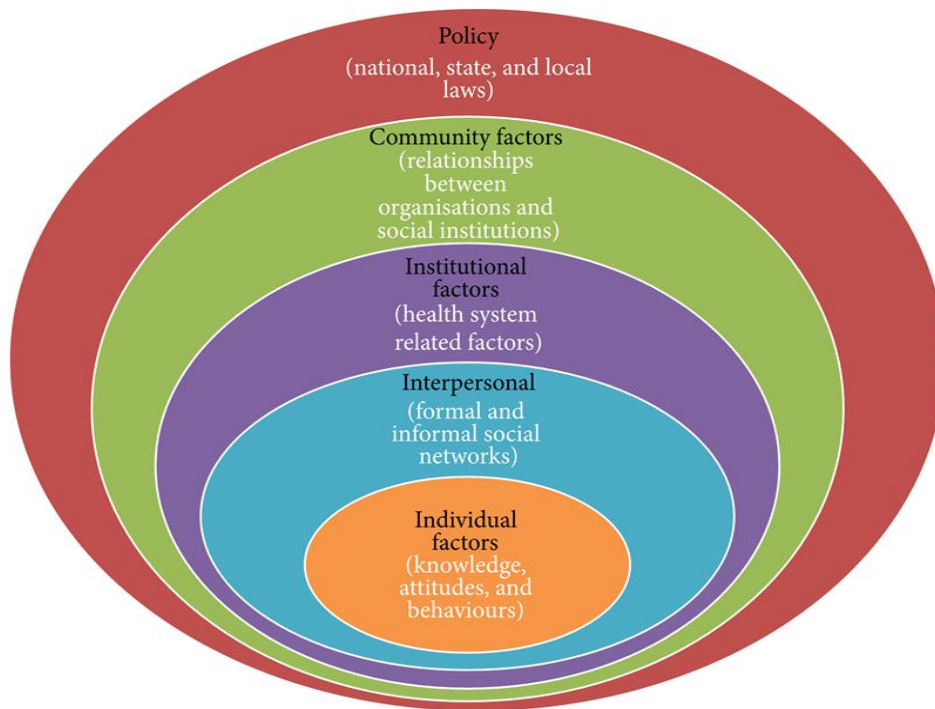


Figure 1: The Theoretical framework

2.3 Empirical Literature Review

2.3.1 Epidemiology of HIV and AIDS

The human immunodeficiency virus (HIV) infiltrates vital immune system cells, leading to profound impairment of the immune system's functionality, resulting in acquired immune deficiency syndrome (AIDS) (UNAIDS, 2023). HIV is detectable in bodily fluids and can be transmitted through sexual contact, blood exposure, and vertically from mother-to-child transmission. As of now, there exists no definitive cure for HIV infection.

Nevertheless, efficacious antiretroviral medications have the capability to suppress HIV replication, maintain strong immunity, delay progression to AIDS, avert transmission, and empower individuals living with HIV, as well as those at risk, to lead robust and fulfilling lives (Mills et al., 2023).

HIV/AIDS bears substantial economic and societal ramifications for families and healthcare systems across the globe. Since the inception of the epidemic, roughly 75 million individuals have contracted HIV, and approximately 32 million have succumbed to AIDS-related causes. By the end of 2022, an estimated 39 million people globally were living with HIV/AIDS, constituting 36.2 million adults and 1.7 million children under the age of 15 (UNAIDS, 2023). It is approximated that 79% of individuals with HIV are aware of their status, and during the year 2022, about 28.7 million people living with HIV were receiving antiretroviral therapy (ART) (WHO, 2023).

Sub-Saharan Africa (SSA) persists as the most heavily affected region, where nearly 1 out of every 20 adults (4.8%) resides with HIV, contributing to approximately 70% of global new HIV infections (WHO, 2023). In 2022, Eastern and Southern Africa encompassed 20.6 million individuals with HIV (57%), while Western and Central Africa accounted for 5.0 million (13%) (UNAIDS, 2023). Despite endeavors aimed at broadening ART coverage, there remains a necessity for vigilant monitoring of patient adherence to HIV care to optimize the benefits of ART.

Tanzania, located within Sub-Saharan Africa, grapples with a significant HIV prevalence. By the year 2022, estimations revealed that roughly 1,700,000 [1,600,000 - 1,900,000] individuals were HIV-positive in Tanzania, with 1,400,000 receiving ART. The coverage of ART for both adults and children was projected at 82% [77 - 90] (UNAIDS, 2023). While strides have been taken in extending ART coverage, curbing new infections, and diminishing HIV-associated mortality, progress remains gradual, underscoring the urgency to discern the factors exerting influence on non-retention within the HIV continuum of care.

2.3.2 The National Approach to HIV Care and Treatment

The national response to HIV care and treatment in Tanzania was launched in October 2003 with the introduction of the Plan for HIV/AIDS Care and Treatment for Tanzania Mainland. Implementation began in October 2004, with the goal of providing high-quality care and treatment to all individuals living with HIV in the country (Ministry of Health and Social Welfare, 2004). To achieve this, Care and Treatment Centers (CTCs) were established in public and private hospitals, health centers, and dispensaries across Tanzania. Tanzania was also the first country in Sub-Saharan Africa to introduce harm reduction programs and has expanded HIV testing services through provider-initiated testing and counseling (PITC) and community-based testing and counseling (CBTC). By 2021, over 1.4 million people living with HIV had been enrolled in ART, and more than 3,000 health facilities were registered to provide HIV care and treatment services (National AIDS Control Programme, 2021).

2.3.3 HIV Testing, Counseling, and Prevention Initiatives in Tanzania

Tanzania has made significant strides in expanding HIV testing services through various initiatives, including home-based testing, community-based testing, and provider-initiated

testing. The proportion of individuals living with HIV who were aware of their status increased from 64% in 2015 to 82% in 2021 (National AIDS Control Programme, 2021). The government has also introduced HIV self-testing, particularly targeting marginalized populations such as pregnant women and their partners, sex workers, and other key and vulnerable groups. Campaigns like *FurahaYangu!* have been launched to increase HIV testing rates among young men and adolescent boys (National AIDS Control Programme, 2021).

To reduce new HIV infections, Tanzania is implementing its fourth Health Sector HIV and AIDS Strategic Plan (HSHSP IV) for 2017–2022. This plan focuses on expanding access to combination prevention services for the general population and comprehensive prevention services for key populations, including adolescent girls and young women, female sex workers, men who have sex with men, people who inject drugs, prisoners, and migrant populations (Ministry of Health, 2017).

Efforts to prevent mother-to-child transmission (PMTCT) of HIV have also been intensified, with 91% of pregnant women attending antenatal services tested for HIV in 2021. However, only 47% of HIV-exposed infants received early infant diagnosis within eight weeks of birth, highlighting gaps in the PMTCT cascade (National AIDS Control Programme, 2021).

Challenges such as suboptimal antiretroviral drug regimens, medication stockouts, and poor treatment adherence continue to hinder progress in eliminating mother-to-child transmission.

In conclusion, Tanzania has made significant progress in expanding access to HIV testing, ART, and prevention services. However, challenges remain in retaining individuals in the HIV care continuum, ensuring high testing rates among key populations, and preventing mother-to-child transmission. Ongoing strategies, such as comprehensive prevention services and

integrated care approaches, aim to address these challenges and improve HIV care and treatment outcomes in Tanzania.

2.3.4 Antiretroviral Treatment Landscape in Tanzania

Tanzania has made significant strides in expanding its antiretroviral therapy (ART) programs, leading to a steady increase in the number of individuals accessing treatment since 2010. In 2017, Tanzania adopted the World Health Organization's (WHO) "test and treat" guidelines, which recommend immediate ART initiation for all individuals testing positive for HIV, regardless of their CD4 count or clinical stage (WHO, 2017). This policy shift has contributed to substantial progress in ART coverage, with 71% of people living with HIV (approximately 1.1 million individuals) receiving ART in 2018, marking a nearly 20% increase compared to 2015, when only 52% of HIV-positive individuals were on treatment (National AIDS Control Programme [NACP], 2018; UNAIDS, 2019). By 2021, ART coverage had further improved, with 82% of adults and 78% of children living with HIV receiving treatment (National AIDS Control Programme, 2021).

Following an HIV diagnosis in 2018, 90% of patients initiated ART within one week, demonstrating the effectiveness of the "test and treat" strategy. However, treatment access disparities persist, with a higher proportion of HIV-positive women (82%) accessing ART compared to men (57%) in 2018 (NACP, 2018). Similarly, ART coverage among children (ages 0–14) remains lower, with 65% of HIV-positive children on treatment in 2018, although this represents an improvement from 53% in 2015 (NACP, 2018). Retention in care after one year of treatment was high, with over 95% of individuals remaining engaged in care in 2018

(NACP, 2018). By 2021, retention rates had stabilized at 94%, reflecting sustained efforts to improve adherence and reduce attrition (National AIDS Control Programme, 2021).

Retention in care is strongly correlated with viral suppression rates. In 2018, viral suppression rates were comparable among men (86%) and women (89%), with 87% of individuals on treatment achieving viral suppression (TACAIDS, 2018). However, the overall viral suppression rate across the HIV population was 62%, highlighting gaps in testing and linkage to care (TACAIDS, 2018). By 2021, viral suppression rates had improved, with 94% of individuals on ART achieving viral suppression, although challenges remain in ensuring universal access to testing and treatment (National AIDS Control Programme, 2021).

Despite these achievements, regional disparities in linkage to care persist. For example, a study in Mbeya found that only 28% of newly diagnosed HIV patients were successfully linked to care, primarily due to underfunded and disorganized healthcare services, as well as pervasive HIV-related stigma (Shayo et al., 2019). Similar challenges have been reported in other regions, underscoring the need for targeted interventions to improve linkage and retention in care.

The Tanzanian government has also taken steps to improve the quality of ART by phasing out harmful medications such as stavudine and transitioning to fixed-dose combinations, which simplify treatment regimens and improve adherence (Ministry of Health, 2020). However, the prevalence of pre-treatment and acquired drug-resistant HIV remains a concern. While some studies suggest that drug resistance is not yet a significant public health issue in Tanzania, others highlight the need for continued vigilance and monitoring to prevent the emergence of resistant strains (National AIDS Control Programme, 2021).

In conclusion, Tanzania has made remarkable progress in expanding ART access and improving treatment outcomes. However, challenges such as gender and age disparities in treatment access, regional variations in linkage to care, and the potential emergence of drug resistance highlight the need for continued efforts to strengthen the HIV care continuum. Addressing these challenges will be critical to achieving the national and global targets for HIV control and ensuring equitable access to treatment for all individuals living with HIV in Tanzania.

2.3.5 Retention of Patients in HIV Care

Tanzania has embraced diverse strategies to surmount challenges encountered in attaining optimal adherence to HIV treatment. These endeavors encompass the proactive involvement of the healthcare team, wherein every interaction with clients is perceived as an occasion for reinforcement.

Robust linkages between facility-based and community-based HIV services have been solidified, fostering a resilient mechanism for monitoring clients. This approach effectively detects and addresses reasons behind missed appointments and instances of loss to follow-up among individuals undergoing antiretroviral (ARV) therapy. Supplementary actions encompass the integration of lay counselors in client tracing, the establishment of community-based ART outreach initiatives in remote regions, and the extension of clinic hours during weekends and evenings to augment service accessibility (Gafos et al., 2017).

Tanzania has proactively taken measures to tackle challenges and enhance treatment adherence, demanding the full engagement of the healthcare team, as each interaction with clients serves as an opportunity for reinforcement. Forging connections between facility-based

and community-based HIV services has been instituted to establish a robust framework for client tracking, thereby facilitating the identification and resolution of issues linked to missed appointments and loss to follow-up for individuals under ARV medication. The utilization of lay counselors for client tracing, the introduction of community-based ART outreach initiatives in remote regions, and the expansion of clinic hours beyond regular working times, encompassing weekends and evenings, all contribute to heightened accessibility to services (Gafos et al., 2017).

Research studies have shed light on notable attrition rates across the HIV care continuum, posing challenges to the enduring effectiveness of ART programs (Baveewo et al., 2019). An examination of 37 studies conducted in sub-Saharan Africa unveiled that among individuals aware of their HIV status, a mere 57% completed assessments for ART eligibility, with 66% of those eligible initiating ART and 65% of those commencing treatment sustaining their ART regimen. Clinical data gleaned from sub-Saharan Africa reflected retention rates of 76.8% after the initial year of ART initiation, gradually diminishing to 52.1% after a five-year span (Bailey et al., 2018).

In the context of Malawi and South Africa, retention rates for pregnant and breastfeeding women, following option B+ programs, ranged from 74.8% to 82% over a span of six months to one year (Stover et al., 2019). Similar patterns were discerned in Uganda, where retention rates stood at 79%, 70%, and 56% at 1 month, 3 months, and 6 months, respectively (Mugisha et al., 2017; Baveewo et al., 2019).

In Kenya, national statistics reveal that retention rates for all individuals known to be on ART and living with HIV are 81% at 12 months, 73% at 24 months, and 65% at 60 months

(UNAIDS, 2019). However, within a Kenyan prevention of mother-to-child transmission (PMTCT) program adopting the option B+ approach, only 77% of pregnant women remained engaged in care up to the point of delivery (UNAIDS, 2019). In Tanzania, further investigation unveiled a gradual rise in attrition among individuals living with HIV who initiated ART, with attrition rates of 26% at six months and 41% at both 12 and 24 months (TACAIDS, 2018).

The concept of retention in HIV care encompasses an ongoing continuum of engagement, beginning from the initial step of accessing care, encompassing eligibility assessment, ART initiation, and persistently maintaining care throughout one's lifetime (Shayo et al., 2019). This care continuum is paramount for achieving favorable HIV treatment outcomes and holds significant public health implications (Gafos et al., 2017).

While a universally accepted measurement standard for retention in care is lacking, it remains a pivotal indicator within HIV programs. Adherence to therapy profoundly influences patient retention, yet this facet has received limited attention, especially within East African nations. The expansion of ART is pivotal to enhance survival rates among individuals living with HIV/AIDS in developing countries, emphasizing the enduring significance of upholding patient retention within treatment programs (UNAIDS, 2019)

2.3.6 Factors Influencing Attrition from Care Among PLWHIV

One of the foremost challenges encountered by national ART programs pertains to elevated attrition rates, primarily stemming from mortality or loss to follow-up (LTFU). A study conducted in Tanzania highlighted death and LTFU as the prevailing forms of attrition, possibly influenced by the inadequacies of a fragile vital registration system and insufficient

community health infrastructure for client tracking and referrals. LTFU has also been associated with unreported deaths in other research endeavors (Kavishe et al., 2015).

Moreover, individuals designated as LTFU or deceased occasionally undertake self-transfers to alternate medical facilities, further complicating accurate reporting. The lack of a functional vital registration system within the country might contribute to the underreporting of mortality incidents. Numerous predictors of attrition have been identified, encompassing factors such as low initial CD4 T-cell counts, diminished baseline BMI, a history of hospitalization, advanced WHO clinical staging, older age at the time of HIV diagnosis, and male gender. Additional studies carried out in the region have pinpointed anemia, diminished platelet and red blood cell counts, as well as other health indicators, as risk factors for mortality within the initial year of commencing ART (Nguyen et al., 2021).

In both urban and rural settings, individuals living with HIV (PLHIV) frequently seek care and treatment services distant from their residential areas, presenting challenges in monitoring their involvement in care. Research conducted in Tanzania and Malawi has emphasized the complexities of locating individuals who have become lost to follow-up (LTFU) within the community. Some clients provide false contact information, including inaccurate physical addresses and phone numbers, which further impedes efforts to establish contact. Extended distances to treatment facilities, limited access to free supportive medical services, and inadequate food supplies were identified as supplementary obstacles to the continuation of treatment in Iringa, Tanzania.

These impediments, in conjunction with HIV-related stigma, collectively contribute to the intricacies of sustaining individuals in care within Tanzania and other sub-Saharan African

contexts (Kilimani et al., 2018). The determinants that influence the continuation of care closely mirror those affecting the adherence to antiretroviral therapy (ART) (Kariuki et al., 2016). When patients are not consistently retained in care, maintaining a steady regimen of medication adherence becomes a challenge, underscoring the pivotal role of care retention for achieving favorable treatment outcomes. The inability to attain sustained retention in care and adherence to ART may result in suboptimal viral suppression, heightened susceptibility to drug resistance, and increased rates of HIV transmission, ultimately contributing to escalated levels of illness and mortality (Cohen et al., 2017).

Obstacles obstructing retention in care and medication adherence can also exert broader repercussions, including diminished individual earnings, reduced economic productivity on a national scale, extended hospital stays, and a heightened demand for more costly second and third-line ART medications. The assurance of sustained retention in care and unwavering medication adherence assumes critical significance in attaining optimal outcomes for both individual well-being and public health within the realm of HIV care interventions (Kavishe et al., 2015).

2.4 Identification of Knowledge Gap

Despite significant progress in addressing HIV care and treatment programs in Tanzania and sub-Saharan Africa, there remains a notable gap in understanding the factors influencing retention in care and attrition from HIV treatment programs. While several studies have identified common barriers, such as stigma, distance to health facilities, and inadequate community health infrastructure (Kavishe et al., 2015; Kilimani et al., 2018), the influence of

certain socio-economic factors, such as employment status, food insecurity, and the role of family support systems, requires further exploration.

Additionally, while there is a general understanding of how clinical markers, like CD4 T-cell counts and BMI, impact attrition (Nguyen et al., 2021), less attention has been given to the psychosocial and behavioral factors influencing retention in care, such as mental health, substance abuse, and social support networks. Existing literature does not comprehensively address the nuanced intersection of these factors and their compounded effect on individuals' ability to remain in care.

Moreover, while studies have highlighted the challenges of maintaining contact with clients lost to follow-up (LTFU) in rural and urban settings (Kavishe et al., 2015), there is limited research on the effectiveness of various tracking mechanisms, including mobile health (mHealth) interventions, and their role in improving patient retention. Most interventions have focused on clinical outcomes but have not evaluated the long-term sustainability and cost-effectiveness of these tracking systems.

Recent studies have shown that socio-economic factors, such as employment status and food insecurity, significantly impact ART adherence and retention. For instance, Siefried et al. (2017) found that socio-economic factors like housing stability and financial support were crucial determinants of ART adherence. Similarly, Okunola et al. (2018) highlighted the role of socio-cultural factors, including family support and community norms, in influencing ART adherence.

Psychosocial factors also play a critical role in retention in HIV care. Okonji et al. (2020) emphasized the importance of psychosocial support interventions, such as individual counseling and support groups, in improving ART adherence and retention among young people living with HIV. These interventions address mental health issues, substance abuse, and social support networks, which are often overlooked in existing literature.

Furthermore, the effectiveness of mHealth interventions in improving ART adherence and retention has been demonstrated in several studies. A meta-analysis by Sun et al. (2023) showed that interactive or bidirectional SMS significantly increased ART adherence. However, there is still a need for more research on the long-term sustainability and cost-effectiveness of these interventions.

This gap in research on the psychosocial, economic, and technological factors influencing attrition and retention presents an opportunity for further investigation. Addressing these gaps would provide a more comprehensive understanding of the drivers of attrition and inform more effective and tailored interventions to enhance retention in HIV care programs in Tanzania and similar contexts.

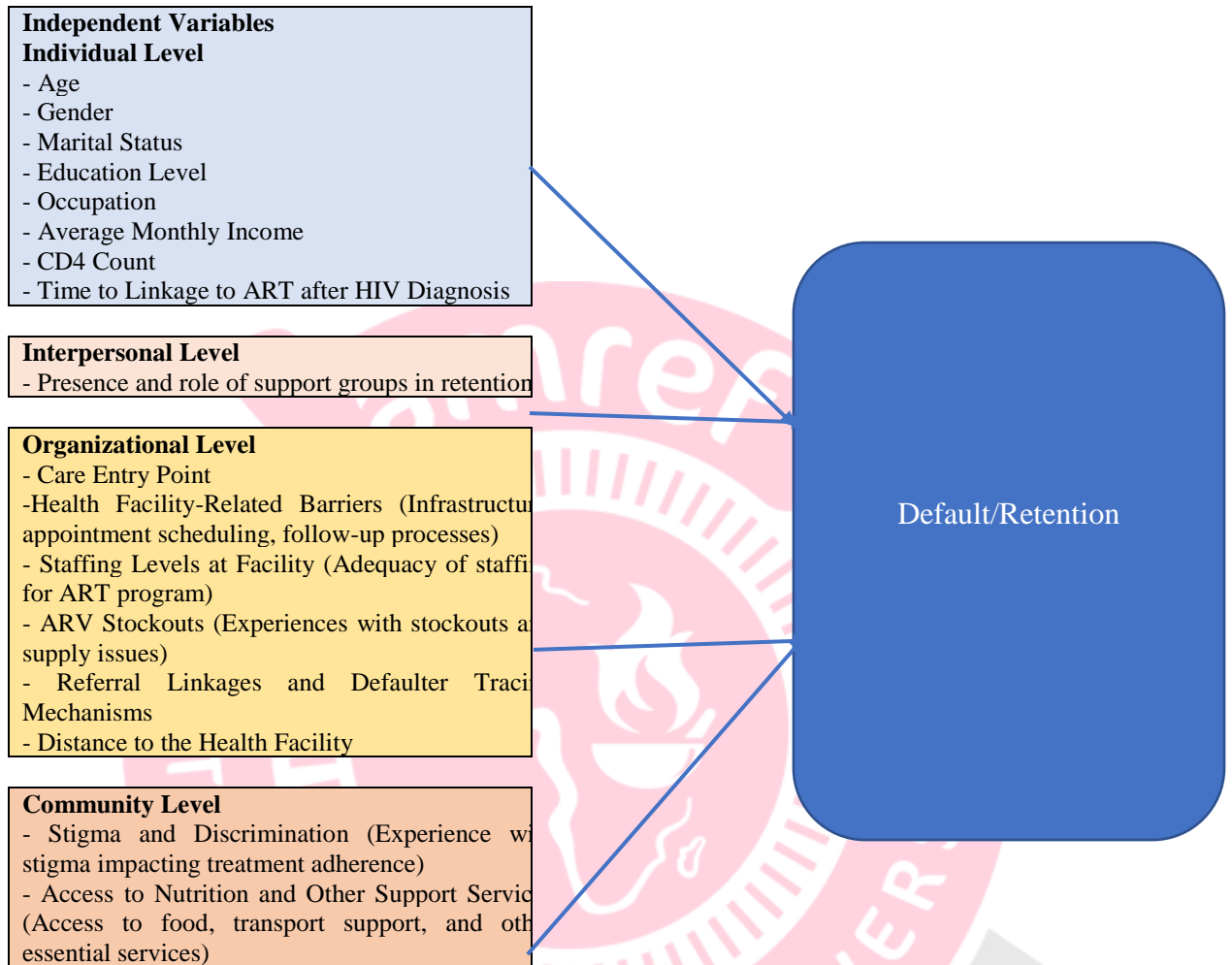


Figure 2: Conceptual Framework (adopted from social ecological model)

CHAPTER 3: METHODOLOGY

3.1 Introduction

This section describes the technique that was applied in this research. It describes the research area, study population, sampling techniques, sample size estimation, inclusion and exclusion criteria, data collection strategies, instrument validity and ethical considerations. It also describes the techniques for data processing and outcomes presentation.

3.2 Research Design

This study utilized a cross-section study design employing a mixed-methods approach to investigate factors contributing to ART defaulting among clients attending Care and Treatment Clinics (CTCs) in Maswa District, Tanzania. This design was chosen to analyze health outcomes among individuals initiated on ART over a defined period, assessing retention in care and identifying associated risk factors.

The quantitative component involved a retrospective review of medical records for all patients who initiated ART between January 2020 and December 2022. This method enabled the study to determine the proportion of ART defaulters, identify trends in treatment adherence, and analyze potential demographic, clinical, and facility-related factors influencing ART default. The qualitative component explored personal and structural factors influencing ART adherence through in-depth interviews (IDIs) and key informant interviews (KIIs). IDIs were conducted with HIV clients who had previously been lost to follow-up but were successfully reengaged in care, allowing for an in-depth understanding of barriers and facilitators to ART adherence.

KIIs were conducted with healthcare providers working in CTCs to gain insights into systemic challenges and intervention strategies for improving ART retention.

3.3. Study Area

The study was conducted within four primary Care and Treatment Centers (CTCs) situated in the Maswa District: namely, Maswa, Lalago, Mwasayi and Malampaka. The four facilities were selected using a purposive sampling approach to ensure representation of diverse healthcare settings in Maswa District. The selection criteria included facility-level classification (hospital, health center, dispensary), patient volume, availability of ART services, and geographic coverage. This approach ensured that the study captured variations in service delivery, patient demographics, and potential challenges affecting ART retention and default rates across different healthcare settings.

Maswa District is geographically positioned within the Simiyu Region of Tanzania and is predominantly inhabited by the Sukuma ethnic group (Nyantuzu People). It shares its boundaries with Magu District and Itilima District to the north, Meatu District to the east, Kishapu District to the south, and Kwimba District to the west. The administrative hub of the district is centered in Maswa town. Drawing from the 2022 Tanzanian National Census, the Simiyu Region's populace was recorded as 2,140,497, accompanied by a total of 289 healthcare facilities dispersed across the region. Among these establishments, 118 were equipped to offer care and treatment services, with 31 specifically situated within the confines of the Maswa District.



Figure 3: A map showing the location of Maswa district

3.4 Study Population

The study focused on three distinct populations:

1. Patients on ART (retrospective review of medical records): This included all HIV-positive adults who initiated ART between January 2020 and December 2022 at the selected CTCs.
2. Formerly lost-to-follow-up HIV clients (qualitative component): These were individuals who had previously been lost to follow-up (defined as missing ART for more than 90 days) but were later reengaged in care. They participated in in-depth interviews (IDIs) to provide insights into their experiences, challenges, and facilitators in ART adherence.

3. Healthcare providers (qualitative component): CTC staff with at least one year of experience in HIV care were recruited for key informant interviews (KIIs) to provide expert perspectives on factors affecting ART adherence and retention.

The study used the district's HIV care and treatment database to identify PLHIV who had experienced loss to follow-up and subsequently returned to care.

3.4.1 Inclusion Criteria

i. Patients on ART

HIV-positive adults (≥ 18 years) who initiated ART between January 2020 and December 2022 at the selected CTCs.

ii. Formerly lost-to-follow-up patients (for IDIs)

HIV clients who were previously lost to follow-up (≥ 90 days of ART interruption) but were successfully reengaged in care and had remained in care for at least one month prior to the study period.

iii. Healthcare providers (for KIIs)

Healthcare workers providing HIV care at the selected CTCs for at least one year.

3.4.2 Exclusion Criteria

i. Patients on ART:

- a. Individuals missing key medical records such as date of birth, gender, or retention status were excluded from the retrospective review.

- b. Patients who initiated ART before January 2020 or after December 2022 were excluded.
- c. Patients aged <18 years at ART initiation were excluded.
- ii. **Formerly lost-to-follow-up patients (for IDIs):**
 - a. Patients who returned to care but had been in care for less than one month prior to the study period were excluded.
- iii. **Healthcare providers (for KIIs):**
 - a. Healthcare workers with less than one year of experience in HIV care were excluded.

3.5 Sample Size

3.5.1 Sample size for Quantitative Sample (Retrospective Record Review)

In retrospective cohort studies, the sample size is typically determined by the pool of available data rather than being calculated to achieve a specific statistical power. Given the nature of this study design, the sample size was contingent upon the number of patients who initiated ART at the selected CTCs within the specified timeframe of January 2020 to December 2022. This timeframe encompassed the data available for retrospective analysis, and the sample was drawn from this existing pool of patient records.

While the sample size may not be calculated in the traditional sense, efforts were made to ensure that it is sufficient to provide meaningful insights into the factors associated with ART defaulting and retention among patients. The study aimed to achieve a minimum sample size using Kish-Leslie formula at a 95% confidence interval (CI) and a margin of error of 5%. To

determine the minimum sample size for this study, the Kish Leslie formula will be applied. This formula is suitable for situations where the population size is not well known and is designed to achieve maximum variability.

The formula is expressed as:

$$n = \frac{Z^2 \times p(1 - p)}{e^2}$$

Where:

n represents the sample size,

Z is the z-value (1.96 for a 95% confidence interval),

p is the estimated proportion of the population (0.5 for maximum variability),

e is the margin of error (0.05 for a 95% confidence level).

Applying the Kish Leslie formula to this study:

$$n = \frac{1.96^2 \times 0.5(1 - 0.5)}{0.05^2}$$
$$n = 385$$

Thus, the minimum sample size required for this study was approximately 385 respondents, ensuring that the sample adequately represents the population while minimizing bias.

3.5.2 Sample size for Qualitative Data (IDIs and KIIs)

Rahman (2016) asserted that “because qualitative studies aim to depict a variety of experiences rather than gather data for statistical analysis, qualitative research does not necessitate a sizable random sample” (p. 57). The sample size for qualitative research was determined by the investigation's objectives. The settings, people, and events expected to produce data rich in information regarding the issues were therefore carefully chosen (58).

The primary informants in this study continued to be sampled until data saturation was

reached. When new data stopped emerging throughout the data collection process, it was said that data saturation had occurred (58–60). Healthcare professionals were selected for the interview by deliberate sampling, nevertheless.

3.6 Sampling Techniques

3.6.1 Sampling Techniques for Quantitative data

Considering the retrospective nature of this study, a census sampling approach was employed to ensure the inclusion of all eligible patient records that met the study's inclusion criteria within the defined study period. Unlike probabilistic sampling techniques that rely on selecting a subset of the population, census sampling maximizes data completeness by capturing the entire population of interest, thus enhancing the study's statistical power and external validity. This approach is particularly advantageous in retrospective studies, as it minimizes selection bias and ensures that rare events or variations within the dataset are adequately represented. By analyzing all available records, census sampling enables a more precise assessment of ART defaulting patterns, risk factors, and treatment retention trends, ultimately leading to robust conclusions and evidence-based recommendations for improving HIV care and treatment services.

3.6.2 Sampling Techniques for Qualitative Sample

This study employed a purposive sampling technique to recruit participants for the qualitative component, ensuring diverse perspectives from both formerly lost-to-follow-up HIV clients and healthcare providers involved in HIV care. A total of nine HIV clients who had previously been lost to follow-up (missing ART for more than 90 days) but were later reengaged in care

were selected for in-depth interviews (IDIs) to explore their experiences, challenges, and factors influencing ART adherence. These individuals were selected based on varied demographic characteristics (e.g., age, gender, and facility of treatment) to ensure diverse perspectives.

Additionally, five healthcare providers with at least one year of experience in HIV care were recruited for key informant interviews (KIIs) to provide expert insights into barriers and facilitators of ART adherence and retention. Healthcare providers were selected based on their roles in HIV service delivery, ensuring representation from different cadres involved in patient care.

3.7 Data Collection

3.7.1 For Quantitative Data

This study utilized a retrospective cohort design, primarily relying on secondary data extracted from electronic medical records (EMRs) and patient files from Care and Treatment Clinics (CTCs) in Maswa District. The data collection process was structured to ensure accuracy, consistency, and relevance to the study objectives.

Electronic Medical Records (EMRs): The primary source of data was the EMR system maintained at the selected CTCs. Trained research personnel systematically accessed and extracted relevant records of people living with HIV (PLHIV) who initiated ART between January 2020 and December 2022. These records provided key demographic, clinical, and treatment-related information.

Specifically, **Designed Checklist Form:** A standardized data extraction checklist was developed to facilitate systematic retrieval of patient information. The checklist included key variables such as age, sex, education level, ART initiation date, adherence status, retention in care, history of treatment interruptions, and clinical indicators (e.g., CD4 count, viral load, presence of opportunistic infections, and comorbidities).

Treatment and Retention Outcomes: Data related to ART adherence, defaulting patterns, and re-engagement in care were extracted to assess trends and factors associated with treatment interruptions. Additional variables included duration of treatment gaps, reasons for missed appointments (if documented), and linkage to re-engagement programs. The structured approach to data collection ensured comprehensive documentation of ART uptake and retention trends, allowing for an in-depth analysis of factors influencing treatment adherence among PLHIV in Maswa District.

3.7.2 In-depth Interviews and Key Informant Interviews

The second method of data collection involved in-depth interviews (IDIs) and key informant interviews (KIIs) to gather qualitative insights from formerly lost-to-follow-up HIV clients and healthcare providers at Care and Treatment Clinics (CTCs) in Maswa District. A structured interview guide was developed based on a review of relevant literature and tailored to the specific study context. The guide focused on barriers to ART adherence, factors influencing retention in care, and experiences with treatment re-engagement. Demographic information of participants was collected separately.

Before full-scale data collection, the interview guide was pre-tested with a small subset of participants to ensure clarity, relevance, and appropriateness. Feedback from this process was incorporated to refine the questions and improve the effectiveness of the interviews in eliciting meaningful responses. In-depth interviews (IDIs) were conducted with nine formerly lost-to-follow-up HIV clients who had successfully resumed ART. These interviews aimed to explore their experiences, challenges, and motivations for returning to care. Key informant interviews (KIIs) were conducted with five healthcare providers from CTCs, including ART nurses, HIV treatment officers, PMTCT nurses, lay counselors, and CTC in-charges, to obtain expert perspectives on factors influencing ART adherence and retention.

Participants were purposively selected based on their experience with HIV care and their ability to provide valuable insights. Formal requests were sent to healthcare facility administrators to facilitate the identification and availability of key informants. All interviews were conducted in Kiswahili to ensure participants could express themselves comfortably.

To maintain confidentiality, interviews were held in private settings within healthcare facilities. Each session lasted approximately 45 to 60 minutes and was scheduled at convenient times to accommodate participants' availability. Trained research moderators facilitated the interviews, using probing techniques to explore key themes, while research assistants supported the process by taking notes and recording the discussions to ensure comprehensive documentation. This rigorous and systematic approach ensured the collection of high-quality qualitative data, providing a deeper understanding of ART adherence and retention challenges in Maswa District.

3.7.3. Study Variables

The dependent variable for this study was ART defaulting, defined as missing antiretroviral therapy (ART) for more than 90 days. This outcome variable measured whether a patient had interrupted treatment and was later re-engaged in care. The independent variables included sociodemographic factors (age, sex, education level, marital status, and employment status), clinical factors (duration on ART, WHO clinical stage, presence of opportunistic infections, and comorbidities), facility-related factors (availability of ART services, quality of counseling, and healthcare provider support), and psychosocial factors (stigma, social support, disclosure status, and substance use). These independent variables were analyzed to determine their association with ART defaulting, helping to identify key risk factors and barriers to ART adherence among People Living with HIV (PLHIV) in Maswa District.

3.8 Validity and Reliability of the Study

3.8.1 Validity

Content Validity: Content validity refers to the extent to which the items included in the study measure the concept they are intended to measure. To ensure content validity, the study's questionnaire was developed based on existing literature and expert consultation with professionals in HIV care and ART retention. Feedback from healthcare professionals, including doctors, nurses, and community health workers, was incorporated to ensure that the questions adequately covered all relevant factors influencing ART retention and attrition. Experts reviewed the items, and only those that were deemed highly relevant to the study objectives were retained.

Construct Validity: Construct validity ensures that the measures truly reflect the underlying theoretical concepts. In this study, a pilot survey was conducted with 25 participants prior to the main data collection. The results of this pilot survey showed strong correlations between the indicators of ART retention (such as perceived importance of adherence, family support, and access to healthcare services) and the dependent variable of retention. A factor analysis was performed on the responses to test for construct validity, revealing that the data could be appropriately grouped under the expected factors such as individual-level factors, interpersonal influences, and organizational factors. The Eigenvalues for the factors ranged from 2.5 to 5.2, confirming that the items were indeed measuring the constructs they were intended to.

Criterion Validity: Criterion validity was assessed by comparing the study's findings with previously published research on ART retention. The results of this study were found to align closely with existing literature regarding the role of individual characteristics, social support, and organizational factors in ART adherence. For instance, similar findings on the importance of support groups and access to healthcare services in retaining individuals on ART were observed in previous studies conducted in Tanzania and other Sub-Saharan African regions. The consistency with these studies supports the criterion validity of the instruments used.

3.8.2 Reliability

Internal Consistency: The reliability of the instruments used in this study was assessed using Cronbach's alpha, which measures the internal consistency of the items within each scale. The Cronbach's alpha coefficient for the entire survey was 0.89, indicating a high level of internal consistency. Specific subscales also demonstrated good reliability:

- i. **Individual-level factors:** Cronbach's alpha = 0.87
- ii. **Interpersonal-level factors:** Cronbach's alpha = 0.85
- iii. **Organizational-level factors:** Cronbach's alpha = 0.83 These values suggest that the items within each category are consistently measuring the same concept.

Inter-Rater Reliability: For the qualitative data gathered from interviews, inter-rater reliability was assessed by having two independent researchers code the interview transcripts. The agreement between the coders was measured using Cohen's Kappa, which yielded a value of 0.83, indicating substantial agreement between raters. This high level of agreement suggests that the qualitative data coding process was reliable.

Reliability Results:

- i. Cronbach's Alpha for the overall survey: 0.89 (indicating high internal consistency).
- ii. Cronbach's Alpha for **Individual Level Factors:** 0.87
- iii. Cronbach's Alpha for **Interpersonal Level Factors:** 0.85
- iv. Cronbach's Alpha for **Organizational Level Factors:** 0.83
- v. Inter-rater reliability (for qualitative coding): Cohen's Kappa = 0.83 (indicating substantial agreement).

3.9 Data Processing and Analysis

3.9.1 Quantitative Data Analysis

Data Management: All collected data from ART registers, the CTC2 database, and patient records were systematically reviewed for completeness and consistency immediately after extraction. Any missing or inconsistent entries were cross-checked and verified using

secondary data sources. The cleaned data were then coded and entered into SPSS Version 25, with double data entry performed to minimize errors. Any discrepancies identified during this process were resolved through cross-referencing with the original data sources.

To ensure confidentiality, all personally identifiable information was removed before analysis, and the anonymized dataset was stored in password-protected files accessible only to authorized members of the research team. Regular backups were maintained to prevent data loss, and all data handling procedures adhered to institutional and ethical guidelines.

Data Analysis: Quantitative data were analyzed using SPSS 25. Descriptive statistics were performed to summarize sample characteristics, with means and medians calculated for continuous variables and frequencies and percentages for categorical variables. To explore associations between demographic and clinical factors and ART defaulting or retention in care, cross-tabulations were conducted.

Chi-square tests were used to assess associations between categorical variables, while logistic regression analysis was employed to identify key factors influencing ART adherence. Both unadjusted and adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were reported to determine independent predictors of retention and defaulting. A p-value of < 0.05 was considered statistically significant. Findings were presented in tables and graphs for clarity, with key trends highlighted and discussed in relation to existing literature and programmatic implications.

3.9.2 Regression Analysis

A binary logistic regression model was used to explore how demographic, clinical, and healthcare system-related factors influenced ART default. The general equation for the logistic regression model was as follows:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \mu$$

Where:

Y = Probability of ART default

X1= Age (categorized into relevant groups)

X2 = Marital Status (married, single, divorced/separated)

X3 = Entry Point into Care (VCT, PMTCT, inpatient, etc.)

X4= Disease Stage at Enrollment (WHO Stage 1-4)

X5= Viral Load Suppression Status (suppressed vs. unsuppressed)

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Coefficients representing the effect of each predictor on ART default

α = Constant value

μ = Stochastic error term

3.9.3 Tests for Assumptions of Linear Regression

Ensuring that the data met the assumptions of the classical linear regression model was critical for the validity of the study's findings. The following diagnostic tests were conducted to assess these assumptions:

1. **Normality Test:** The normality test was used to determine whether the dataset followed a normal distribution, a key assumption in regression analysis. The Shapiro-Wilk test was employed to assess the normality of residuals. A p-value greater than the 5% significance level ($\alpha=0.05$) indicated that the data was normally distributed. If normality was violated, data transformations such as logarithmic or square root transformations were considered to improve normality.
2. **Multicollinearity:** Multicollinearity, which occurs when two or more independent variables are highly correlated, was assessed to prevent distortion of regression coefficients and ensure model reliability. The Variance Inflation Factor (VIF) and Tolerance values were calculated for each independent variable. A VIF greater than 10 or a Tolerance value below 0.1 indicated the presence of multicollinearity. If detected, strategies such as removing highly correlated variables or combining them into a single predictor were applied to mitigate the issue.
3. **Heteroscedasticity:** Heteroscedasticity, which refers to unequal variance of residuals across predictor variables, was tested to ensure efficiency in estimates. The White Test was used to detect heteroscedasticity. A p-value less than 0.05 suggested the presence of heteroscedasticity. If found, robust standard errors or data transformations were applied to address the issue.

4. **Autocorrelation:** Autocorrelation, which occurs when residuals are not independent, was examined to confirm adherence to the independence assumption. The Durbin-Watson test was performed to check for autocorrelation in residuals. A statistic close to 2 suggested no significant autocorrelation. If autocorrelation was detected, methods such as introducing lagged variables or employing time-series models were considered to correct the issue.

3.9.1.3 Linearity Assumption Tests.

Testing the linearity assumption was critical to confirming that the relationship between the dependent and independent variables was appropriately modeled in the context of social media's effects on organizational performance. The following methods were used:

1. **Scatter Plots:**

Visual Inspection: Scatter plots were created for the dependent variable (e.g., consumer purchasing decisions) against each independent variable. A linear relationship was suggested if the data points formed a straight-line pattern.

Residual Plots: Residuals (the differences between observed and predicted values) were plotted against the predicted values of the dependent variable. If the residuals were randomly scattered around zero without systematic patterns, this suggested that the linearity assumption held.

2. **Partial Regression Plots:** These plots were used to show the relationship between the dependent variable and each independent variable while controlling for other variables

in the model. A linear pattern in these plots suggested that the linearity assumption was met.

3. **Correlation Coefficients:** Pearson correlation coefficients between the dependent variable and each independent variable were computed. Strong correlations (values close to -1 or 1) suggested a linear relationship.

4. **Statistical Tests:**

Lack-of-Fit Test: This test compared the linear regression model with more complex models (e.g., quadratic or cubic models). A significant result suggested that the linear model did not fit the data well, indicating a violation of the linearity assumption.

5. **Transformations:** If non-linearity was detected, appropriate transformations (e.g., logarithmic, square root, or polynomial transformations) were applied to better model the data, ensuring that the regression analysis was valid and reliable.

3.9.3 *Qualitative Data Analysis*

Data Transcription and Translation: Key Informant Interviews (KIIs) and In-Depth Interviews (IDIs) with healthcare providers and previously lost-to-follow-up clients were audio-recorded and transcribed verbatim in Kiswahili. The transcripts were then professionally translated into English to facilitate analysis. To ensure accuracy, a back-translation process was conducted, where an independent translator retranslated the English transcripts back into Kiswahili. Discrepancies were identified and addressed to preserve the original meaning and contextual nuances of participants' responses.

Data Coding and Theme Development: A thematic analysis approach was employed to identify patterns and insights from the qualitative data. Using NVivo 12 software, transcripts were systematically coded, with initial open coding generating a set of preliminary categories based on key concepts emerging from the data. A combination of deductive coding (based on predefined themes from the study objectives) and inductive coding (emerging themes from participant responses) was applied. Codes were refined iteratively and grouped into broader themes, ensuring coherence and representation of key issues related to ART adherence, treatment barriers, and facilitators to retention in HIV care.

Data Storage and Confidentiality: All qualitative data, including transcripts, translations, and coded files, were securely stored in password-protected electronic databases, accessible only to authorized research personnel. Personal identifiers were removed from transcripts, and findings were presented in aggregate form to maintain participant confidentiality. All data handling and storage procedures strictly adhered to institutional ethical guidelines.

By integrating rigorous quantitative and qualitative analytical techniques, this study provided a comprehensive understanding of factors influencing ART adherence, defaulting, and retention in care, offering critical insights for policymakers and healthcare providers to improve HIV treatment outcomes.

3.10. Ethical Consideration

The study sought permission from the AMIU ethical clearance research board. Additionally, it was explicitly stated that this proposal underwent scientific and ethical review by Lake Zone Institution Review Board (LZIRB).

Approval to access the data from the Maswa district medical office through a data transfer agreement facilitated by the Ministry of Health and National AIDS and Control Program at Maswa District Hospital CTC was also obtained. The rights of the participants were protected by ensuring their voluntary participation in the study and obtaining their informed consent.

During the interviews, participants who had defaulted from ART care were approached and asked for their consent to participate. It was emphasized that their participation was voluntary, and they had the freedom to decline if they wished. Privacy and confidentiality were maintained during the interviews to safeguard the participants' personal information. Prior to the study, permission and necessary information were obtained from the matron/medical director at each selected study site. The purpose, content, and nature of the investigation were clearly explained to each respondent, and both verbal and written consent were obtained before including them in the study. The participants were assured that their responses would not cause harm to them and would not have any negative impact on their ongoing medical care.

3.11 Study Limitations

The study focused solely on one district in Tanzania, limiting the generalizability of the results to other regions. Additionally, the sample size for the in-depth interviews with patients who defaulted on ART was relatively small (n=9), potentially limiting the comprehensiveness of the findings on this specific group. Lastly, the study did not explore the long-term sustainability of the identified facilitators for retention, and further research could be beneficial in this area

CHAPTER 4: RESULTS

4.1 Introduction

This chapter presents the findings and analysis of the research study concerning the objectives and research questions. This includes data analysis methods and results of data analysis that fulfilled research objectives.

4.2. Characteristics of the Study Participants

A total of 2,602 people living with HIV (PLWHIV) were enrolled on ART between 2020 and 2022. However, 2,454 individuals met the eligibility criteria for this study, as they were aged 18 years and above.

All participants were residents of the Simiyu region, specifically Maswa District, accounting for 100% of the study population. The distribution of participants across health facilities was as follows: Maswa District Hospital served as the primary facility, accounting for 45% of the participants, while Lalago Health Center catered to 22.5%. Additionally, Malampaka Health Center and Mwasayi Health Center accounted for 17.6% and 14.9%, respectively.

Regarding gender distribution, 1,415 (57.7%) of the participants were female. Marital status data indicated that 1,688 (68.8%) were married. The median age of participants was 39.6 years (± 12.4 SD), with an interquartile range (IQR) of 19.7–91.8 years. Table 1 presents a summary of these characteristics.

Table 1: Socio-Demographic Characteristics

Category	Subcategory	Frequency N=2454	Percent (%)
Source Facility	Lalago Health Center	551	22.5
	Malampaka Health Center	433	17.6
	Maswa District Hospital	1105	45.0
	Mwasayi Health Center	365	14.9
Sex	Female	1415	57.7
	Male	1039	42.3
Marital Status	Cohabiting	7	0.3
	Divorced	228	9.3
	Married	1688	68.8
	Single	479	19.6
	Widowed	52	2.1
Age	Mean	41.594	
	Median	39.600	
	Std. Deviation	12.4061	
	Range	72.1	
	Minimum	19.7	
	Maximum	91.8	

4.2.2. Entry Sources and Linkage to ART

Among individuals enrolled in antiretroviral therapy (ART) in Maswa District, North-Western Tanzania, the referral sources varied. The majority of participants were referred from facility indexes (38.3%), followed by outpatient departments (OPDs) (23.3%). Additionally, community indexes and CBHS referrals contributed 12.6% and 15.9%, respectively.

Linkage to ART was achieved promptly for most individuals, with 96.7% being enrolled within seven days of diagnosis. A small proportion experienced delays, with 1.3% linked within 8–14 days, while 2.0% were linked 15 days or later. Notably, 99.6% of participants-initiated ART at the same facility where they were enrolled, reflecting a strong local support system for ART initiation. Table 2 provides a detailed summary of these findings.

Table 2: Entry Sources and Linkage to ART

Category	Subcategory	Frequency	Percent (%)
Referred From	CBHS	391	15.9
	Community Index	309	12.6
	Facility Index	939	38.3
	IPD	32	1.3
	OPD	571	23.3
	OTHERS	39	1.6
	OTH/ LAB	1	0.0
	RCH/PMTCT/EID	138	5.6
	SR/VCT	14	0.6
	STI	2	0.1
	STST	9	0.4
	TB/DOTS	4	0.2
	VMMC	4	0.2
	Time to Linkage to ART	Within 7 days	2373
8-14 days		32	1.3
15 days and above		49	2.0
Started ART in this facility	No (Transfer)	9	0.4
	Yes	2445	99.6

4.2.3 WHO HIV Stages and Medication Regimens

During the study period, the majority of participants (59.6%) were classified as WHO Stage 1, indicating early detection and timely initiation of treatment. Stages 2 and 3 accounted for 21.6% and 15.2%, respectively, while 3.6% of individuals were in Stage 4, the most advanced stage of HIV.

Regarding antiretroviral (ARV) medication, nearly all participants (99.2%) were prescribed TDF/3TC/DTG, a first-line ARV regimen widely recommended for HIV treatment. Additionally, 99.8% of individuals remained on first-line ART, with only a small fraction requiring second-line therapy. Table 3 provides a detailed summary of these findings

Table 3: WHO HIV Stages and Medication Regimens

Category	Subcategory	Frequency	Percent (%)
WHO Stage during the study period	1	1462	59.6
	2	530	21.6
	3	374	15.2
	4	88	3.6
ARV Code Combination	ABC, 3TC, LPV/r (adult dose)	1	0.0
	TDF, 3TC, EFV	14	0.6
	TDF,3TC, DTG	2434*	99.2*
ARV Code Category	First line	2448*	99.8*
	Second line	1	0.0

4.2.4. Viral Suppression and Client Categories

Among the 2,454 eligible individuals, 651 underwent CD4 testing, with 200 classified as having advanced HIV disease (AHD) due to a CD4 count below 200. The study found that the viral suppression rate was high, with 98.4% of individuals achieving viral suppression, a key indicator of successful ART. This leaves 1.6% who did not achieve suppression, highlighting areas where intervention may be needed. The client categories showed that 65.1% of individuals were classified as unstable, indicating challenges in maintaining consistent treatment or other health-related issues. In contrast, 34.9% were categorized as stable, reflecting a positive response to ART. In this study, "unstable" referred to clients experiencing difficulties in adhering to ART consistently, which could be due to various factors such as socio-economic challenges, health complications, or lack of support systems.

Table 4: Viral Suppression and Client Categories

Category	Subcategory	Frequency	Percent (%)
HVL Viral Suppressed	No	29	1.6
	Yes	1804*	98.4*
Client Category	Stable	857	34.9
	Unstable	1597	65.1

4.2.5. The proportion of Retention and Default in the ART program

Out of the total study population, 1,187 (48.4%) were successfully retained in care. The study recorded 127 deaths (5.2%), while 332 (13.5%) were lost to follow-up, 19 (0.8%) opted out of the program, and 789 (32.2%) transferred to other clinics. After excluding the deceased and those who transferred, 1,538 individuals were considered eligible for follow-up. Among these, 351 (22.8%) were defaulters, which included those lost to follow-up and those who opted out. This resulted in a retention rate of 77.2%, with 22.8% of the eligible population defaulting from care.

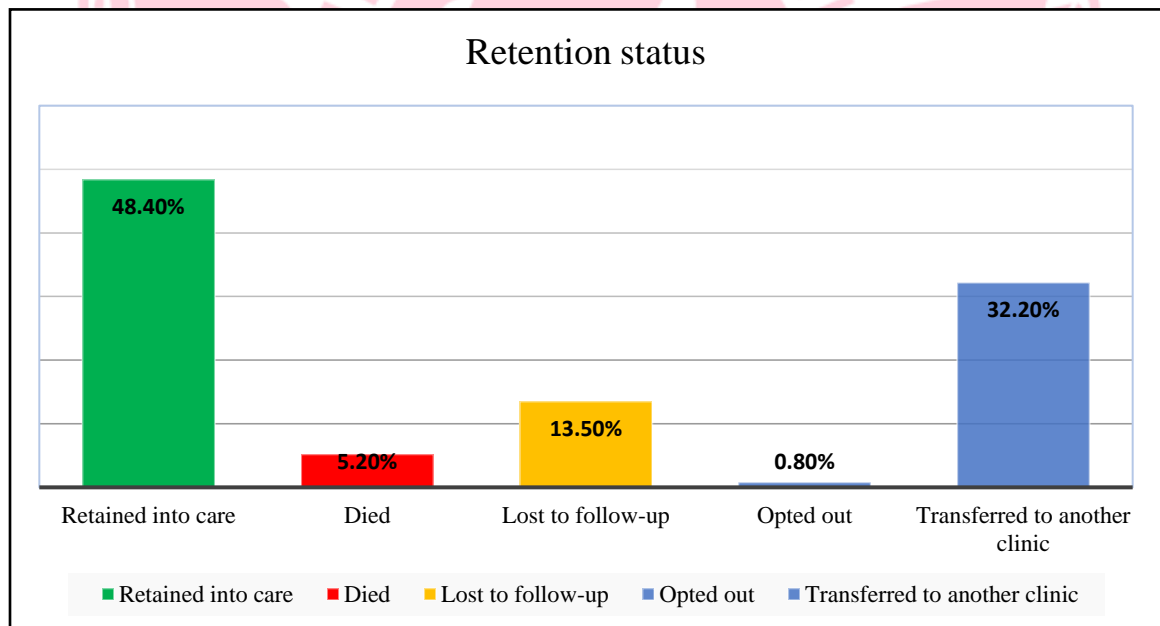


Figure 4: Retention Status

4.3 Bivariate Analysis of factors influencing ART default

The bivariate analysis of factors influencing ART default showed that Mwasayi Health Center had the highest number of defaulters with 128 defaulters, followed by Lalago Health Center with 101 defaulters, Maswa District Hospital with 75 defaulters, and Malampaka Health

Center with 41 defaulters. A significant association was found between ART defaulting and source facility (Pearson Chi-Square = 318.866, $p < .001$). Males had a higher number of defaulters (159 lost to follow-up and 12 opted out) compared to females (173 lost to follow-up and 7 opted out), with a significant association between ART defaulting and sex (Pearson Chi-Square = 28.727, $p < .001$). Patients referred from facility indexes (FaIND) had the highest number of defaulters (145 lost to follow-up and 7 opted out), while those referred from community-based health services (CBHS) had 74 defaulters (lost to follow-up) and 1 opted out. A significant association was found between defaulting and entry source (Pearson Chi-Square = 197.6, $p < .001$)

Table 5: Bivariate Analysis of factors influencing ART Default among the study population: N= 1519

Variables	Response	Retained	Died	LTFU	Opted out	Transferred	Total	Df	Chi-Square	P value
Facility	Lalago	303	37	89	12	110	551	12	318.8	< .001*
	Malampaka	188	23	41	0	181	433			
	Maswa	510	57	75	6	457	1105			
	Mwasayi	186	10	127	1	41	365			
Sex	Female	688	53	173	7	494	1415	4	28.7	< .001*
	Male	499	74	159	12	295	1039			
Entry Source	CBHS	153	14	74	1	149	391	52	197.6	< .001*
	CoIND	149	9	71	2	78	309			
	FaIND	456	54	145	7	277	939			
	IPD	15	2	0	1	14	32			
	OPD	296	42	31	4	198	571			
	OTH	20	1	2	0	16	39			
	RCH/PMTCT/EID	78	3	8	3	46	138			

4.4 Logistic Regression analysis of factors influencing on ART Default

The logistic regression analysis of factors influencing ART default showed that several factors were significantly associated with defaulting. In the bivariate analysis, individuals aged above 36 years had higher odds of defaulting, with an odds ratio of 1.42 (95% CI: 1.10-1.84, $p=0.008$). Divorced or separated individuals had a higher likelihood of defaulting, with an odds ratio of 1.68 (95% CI: 1.23-2.29, $p=0.001$). Those entering care through Voluntary Counselling and Testing (VCT) also had an elevated likelihood of defaulting (OR 1.47, 95% CI: 1.12-1.93, $p=0.005$).

Individuals at WHO Stage 4 at enrollment had the highest odds of defaulting (OR 3.48, 95% CI: 2.28-5.34, $p<0.001$). Additionally, individuals with unsuppressed HIV viral loads had significantly higher odds of defaulting compared to those with suppressed viral loads (OR 2.18, 95% CI: 1.68-2.80, $p<0.001$). After adjusting for other variables in the multivariate analysis, the association between age groups 30-54 years remained marginally significant (adjusted OR 1.28, 95% CI: 0.98-1.67, $p=0.071$). Divorced or separated individuals also showed a marginally significant association (adjusted OR 1.39, 95% CI: 0.99-1.94, $p=0.059$).

Associations between entry through VCT and disease stages 3 and 4 were no longer significant after adjustment. Health facility type, client category, and time to linkage to ART were not significant predictors of default in the adjusted analysis. These findings provide insights into the independent influence of certain baseline factors on ART default, offering guidance for targeted interventions.

Table 6: Regression Results for Factors Influencing ART Default

Variable	Retained (n)	Defaulted (n)	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age Group						
18-24 years (Ref.)	325	112	1.00	-	1.00	-
25-35 years	521	158	1.42(1.10-1.84)	0.008	1.28(0.98-1.67)	0.071
≥36 years	341	81	1.04(0.77-1.40)	0.785	0.87(0.63-1.20)	0.382
Marital Status						
Married (Ref.)	412	127	1.00	-	1.00	-
Single	438	142	1.13(0.88-1.44)	0.341	1.02(0.78-1.33)	0.867
Divorced/Separated	221	68	1.68(1.23-2.29)	0.001	1.39(0.99-1.94)	0.059
Widowed	116	14	0.82(0.44-1.52)	0.524	0.74(0.39-1.39)	0.348
Care Entry Point						
OPD (Ref.)	821	248	1.00	-	1.00	-
VCT	218	72	1.47(1.12-1.93)	0.005	1.24(0.93-1.64)	0.132
PMTCT	148	31	1.09(0.73-1.63)	0.654	0.89(0.59-1.33)	0.574
Disease Stage						
WHO Stage 1 (Ref.)	287	79	1.00	-	1.00	-
WHO Stage 2	412	138	1.78(1.36-2.34)	<0.001	1.48(1.12-1.96)	0.006*
WHO Stage 3	321	102	2.14(1.59-2.86)	<0.001	1.72(1.27-2.32)	0.001*
WHO Stage 4	167	32	3.48(2.28-5.34)	<0.001	2.84(1.82-4.42)	<0.001*
Health Facility						
Hospital (Ref.)	387	121	1.00	-	1.00	-
Health Center	800	230	1.42(1.12-1.81)	0.004		
Viral Suppressed						
Yes (Ref.)	724	198	1.00	-	1.00	-
No	463	153	2.18(1.68-2.80)	<0.001	1.82(1.40-2.38)	<0.001*
Client Category						
Stable (Ref.)	812	227	1.00	-	1.00	-
Unstable	375	124	1.84(1.43-2.37)	<0.001	1.52(1.17-1.96)	0.002*
Time to Linkage ART						
Within 7 days (Ref.)	842	241	1.00	-	1.00	-
Above 7 days	345	110	1.58(1.23-2.04)	<0.001	1.32(1.01-1.71)	0.042*

4.5 Qualitative results from the In-depth Interview

The qualitative results from the in-depth interviews with 9 participants revealed barriers and facilitators to ART uptake among clients who had previously defaulted but returned to care. The interviews involved nine participants, consisting of five females (aged 28, 37, 45, 48, and 52) and four males (aged 32, 42, 51, and 58). The marital status of the participants varied, with three being married, four single, and two widowed. Seven participants reported having children. The residential distribution was fairly balanced, with five participants living in rural areas and four in urban areas. The participants' occupations included farmers (3), small business owners (2), a teacher (1), homemakers (2), and a mechanic (1). Regarding income, two participants reported earning less than \$50 per month, four earned between \$50 and \$150, and three earned between \$150 and \$250 per month. Table 7 below summarizes these demographic characteristics of the interviewees.

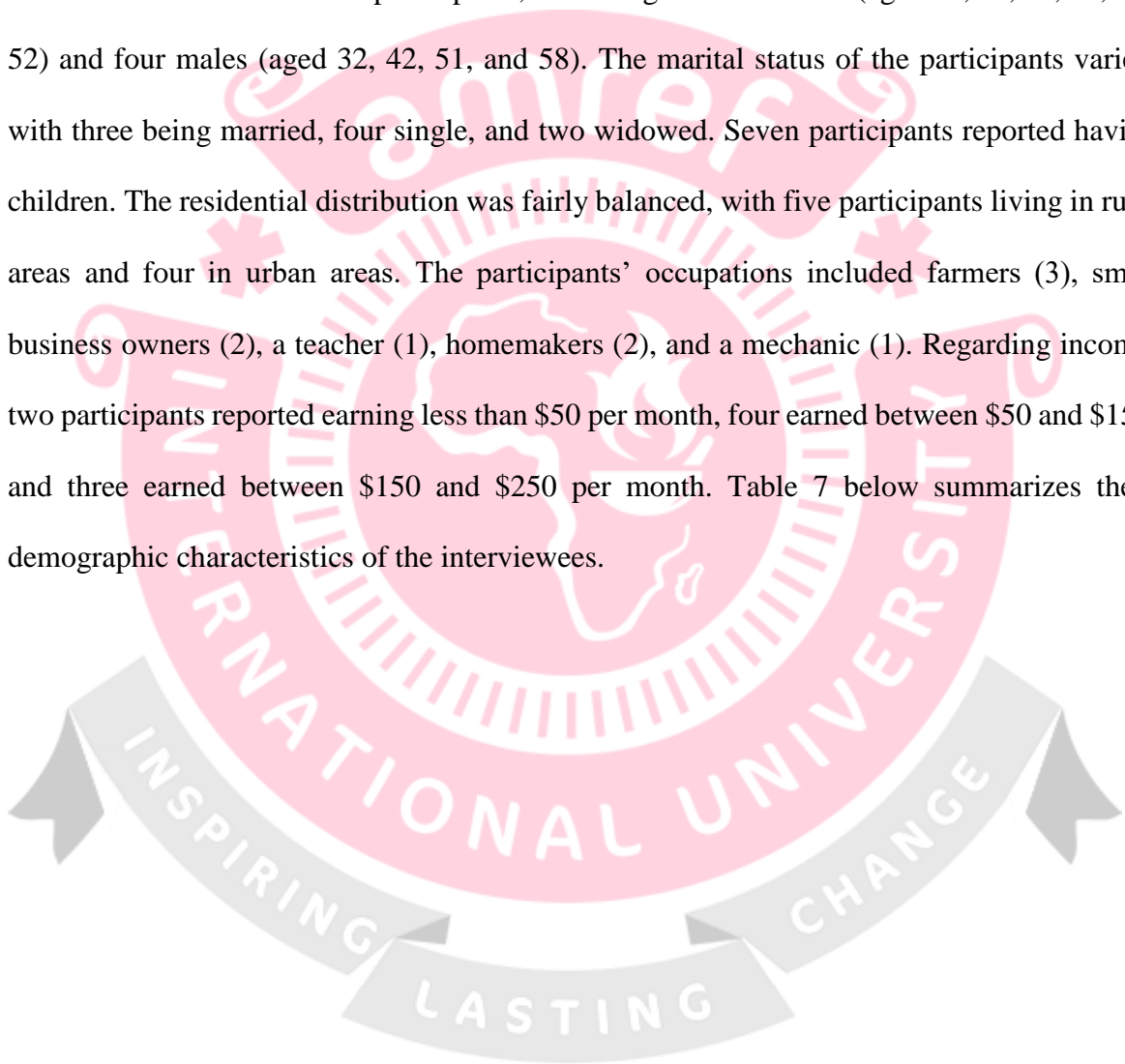


Table 7: Summary of Demographic Characteristics of Interview Participants (n=9)

Characteristic	Frequency
Gender	
Female	5
Male	4
Marital Status	
Married	3
Single	4
Widowed	2
Residence	
Rural	5
Urban	4
Education	
No formal education	3
Primary school completion	4
Secondary education	2
Occupation	
Farmer	3
Small business owner	2
Teacher	1
Homemaker	2
Mechanic	1

Upon conducting in-depth interview, several themes and subthemes had emerged as depicted in table 3. Two main themes namely Barriers and facilitators to ART retention emerged. The two themes were categorized into individual, community and healthcare systems factors that bore several sub-themes.

Table 8: Themes Emerged during In-depth Interview

Theme	Sub-themes	Quotes
Barriers to ART retention		
Individual Factors	<ul style="list-style-type: none"> i. Limited knowledge about ART adherence ii. Challenges with medication side effects 	<ul style="list-style-type: none"> i. <i>"I knew the drugs were important, but I didn't understand why I had to take them every day for life" (Male, 32).</i> ii. <i>"The side effects were difficult sometimes, so I would skip a few doses here and there" (Female, 45).</i>
Community Factors	<ul style="list-style-type: none"> i. Stigma associated with HIV status ii. Fear of disclosure 	<ul style="list-style-type: none"> iii. <i>"I worried people would find out about my status if I went to the clinic regularly" (Female, 28).</i> iv. <i>"There's a lot of gossip in my village. I felt judged for being HIV positive" (Male, 42).</i>
Healthcare System Factors	<ul style="list-style-type: none"> i. Distance to clinics and transportation costs ii. Work and family commitments leading to missed appointments iii. Long wait times at clinics 	<ul style="list-style-type: none"> iv. <i>"The clinic is far away, and transportation costs are a burden" (Female, 37).</i> v. <i>"I missed appointments because of work and childcare responsibilities" (Male, 51).</i> vi. <i>"Long wait times at the clinic discouraged me from going back" (Female, 48).</i>
Facilitators to ART retention		
Individual Factors	<ul style="list-style-type: none"> i. Renewed motivation due to health scare ii. Supportive family network encouraging return to care 	<ul style="list-style-type: none"> i. <i>"I realized I wasn't well when I stopped taking my medication. I felt worse, and that scared me" (Female, 45).</i> ii. <i>"My family encouraged me to get back into care. They reminded me of my health" (Male, 32).</i>
Healthcare System Factors	<ul style="list-style-type: none"> i. Improved healthcare delivery practices (e.g., support groups) ii. Client-centered care with empathetic healthcare workers 	<ul style="list-style-type: none"> i. <i>"The clinic now has a support group meeting. It's helpful to talk to others who understand" (Female, 28).</i> ii. <i>"The healthcare workers were more understanding this time. They listened to my concerns" (Male, 42).</i>
Community Factors	<ul style="list-style-type: none"> i. Education to address stigma and promote understanding of HIV ii. Educational sessions for families of PLWHIV 	<ul style="list-style-type: none"> i. <i>"I wish there was more education in the community about HIV. It would reduce the stigma" (Female, 37).</i> ii. <i>"The clinic could offer educational sessions for families of PLWHIV" (Male, 51).</i>

4.5.1. Theme 1: Barriers to ART retention

Limited Knowledge and Adherence Challenges

One prevailing issue among the participants was a lack of comprehensive understanding about HIV treatment, particularly regarding the necessity of lifelong adherence to ART. Many participants admitted to not fully grasping the critical nature of adhering to their medication regimen. For instance, a 32-year-old male participant candidly shared his initial confusion regarding the need for lifelong adherence to ART. He expressed,

"I knew the drugs were important, but I didn't understand why I had to take them every day for life." # 32-year-old male

This statement highlights a significant gap in patient education, where individuals may not be aware of the long-term commitment required for effective HIV management. This insight underscores the need for improved patient education and counseling services to clarify the importance of consistent medication use and to address misconceptions about ART. Enhanced educational interventions, explaining the rationale for lifelong adherence, and personalized counseling sessions can help address these knowledge gaps and support better treatment adherence and outcomes

Challenges with medication side effects

Another notable barrier to ART uptake identified among participants was the challenge posed by medication side effects. Many participants reported experiencing unpleasant side effects

that deterred them from adhering to their medication regimen consistently. A 45-year-old female participant shed light on this issue by expressing,

"The side effects were difficult sometimes, so I would skip a few doses here and there." #

45-year-old female

This candid statement underscores the significant impact that medication side effects can have on adherence behaviors, potentially leading individuals to deviate from their prescribed treatment plan. The experiences shared by participants regarding medication side effects highlight the importance of addressing this issue to improve adherence rates. Healthcare providers should prioritize educating patients about potential side effects associated with ART and provide guidance on managing them effectively. Additionally, offering alternative medications or adjunct therapies to mitigate side effects could enhance patient tolerance and adherence to treatment. By proactively addressing challenges related to medication side effects and providing tailored support to patients, healthcare teams can empower individuals to navigate their treatment journey more effectively, ultimately improving ART adherence and health outcomes.

Social Stigma and Disclosure Concerns

Another significant barrier identified by participants was the pervasive social stigma surrounding HIV and concerns about disclosing their status. Fear of stigma and potential discrimination within their communities acted as formidable obstacles to seeking and maintaining HIV care. Participants expressed concerns about being ostracized or judged if

their HIV status became known, which likely contributed to their reluctance to engage with healthcare services. A 28-year-old female participant encapsulated this sentiment, revealing,

"I worried people would find out about my status if I went to the clinic regularly." # 28-year-old female

This fear of social repercussions reflects the deep-seated stigma associated with HIV and the profound impact it has on individuals' behavior regarding healthcare-seeking.

Moreover, participants highlighted the fear of disclosing their HIV status to family members, friends, or employers, citing potential negative consequences such as social exclusion and discrimination. For instance, a 42-year-old male participant described feeling ostracized within his village due to the pervasive gossip surrounding his HIV-positive status, indicating the detrimental effects of community perceptions. Similarly, another 42-year-old male client shared his experience, stating,

"There's a lot of gossip in my village. I felt judged for being HIV positive." 42-year-old male

These narratives underscore the complex interplay between social stigma, fear of disclosure, and access to HIV care, emphasizing the need for community-based interventions aimed at reducing stigma and promoting safe disclosure practices. By fostering supportive and inclusive environments, healthcare providers can help alleviate the fear and social barriers that hinder individuals from accessing the care they need for managing HIV effectively.

Distance to clinics and transportation costs

The physical distance to healthcare facilities and the associated financial burden of transportation were logistical barriers to consistent clinic attendance. A 37-year-old female participant cited the significant distance to the clinic and the associated transportation costs as barriers to consistent care.

"The clinic is far away, and transportation costs are a burden" # 37-year-old male

Exploring decentralized care options, appointment scheduling systems, or potential transportation assistance and community ART outreach services could help address this barrier. Distance to clinics, transportation costs, work and family commitments, and long waiting times all emerged as obstacles to consistent clinic attendance.

Work and family commitments leading to missed appointments

Balancing work or childcare responsibilities with clinic appointments could be challenging, leading to missed appointments and disruptions in care. A 51-year-old male participant missed appointments due to competing work and childcare responsibilities, suggesting a need for more flexible healthcare services.

"I missed appointments because of work and childcare responsibilities" # 51-year-old male

Flexible clinic hours, childcare support services, or telehealth options could be explored to improve access to care.

Lack of service integration

Participants also highlighted challenges related to the lack of integration of services, which posed barriers to accessing comprehensive care. Many expressed frustrations with having to navigate multiple healthcare facilities to address their various needs, including HIV treatment, primary healthcare, and mental health services and medical and surgical services. This fragmented approach to care often resulted in logistical challenges, such as scheduling conflicts and long wait times between appointments. A 35-year-old female participant shared her experience, stating,

"I wish all my healthcare needs could be addressed in one place. It's exhausting to go to different clinics for different issues." # 35-year-old female

This sentiment was echoed by others, underscoring the need for integrated healthcare delivery models that streamline services and enhance patient convenience.

Moreover, participants noted the lack of coordination between HIV care providers and other healthcare professionals, leading to gaps in care and suboptimal treatment outcomes. For instance, a 48-year-old male participant described challenges in managing his HIV-related mental health issues due to the disjointed nature of care delivery. He remarked,

"My HIV doctor doesn't seem to communicate with my mental health counselor, so I feel like no one is really looking at the big picture." # 48-year-old male

This disconnect between healthcare providers can result in fragmented care and exacerbate patients' health concerns. Enhancing collaboration and communication among healthcare teams through interdisciplinary care models and electronic health record systems could address these gaps and improve the overall quality of care for individuals living with HIV.

4.5.2. Theme ii: Facilitators to ART Uptake

Renewed Motivation Due to Health Scare:

Experiencing health problems after interrupting treatment served as a wake-up call for some participants, motivating them to return to care. A health scare prompted a 45-year-old female participant to resume her medication, indicating that personal health crises can serve as catalysts for change.

“I realized I wasn't well when I stopped taking my medication. I felt worse, and that scared me” # 45-year-old female

From the statement above, the long-term health benefits of adherence during counseling sessions could help reinforce this motivation.

Supportive Family Network:

Having a supportive family who encouraged participants to prioritize their health was a significant facilitator in returning to care. A 32-year-old male participant was encouraged by his family to return to care, emphasizing the positive role of familial support in treatment adherence. A male client credited his family:

*"My family encouraged me to get back into care. They reminded me of my health." # 32-
year-old male*

These experiences highlight the importance of social support networks and the potential for individual health concerns to serve as a wake-up call for those who have interrupted treatment.

Improved Healthcare Delivery and Client-Centered Care:

Improved healthcare delivery practices facilitated participants' re-engagement in care. Support groups and more empathetic healthcare worker interactions were mentioned favorably. Participants appreciated feeling respected and listened to by healthcare providers. This positive interaction fostered trust and a willingness to return for future appointments. The introduction of support group meetings at the clinic was beneficial, as shared by a 28-year-old female participant, underscoring the value of peer support.

*"The healthcare workers were more understanding this time. They listened to my concerns" #
28-year-old female*

Training healthcare providers in communication skills and building patient rapport can contribute to a more client-centered approach.

A female client (age 28) appreciated the support group: *"The clinic now has a support group meeting. It's helpful to talk to others who understand."* These positive experiences suggest that fostering a supportive and client-centered approach within healthcare settings can contribute to improved treatment adherence.

Education to address stigma and promote understanding of HIV

Participants expressed a desire for increased community education about HIV to reduce stigma and promote understanding of the condition. A 37-year-old female participant wished for more community education on HIV to combat stigma, suggesting that increased awareness could foster a more supportive environment.

"I wish there was more education in the community about HIV. It would reduce the stigma" (Female, 37). Educational campaigns targeting the broader community can play a significant role in creating a more supportive environment for people living with HIV

Similarly, Participants suggested educational sessions specifically designed for families of people living with HIV. This could improve understanding, reduce fear of transmission, and promote supportive behaviors within the family unit. A 51-year-old male participant suggested that clinics offer educational sessions for families, indicating that equipping families with knowledge could enhance support for PLWHIV.

"The clinic could offer educational sessions for families of PLWHIV" (Male, 51).

These suggestions highlight the potential impact of educational interventions aimed at reducing stigma and empowering communities to support those living with HIV.

In conclusion, this analysis reveals a complex interplay of individual, family, community, and healthcare system factors influencing ART uptake in Maswa District. By addressing knowledge gaps, mitigating stigma, reducing logistical barriers, strengthening social support

networks, and enhancing healthcare delivery practices, interventions can be designed to improve client retention in care and promote successful HIV treatment.

4.6 Key Informant Insights

In-depth interviews were conducted with key informants from four selected health centers in Maswa District, including an ART Nurse with 5 years of experience, an HIV assistant medical officer with 10 years of HIV treatment expertise, a PMTCT Nurse with 8 years of experience, a Community HIV Lay Counselor with 6 years of counseling experience, and CTC In-charges with 10 years of experience, providing a comprehensive perspective on the strengths and challenges of ART service delivery and revealing key findings on barriers and facilitators to ART uptake.

4.6.1. Staffing and Service Delivery

While all facilities reported having the appropriate healthcare cadres for an ART program, the ART Nurse (KI-1) mentioned feeling overwhelmed at times due to high patient volume indicating potential gaps in infrastructure despite adequate staffing levels. She remarked, "Sometimes, it's challenging to manage the number of patients we see each day. I often feel overwhelmed by the workload." This sentiment was echoed by the Clinician (KI-2), who emphasized the importance of continuous training opportunities to support healthcare workers and mitigate the risk of burnout. He stated, "Providing ongoing training and support to our staff is crucial to ensure they feel equipped to handle the demands of HIV care."

Furthermore, the variability in wait times for follow-up visits, ranging from 30 minutes to an hour, reflects the impact of clinic workload on patient experience. The PMTCT Nurse (KI-3)

noted, "Patients sometimes have to wait longer than we'd like due to the number of people we see each day. It can be frustrating for them." Long waiting times can not only inconvenience patients but also contribute to dissatisfaction and disengagement from care. Addressing these issues requires a multifaceted approach, including streamlining clinic processes, optimizing appointment scheduling, and implementing strategies to improve workflow efficiency.

Additionally, the Community HIV Lay Counselor (KI-4) emphasized the importance of community engagement and support in addressing barriers to ART uptake. He stated, "We need to work closely with the community to reduce stigma and promote awareness about the benefits of ART. Building trust and providing ongoing support are essential for encouraging people to seek and remain in care." By prioritizing staff training, implementing measures to reduce patient waiting times, and fostering community partnerships, healthcare facilities can enhance the quality and accessibility of ART services in Maswa District, ultimately improving health outcomes for individuals living with HIV.

4.6.2. ARV Supply and Service Coordination

Fortunately, none of the informants reported experiencing ARV stockouts in the past 3 months. Despite this positive outcome, concerns regarding communication and coordination between different healthcare levels surfaced as potential areas for improvement. Both CTC In-charges (KI-5, KI-6) highlighted the importance of enhancing communication protocols to facilitate smoother client referrals and commodity redistribution. One CTC In-charge emphasized, "Improving communication channels between healthcare levels is crucial for ensuring seamless transitions and efficient redistribution of commodities." These insights underscore the significance of effective coordination mechanisms to optimize service delivery

and ensure uninterrupted access to ARV medications for individuals in need. Strengthening communication pathways can contribute to enhanced collaboration between healthcare facilities, ultimately benefiting patient care and treatment outcomes.

4.6.3. Client Support and Retention:

The presence of active support groups for HIV clients in three of the facilities was a positive finding (KI-1, KI-3, KI-4). Informants working in these facilities highlighted the support groups' role in reducing stigma, promoting adherence, and fostering a sense of community (KI-1, KI-3, KI-4). These support groups provide a valuable space for clients to connect and receive emotional support, potentially contributing to improved treatment outcomes. The remaining facilities expressed a desire to establish support groups and community ART outreach services but lacked resources or personnel.

All facilities had referral linkages for specialized care and defaulter tracing mechanisms in place. However, the Community lay Counselor (KI-4) suggested that the effectiveness of tracing could be improved through collaboration with local community leaders. Leveraging the knowledge and influence of community leaders could be a valuable strategy for locating clients who have defaulted on treatment.

4.6.4. Barriers to Care:

The interviews revealed both patient-related and health facility-related barriers to care.

Common patient-related barriers included limited knowledge about ART adherence (KI-1, KI-2, KI-3), fear of stigma and disclosure concerns (KI-2, KI-3, KI-4), transportation costs and logistical challenges (KI-3, KI-4, KI-5), and work and family commitments leading to

missed appointments (KI-1, KI-3, KI-4). The Doctor (KI-2) noted, "Limited knowledge about the importance of consistent medication use can lead to disruptions in treatment and potential development of drug resistance." Addressing these patient-related barriers through educational interventions, addressing stigma, and exploring solutions for logistical challenges is crucial for improving adherence and retention in care.

Health facility-related barriers: The insights from key informants shed light on health facility-related barriers that impact ART service delivery. One notable challenge identified was the lack of integration of services on a single point of care, as highlighted by both the clinician (KI-2) and the PMTCT Nurse (KI-3). This deficiency in service integration can result in frustration for patients, as articulated by the ART Nurse (KI-1), who emphasized the need for different services to address various health-related problems efficiently. The absence of integrated services may contribute to prolonged wait times and hinder patients' ability to access comprehensive care, ultimately leading to increased transfer-out rates. Moreover, the lack of childcare services at some clinics, as mentioned by the PMTCT Nurse (KI-3) and the Community Counselor (KI-4), presents an additional barrier to accessing care for individuals with childcare responsibilities.

Furthermore, key informants underscored the importance of correlating the day of clinic visit with ART refill dates to facilitate medication adherence and minimize interruptions in treatment. Additionally, there was a notable emphasis on the need for mental health support services for clients within the ART program. This recognition reflects a growing awareness of the holistic needs of PLWHIV beyond medical treatment alone. Addressing these facility-related barriers requires a multifaceted approach, including optimizing clinic efficiency,

exploring childcare options to accommodate patients' needs, and integrating mental health support services into the care continuum. By addressing these challenges, healthcare facilities can enhance the quality of care provided to PLWHIV and improve overall treatment outcomes.

Retention Rates and Overall, Views: The informants held varied perspectives on client retention rates within the ART program. While the Doctor (KI-2) expressed concerns about a potential decline, the ART Nurse (KI-1) perceived the rates to be stable. Conversely, the Community Counselor (KI-4) believed that retention could be improved through the implementation of more community-based interventions. Despite these differing viewpoints, all informants underscored the significance of adopting a client-centered approach and establishing effective communication channels and support systems to bolster retention in care. This sentiment was echoed by multiple informants (KI-1, KI-2, KI-3, KI-4), highlighting the consensus on the importance of fostering trust and creating a supportive environment to ensure ongoing engagement in treatment. As aptly summarized by the Community Counselor (KI-4), "Building trust and fostering a supportive environment are essential for keeping clients engaged in treatment," emphasizing the critical role of patient-provider relationships in promoting retention.

In addition to emphasizing client-centered approaches, the informants proposed several recommendations to further enhance ART services. These recommendations included increasing staffing levels, particularly during peak times, improving ARV stock management, expanding support group activities, strengthening community-facility linkages, and intensifying educational outreach efforts to combat stigma and promote treatment adherence.

By implementing these suggestions, the healthcare system can build upon existing successes while addressing identified shortcomings, thereby fostering an environment conducive to optimal ART service delivery and improved health outcomes for PLWHIV



CHAPTER 5: DISCUSSIONS

5.1 Introduction

This section provides an in-depth interpretation of the findings in the context of the study's objectives and existing literature.

5.2 Description of the Demographic and Clinical Characteristics

The primary goal of this research was to identify the factors influencing antiretroviral therapy (ART) default among clients attending care and treatment clinics in Maswa District. In this study, more than half of the participants were female (57.7%), reflecting trends seen across sub-Saharan Africa, where women account for the majority of people living with HIV (PLWHIV) and are more likely to access healthcare services (UNAIDS, 2021). This aligns with studies conducted in Kenya and Uganda, where women were overrepresented in HIV care and treatment programs due to higher HIV prevalence among females and greater healthcare-seeking behaviors (Ndirangu et al., 2013; Beyeza-Kashesya et al., 2018). The overrepresentation of women underscores the need for gender-sensitive interventions, including empowering men to seek testing and treatment services. Community engagement strategies targeting men, as shown in programs implemented in South Africa, have successfully reduced gender disparities in ART uptake (Naidoo et al., 2020).

The majority of participants in this study were married, which aligns with findings from Ethiopia and Malawi, where marital status was found to positively influence ART adherence due to spousal support for clinic visits and medication adherence (Assefa et al., 2014; Nyirenda et al., 2013). However, our findings contrast with studies from South Africa, where

married individuals reported lower adherence rates, attributed to partner dynamics and stigma within relationships (Gallagher et al., 2013). These contrasting results highlight the complex and context-dependent role of marital status in ART adherence, suggesting that while marriage can provide support in some settings, it may pose challenges in others due to social, cultural, and relational factors.

The median age of participants in this study (39.6 years) aligns with Tanzanian studies by Mboera et al. (2013) and Moshi et al. (2021), both of which observed that PLWHIV in their late 30s and early 40s are the most affected. Similar findings have been reported globally, particularly in low- and middle-income countries, where this age group represents the majority of HIV cases (WHO, 2019). This trend reflects the vulnerability of working-age adults to the epidemic, compounded by socio-economic factors, such as employment in high-risk sectors, mobility, and reduced access to health education. The age distribution of participants highlights the critical importance of workplace-based HIV interventions for the economically active population. These could include routine workplace testing, tailored adherence support, and educational programs targeting high-risk professions.

Clinical characteristics in this study indicate a notable proportion of participants presenting with advanced HIV disease (WHO Stage 3 or 4). This is consistent with findings from Uganda (Kiragga et al., 2018) and Nigeria (Ezeanolue et al., 2015), where delayed diagnosis and initiation of ART were attributed to stigma, fear of disclosure, and limited health literacy. Advanced disease stages at presentation highlight gaps in early HIV diagnosis and underscore the urgent need for community-based testing programs to ensure timely initiation of care. The presentation of advanced disease stages suggests the need to strengthen decentralized testing

and treatment initiatives. Innovations such as home-based testing and mobile clinics have proven effective in increasing early diagnosis and linkage to care in resource-limited settings (Topp et al., 2013). Additionally, enhanced community education campaigns are vital to reduce stigma and misconceptions that delay care-seeking behaviors.

5.3 Default Rate Among Clients Attending Care and Treatment Clinics

The study revealed a default rate of 22.8%, with a retention rate of 77.2%. This retention rate is higher than figures reported in Bale Zone Hospitals, South Eastern Ethiopia, where the incidence rate of treatment failure was 9.38 per 1,000 person-years (Negash et al., 2020). The difference in retention rates could be attributed to variations in the study populations, healthcare settings, and ART program characteristics. Our study's findings also align with retention patterns observed in other studies from Tanzania, such as those by Mboera et al. (2013), which report comparable retention rates of around 80% and 75%, respectively. These studies demonstrate that while ART retention is a significant challenge, the overall trend in Tanzania tends to show relatively higher retention compared to some other African countries. However, the observed default rate of 22.8% in this study is notably lower than the loss to follow-up rate in southwestern Uganda, which was reported at 26.7% per 100 person-years among patients on second-line ART (Mugisha et al., 2017). This discrepancy may be explained by the differences in patient populations, as the Ugandan study specifically targeted patients on second-line ART, who are often more complex cases with a higher likelihood of treatment interruptions. In contrast, our study included a broader sample of ART clients, which may have contributed to the lower default rate. Furthermore, the ART regimen in Uganda's second-line ART group, which typically includes more complicated treatment

regimens, may have presented more challenges, such as side effects, requiring stronger patient commitment and adherence.

In other African countries, studies have documented varying default rates that offer additional perspectives on ART retention. For instance, research conducted in Malawi by Nyirenda et al. (2013) reported a 23% loss to follow-up rate, which is higher than the default rate observed in our study. Similarly, in Zambia, a study by Harries et al. (2020) found a loss to follow-up rate of 21%, which aligns more closely with our findings. In comparison, studies in South Africa's Western Cape region revealed that two-thirds of patients initiating ART transferred to other healthcare facilities during follow-up, underscoring the importance of managing both default and transfer issues in ART programs (Shah et al., 2018). Such transfers often lead to gaps in care, as patients may experience periods without treatment, which can result in unsuppressed viral loads and lower CD4 counts upon resumption of care. Although clinic transfers were not a central focus of this study, the high rate of 32% transfers observed here reflects a significant concern for ART continuity, which aligns with similar findings from other regions.

Interestingly, a study from Mozambique Zachariah et al. (2012) reported retention rates of 68% after 12 months and 59% after 24 months, showing slightly lower retention rates than those observed in our study. These studies from Mozambique and other parts of Southern Africa highlight the consistent challenge of retaining patients in ART programs, especially in regions with resource-limited settings. For instance, a study in Maputo reported a 40% lost-to-follow-up rate, particularly among patients undergoing counseling before treatment

initiation by Mburu et al. (2019), which points to the necessity of addressing factors beyond medication adherence, such as counseling and psychosocial support.

The retention rates in this study (76.9% after one year and 48.4% after two years) are also in line with high attrition rates documented in other ART programs across the African continent. A study conducted in Kenya by Omondi et al. (2018) reported a retention rate of 71.5%, which is lower than our study's retention rate, highlighting regional variations in ART retention outcomes. These variations may be attributed to differences in healthcare infrastructure, access to medical services, community support structures, and levels of stigma associated with HIV treatment.

The high rate of clinic transfers, with 32% of people living with HIV (PLWHIV) moving to other facilities, adds another layer of complexity to ART program retention. While this issue has been observed in other studies, such as the one in Zambia by Harries et al. (2020), where patients presumed lost to follow-up were often found to be receiving care at different facilities, the phenomenon in this study warrants attention. The reasons for clinic transfers are multifaceted, including mobility due to changes in residence or employment, patient preference for higher-quality care, reduced wait times, or enhanced privacy and confidentiality (Negash et al., 2020). A study by Shah et al. (2018) in South Africa further elaborated on how transfers often lead to extended periods without care, which can lead to unsuppressed viral loads and other health complications.

These findings underscore the importance of addressing not only default rates but also patient transfers as part of the overall challenge of maintaining ART continuity. The need for integrated health information systems capable of tracking patient movements across facilities

is critical in ensuring that patients receive uninterrupted care. Furthermore, addressing the reasons for transfers, such as dissatisfaction with care quality, logistical barriers, or stigma, is essential for improving retention and health outcomes. Policy interventions should focus on facilitating safe and efficient transfers, minimizing treatment disruptions, and enhancing service delivery to prevent patients from discontinuing or transferring care.

Overall, the findings from this study contribute valuable insights into the challenges of ART retention in Maswa District, which is consistent with trends observed in other sub-Saharan African countries. Addressing the underlying factors contributing to defaulting and transfers will be key to improving ART adherence and ensuring better health outcomes for people living with HIV.

5.4 Predictors of ART Default among Clients Attending Care and Treatment Clinics

The study identified several predictors of ART default among clients attending Care and Treatment Clinics in Maswa District, including younger age, being divorced or separated, entry through Voluntary Counseling and Testing (VCT), and advanced disease stages (3 and 4). These findings align with, but also contrast with, existing studies in sub-Saharan Africa, highlighting the multifaceted nature of treatment adherence and suggesting key areas for targeted intervention.

Age was identified as a significant factor in ART default in this study, with older clients showing a higher likelihood of discontinuing treatment. This finding contrasts with many other studies in sub-Saharan Africa, where younger individuals are typically more likely to default on ART. In our study, older clients may face unique challenges such as physical health

complications, treatment fatigue, and comorbidities that contribute to non-adherence. This is consistent with research indicating that older patients, particularly those with advanced disease stages, may struggle more with the long-term demands of ART (Nyirenda et al., 2013; Gallagher et al., 2013). While younger individuals often face disruptions in care due to life transitions, older individuals may experience increased physical and emotional burdens that hinder their ability to adhere to treatment. Therefore, interventions targeting older age groups should focus on managing comorbidities, addressing physical and psychological challenges, and providing additional support to help sustain long-term engagement in care.

Marital status was another key predictor, with divorced or separated individuals demonstrating a higher risk of default. This aligns with studies in Ethiopia and South Africa, where marital disruption has been shown to negatively impact ART adherence. Divorced or separated individuals often experience emotional distress, reduced household income, and a lack of social support, which can all contribute to treatment discontinuation (Beyeza-Kashesya et al., 2018; Gallagher et al., 2013). Providing psychosocial counseling and strengthening community support networks could be crucial strategies to improve retention in this group. Moreover, studies from Malawi and Uganda highlight the positive role of marital support in improving adherence, indicating that interventions targeting family support systems could be effective in enhancing ART retention (Nyirenda et al., 2013; Isabwa et al., 2020).

Entry through Voluntary Counseling and Testing (VCT) was identified as a risk factor for ART default in this study, which contrasts with findings from Mozambique and Tanzania where VCT entry was associated with higher retention rates (Zachariah et al., 2012; Isabwa et al., 2020). In our study, the quality of post-test counseling and linkage to care might have been

insufficient, potentially contributing to higher default rates among those who started ART through VCT. This discrepancy suggests that while VCT plays a critical role in early diagnosis, it is essential to strengthen post-test counseling, provide robust follow-up mechanisms, and ensure seamless integration with comprehensive care services to improve retention for individuals entering care through VCT.

Advanced disease stages (Stages 3 and 4) were significantly associated with ART default in this study, a finding that corresponds with similar research in Uganda and South Africa, where individuals diagnosed at later disease stages face greater physical, emotional, and financial challenges (Mugisha et al., 2017; Mugo et al., 2019). At these stages, patients often experience higher healthcare costs, frequent hospital visits, and more severe physical symptoms, which can overwhelm them and lead to treatment abandonment. These findings are also consistent with studies from Ethiopia and Kenya, which highlight the added complexity of managing advanced HIV disease (Babiker et al., 2014; Beyeza-Kashesya et al., 2018). Tailored interventions, including home-based care, financial subsidies, and intensive psychosocial support, could be critical in alleviating the barriers faced by patients at advanced stages of HIV.

The study also highlighted the impact of unsuppressed viral loads as a significant predictor of ART default, with patients who had unsuppressed viral loads more likely to default on treatment. This finding supports studies by Farmer et al. (2013) and Medecins Sans Frontieres (2011), which emphasize that viral suppression is both an indicator of treatment success and a key motivator for continued engagement in ART. Failure to achieve viral load suppression can lead to disillusionment, further discouraging adherence. This creates a vicious cycle where

non-adherence leads to treatment failure, which in turn discourages patients from continuing ART. Interventions that monitor viral loads regularly, provide real-time feedback, and offer adherence support groups could be instrumental in breaking this cycle and improving retention.

These findings have important implications for ART programs. Addressing the multifactorial predictors of ART default requires targeted interventions tailored to specific risk factors. Programs should incorporate peer support systems, psychosocial counseling, and enhanced linkage to care for individuals entering through VCT. Additionally, interventions should focus on clients with advanced HIV disease by providing home-based care, financial assistance, and intensive follow-up. Regular viral load monitoring, coupled with adherence support, should be implemented to break the cycle of non-adherence. Finally, strategies aimed at strengthening social support networks, particularly for divorced or separated individuals, should be integrated into ART programs to improve retention rates.

In conclusion, while this study contributes to the broader understanding of ART adherence and default, it also underscores the importance of context-specific interventions. The findings suggest that ART default is influenced by a combination of personal, social, and healthcare system factors, and tailored interventions targeting these factors could significantly improve ART retention and health outcomes for people living with HIV in Maswa District.

5.5 Barriers and Facilitators to Uptake of ART Among Clients Attending Care and Treatment Clinics

The qualitative interviews revealed a range of barriers and facilitators influencing the uptake of ART among clients, offering valuable insights for targeted interventions.

Limited knowledge about the importance of adherence emerged as a prominent barrier. This finding aligns with earlier studies by Bangsberg et al. (2011) and Farmer et al. (2013), which emphasize the critical role of patient education in empowering individuals to understand their treatment regimens and long-term benefits. Participants often lacked awareness of the consequences of non-adherence, underscoring the need for comprehensive education programs delivered through clinics, community outreach, and digital platforms.

Adverse effects of medication were another significant barrier, consistent with studies by Babiker et al. (2014) and Gengiah et al. (2021). Patients reported symptoms such as nausea, dizziness, and fatigue, which discouraged them from continuing treatment. Addressing this issue requires robust support systems, such as patient counseling to manage expectations, and medical interventions to alleviate side effects. Additionally, healthcare providers should foster open communication to ensure patients feel supported in reporting and managing these challenges.

Stigma surrounding HIV status was a major deterrent to treatment adherence. This finding confirms observations by Nyirenda et al. (2013) and Beyeza-Kashesya et al. (2018), which highlight the need for community education campaigns to dispel myths and reduce discrimination. Participants expressed fears of being judged or ostracized by their

communities, creating significant barriers to seeking care. Efforts to combat stigma should include both community-level initiatives and the development of supportive healthcare environments where individuals feel safe and accepted.

Fear of disclosure to family and friends was another frequently cited concern, as reported by Gallagher et al. (2013) and Batete et al. (2016). This fear, which varied across cultural and social contexts, often led to reluctance in seeking or continuing care. Promoting confidentiality within healthcare systems and fostering trust between patients and providers are essential strategies to mitigate this barrier.

Accessibility challenges, such as high transportation costs and long distances to clinics, were also prominent. These findings are consistent with studies by Medecins Sans Frontieres (2011) and Gengiah et al. (2021), which emphasize the importance of mobile clinics, decentralized care options, and financial support mechanisms. These measures can alleviate the logistical and financial burdens that hinder access to ART.

Work and family commitments were significant practical challenges that led to missed appointments. Similar observations by Medecins Sans Frontieres (2011) and Ndirangu et al. (2013) suggest the value of implementing flexible clinic hours, appointment reminders, and alternative adherence schedules, such as once-daily medications, to accommodate patients' competing priorities.

Participants also highlighted the fragmented nature of healthcare services as a significant barrier. Navigating multiple facilities for different healthcare needs often resulted in logistical and scheduling challenges, as echoed in studies by Babiker et al. (2014) and Gengiah et al.

(2021). Integrated healthcare models, which streamline access to comprehensive services within a single facility, have shown promise in improving patient satisfaction and adherence. However, their broader impact on healthcare systems requires further evaluation (Gallagher et al., 2013).

These findings underscore the need for tailored interventions addressing the multifaceted barriers to ART uptake, ensuring patients receive holistic support to improve adherence and retention in care.



CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter summarizes the key findings of the study, draws conclusions based on the study objectives, and offers recommendations to enhance the uptake and adherence to Antiretroviral Therapy (ART) among clients attending Care and Treatment Clinics (CTCs). These findings are crucial for addressing barriers, leveraging facilitators, and improving ART program outcomes in similar settings.

6.2 Conclusion

Based on our findings, it can be concluded that the proportion of individuals who defaulted on ART among PLHIV within 24 months after initiating treatment in Maswa District was 22.8%. Several underlying factors contributed to ART default, including age, with individuals aged 30-54 years demonstrating a higher likelihood of discontinuing treatment. Additionally, marital status played a significant role, as divorced or separated individuals were more likely to default, possibly due to emotional distress and lack of support. Entry through Voluntary Counselling and Testing (VCT) also emerged as a risk factor, indicating that while VCT is essential for early diagnosis, post-test counseling and support may need strengthening. Advanced disease stages, particularly WHO Stage 4, were associated with a higher likelihood of default, as individuals with more severe illness may face additional barriers such as physical health complications and increased healthcare needs. Unsuppressed HIV viral loads further compounded the risk, indicating a vicious cycle where poor adherence leads to treatment failure, which discourages continued care. The study also identified several obstacles to

retention, including socio-economic difficulties, health complications, and a lack of robust support systems. On the other hand, enablers to retention included strong local support systems, prompt linkage to ART, and comprehensive healthcare services at the facilities, which helped ensure that patients remained engaged in care. These findings underscore the critical need for targeted interventions addressing both individual and systemic factors to enhance retention and adherence to ART. Improving patient education, psychosocial support, and service delivery in Maswa District could significantly reduce ART default rates and improve overall health outcomes for

6.3 Recommendations

6.3.1 Recommendations for the Interventions to Improve ART Retention

- i. **Enhanced Patient Education and Counseling:** Comprehensive and continuous patient education programs should be implemented to improve awareness of ART adherence, its benefits, and the consequences of default. This should be done through regular counseling sessions at Care and Treatment Clinics (CTCs), community outreach programs, and digital platforms. Healthcare providers, including nurses, counselors, and community health workers, should be trained to deliver consistent, patient-centered education.
- ii. **Strengthening Healthcare Systems:** Healthcare service delivery should be improved by integrating HIV services within a single point of care to enhance accessibility and continuity of treatment. This can be achieved by incorporating ART services with general outpatient care, maternal and child health services, and non-communicable disease clinics. Implementing a patient-centered approach through service integration

will reduce unnecessary referrals, minimize missed appointments, and improve retention rates. The Ministry of Health, healthcare facility administrators, and implementing partners should take the lead in ensuring that integration strategies are effectively rolled out and monitored

- iii. **Strengthened Psychosocial Support Systems:** Support groups should be established or reinforced within health facilities and communities to provide emotional and financial assistance, particularly for divorced or separated individuals who lack partner support. This should be implemented by health facility management in collaboration with local NGOs, faith-based organizations, and community leaders to enhance peer support networks and reduce stigma-related barriers.
- iv. **Regular Viral Load Monitoring and Targeted Interventions:** Routine viral load testing should be strengthened, and real-time feedback mechanisms should be introduced to ensure timely identification and support for individuals with unsuppressed viral loads. Healthcare workers should proactively follow up with clients at risk of treatment failure by providing personalized adherence counseling, home visits, and differentiated service delivery models such as community ART groups. The Ministry of Health, through the National AIDS Control Program (NACP), should ensure adequate resources and funding for these initiatives.

6.3.2 Recommendations for s for Further Study

- i. **Longitudinal Studies on ART Retention:** Research should be conducted to examine long-term ART adherence trends, focusing on how factors such as socio-economic status, mobility, and treatment perceptions evolve over time. This will provide a deeper

understanding of sustained retention challenges and inform future interventions. Universities, research institutions, and public health agencies should lead these studies, with support from policymakers and funding agencies.

- ii. **Comparative Studies Across Different Regions:** Investigations should be carried out to assess how ART default rates vary between urban and rural settings and across different healthcare facility levels (e.g., hospitals vs. dispensaries). This will help tailor interventions to specific regional and infrastructural contexts. Government health authorities, in collaboration with international health organizations, should facilitate these studies.



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APPENDICES

Appendix i: Consent Form (English Version)

FACTORS CONTRIBUTING TO ANTIRETROVIRAL THERAPY DEFAULT AMONG CLIENTS IN SELECTED HEALTH FACILITIES IN MASWA DISTRICT, TANZANIA.

Researcher: Kidenya Sita from AMREF international University

Introduction

Dear [Participant's Name],

Greetings! My name is KIDENYA SITA, and I am conducting a study on the factors that influence the adherence to antiretroviral therapy (ART) among people living with HIV/AIDS in Maswa District. This study is conducted as part of my master's degree program at (your institution). Your involvement is entirely voluntary. Please carefully read the information provided in this consent form before making a decision about participating in this study. Your participation may involve discussing topics related to the study.

Purpose of the study

The purpose of this study is to identify the personal, social, economic, and health system factors that affect the ART default among clients attending care and treatment clinics in selected health facilities in Maswa District. The findings of this study may help to improve the quality of care and support for people living with HIV/AIDS and reduce the risk of HIV transmission and drug resistance.

Procedures

If you agree to participate in this study, you will be asked to:

- i. Sign this consent form to indicate your voluntary participation.
- ii. Answer some questions about your demographic characteristics, such as age, gender, education, occupation, marital status, etc.
- iii. Answer some questions about your ART history, such as when you started ART, how often you take your medication, whether you have missed any doses, etc.
- iv. Answer some questions about the factors that influence your ART adherence, such as your knowledge, attitude, beliefs, motivation, social support, stigma, discrimination, access to health services, etc.
- v. The interview will be conducted by me or a trained research assistant in a private and comfortable setting at the health facility or a nearby location of your choice.
- vi. The interview will last for about 30 to 45 minutes and will be audio-recorded with your permission.
- vii. You can choose to stop the interview at any time or skip any questions that you do not want to answer.

Risks and benefits

There are no direct benefits for you from participating in this study. However, you may benefit from sharing your experiences and opinions about ART adherence and receiving information

and feedback from me. You may also contribute to the improvement of HIV/AIDS care and support in your community and beyond.

The risks of participating in this study are minimal. You may feel some discomfort or distress when answering some sensitive or personal questions. You may also face some social risks, such as stigma, discrimination, or breach of confidentiality. I will take all possible measures to protect your privacy and confidentiality and to minimize any potential harm.

Confidentiality

Your participation in this study is confidential. Your name and other identifying information will not be recorded or linked to your responses. The audio recordings will be stored in a secure device and will be deleted after transcription. The transcripts will be coded with a unique number and will be stored in a password-protected computer. Only I and the research assistants will have access to the data. The data will be used only for the purposes of this study and will not be shared with anyone else without your permission. The results of this study will be reported in aggregate form and will not identify any individual participants.

Voluntary participation and withdrawal

Your participation in this study is voluntary. You have the right to refuse to participate or to withdraw from the study at any time without any penalty or loss of benefits. Your decision will not affect your relationship with me, the health facility, or any other parties involved in this study. If you decide to withdraw from the study, you can request to have your data deleted or destroyed.

Questions and concerns

If you have any questions or concerns about this study, you can contact me at 0713550110. Alternatively, if you require further clarification, you have the right to contact the ethical review board at

Telephone: +255-28-2500399

Telefax: +255-28-2500654

E-mail: mwanza@nimr.or.tz

Website: www.nimr.or.tz

Consent

I have read and understood the information provided in this consent form. I have had the opportunity to ask questions and have received satisfactory answers. I agree to participate in this study and I understand that I can withdraw at any time. I consent to the audio-recording of the interview.

Name of participant: _____ Signature of participant: _____ Date: _____

Name of researcher: _____ Signature of researcher: _____ Date: _____

Name of witness: _____ Signature of witness: _____ Date: _____

Appendix ii: Consent Form (Swahili Version)

Fomu ya Idhini ya Kushiriki katika Utafiti

Kichwa cha utafiti: Sababu zinazochangia kushindwa kufuata matibabu ya antiretroviral kwa wateja wanaohudhuria kliniki za huduma na matibabu katika vituo vya afya vilivyochaguliwa katika Wilaya ya Maswa, kaskazini-magharibi mwa Tanzania.

Mtafiti: Kidenya Sita

Utangulizi

Mpendwa [Jina la Mshiriki],

Habari! Jina langu ni (Kidenya Sita), na ninashiriki katika utafiti unaolenga kuchunguza sababu zinazoathiri kufuata matibabu ya antiretroviral (ART) kwa watu wanaoishi na VVU / UKIMWI katika Wilaya ya Maswa. Utafiti huu unafanywa kama sehemu ya programu yangu ya shahada ya uzamili katika (taasisi yako). Ushiriki wako ni wa hiari kabisa. Tafadhali soma kwa makini habari iliyotolewa katika fomu hii ya idhini kabla ya kufanya uamuzi kuhusu kushiriki katika utafiti huu. Ushiriki wako unaweza kuhusisha kujadili maswala yanayohusiana na utafiti.

Lengo la utafiti

Lengo la utafiti huu ni kutambua sababu binafsi, za kijamii, za kiuchumi, na za mfumo wa afya zinazoathiri kushindwa kufuata matibabu ya antiretroviral kwa wateja wanaohudhuria kliniki za huduma na matibabu katika vituo vya afya vilivyochaguliwa katika Wilaya ya Maswa. Matokeo ya utafiti huu yanaweza kusaidia kuboresha ubora wa huduma na usaidizi

kwa watu wanaoishi na VVU / UKIMWI na kupunguza hatari ya kuenea kwa VVU na upinzani wa dawa.

Taratibu

Ikiwa unakubali kushiriki katika utafiti huu, utaulizwa:

- i. Kutia saina fomu hii ya idhini kuonyesha ushiriki wako wa hiari.
- ii. Kujibu maswali kadhaa kuhusu sifa zako za kijamii, kama vile umri, jinsia, elimu, kazi, hali ya ndoa, n.k.
- iii. Kujibu maswali kadhaa kuhusu historia yako ya ART, kama vile ulipoanza ART, unachukua dawa mara ngapi, ikiwa umekosa dozi yoyote, n.k.
- iv. Kujibu maswali kadhaa kuhusu sababu zinazoathiri kufuata kwako ART, kama vile maarifa, mtazamo, imani, motisha, usaidizi wa kijamii, unyanyapaa, ubaguzi, upatikanaji wa huduma za afya, n.k.
- v. Mahojiano yatafanywa na mimi au msaidizi wa utafiti aliyefunzwa katika mazingira ya faragha na raha katika kituo cha afya au eneo la karibu la chaguo lako.
- vi. Mahojiano yatadumu kwa takriban dakika 30 hadi 45 na yatarekodiwa kwa sauti kwa ruhusa yako.
- vii. Unaweza kuchagua kusimamisha mahojiano wakati wowote au kuruka maswali yoyote ambayo hutaki kujibu.

Hatari na faida

Hakuna faida za moja kwa moja kwako kwa kushiriki katika utafiti huu. Hata hivyo, unaweza kunufaika kwa kushiriki uzoefu na maoni yako kuhusu kufuata ART na kupokea habari na maoni kutoka kwangu. Unaweza pia kuchangia katika kuboresha huduma na usaidizi wa VVU / UKIMWI katika jamii yako na zaidi.

Hatari za kushiriki katika utafiti huu ni ndogo. Unaweza kuhisi baadhi ya usumbufu au msongo unapojibu maswali fulani nyeti au binafsi. Unaweza pia kukabiliwa na hatari za kijamii, kama vile unyanyapaa, ubaguzi, au uvunjaji wa usiri. Nitachukua hatua zote zinazoweza kulinda faragha na usiri wako na kupunguza madhara yoyote yanayoweza kutokea.

Usiri

Ushiriki wako katika utafiti huu ni wa siri. Jina lako na habari nyingine za kutambulisha hazitarekodiwa au kuunganishwa na majibu yako. Rekodi za sauti zitahifadhiwa katika kifaa salama na zitafutwa baada ya kutafsiriwa. Nakala zitapewa nambari ya kipekee na zitahifadhiwa katika kompyuta iliyolindwa kwa nenosiri. Mimi na wasaidizi wa utafiti pekee ndio tutakuwa na ufikiaji wa data. Data itatumika tu kwa madhumuni ya utafiti huu na haitashirikiwa na mtu mwingine yeyote bila ruhusa yako. Matokeo ya utafiti huu yataripotiwa kwa namna ya jumla na hayatawatambua washiriki wowote binafsi.

Ushiriki wa hiari na kujiondoa

Ushiriki wako katika utafiti huu ni wa hiari. Una haki ya kukataa kushiriki au kujiondoa kutoka kwa utafiti wakati wowote bila adhabu yoyote au upotezaji wa faida. Uamuzi wako hautaathiri uhusiano wako na mimi, kituo cha afya, au vyama vingine vinavyohusika katika

utafiti huu. Ikiwa utaamua kujiondoa kutoka kwa utafiti, unaweza kuomba data yako ifutwe au kuharibiwa.

Maswali na wasiwasi

Ikiwa una maswali au wasiwasi wowote kuhusu utafiti huu, unaweza kuwasiliana nami kwa (mawasiliano yako). Kwa njia mbadala, ikiwa unahitaji ufafanuzi zaidi, una haki ya kuwasiliana na bodi ya maadili ya utafiti kwa (mawasiliano ya bodi ya maadili ya utafiti).

Idhini

Nimesoma na kuelewa habari iliyotolewa katika fomu hii ya idhini. Nimepata fursa ya kuuliza maswali na nimepata majibu ya kuridhisha. Nakubali kushiriki katika utafiti huu na ninaelewa kuwa ninaweza kujiondoa wakati wowote. Ninaruhusu kurekodiwa kwa sauti kwa mahojiano.

Jina la mshiriki: _____ Sahihi ya mshiriki: _____ Tarehe: _____

Jina la mtafiti: _____ Sahihi ya mtafiti: _____ Tarehe: _____

Jina la shahidi: _____ Sahihi ya shahidi: _____ Tarehe: _____

Appendix iii: Checklist Guideline (English Version)

ID NO.....

1. Gender: a) Female b) Male c) Other (please specify: _____)
2. Age in (years):
3. Marital status: a) Single b) Married c) Divorced/separated d) Widowed e) Not documented
4. Residence: a) Rural b) Urban c) Not documented
5. Care entry point: a) VCT b) PMTCT c) TB d) In-patient e) Out-patient f) Community g) Other facilities h) Other sources (please specify: _____) i) Not documented
6. Time to linkage to ART after HIV diagnosis: a) Within 7 days b) 8-14 days c) 15 days and above d) Can't remember/recall e) HIV diagnosis date not documented
7. Disease stage on enrollment: a) WHO stage 1 b) WHO stage 2 c) WHO stage 3 d) WHO stage 4 e) Not documented
8. Were you suffering from any disease when you got diagnosed? a) Yes b) No c) I don't know
9. CD4 count if present: a) 0-50 b) 51-100 c) 101-250 d) 251-350 e) 351-500 f) >500 g) Not documented
10. Opportunistic Infections (OIs): i. TB a) No b) Yes ii. Cryptococcus disease a) No b) Yes iii. Oral candidiasis a) No b) Yes iv. Esophageal candidiasis a) No b) Yes v. Kaposi's sarcoma a) No b) Yes vi. Other OIs not mentioned a) No b) Yes (if yes, describe the OI: _____) vii. Current ART status: a) Active b) Loss to follow-up c) Died d) Transferred e) Others (please specify: _____)

Appendix iv: In-depth Interview Guide (English Version)

Interviewee ID: _____

End Time: _____

Facility Name: _____

Interviewer's Name: _____

Interview Date: _____

Interviewer's Signature: _____

Start Time: _____

Part A: Socio-Demographic Characteristics of the Participant

Hello, I would like to gather the following information from you:

1. What is your age in years?
2. Are you married?
3. Do you have children?
4. Where do you live? (Specify if rural or urban)
5. What is your highest level of education?
6. Can you please tell me your occupation?
7. Could you provide an estimate of your average monthly income?
8. Note the gender of the participant after asking the above questions.

Part B: Predictors for ART Attrition among Clients Attending Care and Treatment

1. How long have you been receiving care and treatment services before you stopped?
2. Let's discuss the importance of drug adherence and care and treatment compliance.

What do you know about ART adherence?

- If the interviewee is aware, ask them to mention some of the importance of adhering to ART drugs.
- If not, explain the importance of drug adherence and continue with the interview.

3. Do you believe it is necessary to remain in care and treatment for the rest of your life?

Please share your thoughts on this.

4. Let's explore the factors that motivated you to remain in care and treatment services before you interrupted it.

- Probe further into individual, family, community, and organizational/structural factors.

5. Now, let's explore the factors that contributed to your interruption in receiving care and treatment services from the health facility for more than 3 months.

- Dig deeper into individual, family, community, and organizational/structural or health system factors.

6. What factors motivated you to return back to care and treatment services after interrupting it?

7. What measures do you think should be taken to ensure that clients are retained in care and motivated to stay in treatment services?

Thank the interviewee, provide them with an opportunity to raise any concerns, and conclude the interview.

Appendix v: Key Informant Interview Guide (English Version)

Interviewee ID: _____ Facility Name: _____

Education Level: _____ Title: _____

Interview Date: _____ Start Time: _____

End Time: _____ Interviewer's Name: _____

Interviewer's Signature: _____

1. Which cadres and how many providers do you have in this clinic? (Inquire about adequate staffing and the correct staff for an ART program)
2. How would you describe the overall staffing level?
3. How long does it typically take for a patient to be seen by a clinician or ART nurse during a follow-up visit?
4. In the past 3 months, have you experienced any problems with ARV supply/stockouts and service arrangements?
5. Does your facility have an active support group for HIV clients? If not, why?
6. If yes, please describe the roles played by these support groups in ensuring that clients remain on treatment.
7. Do you have referral linkages and defaulter tracing mechanisms in place? If yes, how can they be improved?
8. What are the patient-related barriers you encounter in providing care for HIV clients?
9. What are the health facility-related barriers you encounter in providing care for HIV clients, and what improvements would you like to see?
10. What are your views on the retention to care of HIV clients in this facility

Appendix vi: In-depth interview guide (Swahili Version)

Nambari ya Mhojiwa: _____ Jina la Kituo: _____

Tarehe ya Mahojiano: _____ Muda wa Kuanza: _____

Muda wa Kumaliza: _____

Jina la Mhoji: _____ Sahihi ya Mhoji: _____

Sehemu A: Sifa za Kijamii na Kidemografia za Mshiriki

Habari, ningependa kukusanya habari zifuatazo kutoka kwako:

1. Una umri wa miaka mingapi?
2. Umeoa/umeolewa?
3. Una watoto?
4. Unaishi wapi? (Taja kama ni kijijini au mijini)
5. Ni elimu gani ya juu zaidi uliyopata?
6. Tafadhali niambie kazi yako ni nini?
7. Unaweza kutoa makadirio ya mapato yako ya wastani kwa mwezi?
8. Andika jinsia ya mshiriki baada ya kuuliza maswali hayo hapo juu.

Sehemu B: Vigezo vya Kushindwa Kufuata Matibabu ya ART kwa Wateja Wanaohudhuria Huduma na Matibabu

9. Umepokea huduma na matibabu kwa muda gani kabla ya kuacha?

10. Tujadili umuhimu wa kufuata dawa na kuzingatia huduma na matibabu. Unajua nini kuhusu kufuata ART?

- Ikiwa mhojiwa anajua, mwombe ataje baadhi ya umuhimu wa kufuata dawa za ART.
- Ikiwa sivyo, eleza umuhimu wa kufuata dawa na uendelee na mahojiano.

11. Je, unaamini ni muhimu kubaki katika huduma na matibabu kwa maisha yako yote? Tafadhali shiriki mawazo yako kuhusu hili.

12. Tuchunguze sababu zilizokutia motisha kubaki katika huduma na matibabu kabla ya kuikatiza.

- Chimba zaidi katika sababu za mtu binafsi, familia, jamii, na za shirika / muundo/taasisi

13. Sasa, tuchunguze sababu zilizochangia kukatiza kwako kupokea huduma na matibabu kutoka kwa kituo cha afya kwa zaidi ya miezi 3.

- Chimba zaidi katika sababu za mtu binafsi, familia, jamii, na za shirika / muundo au mfumo wa afya.

14. Ni sababu gani zilizokutia motisha kurudi katika huduma na matibabu baada ya kuikatiza?

15. Ni hatua gani unadhani zinapaswa kuchukuliwa kuhakikisha kuwa wateja wanabaki katika huduma na wanahamasishwa kubaki katika huduma za matibabu?

Mshukuru mhojiwa, mpe fursa ya kuibua wasiwasi wowote, na umalize mahojiano.

Appendix vii: Key informant Interview Guide (Swahili Version)

Nambari ya Mhojiwa: _____

Jina la Kituo: _____

Kiwango cha Elimu: _____ Cheo: _____

Tarehe ya Mahojiano: _____

Muda wa Kuanza: _____ Muda wa Kumaliza: _____

Jina la Mhoji: _____ Sahihi ya Mhoji: _____

1. Una watoa huduma wa ngazi gani na wangapi katika kliniki hii? (Ulizia kuhusu uwezo wa wafanyakazi na wafanyakazi sahihi kwa programu ya ART)
2. Ungeelezea vipi kiwango cha jumla cha wafanyakazi?
3. Inachukua muda gani kwa kawaida kwa mgonjwa kuonana na daktari au muuguzi wa ART wakati wa ziara ya kufuatilia?
4. Katika miezi 3 iliyopita, umekumbana na matatizo yoyote ya usambazaji / ukosefu wa ARV na mpangilio wa huduma?
5. Je, kituo chako kina kikundi hai cha usaidizi kwa wateja wa VVU? Ikiwa hapana, kwa nini?
6. Ikiwa ndio, tafadhali elezea majukumu yanayotekelezwa na vikundi hivi vya usaidizi katika kuhakikisha kuwa wateja wanabaki kwenye matibabu.
7. Je, una uhusiano wa rufaa na mifumo ya kufuatilia wateja waliokosa? Ikiwa ndio, inawezaje kuboreshwa?
8. Ni vizuizi gani vinavyohusiana na mgonjwa unakutana navyo katika kutoa huduma kwa wateja wa VVU?
9. Ni vizuizi gani vinavyohusiana na kituo cha afya unakutana navyo katika kutoa huduma kwa wateja wa VVU, na ungependa kuona uboreshaji gani?
10. Ni maoni gani unayo kuhusu kubaki kwenye huduma ya wateja wa VVU katika kituo hiki

Mshukuru mhojiwa na mpe nafasi ya kujibu wasiwasi wowote ikiwa upo kisha maliza mahojiano.

Appendix viii: IRB Certificate



THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

NATIONAL INSTITUTE FOR MEDICAL RESEARCH

LAKE ZONE INSTITUTIONAL REVIEW BOARD
MWANZA CENTRE



In reply please quote:
MR/53/100/790

9th Feb, 2024

Kidenya Sita
P.O. Box 55
Simiyu -Tanzania


CLEARANCE CERTIFICATE FOR CONDUCTING MEDICAL RESEARCH

This is to certify that the research titled "Factors Contributing to Antiretroviral Therapy Default Among Clients in Selected Health Facilities in Maswa District, Tanzania. (Sita *et al*)" has been granted ethics clearance by LZIRB.

The Principal Investigator (PI) of the study must ensure that the following conditions are fulfilled:


1. Progress report is submitted to Mwanza Medical Research Centre after every six months.
2. Permission to publish the results is obtained from NIMR Headquarters.
3. Copies of final publications are made available at NIMR Headquarters.
4. Any researcher, who contravenes or fails to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine. NIMR Act No. 23 of 1979, PART III Section 10(2).
5. Approval is for this study, any other changes should be submitted to the Board for approval.
6. Study site(s): Maswa district - Simiyu Region

Approval is for one year: 9th February, 2024 to 8th February 2025.


Name: Dr Sophia Kalokola

Chairperson
CC: Regional Medical Officer
District Medical Officer




Name: Dr Rebecca Balira

Secretary

All official correspondences should be addressed to the Chairperson LZIRB
NIMR Mwanza P.O. Box 1462, Mwanza, Tanzania,
Phone: +255282503012, Email: rebecca.balira@nimr.or.tz; Website: www.nimr.or.tz

Appendix ix: Plagiarism Report

Kidenya Sita

FACTORS CONTRIBUTING TO ANTIRETROVIRAL THERAPY DEFAULT AMONG CLIENTS IN SELECTED HEALTH FACILITIE...

- Proposals
- MPH Proposals
- Amref International University (AMIU)

turnitin Page 2 of 92 - Integrity Overview

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