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LEVEL OF ADHERENCE AND RISKY BEHAVIOURS AMONG HIV-POSITIVE YOUNG PEOPLE AGED 18-24 ON ANTIRETROVIRAL THERAPY IN EPWORTH, SEKE DISTRICT, 2022

BY

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Abstract

Young people living with HIV are a heterogeneous group with multiple, interlinked factors affecting antiretroviral therapy (ART) adherence. Young people face a myriad of differential factors affecting adherence such as limited knowledge, substance abuse, risky sexual behaviour and poor satisfaction with health service delivery. The purpose of this study was to determine level of antiretroviral therapy adherence and associated risky behaviours among young people aged 18-24 in Epworth, Seke District in 2022. An analytical cross-sectional study was done to assess level of antiretroviral therapy adherence and associated behavioural factors among young people living with HIV. Young people aged 18-24 enrolled on antiretroviral therapy at the Epworth clinics and residing in the district, enrolled on antiretroviral treatment for at least six months prior to the start of the research, willing to participate and capable to provide consent were included in the study. Proportionate stratified random sampling was adopted using a sampling fraction of 0.18 and sample size of 250 was calculated using Cochran's formula. Data was collected using an interviewer administered questionnaire. Analysis was done using SPSS for bi-variate, multi-variate logistic regression analyses to identify independent predictors of antiretroviral therapy adherence. The study found an ART adherence rate of 76.0%, prevalence of risky sexual behaviour of 64.3% and drug-use prevalence of 13.2%. A multivariate analysis showed perceiving that skipping ART medication from time to time will not affect a person at all [AOR=0.4; 95% CI (0.1– 0.9); p=0.047]; perceiving that ART does more harm than good [AOR=0.3; 95% CI (0.1– 0.7); p=0.005]; early sexual debut [AOR=0.1; 95% CI (0.0–0.4); p=0.006]; not using condoms because partner is HIV positive [AOR=0.0; 95% CI (0.0– 0.3); p=0.014] and waiting time to collect ART [AOR=3.3; 95% CI (1.3–8.5); p=0.014] were statistically significant predictors of ART adherence. There is need to address social factors contributing to low ART adherence through strengthening community support and integrated service delivery that also addresses sexual and reproductive health needs of young people.

Keywords: Adherence; Antiretroviral therapy; Risky behaviour; Young people

Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

Kimberly Tamanda Sadrake 13/04/2023

Student's Full Name Signature and Date

Dr Abigail Kapfunde

13/04/2023

Main Supervisor's Full Name Signature and Date

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Dedication

I would like to dedicate this work to young people living with HIV in Epworth, Seke District as they actively contribute to ending AIDS by 2030. A special thanks goes to my spouse for his support and encouragement, my parents for always believing in me and my peers for cheering me on.

List of acronyms and abbreviations

AIDS	Acquired Immune deficiency Virus
ART	Antiretroviral Therapy
HIV	Human Immuno-deficiency Virus
MoHCC	Ministry of Health and Child Care
UNAIDS	United Nations Programme on HIV and AIDS
WHO	World Health Organisation
YLHIV	Youth living with HIV

Definition of key terms

Adherence refers to the extent to which a person's behaviour, taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from their health service provider

Antiretroviral therapy refers to treatment of individuals infected with human immunodeficiency virus (HIV) using anti-HIV drugs, which are usually a combination of drugs that aim to suppress HIV replication

Human immunodeficiency virus is a retrovirus that infects cells of the human immune system (mainly CD4-positive T-cells and macrophages), once the CD4 cells are destroyed this weakens a person’s immunity against opportunistic infections

Young people are defined by the United Nations as persons between the ages of 15 and 24, for statistical purposes as there is no universal global agreement on the definition

Risky sexual behaviour can be defined as engaging in sexual practices that may increase vulnerability to a reproductive health problem, including unprotected vaginal, oral or anal sex; multiple sexual partners; having sex while using drugs or alcohol; exchanging money for sex; early sexual debut

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CHAPTER 1 INTRODUCTION

1.1. Introduction

Globally, the human immunodeficiency virus (HIV) pandemic continues to be a public health priority. As many as 37.7 million are living with HIV worldwide whilst 1.5 million new infections were recorded in 2020 (UNAIDS, 2020). Two thirds of the population of people living with HIV are in sub-Saharan Africa, which faces the brunt of the pandemic. Although antiretroviral treatment (ART) has reduced AIDS-related deaths, access to ART is not universal. In 2020, only 73% of people living with HIV (PLHIV) were an ART. Young people living with HIV face unique challenges in HIV prevention, treatment and care, whilst the majority of statistics report them as synonymous to older adults. In 2019, young people aged 15–24 years accounted for 28% of all new HIV infections globally, with adolescent girls and young women comprising up to two-thirds of new infections (UNAIDS, 2021). Youth living with HIV face challenges such as recognition of HIV status, adherence to ART, mental health, and sexual and reproductive health.

The youth population should be included in targeted interventions if the world is to achieve the ambitious targets 95-95-95 by 2030, that is, 95% of people living with HIV know their HIV status, 95% of people who know their status are receiving treatment and 95% of people on HIV treatment have a suppressed viral load to improve their immune system and reduce likelihood of transmitting the infection. The Joint United Nations Programme on HIV/AIDS (UNAIDS, 2015) fast track approach will avert 28 million HIV infections, if interventions and approaches aim to reach the global targets.

The current study, which addresses the third-95 target concerning optimum virological suppression, aimed to determine the level of ART adherence and associated risky

behaviours among young people aged 18-24 in Epworth, Seke District, Mashonaland East Province in 2022. An analytical cross-sectional study was done to determine behavioural, knowledge and service delivery related factors associated with optimal ART adherence among young people.

1.2. Background to the Study

Retention on ART is intertwined with optimal adherence which is fundamental in the achievement of good clinical outcomes in youth living with HIV. Zimbabwe, a country that had one of the worst HIV epidemics in the world has made significant strides towards the 95-95-95 targets with 87% of people living with HIV diagnosed, 97% of those diagnosed on antiretroviral therapy (ART), and 90% of those on ART virally suppressed (Musuka & Dzinamarira, 2021). Although the number of deaths is now declining among younger adolescents, deaths among older adolescents have remained unchanged since 2012 (Slogrove et al., 2018). Young adults (20–24 years) face high rates of loss to follow-up and poor adherence compared to other individuals living with HIV (Assemie et al., 2018). Despite efforts to abstain or reduce sexual activity, about 25-40% of young people, including those living with HIV, have been reported to have a higher prevalence of risky sexual behaviours than the general population (Feten & Mekonnen, 2018; Geremew et al., 2022).

Studies have noted the high rates of risky sexual behaviour among HIV positive individuals even after learning their sero-status (Ncube et al., 2012; Grubb et al., 2020). With an average sexual debut of 18.7 years in Zimbabwe, there is evidence of high sexual activity among youth aged 15-24 (56% have ever had sexual intercourse), coupled with limited knowledge of HIV prevention (49% boys, 51% girls) (Zimbabwe Demographic

and Health Survey, 2015). The Multi-Indicator Cluster Survey (Zimbabwe National Statistics Agency, 2019) reported that more than 23% of youth 15-24 who are sexually active have not been tested in the past 12 months, meaning they do not know their status, which is a cause for concern in the potential spread of HIV.

Whilst studies have been done on the general youth population including those living with HIV, there are limited studies that explore risky behaviour and factors hindering ART adherence particularly focussing on youth living with HIV as a standalone population group.

1.3. Statement of the Problem

Poor adherence to ART by young people has a direct and negative impact on the ART programme. Harare City recorded a staggering 57% of young people who attained viral suppression after 12 months on ART compared to 88% among adults (Sithole et al., 2018). Poor adherence coupled with documented risky sexual behaviour, drug and substance abuse, and other behavioural factors among young people have detrimental effects. There is need to establish co-occurrence of substance abuse and risky behaviours among youth. Such knowledge will broaden the scope of attrition-related risk factors among HIV positive youth from an adolescent sexual health and mental health perspective rather than merely focusing on clinical factors affecting adherence.

1.4. Purpose of the Study

The purpose of this study is to determine level of ART adherence and associated risky behaviours among young people aged 18-24 in Epworth, Seke District in 2022

1.4.1. Specific Objectives

The specific objectives for the study are to:

- To determine the ART adherence rate among young people living with HIV in Epworth in 2022
- To determine the prevalence of risky sexual behaviour among HIV positive young people in Epworth in 2022
- To identify the risky behaviours associated with ART adherence among HIV positive young people in Epworth in 2022
- To determine young people's satisfaction level with service delivery for ART-related care in 2022

1.5. Research Questions

- What is the ART adherence rate among young people living with HIV in Epworth in 2022?
- What is the prevalence of risky sexual behaviour among HIV positive young people in Epworth in 2022?
- Which risky behaviours are associated with ART adherence among HIV positive young people in Epworth in 2022?
- How satisfied are young people with ART care services in 2022?

1.6. Justification of the study

Zimbabwe aims to achieve the 95-95-95 targets by 2030. Suboptimal adherence due to factors inhibiting young people from taking ART consistently will make this target unattainable. It is important to address risk factors for non-adherence among young people, a subpopulation often forgotten or overlooked in HIV programming. Epworth is

a high-density town with a population of 167,462 (Census, 2012) on the outskirts of the capital Harare. The HIV clinic at Epworth polyclinic was established in 2006 and is in principle a nurse-led service with support available on site from MoHCC doctors.

According to Epworth ART statistics (Epworth Clinic Data, 2022), adherence rate for adults enrolled-on ART was 82% in December 2022. This calls for a study to unearth risk factors including risky sexual behaviour that fuels spread of HIV especially among young people, considering the detrimental effect on adherence to antiretroviral treatment for YLHIV. Furthermore, while the adult ART adherence rate is known, no study on the youth ART adherence rate and behavioural factors contributing to poor adherence among youth has been done or published in Epworth. The study results are useful in informing existing behaviour change programmes targeting YLHIV in Epworth, to implement programmes that also address the root cause of poor adherence and risky behaviours including risky sexual behaviour among YLHIV.

1.7. Delimitations of the study

The study will not be able to address all possible confounding variables. The study is cross-sectional in nature hence causal relationship cannot be established. The research will also be limited to the Epworth context and not the entire Seke District.

1.8. Summary

The chapter introduced the study with an outline of the context of the study, rationale, problem statement, research questions, research objectives, the delimitations to the study. The study is summarised to be a cross-sectional design, which aims to determine the level of ART adherence and associated risky behaviours among young people aged 18-24 in

Epworth, Seke District in 2022.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1. Introduction

This chapter reviews literature related to ART adherence and associated risk behaviours among HIV positive youth and their effect on adherence at a global, regional and national level. The section will zero in on current research on behavioural factors influencing poor ART adherence or potential spread of HIV among young people living with HIV.

2.2. Theoretical Framework

Information-Motivation-Behavioural skills (IMB) model of ART adherence (Figure 1) posits that information related to adherence and personal motivation are associated with adherence-related behavioural skills, these skills in turn directly predict adherence to ART. The original Information-Motivation Behavioural Skill Model was proposed by Fisher and Fisher (1992) to particularly explain HIV-related behaviour. Whilst this model is a behavioural model drawn from existing behaviour change models such as the Health Belief Model, Theory of Reasoned Action and Theory of Planned Behaviour, the IMB model was particularly more relevant to HIV-related behaviour change as not only does it provide a relatively simple explanation for complex health behaviours but also identifies constructs that are needed for successful self-management or adherence among patients with chronic disease.

Fisher and Fisher (1992) posit three constructs needed for one to engage in a particular health behaviour. These are information, motivation and behavioural skills. In the context of HIV-related behaviour change, the IMB model explains that information is a bare minimum requirement or prerequisite for enacting a health behaviour. Information also includes dismissing common myths/misconceptions about health behaviour. Motivation

on the other hand relies on personal motivation/will towards improving the behaviour as well as social motivation in the form of social support and environment that condones good health behaviour (Fisher, Fisher & Harman, 2003). The third determinant, behavioural skills include an individual's objective skills necessary to perform the desired health behaviour, which is enhanced with an individual's increase in self-efficacy (Fisher et al., 2003).

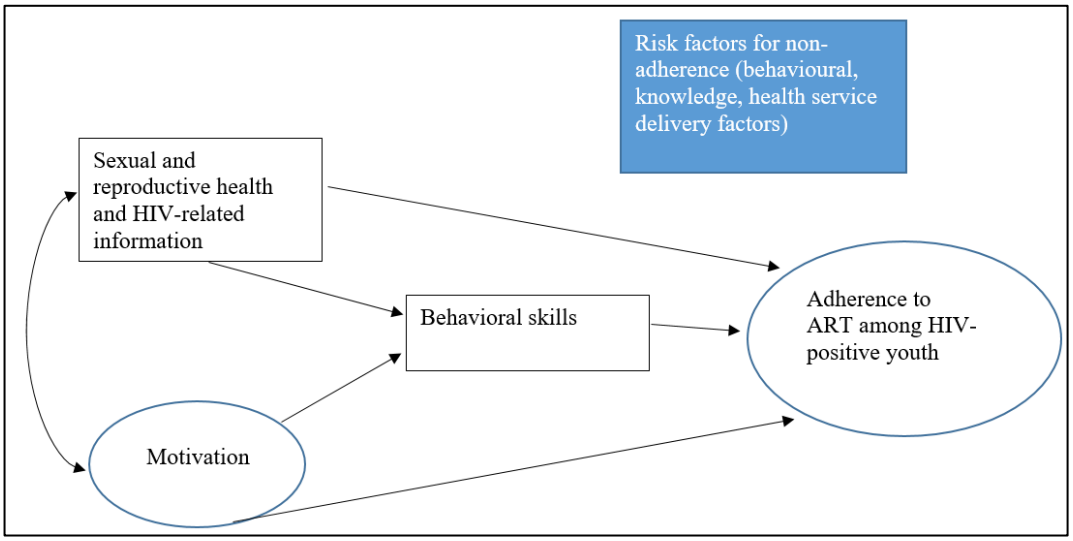

Figure 1: Information-Motivation-Behaviour Model for ART adherence

2.3. Significance of the theoretical framework in the current study

As depicted in the adapted model in Figure 1, information and motivation have direct effects on both behavioural skills and health behaviour. Moreover, behavioural skills exert direct effects on health behaviour. Meanwhile, there are factors at play in the adapted model, where risk factors for poor health behaviour (non-adherence to ART) are listed and acknowledged as fundamental to young people's behaviour change. For example, to identify and understand factors leading to young people exhibiting poor adherence, one needs to understand the risk factors at play and how they affect either access to information, or transition from accessing information to the actual acquisition

of behaviour skills such as safe sexual practice, not taking substances/alcohol.

Overall, if behaviour skills that are conducive to optimal ART adherence are not adopted due to risk factors such as substance use and risky sexual behaviour, and there is no motivation (personal and social factors) to adhere to treatment, then chances are the individual will not adhere to ART thereby resulting in poor treatment outcomes.

2.4. ART adherence from a global, regional and national perspective

Globally, an ART adherence rate of 95% has been used as the gold standard for an appropriate level to achieve maximal viral suppression and lower chances of opportunistic infections (WHO, 2009). It is also acknowledged globally that achieving adherence rate of even above 80% is difficult particularly in resource-constricted settings such as in sub-Saharan Africa. However, with the setting of the UNAIDS targets 95-95-95 and a commitment by member states, there is significant improvement and resource allocation for countries to reach the target if 95% of those that are on ART are virally suppressed, a clear result of ART adherence (UNAIDS, 2016).

Studies have shown the wide facilitators of ART adherence not only limited to young people, but to all individuals living with HIV including knowledge of consequences of nonadherence, availability of social support, the use of a pillbox to remember taking the drugs, being part of an HIV support group and good attitude towards treatment (Kalichman, Cain, Cherry, Kalichman & Pope, 2005; Mabunda et al., 2019; Nyogea et al., 2015). However, the study by Nyogea et al. (2015) had methodological limitations such as bias introduced by interviewing participants at home increasing chances of enrolling those with high risk of ‘loss to follow-up’. The clinical benefits of adherence to

ART are widely known, including improved quality of life, prolonged life, and prevention of premature death and improved overall health that is not prone to opportunistic infection (Gill et al., 2005).

On the contrary, there is wide documentation of poor ART adherence rates despite the available benefits of ART. In developing countries, low adherence rates are evident, for example, a cross-sectional study in Ethiopia showed a self-reported adherence rate of 79.1% by young people (Firdu, Enquselassie & Jerene, 2017), whilst a study in other settings ranged around the same figures failing to achieve the gold standard rate of 95% adherence (82% adherence rate) (Mutevedzi, Lessells, Rodger & Newell, 2011). Firdu et al. (2017) used the self-report method of collecting adherence data which is prone to bias including social desirability and recall bias, this may have overestimated the adherence in the absence of a clinical method for comparison.

A systematic review done in more than 10 countries showed that the reported ART adherence among YLHIV was 6-71% (Zgambo, Kalembo & Mbakaya, 2018). Whilst Zgambo et al. (2018) established strength in estimating adherence across diverse contexts, weaknesses include the limited consistency in adherence classification across studies owing to the varying methods to collect adherence data. In Zimbabwe, a cross-sectional study by Gross et al. (2015) resonated with the current literature on low adherence rate in the adolescent and youth population, with a reported 36% adherence rate. Limitations of the study include that it was a small-scale research, sampling from only two clinics/main public sector sites primarily serving lower income patients though the clinic covers a wide catchment area. There is need to establish the state of adherence in populous urban areas such as Epworth where risk and behavioural factors are numerous.

2.5. ART adherence measurement types used in public health

There is no "gold standard" for measuring adherence as each of these assessments have strengths and weaknesses. Several methods have been used to measure adherence including measures such as self-report, pharmacy refill data, clinic pill count, electronic data monitoring, and therapeutic drug concentration monitoring. The aforementioned are used by authors based on strengths weakness and capital intensity (that is, availability of resources). For example, self-report is the mostly used method to measure ART adherence by researchers in resource-limited settings and mainly in hospitals due to its ease of use, validity and affordability particularly in resource-constrained settings such as Zimbabwe (Atanga et al., 2018; Bajunirwe et al., 2020; Coker et al., 2015; Willis et al., 2019). Moreover, self-report was consistent with objective methods of measuring adherence such as plasma viral load monitoring and Medication Event Monitoring System (MEMS) (Gill et al., 2005). The major shortcoming of self-report method is the overestimation of adherence due to recall bias and social desirability. However, despite these limitations, majority of studies in sub-Saharan Africa and resource-constrained settings have utilised this method with success.

At the local level, studies in Zimbabwe have also used self-reports to measure ART adherence among young people. A cross-sectional study by Gross et al (2015) utilised self-reported adherence measurement among adolescents on ART in a hospital setting where respondents completed a Self-Rating Scale Item questionnaire. Despite experiencing limitations such as potential overestimation of adherence due to recall bias, the study found substantial non-adherence when using the threshold of less than "excellent" adherence. In a similar setting and with a different study design, a randomised

controlled trial in Zimbabwe to determine effectiveness of a community-based peer support intervention on reducing virological failure among young adults used a self-reported adherence questionnaire about the number of missed doses over the previous 30 days (Ndlovu et al., 2021). However, considering the RCT was also evaluating an existing program, periodic-pill count was utilised by peer counsellors which was already part of the broader intervention programme. Other observational studies utilised the self-report method based on documented validity of self-reported measures of ART adherence (Haas et al., 2021; Semvua et al., 2017).

The reliability of self-reported adherence often depends on how the researcher elicits the information. It is most reliable when determined in a simple, non-judgmental, routine, and structured format that normalizes adherence that is less than what is considered as the 'perfect' range, and minimizes social desirability bias (Department of Health and Human Services (DHHS) Panel on Antiretroviral Guidelines for Adults & Adolescents, 2013). Other methods such as pill count and pharmacy refill are other inexpensive and validated measurement methods though they are prone to weaknesses such as pill dumping/sharing, inaccurate and unreliable records (Castillo-Mancilla & Haberer, 2018; Sangeda et al., 2014). Pill count is determined by calculating number of tablets taken divided by number of tablets that were supposed to be taken and multiplied by 100 to get the percentage adherence. The current study will ascertain adherence using self-report on the number of pills missed/remaining in the bottle.

2.6. Factors influencing ART adherence

Identification of factors influencing ART adherence especially among young people is critical to the development and review of ART programmes. Factors were classified as

behavioural/social factors and knowledge-related factors.

2.6.1. Behavioural and social factors affecting ART adherence

Social factors are actors that usually lie within the broader living and societal arrangements and culture that are often times beyond the control of an individual. These include stigma/privacy; social support; drug and substance abuse; disclosure of HIV status. Behavioural factors include sexual risk behaviour and low risk perception (Gamarel et al., 2016; Zgambo et al., 2018).

2.6.2. Drug and substance abuse

Literature exists showing the high prevalence of substance use among young people living with HIV (Mabunda et al., 2019). Substance use alone has detrimental effects on the wellbeing of individuals, let alone young people living with HIV. The effects include social, psychological and health effects, which are also documented to be directly correlated with risky sexual behaviour such as condom-less sex with infected and uninfected partners, suboptimal adherence to ART which exacerbates decreased CD4 counts, reducing efforts to reach viral suppression and essentially resulting in ART-resistant virus (Mabunda et al., 2019; Zgambo, Kalembo & Mbakaya, 2018).

A cross-sectional study by Gamarel et al. (2016) where 72% of HIV cases were behaviourally acquired, a quarter of youth living with HIV reported weekly alcohol intake whilst 20% reported daily marijuana use and 25% weekly marijuana use. Behaviourally infected youth had significantly greater odds of each substance use outcome in the study, revealing the interconnectedness between risk behaviour outcomes. Studies have demonstrated both temporal and dose-related relationships between alcohol use and

adherence, where young people are more likely to miss ART on the day they consume alcohol and the day after, with a stronger association on heavy drinking days (Naggirinya et al., 2022; Pellowski, Kalichman, Kalichman & Cherry, 2016; Williams, Hahn, Saitz, Bryant, Lira & Samet, 2016).

2.6.3. Disclosure of HIV status

Quantitative and qualitative research shows the positive effects of onward disclosure by young people to their sexual partners and friends/family (Mabunda et al., 2019; Ndlovu et al., 2021). HIV status disclosure to sexual partners was low (57%) among adults in a study in Ethiopia (Genet, Sebsibie & Gultie, 2015). Disclosure is an integral component of ART education in programmes targeting adolescents and youth in Zimbabwe (Ndlovu et al., 2021). A systematic review of studies looking into risk behaviours and their correlates among YLHIV found that disclosure from adolescents was staggeringly low, ranging from 40 to 57%, as it was often associated with stigma from peers including sexual partners (Zgambo, Kalembo & Mbakaya, 2018). As a result of factors such as failure to disclose HIV status, ART adherence rates in the countries studied were from as low as 7% up to 56%. Failure to disclose HIV status by young people, especially those that are sexually active is a significant risk to HIV prevention and control.

2.6.4. Sexual risk behaviour

Sexual risk behaviour is defined as sexual activities that may make an individual liable to the risk of STIs including HIV and unplanned pregnancies (Keto, Tilahun & Mamo, 2020). Sexual risk behaviours common among young people include multiple sexual partners including concurrent multiple relationships, unprotected sexual intercourse with sex workers, unprotected sexual intercourse, coerced sexual intercourse and exchanging

goods for sex. A study in Nigeria showed that adolescents living with HIV (48%) who knew their HIV status engaged in unprotected sex compared to 6% of those who did not know their HIV status (Lawan, Envuladu & Abubakar, 2016). The findings are consistent with Zgambo et al. (2018) who found that of the YLHIV who were sexually active, only 35-55% used protection (condoms) to prevent further spread of HIV other STIs. Moreover, low risk perception was also found to be a contributing factor towards non-adherence.

2.7. Knowledge-related factors affecting ART adherence

Gross et al. (2015) found that socio-demographic factors such as age, literacy level, personal capacity to remember treatment plan were related to adherence to ART among adolescents and young people due to the complexity of issues affecting them, coupled with the risk behaviours associated with the age group are prone to poor adherence. Motivation and self-confidence are personal factors that are pivotal in adoption of healthy behaviour skills necessary in adhering to ART especially by young people (Fisher & Fisher, 1992).

Knowledge is an enabler of adherence and lack of it a risk factor for ART non-adherence. According to UNAIDS (2016), a population-based survey done from 2011 to 2016 revealed that just 36% of young women and 30% of young men had comprehensive and correct knowledge about HIV. An analytical cross-sectional study in Côte d'Ivoire among HIV positive young people revealed that 72% knew the modes of transmission, yet risk perception of possibly transmitting HIV to sexual partners was low (68%) (Richard et al., 2020). However, the study had a very low participation rate of 24%. A similar and more powered study by Gross et al. (2015) in Zimbabwe showed 87% of those who had optimal

adherence had knowledge of importance of ART adherence, whilst only 76% of those with suboptimal adherence had similar knowledge.

2.8. Health service delivery factors and their effect on ART adherence

In promoting ART adherence, provision of health services that are youth friendly and satisfactory has been shown to improve adherence to treatment and in turn, patient outcomes. Dibaba et al. (2021) in Ethiopia found that satisfaction with health services improved ART adherence by 69%, though the study enrolled adult participants as opposed to young people as per the current study. In Zimbabwe, a differentiated service delivery model improved virological suppression (Christ et al., 2022; Mavhu et al., 2020), while in Kenya, an ehealth intervention that reduced waiting hours for ART collection improved ART adherence (Ivanova et al., 2019). However, Ivanova et al's stud examined a specific pilot intervention and cannot be generalised to an entire population of young people.

2.9. Summary

In this chapter, studies on factors influencing adherence among young people were reviewed. The review particularly focussed on key definitions and standards regarding ART adherence and its measurements as well as prevalence of risk factors for non-adherence. A scope of factors influencing ART adherence among young people was reviewed using classifications such as behavioural/social factors and knowledge-related factors, which are commonly cited in literature. The literature review pointed out the need to identify and spotlight factors affecting young people's adherence in particular, considering the low levels of self-reported ART adherence which is consistent across literature in comparable settings within sub-Saharan Africa and in Zimbabwe. Some

identified gaps in literature that were addressed by the current study include the need to understand the relationship between sexual behaviour and ART adherence among young people, particularly in a context with high risk sexual behaviour such as the study population. Existing literature looks at behavioural factors broadly, with emphasis on behaviours directly linked to pill uptake, leaving a gap on some risk sexual behaviours that may influence ART adherence.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter outlines the research design, study setting, study population, sampling criteria and methods, data collection methods, data analysis plan and ethical considerations.

3.2 Research Design

An analytical cross-sectional study was done to assess the level of ART adherence and associated behavioural factors among young people living with HIV. An analytical cross-sectional study provides a snapshot for health occurrence, while exploring relationship between variables. The study design paved way for assessment of behavioural factors affecting self-reported adherence to ART by young people, whilst providing opportunity to do bi-variate and multi-variate analyses between risk factors and adherence. In this study, the dependent variable was ART adherence which was measured as a percentage, with 95% being the minimum benchmark for optimal adherence. A cross-sectional design, premised on its ability to measure a 'snapshot' of an event or occurrence was the most appropriate study design as it measured ART adherence at the time of the study. The independent variables included demographic characteristics, behavioural/social factors (sexual behaviour and drug/substance use), knowledge-related factors and service-delivery related factors. The independent variables were relevant as cross-sectional data which was assessed for potential associations with the dependant variable. Despites the above-mentioned benefits of the analytical cross-sectional study design, it cannot be used to establish causality.

3.3 Study Setting

The research was conducted in Epworth, a peri-urban community in Seke District, Mashonaland East Province. The latest Census (2012) revealed that Epworth has a population of 161,840 of which one in every five people (20%) are young people aged 15-24 (Zimbabwe National Statistics Agency, 2012). Epworth is constituted by two municipal clinics, one mission clinic, and an additional satellite clinic which is still under construction as well as seven private clinics (Taderera, Hendricks & Pillay, 2016). Study sites are limited in Epworth; therefore, the study was conducted at the Epworth Polyclinic and Overspill Clinic, as the ART centre at the Epworth Mission Clinic is currently not functional. The Epworth polyclinic is a Ministry of Health and Child Care (MoHCC) polyclinic supported by the international nongovernmental organisation Médecins Sans Frontières (MSF). The HIV clinic at Epworth polyclinic, established in 2006 is in principle a nurse led service (Blankley et al., 2019). The clinic provides antiretroviral therapy (ART) and counselling regarding drug adherence and reproductive health.

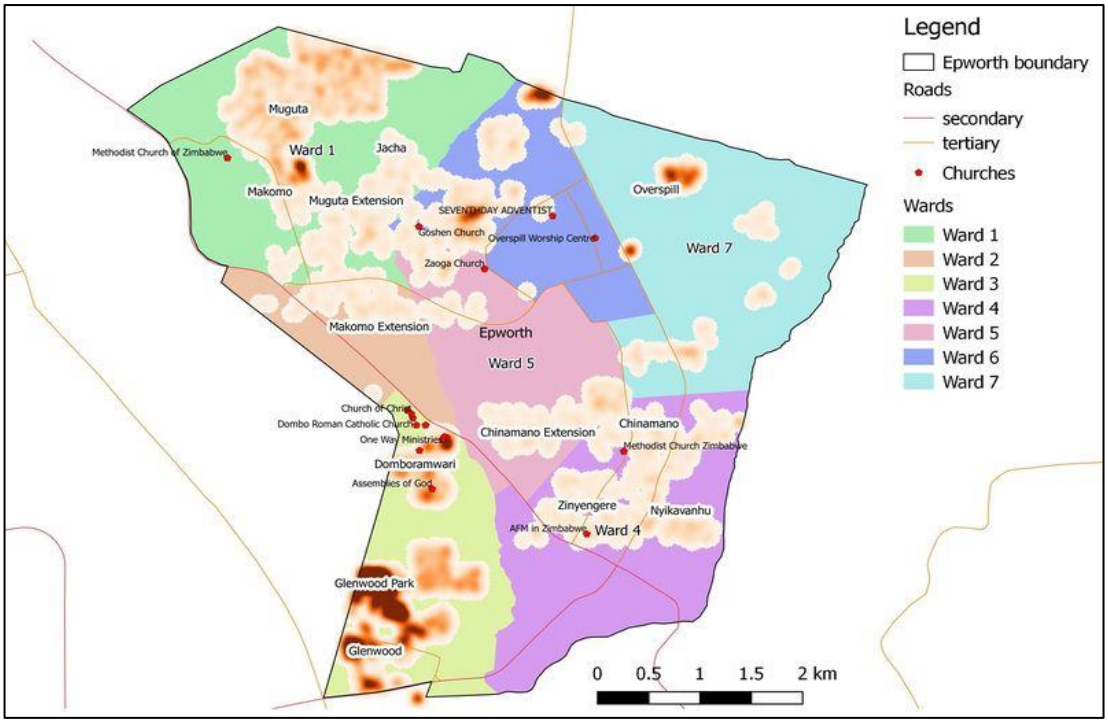

Figure 2: Study site: Location of Epworth

3.4 Study Population

The study population was all young people currently enrolled on ART in Epworth and who receive their ART at the HIV clinic at Epworth Polyclinic and Overspill Clinic. A total of 1,441 young people were registered for ART at the Epworth clinics as of December 2022. Young people aged 18 to 24 who have been on ART for at least one year regardless of how HIV was acquired (vertical transmission or behaviourally acquired) constituted the study population.

3.4.1 Inclusion Criteria

Young people aged 18-24 enrolled on ART at the Epworth Polyclinic were included in the study. In addition, YLHIV had to be currently residing in Epworth to be enrolled in the study. Young people enrolled in the study were on ART for at least six months prior to the start of the research. Additional inclusion factors included willingness to participate, physical and mental capability to provide informed consent.

3.4.2 Exclusion Criteria

Participants who did not meet the criteria described above were not included.

3.5 Sample Size and Sampling procedure

Epworth had an all population ART adherence rate of 82% in late 2022 ((Epworth Clinic Data, 2022). Against this backdrop, the sample size was calculated using the Cochran's formula below.

Using Cochran's formula

$$n = \frac{Z^2pq}{e^2}$$

Where Z (1.960) is corresponding z-value for 95% confidence interval

p= the value of 0.82 is the proportion of the all people regardless of age achieving ART adherence in Epworth (Epworth Polyclinic Statistics, 2022)

q=1-p= 1-0.82= 0.18

e= level of precision which is set at 0.05 for this study

$$n = \frac{(1.96)^2(0.82 \times 0.18)}{(0.05)^2}$$

$$n = \frac{(3.8416) \times (0.1476)}{(0.0025)}$$

$$n = \frac{0.56702}{0.0025}$$

n= 226.8

n=227

The research anticipated a 10% non-response rate

Therefore, maximum sample size = (minimum sample size) / Response Rate =

= 227/0.90

= 252.22222

= 253

Maximum sample size was =253

Sampling procedure

The sample size was proportionally allocated to each of the two health facilities based on the ART case flow as of March 2022. Stratified sampling was used where the two clinics

represented two strata. To be specific, proportionate stratified random sampling was adopted using the sampling interval of 6 which was derived from the sample size and sample population using the formula:

f= N/n

=1441/253

= 5.695

= 6

Where f is the sampling interval, n is the sample size and N is population size of YLHIV

Table 1: Sample size for the study

Stratum	**Epworth Polyclinic**	**Overspill Clinic**
Population size	918	523
Sampling interval	6	6
Sampling size	153	87
Minimum sample size: 240		

With a minimum sample size of 240 and a maximum sample size of 253 which anticipated an initial 10% response rate, a total of 250 participants were recruited for this study, which was well above the minimum sample size. To recruit participants based on the sample size per clinic, systematic random sampling was done where every 3rd YLHIV attending the ART centre and who fit in the inclusion criteria was chosen. This was done until the sample size per site was reached.

3.6 Data Collection Instruments – All tools and sections and variables

The investigator used a structured questionnaire. The questionnaire had five sections as follows:

i) *Demographic and socio-economic characteristics*: The questionnaire had

questions about age, sex, educational status, economic status, marital status, religion

ii) *Behavioural factors*: The investigator asked questions relating to risky sexual behaviour and substance use

iii) *Knowledge-related factors*: knowledge of factors affecting ART adherence

iv) *Adherence*: Dose adherence was used to assess adherence to ART through using self-report on doses missed

v) *Service delivery related factors*: This entails level of satisfaction with ART care services and extent to which services are youth-friendly

The questionnaire adopted critical questions from existing instruments. The WHO 10-items Alcohol Use Disorder Identification Test (AUDIT) for substance-abuse related factors was used for questions related to substance use. The Sexual risk behaviour scale (WHO sexual risk behaviour illustrative questions) was used to assess sexual risk behaviour. Additionally, the Youth Risk Behaviour Surveillance Survey was also utilised for more comprehensive questions. Adherence measurement: South African National Department of Health (NDoH) adherence questionnaire and the Simplified Medication Adherence Questionnaire (SMAQ) were used to adopt questions relating to knowledge of ART adherence.

3.6.1 Dependent variable

In the study, adherence to ART was the dependent variable. Suboptimal adherence (less than the WHO 95% rate) reported by YLHIV was taken as a strong indicator of non-adherence in this study. Thus, participants who have less than 95% dose adherence have been considered as those with suboptimal adherence.

3.6.2 Independent variable

Demographic and socio-economic characteristics, behavioural/social, knowledge and service-delivery related factors were the independent variables. Participants who reported using at least one substance (alcohol, cigarette or drugs) 7 days before the data collection period were considered as "using a substance" and otherwise considered as "not using a substance". Participants who engaged in unprotected (condom-less) sex in the past 3 months, or those with multiple sexual partners, those who encountered paid sex/exchanging sex for money or those that do not disclose their status to their sexual partner were considered as having high risky sexual behaviour.

3.7 Pretesting of instruments - Validity and Reliability

The developed questionnaire was pre-tested with 25 participants from Epworth Polyclinic to ensure reliability. Validity refers to the extent to which the measurement instrument (questionnaire) measures the attribute for which it was designed. On the other hand, questionnaire reliability refers to the precision, the consequence and the stability of its results. Test-retest reliability was done, where the same test was administered twice and five days apart to the same group of individuals. The test retest reliability was 0.89 (95% CI: 0.8- 0.9) which is a good indication. Face validity was measured through expert review, to determine if at face value the questionnaire answers the research questions and appropriateness of language. The 25 participants were not included in the study.

3.8 Data Collection Procedure

Participants were recruited during their routine scheduled clinic days. Data collectors who are Peer Counsellors in the district facilitated data collection under the supervision of a nurse. Participants per clinic were randomly selected during their routine scheduled clinic

days. Data collection was done over a period of two months until the sample size was reached. Participants who met the criteria were selected using systematic random sampling, where every 3rd YLHIV attending the ART centre at the clinic was selected to participate in the research. Sampling was done until each strata size per clinic was reached. Participants were led into areas provided by the clinic for confidentiality in the interviewer administered process.

3.9. Data Analysis and organisation

The study utilised SPSS version 28 in data analysis including capturing, cleaning and tabularisation of all the data collected using questionnaires. The study utilised univariate, bivariate and multivariate analysis. Frequencies for all variables were counted and cross tabulated using percentages. To determine if there was an association between ART adherence and independent variables, the study implored a bivariate analysis. Furthermore, multivariable logistic regression analysis was used to determine the effects of each independent variable in explaining variation in the outcome variable. The study utilised odds ratios (adjusted odds ratio was calculated) along with the 95% confidence interval to ascertain association, statistical significance and direction of association between variables. Statistical significance was set at a p-value of <0.05.

3.10. Ethical Considerations

Ethical approval was sought from the Ethics Committee of Africa University (AUREC). Permission to collect data was granted by the Provincial Medical Director (Mashonaland East Province) and signed by the District Medical Officer. A written informed consent form was made available to research participants, to inform them of the purpose of the research, emphasizing their consent and that they may withdraw their consent at any stage

should they feel the need. Privacy and confidentiality were respected through the use of a private room at the data collection site. Participants were assured that no personal identifying information will be collected such as ID number, address, and photos among other factors. Data collected for this study will not be used for other studies without approval of each participant. To ensure anonymity, no names were used on the questionnaires but each questionnaire was coded using unique numbers. After data collection, all data was stored safely. Participants were told that while there are no monetary gains to participation, the results of the study are anticipated to benefit the Epworth community through contribution to the assessment of factors affecting non-adherence to ART by YLHIV.

3.11. Summary

The chapter provided the research methodology including the research design as an analytical cross-sectional study, study setting, study population, inclusion and exclusion criteria, sample size and its calculation, data collection instrument which was an interview administered questionnaire. The chapter also looked at the dependant and independent variables, data collection procedure, data analysis and organisation, as well as a plan for dissemination of the findings and lastly, ethical considerations.

CHAPTER 4 DATA PRESENTATION AND ANALYSIS

4.1. Introduction

The chapter presents, describes and explains the findings from the data that was collected, with an analysis done using SPSS. In this study, univariate, bivariate and multivariate analysis were done. In the chapter, tables are used to display the data focusing on socio-demographic characteristics, knowledge of HIV, practices related to ART adherence, sexual behaviors, drug use and finally service delivery related factors.

4.2. Data Presentation

4.2.1. Socio-demographic characteristics of young people on ART

Table 2: Demographic characteristics of young people aged 18-24 associated with ART adherence (n=250)

Variables	**n (%)**	**p-value**
Sex		
Female	145 (58.0)	0.291
Male	105 (42.0)	
Age (years)		
18	51 (20.4)	0.037*
19	37 (14.8)	
20	39 (15.6)	
21	26 (10.4)	
22	32 (12.8)	
23	29 (11.6)	
24	36 (14.4)	
Marital status		
Married	85 (34.0)	0.351
Previously/Never married	165 (66.0)	
Highest level of education		
Primary	41 (16.4)	0.540
Secondary	173 (69.2)	
Tertiary	19 (7.6)	
Have never been to school	17 (6.8)	
Average household income in a month		
< USD$100	245 (98.0)	0.090
USD$100 - USD$500	5 (2.0)	
> USD$500	0 (0.0)	

Religion		
Christianity	187 (74.8)	0.529
Muslim	33 (13.2)	
Other	30 (12.0)	

*Significant at p<0.05

The socio-demographic data of the participants is summarised in *Table 2* above. There was a total of 250 respondents. The mean age was 20.7. The majority of respondents were female (58.0%), and previously/never married (66.0%). 69.2% of participants have secondary education as their highest education attainment while majority of participants live on less than US$100/month (98.0%), though there was no significance. The most common religion was Christianity (44.4%) followed by Apostolic (30.4%).

4.2.2. Dose Adherence of participants

Table 3: Dose adherence of young people aged 18-24 on ART in Epworth, Seke District

Variables	**Sub-optimal adherence n(%)**	**p-value**
Adherence		
Suboptimal adherence	190 (76.0)	0.039*
Optimal adherence	60 (24.0)	

*Significant at p<0.05

Majority of participants have sub-optimal adherence, with an adherence rate of 76.0% which is less than the WHO target of 95%, which is also the adherence rate adopted by Zimbabwe including Seke District (p=0.039).

4.2.3. Knowledge factors of participants

Table 4: Knowledge factors among young people aged 18-24 on ART in Epworth, Seke District

Variables	Category	n (%)	p-value
In relation to food intake, how should you take your ART			
	Correct response	188 (75.2)	0.091
	Incorrect response	62 (24.8)	
Do you think skipping your ART medication from time to time will not affect you at all			
	Correct response	195 (78.0)	0.844
	Incorrect response	55 (22.0)	
HIV medications interact with substances such as alcohol, mbanje or bronco			
	Correct response	39 (15.6)	0.965
	Incorrect response	211 (84.4)	
Do you think ART does more harm than good?			
	Correct response	158 (63.2)	0.004*
	Incorrect response	92 (36.8)	

*Significant at $p<0.05$

Majority of participants (75.2%) correctly identified how ART should be taken in relation to food intake though these results were not significant. Additionally, 22.0% believed that skipping ART medication from time to time will not affect a person at all, while only 15.6% knew that HIV medications can interact with alcohol, drugs and other harmful substances, though there was no significant difference. Lastly, 36.8% of participants think ART does more harm to their body than good ($p=0.004$).

4.2.4. Practices related to ART adherence among participants

Table 5: Practices on ART uptake by young people aged 18-24 on ART in Epworth, Seke District

Variables	Category	n (%)	p-value
Ever disclosed your HIV status			
	Yes	244 (97.6)	0.065
	No	6 (2.4)	
Where do you store your ART at home?			
	Hidden	97 (38.8)	0.011*
	Convenient storage but not necessarily as recommended	7 (2.8)	
	Storage that can help to remember daily schedule	133 (53.2)	
	Storage out of the reach and sight of children	6 (2.4)	
	Suitable storage as recommended by the health service provider	7 (2.8)	
Have you ever missed a dose of ART?			
	No	216 (86.4)	0.069
	Yes	34 (13.6)	
What do you do if you have missed a dose of ART?			
	Skip missed dose and just take the next one as planned	15 (6.0)	0.045*
	Take missed dose the next morning	113 (45.2)	
	Go to the clinic	7 (2.8)	
	Take missed dose as soon as you remember	58 (23.2)	
	I don't know what to do	6 (2.4)	
	Never missed a dose	51 (20.4)	
Who do you ask or where do you find out information about your ART?			
	Health service provider	222 (88.8)	0.152
	Other people living with HIV	4 (1.6)	
	Other people e.g. friend, relative, family member	2 (0.8)	
	ART dispensing staff	4 (1.6)	
	Support groups for PLHIV	14 (5.6)	
	Community health worker/volunteers in the community	4 (1.6)	

*Significant at $p<0.05$

Almost all participants have disclosed their HIV status (97.6%), though there was no significance. As many as 133 participants (53.2%) store their ART in a place that helps them to remember and 38.8% keep the ART somewhere hidden (p=0.011). 86.4% report to not have missed a dose, though this result was not significant. For those that have missed their dose, 67.6% did not think it is necessary to take them all the time. 45.2% of participants take a missed does the next morning, while 23.2% take the dose as soon as they remember (p=0.045). Majority of participants (88.8%) refer to health service providers for questions relating to ART, while 5.6% rely on peer support groups for people living with HIV, though there was no significance.

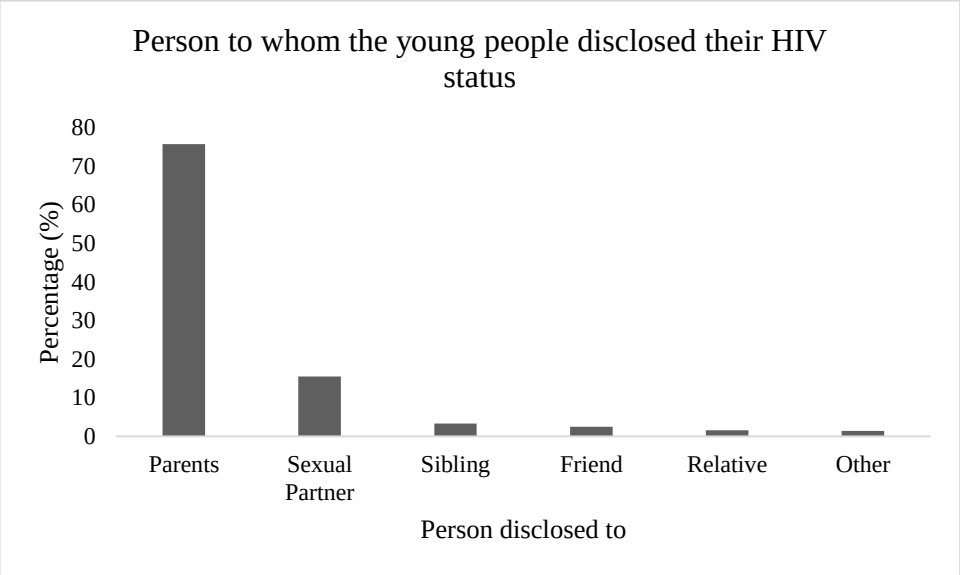

Figure 3: Persons to whom young people aged 18-24 on ART disclosed their HIV status

As per Figure 3 above, the most common person to whom young people disclosed their HIV status to was a parent 189 (75.7%) while only 39 (15.5%) reported to have primarily disclosed to their sexual partner.

4.2.5. Behavioural factors of participants

4.2.5.1. Risky sexual behaviour

Table 6: Sexual behaviour among young people aged 18-24 on ART in Epworth, Seke District

Variables	Category	n (%)	p-value
How old were you when you had sex for the first time?			
	<12	7 (3.4)	0.328
	13-16	48 (23.1)	
	17-18	58 (27.9)	
	>18	95 (45.7)	
How many people have you had sexual intercourse with in the past 3 months?			
	0	82 (36.9)	0.014*
	1	87 (39.2)	
	2-5	48 (21.6)	
	5 or more	5 (2.3)	
The last time you had sexual intercourse did you or your partner use a condom?			
	No	121 (58.5)	0.602
	Yes	86 (41.5)	
If you did not use condoms, what are the reasons for not using a condom the last time you had sex			
	Condoms do not feel natural/partner does not like	48 (30.8)	0.012*
	Condoms were not available	18 (11.5)	
	Partner also HIV positive so do not use	6 (3.8)	
	Believing that being on ART will not spread/acquire HIV	13 (8.3)	
	I have no particular reason	71 (45.5)	
Have you ever paid money for sex?			
	No	208 (91.2)	0.234
	Yes	20 (8.8)	
	More than 5 times in my lifetime	1 (0.4)	

*Significant at $p<0.05$

Majority of participants (87.8%) have ever had sexual intercourse (p=0.063), and 45.7% had their sexual debut at 18 years or older, while 26.5% and 27.9% had sex at ages 12-16 and 17-18 respectively, though this result was not significant. The most commonly recent (36.9%) sexual experience was more than six months ago, with 35.4% having had sex in three to 14 days prior to the interview; the result was not significant. Of those who are sexually active, only 41.5% used a condom. While the result was not significant, the commonly cited reason for not using condoms were other reasons, including preference (45.5%), while 30.8% cited that condoms do not feel natural (p=0.012). Majority of participants have had sex with at least two people in their lifetime (45.0%). In the last 3 months, 39.2% of participants have had one sexual partner while 23.9% have had more than two sexual partners. Only 11.8% of participants have ever been treated for a sexually transmitted infection, though there was no significance of this result.

4.2.5.2. Drug use

Table 7: Drug Use among young people aged 18-24 on ART in Epworth, Seke District

Variables	Category	n (%)	p-value
During the past 30 days, on how many days did you have at least one drink containing alcohol?			
	I do not drink	205 (83.3)	0.055
	Once a week	23 (9.3)	
	2-3 times a week	14 (5.7)	
	4 or more times per week	3 (1.2)	
	Everyday	1 (0.4)	
During your life, how many times have you used marijuana (mbanje)?			
	Never	208 (84.6)	0.05*
	Once a week	23 (9.3)	
	2-3 times a week	12 (4.9)	
	Everyday	3 (1.2)	
Use of recreational drugs (cannabis, heroin, glue and cough mixtures such as histalix and bron clear 'bronco')			
	Never	213 (86.6)	0.205

	Once a week	19 (7.7)	
	2-3 times a week	12 (4.9)	
	4 or more times per week	0	
	Everyday	2 (0.8)	
Ever had sex whilst under the influence of alcohol			
	Always	4 (1.6)	0.154
	Sometimes	28 (11.4)	
	Never	213 (86.9)	
Do you sometimes take your ART at the same time with drugs, alcohol or other substances?			
	Always	2 (0.8)	0.05*
	Sometimes	26 (10.7)	
	Never	214 (88.4)	

*Significant at p<0.05

When it comes to drug and substance use, 16.7% have had at least one drink in the past 30 days, of these, 13.1% have ever had sex under the influence of alcohol, though these results were not significant. Moreover, 11.6% sometimes take ART at the same time with alcohol (p=0.05). 6.1% of participants use marijuana from three days to every day of the week (p=0.05). Close to 12.6% used other recreational drugs (heroin, glue and cough mixtures such as histalix and bron clear 'bronco') in the past 14 days, and 0.8% used drugs every day; the result was not significant.

4.2.6. Service delivery factors

Table 8: Service delivery factors identified by young people aged 18-24 on ART in Epworth, Seke District

Variables	**Category**	**n (%)**	**p-value**
How satisfied are you with the ART services provided by your clinic?			
	Not satisfied	0 (0)	0.078
	Neutral	12 (4.8)	
	Satisfied	238 (95.2)	
How long does it take you to collect your ART?			
	<1 hour	41 (16.4)	0.007*
	1-2 hours	98 (39.2)	
	>2 hours	111 (44.4)	
Are the health service providers youth-friendly?			

	No	3 (1.2)	0.097
	Yes	247 (98.8)	

*significant at p<0.05

Overall, most of the participants (95.2%) were satisfied with service delivery pertaining to ART in Epworth, including the fact that the services were youth-friendly (98.8%) though there was no statistical significance. It takes majority of participants (44.4%) more than 2 hours of waiting in a queue to collect their ART while it takes 1-2 hours for 39.2% of the participants (p=0.007).

4.2.7. Predictors of ART adherence

A multi-logistic regression was performed and the following results were obtained in Table 7 below:

Table 9: Predictors of ART adherence among young people aged 18-24 in Epworth, Seke District, 2023

Variables		Adherence to ART		COR (95% CI)	AOR (95% CI)	p-value
	Category	**Adherent n (%)**	**Not Adherent n (%)**			
Perceiving that skipping ART medication from time to time will not affect a person at all	Correct response	35 (58)	111 (58.4)	0.9 (0.5-0.9)	0.4 (0.1-0.9)	0.047*
	Incorrect response	25 (42)	79 (41.6)			
Perceiving that ART does more harm than good	Correct response	32 (53)	127 (66.8)	0.4 (0.2-0.7)	0.3 (0.1-0.7)	0.005*
	Incorrect response	28 (47)	63 (33.2)			
Early age at first sexual debut	<16 years	16 (30.8)	32 (20.5)	0.3 (0.02-3.01)	0.1 (0.01-0.40)	0.006*
	>16 years	36 (69.2)	124 (79.5)			
Most recent sexual encounter	<3 days ago	5 (10.6)	27 (18.2)	3.1 (1.1-8.9)	8.2 (1.01-18.8)	0.05
	>3 days ago	42 (89.4)	121 (81.8)			
Reason for not using condom during last sex	Partner also has HIV so there is no need to use protection	3 (7)	3 (2.7)	0.1 (0.02-0.68)	0.02 (0.01-0.31)	0.014*
	Other	40 (93)	110 (97.3)			
Time taken to collect ART at the clinic	>2 hours	12 (22.2)	88 (51.5)	3.5 (1.4-8.8)	3.3 (1.3-8.5)	0.014*
	<2 hours	42 (77.8)	83 (48.5)			

*Significant at p<0.05

All factors that had a statistically significant association with ART adherence were controlled for and these included knowledge factors, sexual behavior factors, and service delivery factors. Concerning knowledge factors, thinking that skipping ART from time to time does not affect a person reduced ART adherence [AOR=0.4; 95% CI (0.1–0.9); p=0.047], and perception that ART does more harm than good [OR=0.3; 95% CI (0.1–0.7); p=0.005] were statistically significant predictors of suboptimal ART adherence. When it came to sexual behaviours, early sexual debut [OR=0.1; 95% CI (0.01–0.40); p=0.006]; and not using condoms during the most recent sexual encounter because a partner is already HIV positive [OR=0.02; 95% CI= (0.01–0.31); p=0.014] were significant predictors of poor ART adherence. Concerning service delivery factors, participants who took more than two hours to collect ART were 3.3 times more likely to have optimal ART adherence than those who took less than two hours [OR=3.3; 95% CI (1.3–8.5); p=0.014].

4.3. Summary

The chapter provided data presentation and analysis, as well as a univariate, bivariate and multivariate analysis. An analysis was made to establish predictors of ART adherence. The following were found to be predictors of suboptimal ART adherence: thinking that skipping ART from time to time does not affect a person; the perception that ART does more harm than good to the body; early sexual debut; and not using condoms during the most recent sexual encounter because a partner is already HIV positive. The chapter provided findings that aim to answer the research questions.

CHAPTER 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The chapter presents an interpretation and discussion of results presented in Chapter 4. The study hypothesis stipulated that demographic characteristics, knowledge and practices of ART uptake, behavioural factors and service related factors are associated with ART adherence by young people aged 18-24 in Epworth, Seke District. The assumptions were largely confirmed by the study as per the following discussion.

5.2. Discussion

5.2.1. Socio-demographic Characteristics of the study participants and their association with ART adherence

Of the demographic characteristics that were evaluated in this study, none were statistically associated with ART adherence during multivariate analysis. Similarly, Umar et al. (2019) also found that age and sex were not statistically associated with ART adherence, though their study in Malawi used viral suppression as their measure of ART adherence, an expensive yet equally reliable measure of measuring adherence. Studies by Semvua et al. (2017) found that younger age was associated with suboptimal adherence though the shortfall of this study is that it used patient recall instead of pill count, which is prone to recall bias.

Contrary to existing studies, level of education was not statistically associated with ART adherence. Umar et al. (2019) found that young people with a high level of education (secondary education and above) had 38% greater odds of being adherent than those with lower levels of education, while other studies showed similar findings (GebreEyesus et al. 2021; Dorcelus, Bernard, Georgery & Vanessa, 2021). Such an association may be

related to greater understanding of what treatment entails as well as having the economic capacity to access treatment. While the current study did not find an association between level of education and ART adherence, this may have been due to the age group focus of youth aged 18-24 and geographical context where secondary school completion rates are as low as 6% (Ministry of Primary and Secondary Education, 2018).

Other sociodemographic characteristics such as marital status, average income and religion which were not statistically significant in the study were acknowledged as contributing factors to ART adherence by other studies (Naggirinya et al., 2022; Ransome et al., 2019 & Chikosha, Chiwesu & Vwalika, 2020).

5.2.2. Dose adherence

As expected, dose adherence rate for this study was low, at 76.0% which is less than the expected 95% as per WHO and local MoHCC guidelines. As dose adherence was used to estimate ART adherence in the absence of resources to measure viral suppression for each individual participant, similar studies with alike methodologies also recorded low but accurate adherence rates (Mabunda et al., 2019; Umar et al., 2019; Semvua et al., 2017)). The study result shows poor adherence to ART treatment, of which adherence is a significant predictor of good patient outcomes and averting AIDS.

A study in Zimbabwe among adolescents and young people found an adherence rate of 72%, even after offering a treatment peer support intervention that sought to improve retention in care (Willis et al., 2019). Potential limitations of Willis et al's study include its focus on a rural population of Gokwe, which is different from the current study population which is peri-urban and generalisation may be limited. In South Africa,

Mabunda et al. (2019) recorded an ART adherence rate of 87%, similarly using the pill count method. The proportion of non-adherence seen in this study, can result in massive drug resistance and reversal of the progress achieved in the control of the HIV epidemic. To reach an adherence rate of at least 95% as is the goal nationally, there is need for tailor made interventions approach for youth and addressing determinant of poor adherence.

5.2.3. Knowledge and practice related factors

The study revealed that correct knowledge regarding ART uptake is a predictor of good ART adherence. Perceiving that skipping ART medication from time to time will not affect a person at all reduced the odds of ART adherence by 65.0% [AOR=0.4; 95% CI (0.1–0.9); p=0.047]. Perceiving that ART does more harm than good also reduced the odds of ART adherence by [AOR=0.3; 95% CI (0.1–0.7); p=0.005]. Good knowledge is associated with optimal adherence in previous studies (Ammon, Mason & Corkery, 2018; Okonji et al., 2020; Umar et al., 2019). Aderemi-Williams et al's study revealed that 74% of young people in the study had good knowledge about ART and its effect, and similarly the current study revealed good knowledge of 76.3%. Interestingly, almost all participants in the current study could name the ART medication they are taking (98.2%). It is good for young people on ART to know their medication in case they find themselves outside the facility and run out of medication. The study however shows some worrying trends in knowledge, for example 21% of participants believe not taking ART religiously will not affect them. Poor risk perception is a predictor of nonadherence.

Though the study found no association between ART-uptake related factors and ART adherence, storing ART in a place that one would remember helped some young people (53.2%). Interestingly, though the study reported an adherence rate of 76.0%, when asked

only 13.6% of young people confirmed that they have missed a dose. Knowledge and practice factors are important to take note, particularly for young people as echoed by previous studies (GebreEyesus et al., 2021; Mabunda et al., 2019; Meloni et al., 2020). For example, majority of participants in this study (88.8%) refer to health service providers for questions relating to ART. Though not significant in the current study, health service providers were found by Okonji et al. (2020) to be a reliable source for improved knowledge on ART. On the contrary, in Zimbabwe, Willis et al. (2019) found Community Adolescent Treatment Supporters as preferred and supportive structures that provide knowledge in relation to ART (95%). Health service providers at the local clinics were preferred by only 85.1% of participants in Willis et al's study, a slight difference from the 88.8% in this study. However, the Willis' et al. (2019) study was an experimental design, and it was prone to research bias considering the study was evaluating the effectiveness of the CATS model not the holistic continuum of care. To bridge the knowledge and practices gap, it is essential that young people have access to their preferred and credible sources of information and reinforcement of the ideal practices.

5.2.4. Behavioural factors

5.2.4.1. Risky Sexual Behaviour

The study found that the prevalence of risky sexual behaviour among young people was at 64.3%. The study defined risky sexual behaviour as one of the following: inconsistent use of condoms (58.5%); having more than one sexual partner (23.9%); sexual debut of before 16 years (26.5%) (using the Zimbabwe age of consent to sex of 16 which was the dominant legislation for the past two decades); paying money for sex (8.8%); and having sex under the influence of drugs or alcohol (13.1%) (Fetene & Mekonnen, 2018). The

findings are consistent with Zgambo et al. (2018) who found that of the YLHIV who were sexually active, only 35-55% used protection (condoms) to prevent further spread of HIV other STIs. In this study, those who had early sexual debut had 94% increased odds of nonadherence [AOR=0.1; 95% CI (0.0–0.4); p=0.006]. Brown et al. (2021) also found similar results, where those who had an early sexual debut (classified as child sexual abuse based on legislation) were 78% more likely to report poor ART adherence. Brown's study was a mixed methods systematic review and allows for evidence-based recommendations based on the strengths of the methodologies. Such an association between early sexual debut and poor ART adherence could be explained by low risk perception of young people who had sex at an early age, coupled by childhood trauma, which can carry on to poor practices with regards to ART adherence.

Other studies such as by Ndlovu et al. (2021) found that only 8% of young people were sexually active. This can be explained by a lower age group as Ndlovu et al's (2021) study included adolescents less than 18 years, of which there may be underreporting of sexual activity due to self-report bias and particularly social desirability bias as these were adolescents and young people part of an institution through the Zvandiri CATS programme.

Surprisingly, those whose most recent sexual encounter was less than three days ago had eight times the odds of ART adherence than those whose last encounter was longer than three days ago [AOR:8.2; 95% CI (1.1–18.8); p=0.049]. This can be explained by the borderline significance at p=0.049, and perhaps an analysis of the strength of association could explain this. Moreover, other factors may play a role such as if the participants had social support that enabled them to adhere, and if they had good knowledge and practices

around ART uptake.

The study found that of those who did not use condoms consistently, 10% cited that this is because their partner also has HIV so there is no need to use protection and they had 99% greater odds of nonadherence than those who cited other reasons [AOR=0.0; 95% CI (0.0–0.3); p=0.014]. Low risk perception or marital status could have contributed to this result. Other studies show that for people with a single sexual partner in the last year, condom use at last sexual intercourse was three times higher in those who had a new rather than an existing partner (Gregson & Nyamukapa, 2021).

5.2.4.2. Alcohol and drug use

The prevalence of drug use in the study was 13.4%. Of these, 11.6% occasionally take their ART concurrently with drugs or alcohol. While the study found no association between drug use and ART adherence, drug and substance abuse are a common threat to young people's overall wellbeing including adherence to treatment. Close to 1.6% of the study participants drink alcohol almost every day, with 14.4% and 15.3% taking marijuana and smoking cigarettes respectively, at least once a week. To support this, Mabunda et al. (2019) also found that 21.4% and 35.9% of the participants were smoking and taking alcohol, respectively. Mabunda et al. (2019) found that alcohol consumption was associated with lower levels of ART adherence. Stigma associated with taking ART may contribute to alcohol and drug use as a coping mechanism. Such a habit is harmful as young people may forget to take their medication due to alcohol misuse/drug addiction. Similarly, in Uganda, a mixed methods study to enquire on barriers and facilitators to ART adherence among youth found that alcohol consumption was cited as a common barrier to ART adherence, making youth forgetful in taking their medication (Naggirinya

et al., 2022). However, the study was not analytical in nature and no associations were established between alcohol consumptions and ART adherence.

5.2.5. Service-related factors

Satisfaction with health service provision is commonly cited as a contributing factor to ART adherence. The study recorded high satisfaction with service delivery (95.2%) and 98.8% found that the services offered at the clinics were youth-friendly. However, the study found no statistically significant association between satisfaction with health service delivery and ART adherence. Willis et al. (2021) recorded low satisfaction with services received, and cited unavailability of health service providers when they were needed (63%). When it came to waiting hours for ART collection, those who waited for longer than two hours had three times greater odds of adhering to ART than those who waited for a shorter time of less than two hours [AOR=3.3, 95% CI (1.3–8.5); p=0.014]. These findings contradict some literature that shows long waiting hours often frustrate young people (Ndlovu et al., 2021; Willis et al., 2019; van Wyk & Davids, 2019). Maskew et al. (2016) found that being seen collecting ART because of long waiting hours was associated with 45% increased odds of missing a scheduled clinic visit. However, the study sample was small (125 participants) and may not have had sufficient power.

5.3 Limitations

The study was not without limitations. ART adherence was measured based on self-Self-reports are prove to social desirability bias as well as recall bias (Mabunda et al., 2019). However, self-reported pill count is the most commonly used method and research shows it is a good estimation of adherence in resource-limited settings where it is not possible to use clinical methods such as measuring (Atanga et al., 2018; Bajunirwe et al., 2020;

Coker et al., 2015; Willis et al., 2019). Moreover, in other research, self-report was consistent with objective methods of measuring adherence such as plasma viral load monitoring and Medication Event Monitoring System (MEMS) (Gill et al., 2005).

5.4. Conclusion

The prevalence of ART adherence in this study (76.0%) was unsatisfactory and below the expected threshold of 95%. The study also recorded high prevalence of risky sexual behaviour (64.3%) and drug use (13.4%), which are factors that hinder adherence to treatment for young people, a group affected disproportionately by virological failure owing to poor treatment adherence. The study found that the following factors were significantly associated with suboptimal ART adherence: limited knowledge on how ART works to fight HIV, risky sexual behaviour including early sexual debut and inconsistent condom use because of low risk perception, and waiting hours. These factors need to be considered to provide tailor made solutions to the diverse yet unique needs of young people in Epworth, including addressing social determinants that contribute towards suboptimal adherence as shown in the study. Further research is needed to explore in detail the associations between diverse risk behaviours and ART adherence and social behaviour change programmes on the same.

5.5. Recommendations

The study realises the need to strategize interventions that seek to improve ART adherence among young people based on the study findings. The table below depicts these recommendations per problem identified, including person responsible and a timeline.

Study finding/problem	Recommendation	Person responsible	Timeline
Overall low ART adherence	There is an opportunity to improve ART adherence through electronic reminders, which can curb 'forgetfulness'. In addition to peer support groups, a buddy-system where psychosocial support is offered virtually can go a long way in motivating young people to adhere to treatment. Awareness raising is essential to improve knowledge on impact of poor adherence, as well as to address stigma and discrimination, avoiding the negative impact of social exclusion or mental health issues arising from such stigma.	Coordinators of the Community Adolescent Treatment Supporter (CATS); National AIDS Council	December 2023
Risky sexual behaviour among young people on ART	Social behaviour change programmes should aim to raise awareness of the effect of risky sexual behaviours on ART adherence and essentially viral suppression. Programmes should target young adolescents, promoting good sexual and reproductive health and delaying sexual debut as one of the measures considering early sexual debut has an	National AIDS Council with support from nongovernmental organisations	Annual review by 15 December 2023

	effect on adherence. Ongoing and affordable STI screening and testing including availing condoms in a youth-friendly manner will improve their sexual and reproductive health. Health promotion campaigns should target youth raising awareness at a community level, and leveraging support systems such as CATS to provide information and referrals concerning SRH.		
Drug and substance abuse	Drug and substance abuse is a serious public health problem in Zimbabwe, especially among young people. The situation is worse for youth on ART as they face additional social problems in relation to disclosure, stigma and discrimination. Support groups such as CATS are fundamental in addressing mental health problems that are often connected with drug and substance abuse. Strengthening social support at family level can also help caregivers and family to identify and address drug and substance abuse. A holistic approach is needed to address	Coordinators of treatment support groups	Quarterly basis, progress reports by 30 September 2023

	this challenge, including a coordination between government ministries and nongovernmental organisations, for example pairing treatment support with economic empowerment initiatives to curb economic challenges faced by the youth that exacerbate mental health problems.		
Service delivery factors including availability of service providers to address concerns/questions	In-service trainings and capacity strengthening of health service providers on youth-friendly health services will improve quality of service provided and young people will feel free to ask health workers for information. The use of youth-responsive IEC material with information relating to ART, frequently asked questions and synergies with critical social behaviour change messaging will be crucial. Epworth already has support through several NGOs and can leverage existing resources for improved service delivery and access to integrated information.	Ministry of Health and Child Care through the Provincial Medical Director	Annual review by 15 December 2023

5.6. Dissemination of results

The proposed research is critical to health programme planning for young people living with HIV in Epworth. Upon approval from GSC, the evidence generated through this project will be disseminated in the form of a report to the Provincial Medical Director and District Medical Officer. The report will also be shared with NGOs supporting the clinics, particularly those working with YLHIV in adherence support programs as these have a strong presence in the district.

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APPENDICES

Appendix 1: Questionnaire Survey Instrument

Questionnaire number -

Section A: Demographic Information

#	Question	Coding	Go to-
1	How old are you in years?		
2	Sex	Male----------1 Female----------2	
3	Place of residence	High density—1 Medium density---2 Low density ----------3	
4	What's your marital status?	Married ---------- 1 Previously/never married-- -2	
5	What is your highest level of education	Primary ----------1 Secondary --------2 Tertiary ----------3 Have never been to school----------4	
6	On average, how much is the usual household income in a month?	<USD$100----------1 USD$100-USD$500------2 >USD$500----------3	
7	What is your religion?	Christian ---------- 1 Muslim----------2 Apostolic---------- 3 Other: specify.....4	

Section B: Knowledge and practices on ART adherence

Knowledge of ART

10	Are you aware of what antiretroviral therapy is. *ask respondent to define, if definition is correct, tick as yes	No…..... 0 Yes… 1
11	Name the ARVs that you are currently taking ……	Is not aware…….0 Is aware……..1
12	How should you take your ART?	At a variable time……..0 At a fixed time……..1
13	In relation to food intake, how should you take your ART	With food……1 Without food…….2 Either with or without food …3 On an empty stomach…….4
14	How long should you take ART for?	When feeling sick…..0 Once in a while……1 Lifetime…….2
15	Do you think skipping your ART medication from time to time will not affect you at all	No…..... 0 Yes… .....1 Not sure……2
16	Do you believe as long as you are feeling okay, you can miss your ART medication	No…..... 0 Yes… .....1 Not sure……. 2
17	Do you understand how ART works to fight HIV. **Ask for explanation and tick as yes if correct*	No…..... 0 Yes… .....1 Not sure……. 2
18	Do you believe If you do not take your ART as prescribed this may affect how the drugs work in your body in the future	No…..... 0 Yes… .....1 Not sure……. 2
19	ART completely removes HIV from the body	No…..... 0 Yes… .....1 Not sure……. 2
20	Do you believe that if you take your ART as prescribed, you will live longer	No…..... 0 Yes… .....1 Not sure……. 2
21	HIV medications interact with substances such as alcohol, mbanje or bronco	No…..... 0 Yes… .....1 Not sure……. 2

22	Do you believe skipping your ART from time to time will not affect you at all	No…..... 0 Yes… .....1 Not sure……. 2
23	Are you aware of possible side effects of ART	No…..... 0 Yes… .....1 Not sure……. 2
24	Do you believe as long as you are feeling okay, you can miss your ART medication	No…..... 0 Yes… .....1 Not sure……. 2
25	Do you think ART does more harm than good?	No…..... 0 Yes… .....1 Not sure……. 2

Practices regarding ART

26	Disclosure of HIV	No……0 Yes……1
27	If you disclosed HIV status, to who ?	Mother/Father……1 Spouse……..2 Brother/Sister……..3 Friend……..4 Relative……..5 Sexual Partner…….6 Other: specify……..
28	Where do you store your ART at home?	☐ Hidden ☐ Convenient storage but not necessarily as recommended by the health service provider ☐ Storage that can help to remember daily schedule ☐ Storage out of the reach and sight of children ☐ Suitable storage as recommended by the health service provider
29	How do you store your ART at home?	☐ Without its original packaging ☐ In other plastic packaging ☐ In its original packaging
30	Have you ever missed a dose of ART?	☐ Yes ☐ No
31	If yes, during the last 7 days, how many times have you missed taking your ART?	☐ Rarely (once or twice a week) ☐ Frequently (more than twice a week) ☐ Never
32		_____
33	Why have you missed taking your ART?	☐ I forgot ☐ Can't swallow pills ☐ Lack of information ☐ Busy doing something else ☐ Away from home

		☐ Fear of stigma ☐ Side effects ☐ I find it difficult to comply with prescribed ART schedule ☐ Too many tablets to take ☐ I do not think it is necessary to take them all the time ☐ Other. Specify……. _____
34	What do you do if you have missed a dose of ART?	☐ Skip missed dose and just take the next one as planned ☐ Take missed dose the next morning ☐ Go to the clinic ☐ Take missed dose as soon as you remember ☐ I don't know what to do ☐ Other: specify …….. _____ _____
35	How do you remember to take your ART?	☐ No particular method (l just try to remember to take the meds) ☐ Help from someone l live with ☐ Reminder device ☐ Other: ……. _____
36	Have you ever lost your ART?	☐ Yes ☐ No
37	Have you ever had questions about your ART?	☐ Yes ☐ No
38	Who do you ask or where do you find out information about your ART?	☐ Health service provider ☐ Other people living with HIV ☐ Internet ☐ Other people e.g. friend, relative, family member ☐ ART dispensing staff ☐ Support groups for PLHIV ☐ Community health worker/volunteers in the community ☐ Patient information leaflet ☐ Other……. _____

Section C: Behavioural Factors

Risky sexual behaviour

	Sexual behaviour	
39	Have you ever had sexual intercourse?	No… .....0 Yes… 1
40	How old were you when you had sex for the first time?	☐ <12

		☐ 13-16 ☐ 17-18 ☐ >18
41	Most recent sexual encounter was:	☐ >6 months ago ☐ Past 6 months ☐ Past 3 months ☐ Past 1 month ☐ Past 2 weeks ☐ Past 3 days
42	During your life, with how many people have you had sexual intercourse?	☐ 0 ☐ 1 ☐ 1-2 ☐ 3-5 ☐ 6-10 ☐ More than 10
43	How many people have you had sexual intercourse with in the past 3 months?	☐ 0 ☐ 1 ☐ 1-2 ☐ 3-5 ☐ 6-10 ☐ More than 10
44	The last time you had sexual intercourse did you or your partner use a condom?	No… .....0 Yes…….. 1
45	If you answered no, what are the reasons for not using a condom the last time you had sex	☐ Condoms do not feel natural/partner does not like ☐ Condoms were not available/I did not prepare for using a condom ☐ Partner also HIV positive so do not use ☐ Trying to conceive ☐ Believing that being on ART will not spread/acquire HIV ☐ Other……..
46	Have you ever paid money for sex	☐Never ☐Sometimes ☐Frequently
47	Have you ever been treated for a sexually transmitted infection?	☐ Never ☐ Once in my lifetime ☐ 1-2 times ☐ 3-5 times ☐ More than 5 times in my lifetime

Substance-use

Qn#	Item	
48	During the past 30 days, on how many days did you smoke cigarettes/use any tobacco products other than cigarettes,	☐ I do not smoke ☐ Once a week ☐ 2-3 times a week ☐ 4 or more times per week ☐ Everyday
49	'During the past 30 days, on how many days did you have at least one drink containing alcohol?'	☐ I do not drink ☐ Once a week ☐ 2-3 times a week ☐ 4 or more times per week ☐ Everyday
50	During your life, how many times have you used marijuana (mbanje)?	☐ Never ☐ Once a week ☐ 2-3 times a week ☐ 4 or more times per week ☐ Everyday
51	Use of other recreational drugs (heroin, glue and cough mixtures such as histalix and bron clear 'bronco')	☐ Never ☐ Once a week ☐ 2-3 times a week ☐ 4 or more times per week ☐ Everyday
52	Ever had sex whilst under the influence of alcohol	☐Always ☐Sometimes ☐Never
53	Do you sometimes take your ART at the same time with drugs, alcohol or other substances?	☐Always ☐Sometimes ☐Never

Section D: Service-delivery related factors for ART adherence

	Service delivery	
54	How satisfied are you with the ART services provided by your clinic?	☐Not satisfied ☐Neutral ☐Satisfied
55	How long does it take you to collect your ART?	☐ <1 hour ☐1-2 hours ☐>2 hours
56	Are the health service providers youth-friendly?	No… ..... 0 Yes……. 1

SECTION E: Dose Adherence (Self-reported)

#	Dose adherence	
57	Number of tablets expected to have been taken (a)	……
58	Number of tablets taken (b)	……
59	Dose adherence (%) **to be calculated by statistician*	…… (a/b)*100

Appendix 2: Consent Form

TITLE OF THE STUDY: Level of adherence and risky behaviours among HIV-positive young people aged 18-24 on antiretroviral therapy in Epworth, Seke District

Good morning/ afternoon. I am Kimberly Sadrake, a student at Africa University. I am conducting a study seeking to determine prevalence of antiretroviral therapy adherence and associated risk behaviours among young people in Epworth, Seke District. This form gives you information about the study and will also document your voluntary consent or willingness to take part if you decide to do so.

Purpose of the study

The purpose of this study is to determine prevalence of antiretroviral therapy adherence and associated risk behaviours among young people in Epworth, Seke District.

The study is for academic purposes only. Critical information from this study will assist relevant line ministries such as Ministry of Health and Child Care and civil society organisations to design and implement programmes that promote adherence to ART by young people.

Procedures and Duration

The eligible participants for this study are; 1) Young people on ART and are aged 18-24; 2) Those who are capable to provide consent 3) You have been selected as a possible participant because you meet the stated selection criteria. About 64 participants will be enrolled in this study. If you decide to participate, you will be asked to undergo a face-to-face interview while completing this questionnaire. The interview will take about 45 minutes.

Benefits, Risks and Discomforts

There are no direct benefits to you for participating in this study. I am hoping that findings from this study will be used to improve pre-exposure prophylaxis service provision for girls and young women. The risks of participating in this study are minimal. It is possible that you may feel uncomfortable with some of the questions I will ask you. You can choose to skip or to discontinue the interview if you feel uncomfortable.

Confidentiality

If you participate in this study, your personal details will not appear on the questionnaire. Any information that is obtained for this study that can be identified with you will remain confidential and will be disclosed only with your permission. You will be assigned a study participant identity number

which will be used to identify the questionnaire. All study records will be kept in secure, and stored in lockable cabinets, separate from any information that identifies you personally. Your name will not be used in any reports or publications that may arise from this study. Under some circumstances, the University or Medical Research Council of Zimbabwe may need to review records for compliance audits only.

Additional Costs

There will be no additional costs to you because of your participation in this study except those related to the time taken while participating in this study

Voluntary Participation

Participation in this study is voluntary. If you decide not to participate in this study, your decision will not affect your access to health services at the clinics**.** If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty.

Authorization

Before you sign this form, feel free to ask any questions on any aspect of this study that you need clarity on. Your signature indicates that you have read and understood the information provided above and have decided to participate.

_____ _____

Signature of Participant or legally authorized representative Time

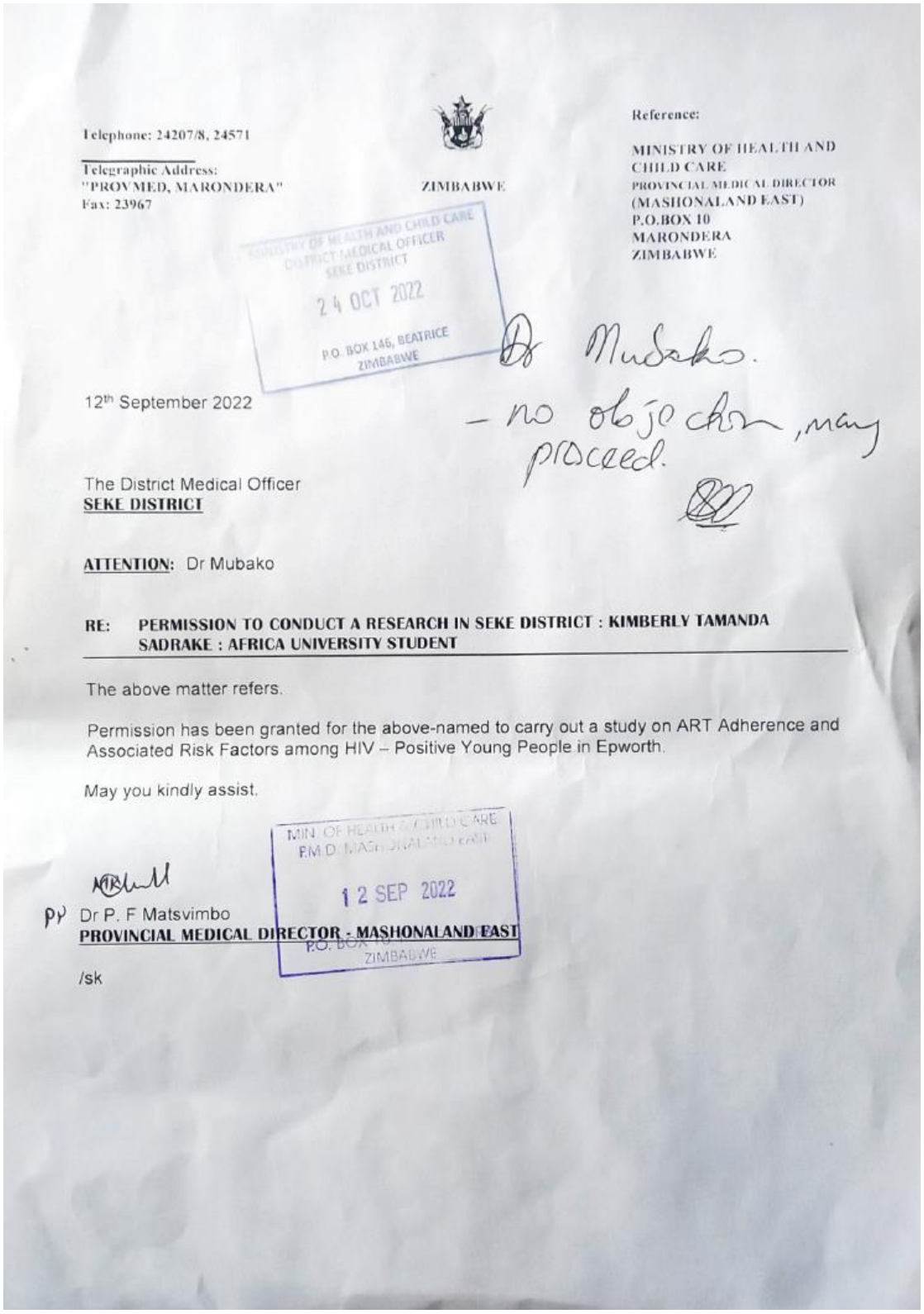
_____

Relationship to the Participant

_____ _____ _____

Name of Staff Obtaining Consent Signature Date

Appendix 4: Mashonaland East PMD/DMO Approval



Telephone: 24207/8, 24571

Telegraphic Address:
"PROVMED, MARONDERA"
Fax: 23967

ZIMBABWE

Reference:

MINISTRY OF HEALTH AND CHILD CARE
PROVINCIAL MEDICAL DIRECTOR
(MASHONALAND EAST)
P.O.BOX 10
MARONDERA
ZIMBABWE

MINISTRY OF HEALTH AND CHILD CARE
DISTRICT MEDICAL OFFICER
SEKE DISTRICT
24 OCT 2022
P.O. BOX 146, BEATRICE
ZIMBABWE

Dr Mubako.
- no objection, may proceed.

12th September 2022

The District Medical Officer
SEKE DISTRICT

ATTENTION: Dr Mubako

RE: PERMISSION TO CONDUCT A RESEARCH IN SEKE DISTRICT : KIMBERLY TAMANDA SADRAKE : AFRICA UNIVERSITY STUDENT

The above matter refers.

Permission has been granted for the above-named to carry out a study on ART Adherence and Associated Risk Factors among HIV – Positive Young People in Epworth.

May you kindly assist.

MIN. OF HEALTH & CHILD CARE
P.M.D. MASHONALAND EAST
12 SEP 2022
P.O. BOX 10
ZIMBABWE

pp Dr P. F Matsvimbo
PROVINCIAL MEDICAL DIRECTOR - MASHONALAND EAST

/sk

Appendix 5: AUREC Approval Letter

AFRICA UNIVERSITY
A United Methodist-Related Institution
Investing in Africa's future

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2453/22 20 December, 2022

Kimberly Sadrake
C/O CHANS
Africa University
Box 1320
MUTARE

RE: LEVEL OF ADHERENCE AND RISKY BEHAVIOURS AMONG HIV-POSITIVE YOUNG PEOPLE AGED 18-24 ON ANTIRETROVIRAL THERAPY IN EPWORTH, SEKE DISTRICT

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 2453/22
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** December 20, 2022
- **EXPIRATION DATE** December 19, 2023
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

Miti G.P.
RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE