SCHOOL OF PUBLIC HEALTH COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

FACTORS ASSOCIATED WITH TREATMENT DEFAULT AMONG HIV PATIENTS INITIATING TREATMENT AT TWO SELECTED HOSPITALS IN THE BONO REGION, GHANA.

EBENEZER NANA YAW OBIMPEH-NIPAMUA

(10939891)

A DISSERTATION SUBMITTED UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE MASTER OF SCIENCE IN BIOETHICS DEGREE

NOVEMBER 2025

DECLARATION

I, Ebenezer Nana Yaw Obimpeh-Nipamua, declare that except for referenced works of other people, which have been cited and duly acknowledged, this work is an output of my initiative. This research proposal has neither in whole nor in part been presented for an award or a degree elsewhere.

Ebenezer Nana Yaw Obimpeh-Nipamua ……11 - 11 - 2025…….

(Student)

Prof. Amos K. Laar ……11 - 11 - 2025…….

(Supervisor)

DEDICATION

To the Almighty God, and the Obimpeh-Nipamua family for their immense support in various ways to ensure I completed my studies. To Eunice my lovely wife, and my children Akyedepa, Adepa, and Nhyiraba, your affection and support keep me moving.

ACKNOWLEDGMENT

I am most grateful to the Lord God Almighty for helping me complete this study successfully. To my colleague Bioethics student and our course representative Dr. Isaac Gyamfi for enormous support and encouragement throughout this journey. God richly bless you for the sacrifices! This study could never have been done without the patience, corrections, and comments of my supervisors, Professor Francis Anto, and Professor Amos Laar, I am eternally grateful for not giving up on me despite my challenges. To my research assistants, God bless you for your dedication and diligence toward this dissertation.

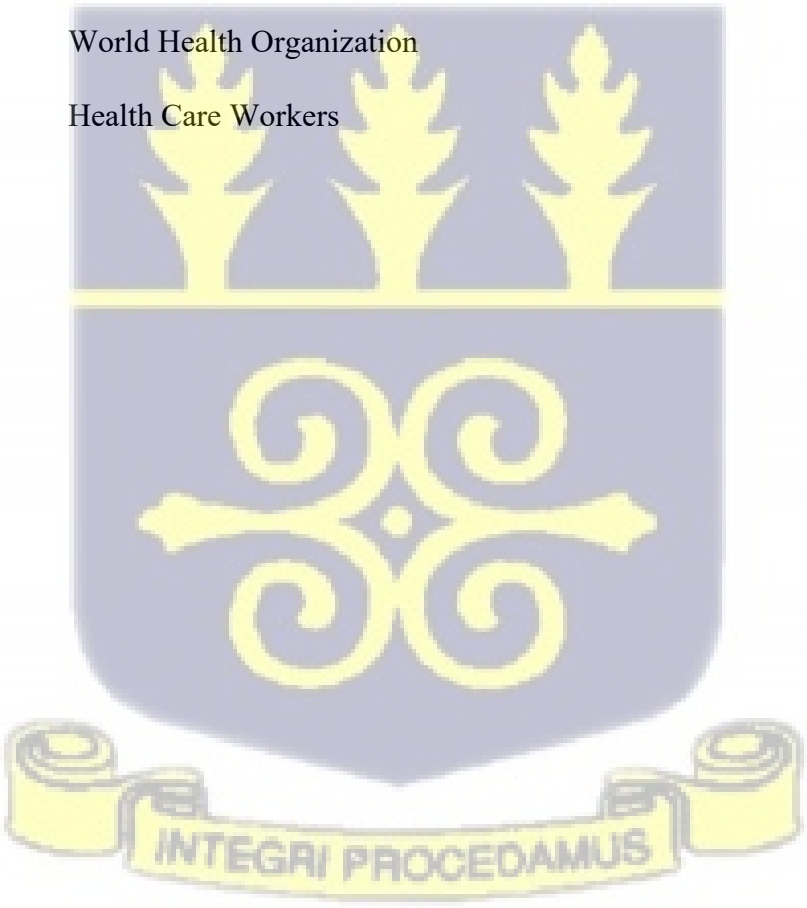
TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

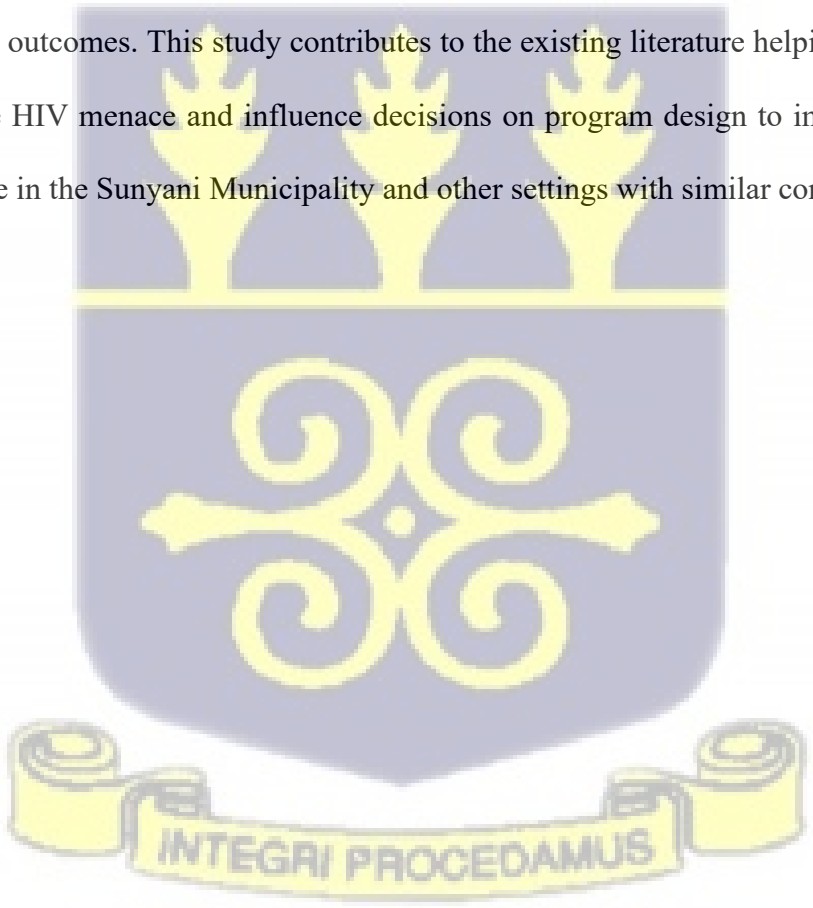
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral treatment
COVID	Coronavirus Disease
GAC	Ghana AIDS Commission
GHS	Ghana Health Service
HIV	Human Immunodeficiency Virus
PLHIV	Persons Living with HIV
UNAIDS	United Nations Programme on HIV/AIDS
WHO	World Health Organization
HCW	Health Care Workers



ABSTRACT

The introduction of antiretroviral treatment (ART) has transformed HIV/AIDS into a chronic disease, and proven to be the surest intervention to improve the morbidity and mortality associated with HIV/AIDS. Ongoing involvement in care and, importantly, sustained adherence to ART is essential to achieve the 95-95-95 targets for the eradication of HIV. While ART services have been effectively implemented in Ghana, defaulting on HIV treatment is a major setback towards the eradication of the pandemic. This study aimed to assess factors associated with HIV treatment default at Sunyani Municipal and Regional hospitals in the Bono region of Ghana. An analytical cross-sectional study was conducted at the Sunyani Municipal and Regional Hospitals. The study population included all persons diagnosed with HIV and receiving ART services at the HIV clinics at the Regional and Municipal Hospitals in Sunyani. A simple random sampling technique was employed to select 385 patients receiving ART services, and probability proportional to size (PPS) to determine the number of participants from the two selected hospitals. Structured questionnaires were used to collect primary data from patients accessing ART services and the quantitative data was analyzed using multiple logistic regression analysis in Microsoft Excel and Stata Version 17. The study found defaulter rate of 21.7%, and side effects of ARVs were strongly associated with HIV treatment default [X^2: 84.82: P=0.000], The fear of rejection from friends was 20.79 times more likely to default on treatment [X^2:20.79: p=0.000], whiles missing appointments due to lack of money were more likely to default on treatment [X^2: 84.79: p=0.000]. Stigma and discrimination by healthcare professionals were 22.06 times more likely to contribute to default on treatment [X^2: 22.06: p=0.000]. Travel time to HIV clinic, mode of transportation, and logistical challenges in

accessing care, stigma and discrimination are critical barriers to treatment adherence. The study indicates the interplay of complex factors at multiple levels contributing to ART default and as such no particular factor is statistically significant to cause treatment default. The study recommends that the MOH, GHS, and development partners in the HIV enterprise adopt holistic initiatives targeting individual patients, community, and structural barriers to ART default. The Sunyani Municipal, Teaching hospitals, and the health directorate should introduce comprehensive protocols for managing side effects to address the discomfort of patients, implement mobile clinics, leverage digital tools for appointment reminders, and train healthcare workers on ethically responsive care to mitigate HIV treatment outcomes. This study contributes to the existing literature helping to understand better the HIV menace and influence decisions on program design to improve treatment adherence in the Sunyani Municipality and other settings with similar contexts.



CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Ghana has made significant progress in addressing HIV/AIDS, as evidenced by improved access to ART services and increased awareness campaigns (World Health Organization [WHO], 2023). However, adherence and retention remain below optimal levels. The most recent data from the Ghana AIDS Commission (2023) indicate that ART coverage in Ghana is approximately 70%, which is still below the threshold required for achieving viral suppression and meeting the UNAIDS 95-95-95 targets (UNAIDS, 2024).

Globally, about 39.9 million people were living with HIV, 1.3 million new infections, and 630,000 AIDS-related deaths in 2023 (UNAIDS, 2024). These trends reflect marked progress in reducing HIV transmission and AIDS-related mortality over the past two decades (UNAIDS, 2024; WHO, 2023), yet significant challenges persist in sustaining treatment adherence and preventing treatment default, especially in sub-Saharan Africa (Tarkang et al., 2023; Dube et al., 2021). Continued participation in care and, more crucially, persistent adherence to ART are required to meet the last 95% of these ambitious 95-95-95 targets (Velloza et al., 2020). However, the benefits of antiretroviral treatment and the accomplishment of HIV eradication are hindered by treatment discontinuation or default in HIV treatment (UNAIDS, 2021). Good adherence to antiretroviral drugs is essential for the survival of those with HIV/AIDS (Nyundo, 2022), and an essential measure to keep progress toward achieving the ultimate goals (Aguilera-Mijares, et al., 2022). To maximize ART effects and boost viral suppression, medication adherence rates should be kept at 95% or above (Bezabhe et al., 2016; Yu et al., 2018; UNAIDS, 2021).

Treatment default connotes the absence of cases during follow-up, including TB patients who either did not start treatment or stopped it for at least two months (WHO 2013; Afshari et al., 2020), often discussed as non-adherence, attrition, and loss to follow-up in several reports (Fox & Rosen, 2010). Defaulting on HIV treatment or low adherence has several negative effects on both individual patients and public healthcare systems, including the emergence of drug resistance to first-line therapy (Yu et al., 2018). As a result, patients are shifted to second- and third-line ART regimens, which are less accessible, especially in low-and middle-income countries (LMIC), because of their higher pill burden, worse side effects, and increased cost (Moosa et al., 2019; Obeagu & Obeagu, 2023). Other dangers of defaulting include the development of advanced HIV illness and opportunistic infections that require hospitalization, further increasing stress on already scarce public health resources (Moosa et al., 2019; Nhemachena, 2022). ART adherence rates vary across the regions in Ghana, reflecting the complex interplay of individual, health system, and sociocultural factors. Some studies have reported lower adherence rates, with challenges such as socioeconomic barriers, medication effects, and stigma contributing to default (Addo et al., 2022; Owusu-Dabo et al., 2019; Mengistie et al., 2018). Conversely, others studies found higher adherence rates of up to 60% particularly in settings with strong patient support systems and improved access to healthcare services (Danso et al., 2018; Prah et al., 2018). Despite these variations, treatment default remains a significant concern with approximately 20% of individuals discontinuing ART within the first year of initiation, highlighting the necessity for targeted interventions to tackle the underlying causes of default (Ghana AIDS Commission, 2022).

This study sought to assess factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region of Ghana.

1.2 Problem statement

Despite significant progress in HIV prevention and treatment globally, treatment default among persons living with HIV (PLHIV) continues to undermine efforts toward achieving the UNAIDS 95-95-95 targets aimed at ending AIDS by 2030 (UNAIDS, 2024; World Health Organization [WHO], 2023). Treatment default, defined as the discontinuation or prolonged interruption of antiretroviral therapy (ART) remains one of the most pressing challenges to sustaining viral suppression, preventing drug resistance, and reducing AIDS-related morbidity and mortality (Yu et al., 2018; Boakye & Adjorlolo, 2023). While the scale-up of ART has contributed to a steady decline in AIDS-related mortality, adherence challenges remain particularly severe in sub-Saharan Africa, which accounts for nearly two-thirds of all global HIV infections (Dube et al., 2021; Tarkang et al., 2023). In Ghana, ART coverage is estimated at approximately 70 percent, far below the 95 percent adherence threshold needed to achieve viral suppression (Ghana AIDS Commission [GAC], 2023). National reports indicate persistent gaps in retention and adherence despite expanded access to ART services and awareness campaigns (Abiodun et al., 2024). Resource constraints, such as limited funding and periodic drug shortages, have further compounded the challenge (Graphic Online, 2023). Data from the Bono Region also point to an alarming trend of treatment discontinuation among clients on ART, signaling a growing threat to the sustainability of HIV control efforts (Bono Regional Health Directorate [BRHD], 2024). Evidence from studies across Ghana and sub-Saharan Africa attributes default to multiple, interrelated factors, including adverse drug reactions,

financial hardship, stigma and discrimination, travel distance to ART clinics, and negative healthcare worker attitudes (Dube et al., 2021; Tarkang et al., 2023; Abiodun et al., 2024). However, there is limited empirical research exploring how these factors interact within the Ghanaian context, particularly in the Bono Region, to influence treatment discontinuation. Addressing this knowledge gap is essential for developing context-appropriate and ethically grounded interventions.

The persistence of HIV treatment default in Ghana, particularly in the Bono Region, reflects the complex interplay of three critical domains of influence (Dube et al., 2021; Tarkang et al., 2023). Patient-related factors, such as adverse drug side effects, financial constraints, and psychosocial stressors, have been widely reported to undermine adherence and retention in care (Abiodun et al., 2024; Boakye & Adjorlolo, 2023). Socioeconomic hardship and emotional distress often compromise patients' ability to maintain consistent treatment schedules, especially among those with limited support systems (Nutor et al., 2024). Health service factors, including long waiting times, clinic accessibility issues, negative staff attitudes, and inadequate counselling, also significantly contribute to treatment discontinuation (Moosa et al., 2019; Dube et al., 2021). Structural challenges within ART service delivery, such as high client loads and periodic drug stock outs, can further discourage adherence (Graphic Online, 2023). At the community level, stigma, discrimination, and lack of social support remain persistent barriers to ART adherence across sub-Saharan Africa (Tarkang et al., 2023; Abiodun et al., 2024). Fear of disclosure, social isolation, and entrenched misconceptions about HIV continue to drive disengagement from care. Together, these interrelated dimensions not only impede adherence and continuity of care but also raise significant ethical concerns about equity,

respect for autonomy, confidentiality, and the moral responsibility of healthcare providers to ensure sustained treatment (Beauchamp & Childress, 2019). Addressing these factors holistically is therefore central to understanding and mitigating treatment default among persons living with HIV.

From a bioethical perspective, treatment default raises important questions concerning autonomy, justice, confidentiality, and beneficence, reflecting the moral responsibility of healthcare professionals to promote adherence and continuity of care (Beauchamp & Childress, 2019). Understanding these ethical and contextual determinants is crucial for designing equitable and patient-centred strategies that enhance patient retention in care.

This study, therefore, sought to assess the factors associated with HIV treatment default among patients receiving ART at the Sunyani Teaching and Municipal Hospitals in Ghana, providing evidence to guide targeted interventions and policy actions aimed at strengthening adherence and ensuring the ethical delivery of HIV care.

1.3 Objectives of the study

1.3.1 General objective

To analyse the factors associated with HIV treatment default among patients receiving antiretroviral therapy (ART) at the Bono Regional and Municipal Hospitals in Ghana.

1.3.2 Specific objectives

1. To determine patient-related factors influencing HIV treatment default among patients receiving ART at the Bono Regional and Municipal Hospitals.
2. To examine health service-related factors associated with HIV treatment default among patients receiving ART at the Bono Regional and Municipal Hospitals.

3. To assess community-related factors contributing to HIV treatment default among patients receiving ART at the Bono Regional and Municipal Hospitals.
4. To evaluate the ethical implications of stigma, privacy concerns, and discrimination on HIV treatment default within the context of ART adherence.

1.4 Research questions

1. What are the patient factors associated with treatment default among HIV patients receiving care at Bono Municipal and Regional hospitals?
2. What are the factors in the community that account for treatment default among HIV patients receiving care at Bono Municipal and Regional hospitals?
3. What are the health service factors associated with HIV treatment default at Bono Municipal and Regional hospitals?
4. How do stigma, privacy concerns, and discrimination in healthcare settings contribute to treatment default?

1.5. Justification of the study

The study of factors contributing to non-adherence to antiretroviral treatment in Sunyani, Ghana is important for several reasons. Firstly, Sunyani is one of the regions in Ghana with a high burden of HIV (GAC, 2022), as such, understanding the factors that contribute to non-adherence to antiretroviral treatment in this specific region is crucial to improve the management of HIV and reduce the burden of the disease on individuals and communities. Furthermore, non-adherence to antiretroviral treatment is a significant problem in Ghana, with estimates suggesting that up to 40% of people living with HIV in the country do not adhere to their treatment regimen (World Health Organization, 2016). However, the HIV treatment default picture in the study sites exposes major gaps in HIV policy and practice

in the Bono region and their hospitals. Although considerable studies have assessed factors associated with treatment default worldwide, there is limited exploration in Ghana's Bono region, particularly in the Bono regional and municipal hospitals. Additionally, insights into the interplay of several factors that impact individual's ability to access and adhere to HIV treatment in the selected hospitals were keen justifications for the study. The information is anticipated to inform policies, practices, and programs aimed at reducing known barriers to care; poverty, stigma, and discrimination (Owusu-Dabo et al., 2019), retention in care, and initiation of targeted interventions to improve HIV outcomes in the region. Overall, the study on factors contributing to HIV treatment default presents valuable resources to improve the management of HIV in selected hospitals, inform policy decisions and programs by the Bono regional health directorate, and reduce the burden of the disease on individuals, families, and communities in Ghana.

1.6 Chapter summary and dissertation outline

Antiretroviral treatment continues to be the surest intervention to improve the morbidity and mortality associated with HIV/AIDS. However, defaulting on HIV treatment is a major setback towards the eradication of the pandemic. This study consists of six chapters. Chapter one presents an introduction to the research topic, the problem statement, the research objectives and questions, and the justification of the study. Chapter two reviews relevant literature and related studies on the subject. Chapter three comprises the research methods including data collection instruments and ethical issues. The results are presented in Chapter Four and discussions are done in Chapter Five. Chapter Six is made up of the conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter analyses evidence regarding factors associated with HIV treatment default. It is organized into four sections that provide a concise evaluation of HIV epidemiology, treatment adherence in Ghana, benefits of ART, and treatment default, along with the factors associated with defaulting on treatment. The section focuses on studies that assess patient-related factors, health service-related factors, and community-related factors and conceptual framework associated with HIV treatment default. The chapter discusses ethical issues inherent in HIV treatment default by exploring the contributions of stigma, privacy concerns, and discrimination in healthcare settings.

2.1.1 HIV Epidemiology

Globally, HIV/AIDS continues to pose a major public health challenge, with 39.9 million people living with HIV, 1.3 million new infections, and 630,000 AIDS-related deaths reported in 2023 (UNAIDS, 2024). Although global efforts have significantly reduced new infections and mortality, sub-Saharan Africa remains disproportionately affected, accounting for approximately two-thirds of all global cases. In Ghana, the 2023 national HIV estimates indicate a prevalence rate of 1.7%, with about 340,000 people living with HIV (Ghana AIDS Commission, 2023). The Bono Region has one of the highest prevalence rates (2.66%), underscoring the urgency of addressing adherence and treatment default in the region.

2.1.2 Benefits of antiretroviral Therapy (ART)

Antiretroviral treatment (ART) is a crucial treatment for individuals infected with the human immunodeficiency virus (HIV). Antiretroviral treatment invention remains one of the major strides in the fight against HIV (Kanters, 2022). ART aims to manage the virus and improve the quality of life. The treatment involves combination of anti-HIV medications that work to reduce the plasma viral load, restore immune function, and prevent the transmission of HIV to others. Antiretroviral treatment is the use of medicines to treat HIV/AIDS; though the medicines used do not cure the disease, it significantly slows down the growth of the virus (Mitchell et al., 2021; Makhado & Mongale, 2019). HIV management strategies have included efforts to ensure ART services become affordable and accessible, especially for people in low to middle-income countries (WHO, 2017). Antiretroviral medication is successful at ensuring HIV-infected individuals have an undetectable viral load, which is crucial for the long-term management of HIV as a chronic illness (Leyva-Moral et al., 2021). The introduction of ART has transformed HIV from a fatal disease to a manageable chronic condition. ART suppresses viral replication, restores immune function, and reduces HIV transmission, leading to improved quality of life and increased life expectancy (WHO, 2023; Leyva-Moral et al., 2021). Sustained adherence to ART also prevents drug resistance, reduces opportunistic infections, and decreases the risk of HIV-related mortality. From an ethical perspective, ART enhances patient autonomy and dignity by empowering individuals to lead productive lives while reducing stigma through improved clinical outcomes.

2.1.3 Concept of Treatment Default

Defaulting is defined and explained differently by several authors. This is because the term "defaulter" was first used in the management and control of tuberculosis when patients who skipped their medications for 30 days or more were labelled as defaulters. After the introduction of ART, the term has been used in HIV management (Ester, 2015; Koku-Anu, 2019). Several studies have also used the term non-adherence (Castelan et al., 2022; Nigusso, & Mavhandu-Mudzusi, 2020; Intasan, et al., 2014) to represent defaulting to HIV treatment. The highest number of HIV-positive individuals receiving ART globally has resulted from the rapid scaling up of ART and the desire to stop the spread of the disease and to remain healthier are major motivators for PLHIV to continue taking ART. The adherence to antiretroviral treatment in Sub-Saharan Africa varies widely and is generally lower than in other regions. (Almeida et al 2024). However, diverse factors cause people to refuse and discontinue ART (Kim, et al., 2016; Heestermans et al., 2016), resulting in HIV treatment failure, susceptibility to opportunistic infections, and mortalities.

Treatment default refers to the discontinuation or prolonged interruption of ART by patients who initiated therapy but subsequently failed to continue (WHO, 2013; Afshari et al., 2020). It is sometimes used interchangeably with non-adherence, attrition, or loss to follow-up. Defaulting disrupts continuity of care and undermines the therapeutic benefits of ART. The consequences include viral rebound, drug resistance, higher healthcare costs, and increased morbidity and mortality (Yu et al., 2018; Moosa et al., 2019). The causes of treatment default are multifactorial, involving patient-related, health system-related, and community-level determinants. Patient-related factors include psychological distress, forgetfulness, and side effects; health system factors include poor provider attitudes and

long waiting times; while community factors encompass stigma, discrimination, and inadequate social support (Tarkang et al., 2023; Boakye & Adjorlolo, 2023). Understanding treatment default within this multidimensional framework is crucial for developing effective, ethically sound interventions that promote adherence, respect autonomy, and ensure equitable access to care.

2.2 Factors influencing ART default

A complex interplay of several determinants influences the adherence to ART among PLHIV. Healthcare quality, socioeconomic barriers, and personal circumstances play significant roles in ART adherence, particularly in resource-limited settings (Chen et al., 2024; Almeida et al., 2024). This review examines the literature to uncover gaps in understanding factors associated with HIV treatment default by grouping into themes; socio-demographic characteristics, individual patient factors, health service providers' and community factors.

2.2.1 Socio-demographic characteristics

Age, sex, education, socioeconomic, and marital status play pivotal roles in determining adherence rates of ART among persons living with HIV.

Age is a consistently identified predictor of antiretroviral treatment adherence with younger persons typically in the mid-30s or below being at higher risk of defaulting. For instance, Potsane (2023), and Nembot (2022) reported mean ages of 34 years and 36.8 years among defaulters in South Africa, and Cameroon respectively, while Adu et al., (2022), and Kogi et al., 2024; found a mean age of 41 years and above more likely to adhere to HIV treatment regimen in Kumasi, Ghana. These findings suggest younger people navigating education, employment, and family life may struggle to sustain consistent adherence to antiretroviral

treatment. The study by Kogi et al., (2024) and Adu et al, (2024) provides valuable insights and applicability given similar geographical and health systems in the study areas. Despite these additions to knowledge, a comprehensive understanding of age as a key determinant of ART adherence remains elusive due to inconsistencies in mean age reported across different study settings. This phenomenon begs for future studies to prioritize methodologies that explore the age of HIV patients in initiating and sustaining treatment.

The relationship between sex and adherence to ART remains contested. While some studies found lower adherence to ART among females (Kogi et al. 2024; Afrane et al. 2021), higher default rates have also been reported among males (Nigusso & Mavhandu-Mudzusi 2020; Senu et al., 2022). The discrepancy could be attributed to cultural differences in gender roles and expectations that tend to influence responses to health challenges.in different context. For instance, caregiving roles of women in some context may hinder adherence to ART whereas societal norms around masculinity may influence men to avoid healthcare. Gender-sensitive research to better understand the pivotal role of gender in ART adherence is therefore imperative to address the inconsistent findings.

The impact of marital status on ART adherence among PLHIV is significantly evident in various studies. For instance, the literature indicates higher adherence in married patients than their unmarried counterparts (Bojdy et al., 2020; Tarkang et al., 2023; Almeida et al., 2024)). In contrast, Nankinga, 2023 and Ada et al., 2023, reported higher ART default rates among single, divorced, and widowed patients. Marital relationship influences social support systems with the potential to hinder or enhance adherence to ART regimens. Married people benefit from shared responsibilities and encouragement assuring partners of logistical and emotional support facilitating ART adherence.

Higher education levels often correlate with better health literacy enabling patients to understand the importance of adhering to treatment regimens, reporting adverse effects, and follow-up visits resulting in improved health outcomes. The relationship between educational attainment and ART adherence is complex, particularly in resource-limited settings. Studies indicate education influences patients' ability to seek information, communicate effectively with healthcare professionals, and navigate healthcare systems smoothly (Almeida et al. 2024; Isabirye et al. 2023). The literature highlights almost widespread agreement regarding improved ART adherence and higher educational status of patients (Aytenew et al. 2024; Kogi et al., 2024). Quality service and privacy in healthcare settings are more accessible to those with higher education (Adjei-Mensah et al., 2024); an opportunity that can enhance treatment outcomes.

In summary, the literature highlights growing consensus on marital status and education as crucial socio-demographic characteristics influencing ART adherence, yet significant gaps remain in understanding the role dynamics of age and sex as key determinants. Future studies should prioritize exploring age-related barriers to inform targeted interventions in Ghana.

2.2.2 Patient-related factors associated with ART default

The literature on patient factors associated with HIV treatment default highlights multiple determinants of ART adherence including socioeconomic vulnerabilities, comorbidities, cognitive capacities, adverse effects of treatment, and psychological stressors. A critical examination of existing literature reveals both consistent patterns and contradictions in findings that warrant further exploration.

One major theme in the literature is the emphasis on the timing of antiretroviral treatment initiation. The literature supports early initiation of ART within 7 days post HIV diagnosis showing significant improvement in adherence (Zhao et al. 2022; Xia et al., 2024; Chen et al., 2024). The studies suggest rapid initiation of ART enhances adherence rates by limiting barriers related to delayed treatment, especially in resource-limited settings. However, in the presence of comorbidities, delayed ART initiation would be a preferred option (Rahardjo et al. 2023). While the benefits of early initiation are well-documented, drug-drug interactions, psychological and social readiness for a lifelong ART, and the need to manage comorbidities are justifiable reasons to delay ART initiation. The timing for ART initiation may not be a one-size-fits-all approach but may be dependent on the specific state and needs of patients. However, there is a paucity of literature on how health systems' readiness impacts the rapid initiation of ART taking into consideration the availability of drugs and trained staff to deliver such essential service.

Unemployment and monthly income are socio-economic factors frequently linked to antiretroviral treatment default. Brown et al. (2019) reported no significant association between socioeconomic status and ART adherence but indicated systemic barriers such as stigma and inefficiencies in health systems as major motivators for non-adherence. In contrast, challenges unemployed patients face in accessing healthcare or prioritizing treatment adherence are well documented (Bondarchuk et al. 2022; Nigusso & Mavhandu-Mudzusi, 2020; Paramesha & Chacko, 2019). Recent studies indicate monthly income and employment status as fundamental determinants of adherence stressing that patients with stable income sources adhere better to ART regimens (Almeida et al., 2024; Adu et al., 2022). Although unemployed people may have adequate time for regular visits to HIV

clinics for treatment, their constrained financial status may be a hindrance to accessing healthcare such as the inability to afford transportation and medications. While employed patients may experience less financial stress due to a reliable source of income, tight working schedules may also contribute to missing appointments at clinics or missing ART doses. Taken together the reviewed studies, although there is disagreement on the impact of patients' socio-economic level on ART adherence, the need for HIV treatment programs that target eliminating financial barriers is evident.

Cognitive and psychological states of patients may play a critical role in patients' adherence to ART otherwise. For example, the literature emphasizes the role of stress, depression, lack of motivation, anxiety, impaired memory, and cognitive function resulting in forgetfulness contributing to reduced adherence to ART (Almeida et al., 2024; Chakraborty et al., 2020). This finding highlights the need for holistic interventions that address the physical and psychological well-being of patients. Despite the clear link between mental health and adherence to ART, the literature lacks practical and workable approaches to integrate mental health services into HIV care programs, especially in resource-limited settings such as Ghana. Interventions to address these gaps would not only ensure efficiency and effectiveness in ART programs but a necessary step towards equity and inclusivity.

In summary, the studies provide a nuanced understanding of patient-related factors contributing to HIV treatment default. While the timing of ART initiation, socio-economic levels, and mental health of patients are well-documented, the existing studies are deficient in exploring integrated interventions that holistically address these challenges. Future studies should tackle targeted interventions including mental health support, flexible clinic

schedules, and improving education to address misconceptions and management of side effects, to mitigate the rates of default.

2.2.3 Health service-related factors associated with ART default

Factors such as healthcare quality, socioeconomic barriers, and personal circumstances also play significant roles in ART adherence among individuals in LMICs (Chen et al., 2024; Almeida et al., 2024). This section reviews the literature on health service-related factors contributing to antiretroviral treatment default: attitude of staff, ART clinic schedules, ART supply, quality of service and satisfaction, information on ART to patients, and stigmatization and discrimination among Health Care Workers (HCW) towards HIV patients.

Positive interactions by healthcare workers can be linked to specialized training and knowledge, enabling them to understand the complex experiences of patients and the need for empathetic care (Boakye et al., 2023). While the literature underscores the critical need for patient-centred care, the existing studies often ignore the importance of addressing systemic factors that influence negative healthcare staff attitudes. Developing interventions that improve the attitudes of health service providers requires that critical gaps, such as burnout, inadequacy of training, and understaffing within the health system, are addressed. Clinic schedules that coincide with the daily activities of patients, such as market days, work hours, and festivals, impose significant barriers to treatment compliance (Koku-Anu, 2019), coupled with long waiting hours at the clinics mostly result in frustration and treatment default (Kamaingi & Meng'anyi, 2019; Jaafari et al., 2022). Although Baker et al. (2020) emphasized the need for flexible clinic hours and relatively shorter waiting periods at the clinic, to improve adherence, existing studies are limited solutions to address

systemic inefficiencies such as poor clinic management that deter patients' visits. Digital health solutions to address scheduling challenges are limited in the literature. Exploring appointment reminders, for example, could enhance a patient-friendly healthcare system and help resolve the tendency for patients to forget appointments. Frequent shortages of HIV drugs and essential supplies are significant challenges to adherence (Abdulai et al., 2023; Davis et al., 2018). This phenomenon erodes trust in health services and disrupts treatment. Availability of resources and supportive policies significantly enhance ART adherence implementation culminating in improved patient outcomes. While the literature highlights ART supply chain issues, there is limited exploration of community-based distribution and private-public partnerships to improve access and availability of antiretroviral drugs. Modern, efficient, and innovative supply chain approaches should therefore be assessed in future studies to guarantee consistent access to and availability of HIV drugs.

Health system attributes such as quality of care have been identified as a key contributor to patients' adherence to ART. For example, Makhado and Mongale (2019), and Simelane et al. (2022), highlighted that absenteeism, unprofessional conduct by health staff, and inadequate staffing frustrate patients and contribute to default treatment. Trust in the healthcare system has been reported to significantly contribute to adherence (Tarkang et al. 2023; Jaafari et al. 2022). However, the existing studies scantily report on healthcare system challenges such as high patient-to-provider ratio, funding constraints, and inadequate training that contribute to poor service delivery in ART implementation.

Information on ART to patients is a critical element for treatment compliance. The literature emphasizes that patients are more likely to adhere to ART if given comprehensive

education that helps them understand the consequences of defaulting treatment (Simelane et al., 2022; Boakye et al., 2022; Prah et al., 2018). Healthcare professionals must therefore receive continuous training on the management of HIV to enhance patient education and ART adherence (Kor & Kor, 2024; Mutaru et al., 2022; Boakye et al., 2022). While the literature underscores the need for comprehensive education or information on ART, studies on barriers to effective communication between healthcare workers and HIV are limited. Addressing literacy and language barriers could enhance communication among health service professionals to improve patients' understanding and ART adherence. Moreover, exploring the use of mobile health applications or SMS reminders and other digital tools may potentially enhance understanding and adherence.

In summary, positive attitudes of health staff, distance to ART clinic and scheduling, logistical supplies, quality of service, and adequate information to patients are healthcare-related factors that influence ART adherence. However, gaps in the existing literature on health service-related factors include systemic barriers such as understaffing and inefficiencies in logistics supply, innovative interventions to improve adherence, such as digital tools usage, and community-based distribution approaches to address ART default.

2.2.4 Community-related factors associated with ART default

The literature presents an extensive overview of key determinants of ART adherence within the community such as social and structural factors, accessibility, and stigma. This section highlights the determinants, explores gaps and inconsistencies in the literature, and suggests areas for further research to improve understanding of challenges to ART adherence.

Existing studies acknowledge social support as a prominent determinant of ART adherence. For example, Sharma et al., (2022), Mitchell et al. (2022), and Buregyeya et al. (2017) identified support from family, and friends as a key determinant of adherence which emphasizes the importance of a supportive environment for patients receiving HIV treatment. These findings align with broader studies that link social integration to improved patient outcomes in chronic disease management (Nutor et al., 2024). However, the reviewed literature fails to discuss the role of culture and context in assessing the effectiveness of social support in HIV management. For example, in communities where HIV is severely stigmatized, disclosing HIV status to social networks such as family and friends may result in patients being stigmatized, discriminated against, and ostracized. In contrast, others may respond favourably to persons with HIV. Social structures are therefore not universally supportive and can be a barrier to ART adherence in certain contexts. Exploration of the context-specific dynamics that help to provide support should be focused in future studies.

Significant associations exist between the location of the ART clinic and treatment default. Patients with easier access to ART sites have improved ART adherence (Kogi et al. 2024). This finding highlights the opportunity for patients to attend appointments and regularly refill medications with minimal stress thereby improving adherence. ART sites that engage with the community and involve patients in support groups or educational programs may enhance adherence. Such initiatives can create a sense of belonging and accountability among patients, making them more likely to adhere to their treatment plans.

Distance to HIV clinics or hospitals is a significant hindrance to ART adherence and has been well documented. Studies highlight the transportation barriers such as the cost

associated with long-distance travel to clinics as a major influence on clinic attendance and eventual default in treatment (Tarkang et al. 2023; Adjei-Mensah et al. 2024; Mwiti et al. 2024). In contrast, a study in South Africa reported patients' willingness to travel long distances to ART clinics, prioritizing anonymity, and privacy over convenience (Mee et al., 2020). These findings suggest the role of structural and social barriers contributing to ART default. Moreover, Ssuuna et al. (2024) and Rodriguez et al (2023) reported that access to personal means of transport significantly improves treatment outcomes. While these findings highlight valuable insights, the economic barriers that limit transportation access have often been overlooked, particularly in resource-limited regions. Innovative solutions to address these challenges, such as mobile clinics and community-based ART distribution, should be explored in future studies.

2.2.5 Ethical assessment of stigma, privacy concerns, and discrimination on HIV treatment default

Treatment default, often discussed as non-adherence, attrition, and loss to follow-up, denotes the absence of cases during follow-up on patients who refuse to initiate or discontinue treatment (Afshari et al., 2020; WHO, 2013; Fox & Rosen, 2010). While defaulting on HIV treatment presents a plethora of negative effects on patients and public health (Bondarchuk et al. 2022; Becker et al. 2020; Yu et al., 2018), several social and structural barriers including stigma, privacy concerns, and discrimination, exist (Sefah et al., 2022). These barriers violate patients' dignity, create social injustices and disparities, and infringe on patients' rights. This section examines the ethical implications of stigma, privacy concerns, and discrimination in HIV treatment default.

The literature highlights a strong correlation between stigma and treatment default. For instance, Nawfal et al. (2024), and Osayi et al. (2024) reported that HIV-related stigma and disclosure concerns significantly affect retention in care and ART adherence. In contrast, some studies have suggested stigma to have some positive impacts on HIV treatment adherence. For instance, Nutor and colleagues found stigma as a motivator for PLHIV to adhere to treatment (Nutor et al. 2025). While the study acknowledges such motivation as rare, the inspiration may stem from the individual's determination to regain control over their health and avoid further stigmatization. Stigma profoundly influences ART adherence and manifests in many forms at different levels including enacted, social, internalized, associative, and structural stigma (Nutor et al. 2024; Turan et al. 2023; Mahinda, 2024; Osayi et al. 2024). Notable causes of stigma and discriminatory attitudes toward PLHIV include low education, poor HIV knowledge, and poverty (Melkam & Fente, 2024). As a consistently pervasive barrier to HIV treatment adherence, stigma has detrimental effects on individuals, families, and the community and is exacerbated by sociocultural barriers. At the individual level, studies suggest that internalized stigma may be considered a self-imposing and self-inflicting barrier resulting from low self-esteem, anxiety, and depression which significantly undermine treatment adherence (Thomford et al. 2023; Nutor et al., 2024; Ouner et al., 2025). The fear of being stigmatized, shame, and isolation experienced may cause PLHIV not to disclose their HIV status to partners, family, or community members. This feeling of guilt and self-blame eventually contributes to HIV treatment default. Within society, studies have reported high levels of stigma and discrimination in Ghana as a major challenge to ART adherence (Alhassan et al., 2023). The fear of family rejection often leads to social isolation, loss of identity, and poor treatment adherence

(Alhassan et al 2023; Adam et al., 2021). Moreover, communities with religious orientations that perceive HIV as a punishment for promiscuity and immoral conduct do not encourage PLHIV to seek care and or adhere to treatment (Parker et al. 2020). Reducing sociocultural barriers such as stigma to ART adherence necessitates an alignment of HIV education with sociocultural perspectives by incorporating religious, cultural, and moral values into stigma reduction programs. These initiatives could potentially shift societal perceptions by improving awareness and treatment outcomes.

At the core of ethics of health practice is the respect for privacy and confidentiality in the management of sensitive health challenges such as HIV. Breaches of privacy and confidentiality undermine the rights of patients often resulting in involuntary disclosure of HIV status and compromises public health efforts. A study examining determinants of antiretroviral therapy adherence among people living with HIV in a poor urban setting in Ghana found that high client satisfaction and privacy at clinics positively correlate with HIV treatment adherence (Adjei-Mensah et al., 2024), while fear of being stigmatized and discriminated resulting from breaches of privacy significantly deter PLHIV to default treatment (Nutor et al., 2024; Adjei-Mensah et al., 2024). These findings underscore the need to address privacy concerns in HIV management to help improve treatment adherence. Denying the privacy and dignity of HIV patients violates the ethical principles of the health professions, and dehumanizes PLHIV resulting in isolation, shame, and psychological distress. Strict adherence to the privacy and confidentiality of patients builds and maintains a trusting relationship between healthcare workers and PLHIV promoting improved health outcomes. Policies and frameworks to safeguard safety and dignity need to be strengthened and enforced. For example, the GHS Patients' Charter enshrines the

rights, dignity, safety, and respect of patients (Nyaho Medical Centre, 2018), and as such breaches of privacy and confidentiality ethically compromise standards, conduct, and quality, and raise medico-legal concerns. Healthcare systems can develop more inclusive and effective interventions to reduce treatment defaults.

Discriminatory practices within the health system contravene human rights and pose a significant hindrance to PLHIV seeking treatment. According to the UNAIDS report, an estimated 21% of PLHIV are denied health care services (UNAIDS, 2021), leading to a disproportionate impact and raising ethical concerns about equity in access. However, health service providers are ethically bound to provide equitable care while respecting patients' rights and dignity of patients.

These multi-level approaches require community-responsive initiatives, peer support, health system training, policy enforcement, and legislative reforms, which have shown promise in reducing stigma and improving treatment adherence (Nelson et al. 2021; Parker et al. 2020). Community-based programs, including public education and workshops, significantly impact stigma and improve treatment adherence. For example, house-to-house education and financial support programs are reported to mitigate stigma and improve ART adherence (Parker et al., 2020). Although community-based programs promise to sensitize and challenge misconceptions, house-to-house education for instance, would be daunting and financially demanding. Moreover, compassionate and empathetic care provides a safe and valued environment and reduces fear of stigma, among PLHIV in health settings, improving adherence. Healthcare workers must be trained to provide a supportive environment to PLHIV and reorient health staff to be non-judgmental and non-stigmatizing in healthcare delivery. Strengthening policies to address structural barriers is

critical to reducing stigma, privacy concerns, and discrimination of PLHIV to improve ART adherence. Healthcare policies on confidentiality and non-discrimination enable PLHIV to seek care promptly and adhere to treatment (Abdulai et al., 2023; Nelson et al., 2021). However, the major challenge with policy has been enforcement rather than formulation and advocacy.

In conclusion, the ethical assessment of stigma, privacy concerns, and discrimination in HIV treatment default highlighted the importance of addressing the fundamental causes and promoting the rights, and dignity of PLHIV. Addressing challenges to ART default would require healthcare workers to diligently and ethically provide care; respecting the autonomy and dignity of patients, promoting equitable access to care, and creating an all-inclusive, and empathetic environment. To address stigma, privacy, and discrimination, interventions must be holistic targeting individual patients, community, and structural barriers.

2.3 Conceptual framework of factors associated with HIV treatment default

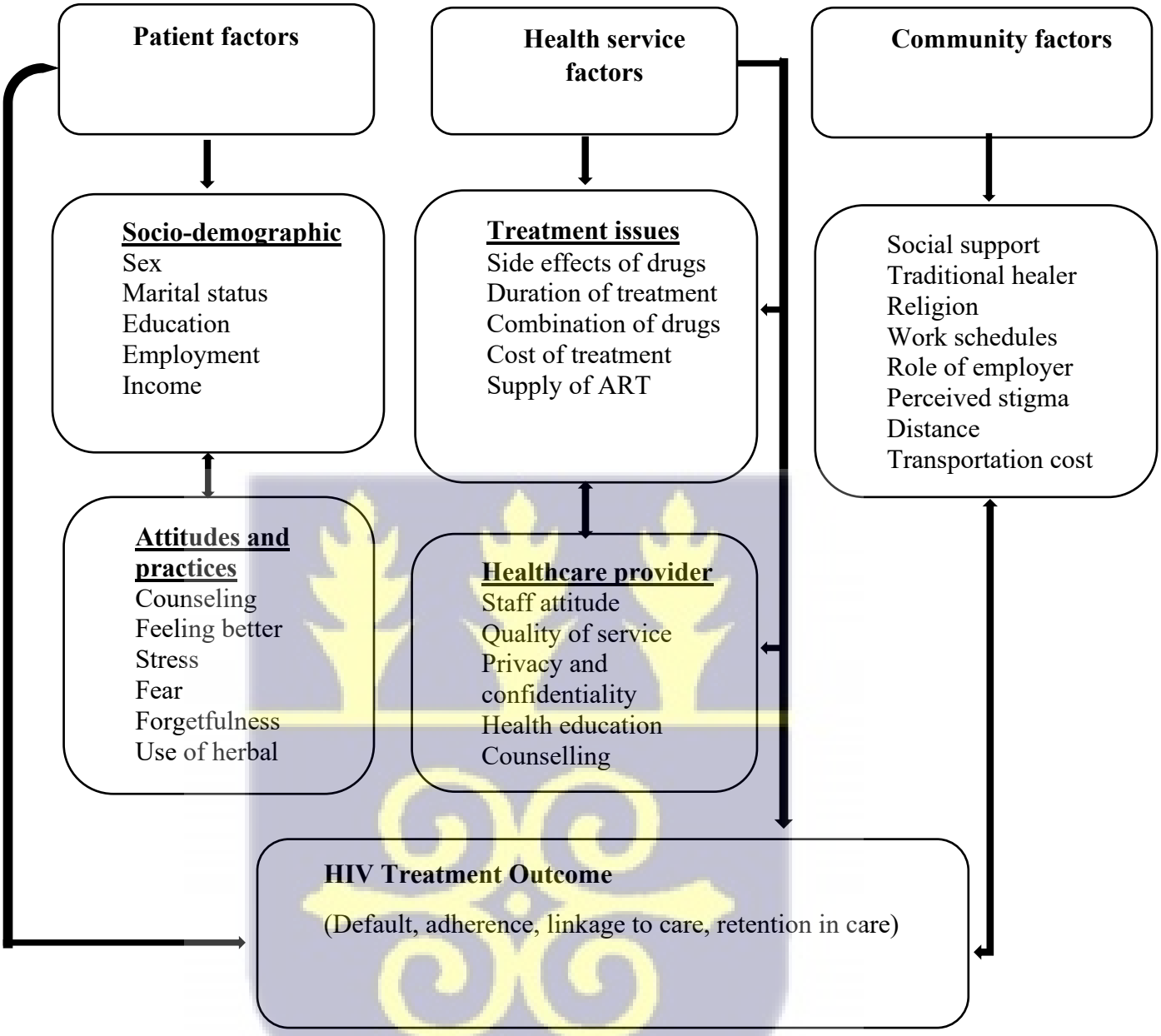


Figure 2. 1: Conceptual framework of factors associated with HIV treatment default

Source: *Adapted from WHO (2003) "Adherence to Long-Term Therapies: Evidence for Action," Andersen (1995), and the Socio-Ecological Model (Bronfenbrenner, 1977).*

2.3 Conceptual framework of factors associated with HIV treatment default among PLHIV

The study's conceptual framework was adapted from the World Health Organization's (WHO) Five Dimensions of Adherence Model (2003), supplemented by elements of Andersen's Behavioural Model of Health Services Use (1995) and the Socio-Ecological Model. These frameworks have been widely used in studies assessing determinants of adherence to chronic disease management and HIV treatment (Iacob et al., 2017; Nabukeera-Barungi et al., 2021; Nutor et al., 2024).

The WHO Adherence Model (2003) identifies five interrelated dimensions influencing adherence: Patient-related factors (knowledge, beliefs, motivation, and psychological status). Health system and healthcare team factors (staff attitude, accessibility, and quality of care). Therapy-related factors (side effects, duration, and complexity of regimen). Socio-economic factors (income, employment, education). Condition-related factors (disease severity, comorbidities).

Similarly, Andersen's Behavioural Model emphasizes that healthcare utilization and outcomes depend on predisposing, enabling, and need factors, while the Socio-Ecological Model situates health behaviour within individual, interpersonal, organizational, and community contexts.

This study integrates these perspectives to explain HIV treatment default as the outcome of interacting influences at three main levels: Patient-related factors, such as socio-demographic characteristics, side effects, psychological stressors, and financial constraints; Health service factors, including staff attitudes, clinic accessibility, and confidentiality practices; and Community factors, such as stigma, discrimination, and

social support networks. By synthesizing these models, the framework provides a comprehensive lens for examining how individual, systemic, and contextual determinants interact to influence treatment adherence. It also highlights the ethical dimensions of autonomy, justice, and respect for persons as cross cutting considerations relevant to the management of HIV treatment adherence in Ghana. Socio-demographic factors like sex, marital status, income, and education may have an impact on HIV treatment adherence. Men seek health care less frequently than women do, but women face greater financial barriers to receiving HIV treatment. Married people may be more likely than single persons to stick to their HIV treatment because they have each other for support. The client's education may also play a role in ART defaulting, as clients with higher levels of education would be more likely to be aware of the repercussions of defaulting than those with lower levels of education or none. Because it may be expensive to pay, for example, transportation, and other out-of-pocket charges at the clinics, patients' employment, and income, may have a key impact on their adherence to or default from HIV treatment (Sabin et al., 2014; Koku-Anu, 2018). Certain beliefs, attitudes, and behaviours may prevent PLHIV from receiving treatment or be reluctant to comply. Clients' use of ART may be influenced by their perceptions of the usefulness and effectiveness of alternative treatments. In contrast to antiretroviral drugs (ARVs), which must be taken daily for a lifetime, the ability to start and discontinue herbal treatments as one's health improves may entice HIV patients to seek alternative treatments. Moreover, when one notices improvements in their health, particularly when their viral load is reduced, they may decide to stop taking their ART medication (Chirambo et al., 2019). Alcohol use and forgetfulness may be factors in HIV treatment discontinuation; those who become

excessively drunk may not remember to take their medications or miss appointments at the ART clinics. Additionally, financial hardships and mental stress may cause PLHIV to skip prescriptions (Becker et al., 2020).

The second independent variable is the health service elements, such as staff attitudes, clinic hours, logistical supply, and treatment-related difficulties, such as side effects, length of treatment, and cost of treatment, which may affect adherence to HIV treatment. When there is a healthcare personnel shortage, factors such as attitude, waiting times, appointments, and clinic days may play a role in patients foregoing treatment. Many clients waiting to start ART or joining lengthy lines or queues for prescription refills may demoralize patients, which could lead to missed appointments and treatment default. Inadequate information and education and other high-quality services supported by morally good values would be less likely to be provided by untrained professionals, which could eventually lead HIV patients to default therapy. Positive relationships between healthcare professionals and PLHIV would increase adherence to ART treatment, whereas unpleasant attitudes on the part of healthcare professionals could compound the already stressful situations of HIV patients and lead to non-compliance with treatment. Patients receiving ART would be given hope and confidence if healthcare professionals showed empathy and provided thorough information, education, and counseling on the pluses of continued ART and the repercussions of defaulting. This would have a beneficial impact on ART adherence (Chirambo et al., 2019). The location of the ART Clinic within the healthcare facility may potentially be a factor in HIV patients' failure to adhere to their ART regimen. The exposed and isolated nature of the clinic may prevent PLHIV from accessing the clinic for their treatment. Patients may be reluctant to keep their appointments at ART Clinics

due to poor logistics, and relevant resources at the facility. It may be difficult for PLHIV to keep clinic appointments that coincide with social events and market days in societies with specific market days (Koku-Anu, 2018). Presence of supervisory mechanisms by health facilities to track the attendance and follow-ups on HIV patients receiving treatment in a specific ART clinic may help to increase adherence, aid in early detection, and better understand the difficulties faced by HIV patients on treatment regimens. The strict commitment to clients' privacy and confidentiality is another aspect of health practice that may impact adherence to treatment. Clients would be more inclined to seek medical care from facilities where their privacy and confidentiality would be guaranteed, and they would probably decline appointments at those where these ethical norms are violated (Becker et al., 2020).

The factors in the community of PLHIV are the third independent variable that may affect HIV treatment default. Support, belief systems, job schedules, and perceived and actual stigma are a few examples of these issues. Initially, the availability of family and community support could be crucial in preserving adherence among people receiving ART treatment. Support eases acceptance of one's positive status, reduces stigma, and may provide a platform for HIV-positive family members and community members to be encouraged and supported in taking medications (Chirambo et al., 2019). Support from family members would raise morale, assist clients to remember their appointments, and even help pick up drugs when they are ill (Koku-Anu, 2018); in contrast, lack of support may increase the likelihood that HIV patients may stop taking their medication. Once more, community perceptions and beliefs about the efficacy of traditional remedies to cure HIV would probably lead PLHIV to stop taking ART drugs that are intended for the treatment

and turn to traditional healers instead. Religious beliefs that call for fasting at specific times of the year, months, or even days would logically prohibit such adherents from taking medication at those times.

Fasting by Muslims, Hindus, and Christians that is reserved for specific times of the year could make it harder for people to follow their ART regimen. Members could purposefully miss their ART appointments and avoid taking anything by mouth. Compared to people who are self-employed or have fewer demanding jobs, HIV patients with extremely busy and demanding work schedules would be more prone to forgo treatment. People in the community who take precautions to avoid being recognized as HIV-positive, such as avoiding all medical institutions, turning to traditional healers, or paying for private doctors, and the fear of stigma continue to be a barrier to care (Koku-Anu, 2018). Treatment adherence may be impacted by community rumours and the anxiety associated with being stigmatized because of one's HIV status. HIV-positive individuals might be hesitant to visit ART clinics because of concern that they would be recognized by the local population. The distance to an ART clinic and the cost of transportation are two additional local factors that may be linked to PLHIV defaulting on treatment (Chirambo et al., 2019; Becker et al., 2020). Long travel times and high transportation costs could lead people living with HIV (PLHIV) to miss appointments for ART clinic refills.

CHAPTER THREE

METHODS

3.1 Study Design

An analytical cross-sectional study was conducted at the Bono Municipal and Regional Hospitals using quantitative approach. PLHIV who are accessing healthcare at the two selected health facilities were enrolled into the study. Participants were enrolled sequentially on the ART clinic days at the two selected hospitals. Data on socio-demographic characteristics, patient, health service provider, and community factors associated with HIV treatment default were collected using an interviewer-administered structured questionnaire.

3.2 Study area

This study was carried out at the Bono Regional and Municipal hospitals. The Bono Regional Hospital is the largest secondary-level hospital (by patient attendance and specialist care) in Sunyani and the Bono Region. Serving as a major referral center, the hospital receives cases from health facilities in the Ahafo, Bono, and Bono East regions of Ghana (Nketia et al., 2022). The Municipal hospital is the largest government-owned primary-level hospital in Sunyani Municipality and the Bono region. The selected facilities provide dedicated consultation, counseling, testing, laboratory, and pharmacy services for HIV patients visiting the facility on Wednesdays and Fridays. The selection of the study locations was determined by the hospitals' status as being the largest hospitals in the Bono region, designated HIV clinics, the diverse cadre of healthcare professionals, and specialties and services provided.

3.3 Study population

The study population included all persons diagnosed with HIV and receiving ART services at the HIV clinic at the Regional and Municipal Hospitals in Sunyani. There are about 3500 and 2200 active registered HIV and AIDS patients with an average daily clinic attendance of 80 and 60 patients at the regional and municipal hospitals respectively. The HIV patients visit the HIV clinics on 6 monthly bases to receive ART supplies.

3.4 Inclusion and exclusion criteria

The following criteria were applied to include or exclude study participants.

3.4.1 Inclusion criteria

1. All HIV patients 18 years and above accessing ART services at the Municipal and Bono Regional Hospitals in Sunyani.
2. All adult HIV patients who meet criteria one above, and consent to participate.

3.4.2 Exclusion criteria

All HIV patients 18 years and above who are accessing ART services on at the Municipal and Bono Regional Hospitals in Sunyani but are severely ill.

3.5 Description of Study Variables

The table below shows the independent and dependent variables of the study. The independent variables are sex, marital status, education, employment status of the participant, income of participant, counseling, feeling better, stress, fear, forgetfulness, use of herbal medicines, health service provider factors, side effects of drugs, duration of treatment, a combination of drugs, cost of treatment, supply of ART, staff attitude, quality of service, privacy and confidentiality, social support, religion, work schedules, the role of employer, perceived stigma, distance, transportation cost. The dependent variable is the

HIV treatment outcome which includes default, adherence, linkage to care, and retention in care.

Table 3. 1: Study Variables

Variable	Classification	Levels
Patient factors		
Socio-demographic Characteristics		
Sex	Independent (categorical)	Nominal
Marital status	Independent (categorical)	Nominal
Education	Independent (categorical)	Nominal
Employment status	Independent (categorical)	Nominal
Income level	Independent (categorical)	Nominal
Attitudes and practices		
Counseling	Independent (categorical)	Ordinal
Feeling better	Independent (categorical)	Ordinal
Stress Counseling	Independent (categorical)	Ordinal
Fear	Independent (categorical)	Ordinal
Forgetfulness	Independent (categorical)	Ordinal
Use of herbal medicines	Independent (numerical)	Ratio
Health service provider factors		
Treatment issues		

Side effects of drugs	Independent (numerical)	Ratio
Duration of treatment	Independent (numerical)	Ratio
Combination of drugs	Independent (numerical)	Ratio
Cost of treatment	Independent (numerical)	Ratio
Supply of ART	Independent (numerical)	Ratio
Healthcare provider		
Staff attitude	Independent (categorical)	Nominal
Quality of service	Independent (categorical)	Nominal
Privacy and confidentiality	Independent (numerical)	Ratio
Community factors		
Social support	Independent (categorical)	Ratio
Religion	Independent (categorical)	Nominal
Work schedules	Independent (numerical)	Nominal
Role of employer	Independent (categorical)	Nominal
Perceived stigma	Independent (categorical)	Nominal
Distance	Independent (numerical)	Ratio
Transportation cost	Independent (numerical)	Ratio

3.6 Sample size estimation

The sample size was estimated using the Cochran formula,

$n = \frac{(Z^2p(1-p)}{d^2}$ (Cochran, 1977), where:

n = sample size

Z = the z-score that corresponds with a 95% confidence interval (1.96),

P = standard deviation (0.5)

e = margin of error (0.05)

$n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}$

$n = \frac{(3.8416) (0.25)}{(0.0025)}$

n = 384.16

n = 385

Therefore, an estimated sample size of 385 participants was used for the study.

3.7 Sampling method

The study used quantitative data collection approach to select patients receiving ART services from the two selected public hospitals in Sunyani municipality. Probability proportion to size (PPS) was used to determine the number of participants from the two selected hospitals as follows.

Population at Regional Hospital (N_1) = 3500

Population at Municipal Hospital (N_2) = 2200

Total population for the study = 5700

Number of participants selected from regional hospital = 3500/5700 *100 = 61%

61% of estimated sample size (385) = 235

Therefore, 235 participants were sampled from the Regional Hospital at Sunyani.

Number of participants selected from municipal hospital = 2200/5700 *100 = 39%

39% of estimated sample size (385) = 150

Therefore, 150 participants were sampled from the Municipal Hospital at Sunyani. A consecutive sampling technique was used to select participants attending ART clinics at the Bono Regional and Municipal Hospitals during the study period. All eligible and consenting HIV-positive patients aged 18 years and above who visited the clinics within the data collection period were enrolled until the required sample size of 385 was reached. Consecutive sampling was chosen because daily clinic attendance varies, and it was ethically and logistically impractical to conduct random selection among patients due to confidentiality considerations and fluctuating patient flow. This method ensured that all eligible patients presenting within the period had an equal opportunity to participate, thereby improving feasibility and representativeness within the study context. Similar approaches have been adopted in related studies on HIV adherence and treatment default in comparable settings (Ogoina et al., 2019; Dube et al., 2021; Tarkang et al., 2023).

3.8 Data collection tool

Structured questionnaires were developed to collect primary data from patients accessing ART services at the selected hospitals. The questionnaire consisted of closed-ended questions with four sections. Section A asked questions relating to the socio-demographic characteristics of participants. Sections B, C, and D consisted of questions relating to patient, health provider, and community variables respectively.

3.9 Data collection technique

Data collection took place on the clinic days of the selected health facilities; Wednesdays, and Fridays at the Regional hospital, and Fridays at the Municipal hospital. Data was collected from consented patients after they had received ART services for the day to avoid marked interruptions in the activities at the clinic. Data collection was carried out by the researcher and other trained research assistants, who were fluent in the Akan language (Bono, Asante Twi) and English, which are widely spoken by the people in the Sunyani Municipality. Questionnaires were administered by the researcher and assistants. Data collection occurred in the nurses' office to allow for privacy and confidentiality and lasted for two weeks.

3.10 Quality control

The principal investigator trained four (4) research assistants to help in the data collection. Research assistants received two days of training on several areas of the research including ethics and conduct of fieldwork. Additionally, the principal investigator supervised the trained research assistants throughout the data collection. The structured questionnaire was pre-tested to determine its appropriateness and suitability for the study. Pre-testing was done using 15 patients accessing ART services at the SDA hospital in Sunyani. The questionnaire was then corrected by rephrasing the questions, and rearrangement of sections in the questionnaire. Quantitative or close-ended questions were appropriately coded before data entry and during the analysis.

3.11 Data processing

Data was collected, collated, and aggregated for analysis. Data was cleaned and checked for completeness and consistency. Processing of the data was based on the socio-

demographic characteristics and patient factors, health service provider factors, and community factors. The questionnaires when completed by respondents will be coded before entering Microsoft excel.

3.12 Data analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 26.0. Both descriptive and inferential statistical techniques were employed to summarize and examine relationships between study variables. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to present socio-demographic characteristics, treatment histories, and patterns of default among participants. These measures provided a clear overview of the distribution and trends within the dataset.

For inferential analysis, the study used Chi-square (χ^2) tests to assess the association between categorical independent variables (such as gender, marital status, occupation, education, and distance to clinic) and the dependent variable (treatment default status). The Chi-square test was appropriate because the variables were nominal and measured at categorical levels, allowing comparison of proportions between groups.

To further determine the predictors of treatment default, binary logistic regression analysis was conducted. Variables that showed a p-value ≤ 0.20 in the bivariate analysis were included in the multivariable model to control for confounding. Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI) were calculated to determine the strength and direction of associations. Statistical significance was set at $p < 0.05$.

The results were interpreted in relation to existing literature, highlighting both statistical and practical implications of the findings for HIV treatment adherence and ethical practice.

3.13 Ethical considerations

3.13.1 Study approval

Ethical approval was sought from the Ghana Health Service Ethics Review Committee (GHS-ERC). Data collection approval was obtained from the Regional and Municipal Hospitals in Sunyani. Copies of the ethical clearance letter and consent form were made available for these authorities.

3.13.2 Confidentiality

Respondents were assured that under no condition whatsoever will their names or any other contacts be linked to the data analysis and dissemination of the findings of the study. Furthermore, codes were used to identify them instead of names in the analysis and reporting process.

3.13.3 Potential risks/benefits

There was minimal risk during the data collection. However, all protocols were duly observed. Also, there were no direct benefits for participants in the study. However, the information obtained was used to provide some recommendations to the authorities that would aid in improving ART adherence in the Sunyani Municipality.

3.13.4 Voluntary consent/withdrawal

Participants were informed that participating in the study is voluntary, and they had all right to refuse or withdraw from the study at any time they felt uncomfortable. Participants were encouraged they could freely opt out at any stage of the study without any consequences whatsoever. Written consent was obtained from the participants after they had understood the purpose of the study and agreed to participate. Participants were asked to sign a consent form.

3.13.5 Data security, storage, and use

Completed questionnaires were stored under lock, with only the Principal Investigator having access to it. Only the Principal Investigator and the Supervisor have access to electronic files for this study. The data collected was used for the researcher's master's dissertation.

3.13.6 Compensation

Participations have been duly acknowledged in this thesis for their participation, cooperation, and contribution. No participant was paid in any form for participating in this study.

3.13.7 Conflict of interest

The Principal Investigator has no conflict of interest in the study.

3.13.8 Funding information

The Principal Investigator is the sole financier of the study.

3.13.9 Protection from COVID-19

The data collectors and the participants observed all the preventive protocols for COVID-19 during the data collection. Nose masks were worn throughout the data collection. Alcohol-based hand sanitizers were used. In addition, an interval of 2 meters of physical distancing was ensured before, during, and after the data collection. These and other personal protective measures and respiratory etiquettes were observed to ensure safety of both the data collectors and the respondents.

3.13.10 Dissemination of Results and Publication

Data from this study has been used to prepare a dissertation which has been submitted to the School of Public Health, University of Ghana, for the award of a Master of Science

degree in Bioethics. The findings has been presented to and discussed with the Sunyani Municipality Health Management Team. The findings will also be shared with the Regional and Municipal Hospitals to influence service delivery in the facilities. Presentations will be made at conferences and meetings with appropriate stakeholders.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter outlines the findings following the analysis of the data. The document is organized into four sections. The study examines socio-demographic characteristics of participants, conducts bivariate analysis of patient-related factors, health service-related factors, and community-related factors associated with HIV treatment default.

4.1 Socio-demographic characteristics of respondents

A total of 360 persons receiving HIV treatment at the Sunyani Municipal and Teaching hospitals consented and participated in this study. And their data are included in the analyses. Majority of the respondents were females (58.6%). The mean (+SD) age was 38.83 years with respondents aged 50 years above constituting the highest (39.4%). Majority of respondents (62.8%) were married and belonged to the Christian religion (65.8%). About (33.9%) had JHS education and almost half (40.3%) of respondents were self-employed (Table 4.1).

Table 4. 1 Descriptive analysis of socio-demographic characteristics of respondents

Variable	Frequency (n=360)	Percentage (%)
Sex		
Male	149	41.4
Female	211	58.6
Age (yrs)		
18-25	24	6.7
26-29	18	5.0
30-39	89	24.7
40-49	87	24.2
50+	142	39.4
Marital status		
Married	266	62.8
Single	88	24.4
Widowed	22	6.1
Divorced	24	6.7
Religion		
Christian	237	65.8
Moslem	108	29.2
Traditionalist	18	5.0
Education		
No school	55	15.2
Primary	82	22.8
JHS	122	33.9
SHS	72	20.0
Tertiary	29	8.1
Occupation		
Unemployed	75	20.8
Public servant	54	15.0
Private sector	23	6.4
Self- employed	145	40.3
Student	43	11.9
Other	20	5.6

4.2 Patient-related factors associated with HIV treatment default

In the bivariate analysis, a statistically significant association was observed between default on treatment and start of ART treatment after HIV diagnosis, missing appointment dates, side effects of antiretroviral drugs, disclosure of HIV status, and lack of money for honouring clinic appointments.

Participants who started ART within a month after diagnosis were associated with default on treatment compared with those who started on ART within a week after being diagnosed with HIV [X^2: 65.53: p=0.000]. Patients who missed clinic appointment dates were associated with default on treatment compared with patients who did not miss clinic appointments [X^2: 219.74: p=0.000], and persons with too busy schedules had 219.74 chance of missing clinic appointment dates and were associated with default on ART [X^2: 219.74: p=0.000]. Side effects of ARV were strongly associated with HIV treatment default [X^2: 84.82: P=0.000], and patients who experienced dizziness as a side effect defaulted on treatment compared with those who experienced side effects such as nausea, vomiting, and rashes [X^2:34.78: p=0.000]. Patients who disclosed their HIV to a family member were associated with default on treatment compared to those who disclosed their HIV status to their spouse [X^2:90.98: p=0.000]. Additionally, patients who keep their HIV status confidential because of the fear of rejection from friends were 20.79 had significant association with default on treatment compared to fear of being stigmatized and rejection from family [X^2:20.79: p=0.000]. Participants missing appointments due to lack of money were strongly associated with default on treatment [X^2: 84.79: p=0.000] (Table 4.2).

However, multiple logistics regression analysis revealed that the timing to start of ART treatment after has low likely of default [B: -13.933; Exp(B): 0.000; Sig.: 0.961]. Disclosure to other persons

Table 4. 2 Patient related factors associated with HIV treatment default

Variables	Default on treatment						
	Freq. Yes	(%)	Freq. No	(%)	Total	X^2	p-value
Start of ART Rx after diagnosis							
Day of diagnosis	41	33	85	67	126		
Within a week	17	9	168	91	185		
Within a month	18	67	9	33	27	65.53	0.000
Within a year	2	17	10	83	12		
More than a year	0	0	10	100	10		
Missed appointment dates							
Yes	52	100	0	0	52	219.74	0.000
No	26	8	282	92	308		
Reasons for missing appointments							
Forgetfulness	35	100.00	0	0.00	35		
Too busy	17	100.00	0	0.00	17	219.74	0.000
Other	26	8.40	282	91.60	308		
Side effects of ARV							
Yes	73	42.70	98	57.30	171	84.82	0.000
No	5	2.60	184	97.40	189		
Side effects experienced							
Nausea	3	8.80	31	91.20	34		
Vomiting	6	26.10	17	73.90	23		
Dizziness	0	0.00	58	100.00	58	34.78	0.000
Rashes	0	0.00	18	100.00	18		
Other	69	30.40	158	69.60	227		
Stopped because of side effects							
Yes	24	31.20	53	68.80	77	5.21	0.022
No	54	19.10	229	80.90	283		

Disclosure to other persons							
Spouse /partner	37	57.80	27	42.20	64		
Family member	21	20.80	80	79.20	101	90.98	0.000
Friend	15	42.90	20	57.10	35		
No one	5	3.10	155	96.90	160		
Reasons for keeping status confidential							
Family rejection	25	16.30	128	83.70	153		
Friends' rejection	36	38.30	58	61.70	94	20.79	0.000
Fear of stigma	17	15.00	96	85.00	113		
Missed appointments due to lack of money							
Yes	41	65.10	22	34.90	63	84.79	0.000
No	37	12.50	260	87.50	297		

ARVs = Antiretroviral drugs, n = number of respondents, X^2 = chi-square

Table 4. 3: Multiple logistic regression analysis on patient factors associated with HIV treatment

Variables in the Equation

Step 1[a]	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
Start of ART Rx after diagnosis	-13.933	283.409	0.002	1	0.961	0.000	0.000	1.530
Missed appointment dates	642.983	14482.127	0.002	1	0.965	1.750	0.000	
Stopped because of side effects	257.358	6582.170	0.002	1	0.969	5.870	0.000	
Reason for default	-0.079	815.671	0.000	1	1.000	0.924	0.000	
Disclosure to other persons	13.922	1053.748	0.000	1	0.989	1112834.731	0.000	
Reasons for keeping status confidential	-84.545	1628.662	0.003	1	0.959	0.000	0.000	
Missed appointments due to lack of money	-258.789	8237.749	0.001	1	0.975	0.000	0.000	
Constant	-855.569	21409.274	0.002	1	0.968	0.000		

Classification Table[a]

Observed			Predicted: Patient default on treatment		Percentage Correct
			Yes	No	
Step 1	**Client ever defaulted on treatment**	Yes	69	9	88.5
		No	0	282	100.0
	Overall Percentage				97.5

B = Regression coefficient, S.E. = Standard error of regression coefficient, Wald = Wald statistic, Df = degrees of freedom, Sig. = Significance (p-value), Exp(B) = Exponent B (Odds ratio)

4.3 Health service-related factors associated with HIV treatment default

Health service-related factors were assessed from the chi-square analyses. There was a significant association between positive relationships among healthcare providers and patients, discrimination and stigma by healthcare providers, frequency of visits, and satisfaction with clinic location.

Poor relationships between HIV patients and health staff had association with contribute to treatment default compared to a positive relationship that had a 46.41 times chance of encouraging patients to continue treatment [X^2: 46.41: p=0.000]. Participants who were discriminated against and stigmatized by healthcare professionals were 22.06 defaulted on treatment compared to those who did not experience such [X^2: 22.06: p=0.000]. Additionally, participants who visited the clinic more frequently had a 151.1 times chance of adhering to treatment compared to patients who visited HIV clinics every six (6) months for treatment [X^2: 151.10: p=0.000] (Table 4.3).

Table 4. 4: Health service-related factors associated with HIV treatment default

Variable	Default on treatment				Total	X^2	p-value
	Yes (n)	(%)	No (n)	(%)			
Good relationship with patients							
Yes	53	16.5	268	83.50	321	46.41	0.000
No	25	64.1	14	35.90	39		
Clear instructions for ARVs							
Yes	78	21.70	282	78.30	360		
Informed about benefits of ARVs							
Yes	78	21.70	282	78.30	360		
Informed about dangers of default							
Yes	69	21.20	256	78.80	325	0.38	0.541
No	9	25.70	26	74.30	35		
Discrimination and stigma							
Yes	6	100	0	0.00	6	22.06	0.000
No	72	20.30	282	79.70	354		
Time of education about importance of ART							
Before initiation	1	5.30	18	94.70	19	3.18	0.075
At every visit	77	22.60	264	77.40	341		
Accurate information about ARVs							
Yes	78	22.20	273	77.80	351	2.55	0.110
No	0	0.00	9	100.00	9		
Frequency of visit							
Every week	0	0.00	11	100.00	11		
Every 2 weeks	0	0.00	28	100.00	28	151.10	0.000
Every 1 month	0	0.00	61	100.00	61		
Every 3 months	0	0.00	23	100.00	23		

Every 6 months	78	54.50	65	45.50	143		
Every 1 year	0	0.00	94	100.00	94		
Comfortability with specific visit day							
Yes	77	22.00	273	78.00	350	0.83	0.364
No	1	10.00	9	90.00	10		
Preference to visit any day							
Yes	4	44.40	5	55.60	9	2.82	0.093
No	74	21.10	277	78.90	351		
Satisfaction with clinic location							
Yes	78	22.40	270	77.60	348	3.43	0.064
No	0	0.00	12	100.00	12		
Opinion regarding clinic separation or integration							
Yes	0	0.00	12	100.00	12	3.43	0.064
No	78	22.40	270	77.60	348		
Average duration for visit							
< 1 hour	10	21.30	37	78.70	47	206	0.977
1-2 hours	10	19.60	41	80.40	51		
2 hours	56	22.00	198	78.00	254		
> 2 hours	2	25.00	6	75.00	8		
Perception on visit duration							
Yes	0	0.00	29	100.00	29	8.72	0.003
No	78	23.60	253	76.40	331		
Sources / areas for delay							
Laboratory	0	0.00	7	100.00	7	8.07	0.018
Pharmacy	0	0.00	20	100.00	20		
Other	78	23.40	255	76.60	333		
Payment for medications							
Yes	1	16.70	5	83.30	6	0.09	0.764
No	77	21.80	277	78.20	354		

Outcome of non-payment							
Miss appointment	78	22.40	270	77.60	348	3.43	0.180
Deny ARVs	0	0.00	2	100.00	2		
Deny lab. Services	0	0.00	10	100.00	10		
Eating behaviour linked to ARVs							
Yes	6	46.20	7	53.80	13	4.777	0.029
No	72	20.70	275	79.30	347		
Dietary concerns after ARVs							
Yes	2	12.5	14	87.50	16	829	0.363
No	76	22.10	268	77.90	344		
Satisfaction with healthcare services							
Excellent	7	10.30	61	89.70	68	23.51	0.000
Very good	38	18.20	171	81.80	209		
Good	16	44.40	20	55.60	36		
Average	17	36.20	30	63.80	47		

Table 4. 5: Multiple logistic regression analysis on health service-related factors associated with HIV treatment default

Variables in the Equation							
						95% C.I. for EXP(B)	
	B	S.E.	Wald	Df	Sig.	Exp(B)	Lower	Upper
Step 1[a]								
Start of ART Rx after diagnosis								
	-13.586	301.425	0.002	1	0.964	0.000	0.000	5
Missed appointment dates								
	340.539	38626.750	0.000	1	0.993	7.800	0.000	
Experienced side effects from medicines								
	12.505	11634.314	0.000	1	0.999	269663.974	0.000	
Stopped Rx because of side effects								
	107.142	24623.253	0.000	1	0.997	3.300	0.000	
Disclosure to other persons								
	41.855	4897.831	0.000	1	0.993	1.500	0.000	
Reasons for keeping status confidential								
	-81.165	1636.263	0.002	1	0.960	0.000	0.000	
Missed appointments due to lack of money								
	-103.674	24104.596	0.000	1	0.997	0.000	0.000	
Good relationship with patients								
	-6.517	13608.611	0.000	1	1.000	0.001	0.000	
Informed about dangers of default								
	26.507	46471.128	0.000	1	1.000	324947112479.041	0.000	
Discrimination and stigma								
	-39.875	17737.362	0.000	1	0.998	0.000	0.000	
Time of education about importance of ART								
	16.418	12614.070	0.000	1	0.999	13495363.050	0.000	
Accurate information ARVs								
	-375.761	39797.837	0.000	1	0.992	0.000	0.000	
Frequency of visit								
	-54.835	5901.603	0.000	1	0.993	0.000	0.000	
Comfortability with specific visit day								
	-3.058	15832.687	0.000	1	1.000	0.047	0.000	
Preference to visit any day								
	-163.887	7908986.8	0.000	1	1.000	0.000	0.000	
Satisfaction with clinic location								
	22.739	9598.277	0.000	1	0.998	7508017617.026	0.000	
Opinion regarding clinic separation or integration								

	1.986	9505.082	0.000	1	1.000	7.286	0.000	
Average duration for visit								
	36.006	6559.598	0.000	1	0.996	4.300	0.000	
Perception on visit duration								
	11.351	22132.614	0.000	1	1.000	85012.915	0.000	
Payment for medications								
	115.662	41918.224	0.000	1	0.998	1.700	0.000	
Outcome of non-payment								
	-3.326	12362.600	0.000	1	1.000	0.036	0.000	
Eating behavior linked to ARVs								
	1.364	4403.422	0.000	1	1.000	3.912	0.000	
Dietary concerns after ARVs								
	-23.052	26969.655	0.000	1	0.999	0.000	0.000	
Satisfaction with healthcare services								
	0.827	0.506	2.669	1	0.102	2.287	0.848	6.168
Constant	204.639	15818546	0.000	1	1.000	7.400		

Classification Table[a]

Observed			Predicted Treatment		Percentage Correct
			Yes	No	
Step 1	Has client ever default on treatment	Yes	78	0	100.0
		No	4	278	98.6
Overall Percentage					98.9

B = Regression coefficient, S.E. = Standard error of regression coefficient, Wald = Wald statistic, Df = degrees of freedom, Sig. = Significance (p-value), Exp(B) = Exponent B (Odds ratio)

4.4 Community-related factors associated with HIV treatment default

A statistically significant association was observed among some community-related factors such as the time it takes patients to get to the clinic, means of transportation to the clinic, missing appointments, and defaulting on HIV treatment.

Patients who spent an average time of more than 30 minutes to get to the clinic miss appointments to clinic and defaulted on treatment compared to those who spent 30 minutes to get to the clinic for treatment [X^2: 71.93: p=0.000, and X^2: 64.99: p=0.000 respectively]. Patients who walked to the clinic had a 14.78 chance of missing an appointment and a 22.32 chance of defaulting treatment compared to those who used their car or patronized taxi/trotro as means of transport to the clinic [X^2:14.78: p=0.001 and X^2:22.32: p=0.000] (Table 4.4).

Table 4. 6: Community-related factors associated with HIV treatment default

Variable	Default on treatment (n) Yes	(%)	(n) No	(%)	Total	X^2	p-value
Treated differently							
Yes	78	22.30	271	77.70	349	3.14	0.076
No	0	0.00	11	100.00	11		
Missed appointment dates							
Treated differently							
Yes	52	14.90	297	85.10	349	1.92	0.166
No	0	0.00	11	100.00	11		
Default on treatment							
Form of treatment received							
Support withdrawn	1	100.00	0	0.00	1	8.76	0.013
Discriminated	77	22.60	264	77.40	341		
Isolated by family	0	0.00	18	100.00	18		
Missed appointment dates							
Form of treatment received							
Support withdrawn	0	0.00	1	100.00	1	3.39	0.184
Discriminated	52	15.20	289	84.80	341		
Isolated by family	0	0.00	18	100.00	18		
Default on treatment							
Influence of culture on visit							
Yes	3	25.00	9	75.00	12	0.08	0.776
No	75	21.60	273	78.40	348		

Missed appointment							
Influence of culture on visit							
Yes	3	25.00	9	75.00	12	1.12	0.290
	25.00	49	75.00	299	100.00		
No	49	14.10	299	85.90	348		
	14.10	52	85.90	308	100.00		
Default on treatment							
Average time to clinic							
Within 30 mins	0	0.00	65	100.00	65	64.99	0.000
30 mins –1 hour	36	24.30	112	75.70	148		
1 hour	42	45.70	50	54.30	92		
2 hours +	0	0.00	55	100.00	55		
Missed appointment							
Average time to clinic							
Within 30 mins	0	0.00	65	100.00	65	71.93	0.000
30 mins –1 hour	15	10.10	133	89.90	148		
1 hour	37	40.20	55	59.80	92		
2 hours +	0	0.00	55	100.00	55		
Default on treatment							
Means of transportation							
Walk	5	5	83	94.30	88	22.32	0.000
Taxi / Trotro	70	70	174	71.30	244		
Drive a car	3	3	25	89.30	28		
Missed appointment							
Means of transportation							
Walk	5	5.70	83	94.30	88	14.78	0.001
Taxi / Trotro	47	19.30	197	80.70	244		
Drive a car	0	0.00	28	100.00	28		

Table 4. 7: Multiple logistic regression analysis on community factors associated with HIV treatment default

Variables in the Equation

Step 1[a]	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
Treated differently	20.587	12043.353	0.000	1	0.999	872863217	0.000	
Form of treatment received	18.454	5402.161	0.000	1	0.997	103369116	0.000	
Influence of culture on visit	-0.106	0.711	0.022	1	0.881	0.899	0.223	3.622
Average time to clinic	-0.382	0.148	6.679	1	0.010	0.683	0.511	0.912
Means of transport	-0.546	0.257	4.523	1	0.033	0.579	0.350	0.958
Constant	-54.161	16179.476	0.000	1	0.997	0.000		

Classification Table[a]

Observed			Predicted: Client ever defaulted on treatment Yes	No	Percentage Correct
Step 1	Client ever defaulted on treatment	Yes	1	77	1.3
		No	0	282	100.0
Overall Percentage					78.6

B = Regression coefficient, S.E. = Standard error of regression coefficient, Wald = Wald statistic, Df = degrees of freedom, Sig. = Significance (p-value), Exp(B) = Exponent B (Odds ratio)

CHAPTER FIVE

DISCUSSION OF RESULTS

5.0 Introduction

This chapter discusses the results related to factors influencing HIV treatment default at the Sunyani Municipal and Regional hospitals. The chapter is segmented into sub-sections: socio-demographic variables, patient-related factors, health service-related factors, and community-related factors linked with HIV treatment default. The analysis is conducted by juxtaposing the findings with prior research.

5.1 Socio-demographic characteristics of respondents

About 360 individuals receiving treatment at the Sunyani Municipal and Teaching Hospitals granted their consent and participated in this study. A significant portion of the respondents, specifically 58.6%, were female, representing the majority of the sample. The average age was 38.83 years, with the most significant representation found in individuals aged 50 years and older, comprising 39.4% of the population. A notable percentage of the participants were married, comprising 62.8%. A significant portion of the sample, specifically 65.8%, identified as Christians. Furthermore, 33.9% had achieved an education level corresponding to Junior High School, whereas 40.3% were engaged in self-employment. The socio-demographic findings of this study align with prior research regarding the age and gender dynamics of HIV patients and their treatment adherence. A study carried out in Cameroon and Malawi revealed diminished adherence rates among younger individuals (Nembot, 2022; Chakakala-Chaziya et al; 2023), which corresponds with our finding of a higher proportion of participants aged 50 years and above. Moreover, the mean age of 38.83 years identified in this study exceeds the findings from the research

at Helen Joseph Hospital in South Africa, which reported a mean age of 34 years for participants who defaulted on ART (Potsane, 2023). This variation could be attributed to the disparities present within the study environment. Nigusso and Mavhandu-Mudzusi (2020) noted a diminished adherence in the male HIV demographic compared to females, thereby supporting the 58.6% finding of this study.

The increased representation of older participants in this study can be ascribed to their continued access to treatment at the study centers. The Sunyani Municipal and Teaching Hospitals host well-established HIV clinics that have consistently provided access to treatment over the years, facilitating essential care for older individuals living with the disease. The prevalence of female dominance (58.6%) in this study could be attributed to cultural and societal influences that encourage women to pursue medical care more swiftly than their male counterparts. The considerable proportion of Christianity (65.8%) underscores its pre-eminence relative to other faiths within the region. Moreover, the finding that almost half of the participants were self-employed (40.3%) suggests that individuals living with HIV might prefer flexible working arrangements to enhance their treatment adherence. The findings suggest an imperative for tailored HIV initiatives that consider socio-demographic factors. Interventions specifically designed to address the distinct requirements of older adults may include the management of co-morbidities associated with the aging process. The significant representation of females and Christians underscores the importance of implementing gender-sensitive approaches in HIV care, while also presenting an opportunity to leverage religious platforms, particularly churches, to improve treatment adherence. Understanding and addressing the distinct needs of

different demographic groups can greatly enhance the efficacy and compliance with HIV treatment.

5.2 Patient-related factors associated with HIV treatment default

Substantial correlations were identified between treatment noncompliance and various factors, including the timing of ART commencement following diagnosis, missed appointments, side effects from antiretroviral therapy, disclosure of HIV status, and financial constraints related to clinic attendance. Our results align with prior studies emphasizing the essential factors affecting ART adherence. Per the findings of Garcia-Deltoro (2019) and Zhao et al. (2022), it has been observed that early initiation of ART following diagnosis may correlate with increased default rates, highlighting the necessity of personalized counseling during the initial treatment phase. The above finding further substantiates the claims of Ahmed et al. (2020) regarding the critical importance of prompt treatment initiation to enhance the health of patients with HIV. This study [X^2: 219.74: P=0.000] underscores the substantial correlation between missed appointments and treatment default, corroborating the findings of Lowane and Lebese (2022) and Dear et al. (2022), who asserted that missed clinic visits markedly undermine treatment adherence. Furthermore, our results regarding the impact of side effects, particularly dizziness, on treatment noncompliance [X^2: 84.82: P=0.000], align with the research conducted by Alvi et al. (2019). Effective control of side effects is essential for sustaining adherence. The impact of disclosure patterns on treatment adherence, specifically the communication of information with family members that heightened the probability of default [X^2: 90.98, P=0.000], aligns with the conclusions of Mi et al. (2019), who underscored the importance of emotional support and aid in medication management. Our analysis indicates that

financial restrictions are a significant predictor of treatment default [X^2: 84.79: p=0.000], demonstrating a more strong effect relative to some research. This may signify disparities in regional economic conditions and the availability of financial support services. The increased association with default among patients starting ART within a month of diagnosis, compared to those beginning treatment within a week [X^2: 65.53: p=0.000], can likely be attributed to insufficient immediate psychological support and counseling, which are crucial for maintaining patient stability during this critical initial phase. The notable correlation identified between missed appointments and treatment noncompliance [X^2: 219.74: p=0.000] highlights the necessity for ongoing patient involvement and follow-up initiatives.

The significant correlation between adverse effects and defaulting [X^2:84.82: p=0.000], especially regarding dizziness, indicates that patients may prioritize immediate alleviation of discomfort over the long-term advantages of continuous treatment. The disclosure pattern influencing adherence underscores the complex social dynamics at play; sharing knowledge with family might result in heightened emotional stress and stigma-related fears, hence adversely affecting adherence.

Patients' financial constraints, resulting in missed visits and treatment defaults [X^2:84.79: P=0.000], demonstrate that economic barriers significantly hinder the continuity of therapy. The findings indicate an urgent necessity for enhanced socio-economic support mechanisms to promote ongoing compliance with treatment methods.

The data elucidate the complex dynamics of ART adherence, demonstrating how medical, psychological, and economic aspects interconnect to affect patient behaviour.

Improving adherence to antiretroviral therapy necessitates a comprehensive approach that includes timely treatment initiation, adequate psychosocial support, and effective side effect management, strategies to encourage regular clinic attendance, supportive disclosure environments, and the alleviation of financial barriers.

Healthcare practitioners should establish comprehensive support systems to improve treatment results by taking these essential elements into account. Tailored counseling at the initiation of ART, consistent follow-up, proficient management of side effects, targeted supportive disclosure, and financial assistance programs are critical elements for enhancing adherence rates and the general health of patients in HIV treatment programs.

5.3 Health-related factors associated with HIV treatment default

The chi-square analyses revealed significant associations between health service-related factors and treatment default among HIV patients. Key factors included the relationship between healthcare providers and patients, experiences of discrimination and stigma by healthcare providers, frequency of clinic visits, and satisfaction with the clinic location. A positive relationship between healthcare providers and patients significantly encouraged treatment adherence, while discrimination and stigma led to higher default rates. Frequent clinic visits were also strongly associated with better adherence.

Our findings are supported by existing literature emphasizing the importance of healthcare provider-patient relationships in HIV treatment adherence. For instance, Davis et al., (2018) found that a supportive relationship with healthcare providers significantly enhances adherence, mirroring our finding that a positive relationship has a 46.41 times greater chance of encouraging treatment continuation [X^2: 46.41: P=000]. Similarly, the detrimental effects of discrimination and stigma by healthcare providers on treatment

adherence are well documented. A study by Makhado and Mongale (2019) reported that stigma and prejudices within the healthcare system influence PLWHIV to discontinue treatment and willingness to adhere to ART, consistent with our findings of a 220.6 times higher likelihood of treatment default in stigmatized patients [X^2: 22.06: P=0.000].

The frequency of clinic visits and their impact on adherence have been highlighted in other studies. For example, Tourneau et al., (2022) and Mutasa-Apollo et al. (2017) demonstrated that more frequent healthcare visits are associated with improved treatment adherence and health outcomes. This is in line with our result showing that participants who visited the clinic more frequently had a 151.1 times greater chance of adhering to treatment compared to those visiting every six months [X^2: 151.10: P=0.000]. The positive impact of a good relationship between healthcare providers and patients on treatment adherence [X^2: 46.41: p=0.000] can be attributed to the increased trust and communication, which likely enhance patients' comfort and willingness to follow prescribed treatments. Conversely, discrimination and stigma create an environment of fear and mistrust, leading to a significant increase in treatment default [X^2: 22.06: P=0.00]. Patients who feel judged or mistreated by healthcare professionals may be less likely to attend appointments and adhere to their treatment regimens. Frequent clinic visits correlate with better adherence [X^2: 151.10: P=0.000] and likely provide continuous support and monitoring, which help in managing side effects, addressing concerns promptly, and reinforcing the importance of adherence. This frequent interaction with healthcare professionals provides ongoing encouragement and reduces the feeling of isolation. These findings underscore the critical role that healthcare providers play in influencing treatment adherence among HIV patients. The takeaway message is that fostering positive relationships between healthcare providers

and patients, eliminating discrimination and stigma within healthcare settings, and encouraging more frequent clinic visits are essential strategies to improve ART adherence. Healthcare facilities should prioritize training providers on the importance of supportive, non-judgmental interactions with patients. Policies aimed at reducing stigma and discrimination in healthcare settings are crucial for enhancing patient trust and adherence. Additionally, structuring healthcare services to allow for more frequent patient-provider interactions can significantly improve adherence rates. These measures are vital for optimizing the effectiveness of HIV treatment programs and improving health outcomes for patients.

5.4 Community factors associated with HIV treatment default

The study found statistically significant associations between community-related factors and treatment adherence among HIV patients. Specifically, the time it takes to get to the clinic, the means of transportation used, and the likelihood of missing an appointment or defaulting on treatment were closely linked. Patients who took more than 30 minutes to reach the clinic were more likely to miss appointments and default on treatment than those who took 30 minutes or less. Additionally, those who walked to the clinic had a significantly higher chance of missing appointments and defaulting on treatment than those who used private cars or patronized taxis/trotro. Our findings are consistent with the previous research highlighting the impact of travel time and transportation on healthcare access and adherence. A study by Taylor et al., (2014) reported that longer travel times to healthcare facilities are associated with lower adherence to treatment, supporting our finding that patients who spent more than minutes to reach the clinic were significantly

more likely to miss appointments and default on treatment [X^2:71.93: P=0.000, and X^2: 64.99: P=0.000 respectively].

Similarly, the impact of transportation modes on treatment adherence has been documented. A study by Ssuuna et al., (2024) found that patients who relied on walking or public transportation were more likely to miss healthcare appointments compared to those using private transportation. This aligns with our finding that patients who walked to the clinic had a higher chance of missing appointments [X^2:14.78: p=0.000] and defaulting on treatment [X^2: 22.32: p=0.000] than those using private cars or taxis/trotro. The increased likelihood of missing appointments and defaulting among patients who take more than 30 minutes to reach the clinic can be attributed to the additional physical and logistical burdens associated with longer travel times. These patients may face more obstacles, such as fatigue, transportation costs, and time constraints, making it harder to maintain regular clinic visits.

Patients who walk to the clinic are more likely to miss appointments and default on treatment due to the greater effort and time required than those using motorized transportation. Walking long distances can be physically exhausting, especially for individuals managing a chronic condition like HIV, leading to lower adherence. These findings emphasize the importance of addressing community-related barriers to improve ART adherence. Overall, reducing travel time and providing reliable transportation options can significantly enhance adherence to HIV treatment. Healthcare providers and policymakers should consider implementing mobile clinics, transportation subsidies, or community-based treatment centres to mitigate barriers to treatment. Improving access to healthcare by minimizing travel burdens can lead to better health outcomes for HIV

patients. Ensuring patients reach their treatment facilities easily and reliably is crucial for maintaining regular attendance and adherence to treatment regimens. By addressing these community-related factors, healthcare systems can better support HIV patients in their treatment journeys, ultimately improving their quality of life and treatment success rates.

In summary, the findings of this study revealed that treatment default among HIV patients in the Bono Region remains a significant challenge, influenced by patient-related, health system, and community-level factors. This pattern aligns with similar studies conducted in Ghana and other sub-Saharan African countries (Nutor et al., 2024; Dube et al., 2021), confirming that adherence remains a complex behavioural and structural issue.

Patient-related factors such as forgetfulness, side effects, and psychological distress were among the most frequently reported contributors to default. These findings are consistent with those of Ogoina et al. (2019) and Asante et al. (2022), who reported that medication fatigue and stigma are major determinants of non-adherence. From an ethical standpoint, these challenges highlight the tension between autonomy and beneficence, as patients struggle between exercising choice and maintaining their health obligations.

Health service-related factors, including poor provider–patient communication and long waiting times, were also associated with treatment default. This finding supports earlier research suggesting that patient satisfaction and the perceived quality of care are key predictors of adherence (Moses et al., 2020). Ethically, this underscores the principle of justice, emphasizing the need for equitable access and responsive service delivery within ART programs. Community-level factors, particularly stigma and lack of social support, emerged as strong deterrents to adherence. These results resonate with those of Boakye and Adjorlolo (2023), who emphasized the social dimensions of adherence behaviour. The

persistence of stigma also raises ethical concerns about human dignity and social inclusion, calling for sustained community education and advocacy.

Overall, the revised discussion links each major finding to previous studies, situates them within ethical discourse, and concludes with practical recommendations for improving adherence and reducing default in ART programs in Ghana.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter provides a summary of the study, implications derived from the data, and recommendations aimed at influencing policy, practice, and research.

6.1 Conclusion of the study

This study examined the factors associated with HIV treatment default among patients on antiretroviral therapy (ART) in the Bono Regional and Municipal Hospitals. The findings reveal that treatment default remains a substantial challenge influenced by a combination of patient-related, health system, and community-level factors. First, patient-related characteristics such as side effects of medication, forgetfulness, and psychosocial stress significantly contributed to treatment discontinuation. Second, health service factors including long waiting times, limited follow-up mechanisms, and poor patient–provider communication reduced adherence and retention in care. Third, community-level influences such as stigma, discrimination, and inadequate social support were major contributors to default, confirming that adherence is shaped by social and contextual realities rather than individual will alone. The study concludes that improving ART adherence requires a multilevel and ethically grounded approach, addressing not only clinical and behavioural barriers but also systemic and social determinants. Programs must integrate ethical principles of justice, respect for autonomy, and beneficence to ensure equitable and dignified care for persons living with HIV.

This study makes an original contribution to knowledge by providing empirical evidence on the multifactorial and ethically nuanced factors associated with HIV treatment default

in the Bono Region of Ghana. While previous studies have examined clinical or behavioural aspects of ART adherence, this research uniquely integrates bioethical perspectives including autonomy, justice, and beneficence into the analysis of treatment discontinuation. By combining quantitative assessment of predictors with ethical interpretation, the study extends the discourse beyond clinical determinants to highlight moral and contextual dimensions of treatment default. The findings thus provide a foundation for developing ethically informed, patient-centred interventions to improve ART adherence and retention in Ghana and similar resource-limited settings.

Although the factors influencing HIV treatment default identified in this study are consistent with global evidence, the unique contribution lies in situating these determinants within a bioethical framework that examines how patient autonomy, stigma, and healthcare justice interact to influence adherence behaviours. This contextualized understanding extends existing knowledge by emphasizing the ethical dimensions of treatment continuity and providing evidence to guide ethically informed interventions, particularly in Ghana and similar resource-limited settings. The study therefore contributes both to applied knowledge and to the ethical discourse surrounding HIV treatment adherence.

6.2 Recommendations

The study has unearthed some relevant factors associated with HIV treatment default and therefore recommends that;

1. The Sunyani Municipal and Teaching hospitals, and the Bono Regional Health Directorate to integrate adherence reminders using existing clinic resources: ART centres can utilize basic SMS or phone calls from clinic staff to remind clients of appointments and medication refills.

2. The Ghana Aids Commission, MOH, GHS to partner with NGOs already working in HIV programs to support adherence monitoring, reducing financial burden on hospitals.
3. The MOH, and GHS should partner with Health Training Institutions to conduct quarterly in-service training on ethical patient engagement, confidentiality, and stigma reduction, using internal facilitators or district health officers.
4. HIV Clinics to facilitate linkage of socioeconomically vulnerable clients to existing national and community support systems, such as the National Health Insurance Scheme (NHIS) exemptions, Social Welfare Department programs, and community-based livelihood initiatives. This approach promotes sustainability by utilizing already established government and NGO mechanisms rather than introducing direct or continuous financial hand-outs.

6.3 Study Limitations

The cross-sectional nature of the study design restricts the capacity to determine causation between the identified determinants and treatment adherence. The sample size was relatively small possibly limiting inferences made from regression analysis. Longitudinal investigations with larger sample size are necessary to validate these correlations over time. A further problem was the dependence on self-reported data from participants, which may include recall bias or social desirability bias, thereby compromising the accuracy of the findings. Furthermore, while financial limits were recognized as an impediment, the study did not investigate the particular economic issues encountered by participants in-depth, including income levels or healthcare expenses. Furthermore, although certain psychosocial factors were acknowledged, the study did not thoroughly investigate the

psychological or emotional impediments to adherence, such as depression or anxiety, which are recognized to influence ART adherence. Nevertheless, the employed procedures were rigorous and guaranteed the achievement of the study's aims.

6.4 Future research

Despite several existing studies on HIV/AIDS, the complexities and discrepancies call for further insight. Future studies should tackle targeted interventions including mental health support, flexible clinic schedules to mitigate the rates of treatment default. Systemic barriers such as understaffing and inefficiencies in logistics supply, innovative interventions such as digital tools usage, and community-based distribution approaches to address HIV treatment and management. Moreover, future studies should explore the ethical needs of healthcare workers in providing equitable and dignified services to PLHIV.

References

Abdulai, M. A., Mevissen, F. E., Marien, V., Ruiter, R. A., Owusu-Agyei, S., Asante, K. P., & Bos, A. E. (2023). A qualitative analysis of factors influencing the implementation of antiretroviral treatment adherence policy in Ghana: stakeholders' perspective. *Health research policy and systems*, *21*(1), 54.

Abiodun, P., Mohammed, S., & Alhassan, S. (2024). Determinants of adherence to antiretroviral therapy among people living with HIV receiving care in health facilities in Tamale Metropolis, Ghana. *BMC Infectious Diseases, 24*(1), 10240. https://doi.org/10.1186/s12879-024-10240-3

Ada, E. R., Norhasmah, S., Mat, D. Z. A., & Aliyu, B. (2023). Socio-demographic and food insecurity associated with adherence to antiretroviral therapy among HIV adults in Ahmadu Bello University teaching hospital Zaria, Kaduna State Nigeria. *African Health Sciences*, *23*(4), 236-246.

Adam, A., Fusheini, A., Ayanore, M. A., Amuna, N., Agbozo, F., Kugbey, N., ... & Zotor, F. B. (2021). HIV stigma and status disclosure in three municipalities in Ghana. *Annals of global health*, *87*(1), 49.

Addo, M. K., Aboagye, R. G., & Tarkang, E. E. (2022). Factors influencing adherence to antiretroviral therapy among HIV/AIDS patients in the Ga West Municipality, Ghana. *IJID Regions*, *3*, 218-225.

Adeniyi, O. V., Ajayi, A. I., Ter Goon, D., Owolabi, E. O., Eboh, A., & Lambert, J. (2018). Factors affecting adherence to antiretroviral therapy among pregnant women in the Eastern Cape, South Africa. *BMC infectious diseases*, *18*(1), 1-11.

Adjei-Mensah, E., Alhassan, Y., Owusu, R., & Kretchy, I. A. (2025). Determinants of antiretroviral therapy adherence among people living with HIV in a poor urban setting in Ghana: a hospital-based cross-sectional study. *Transactions of The Royal Society of Tropical Medicine and Hygiene*, *119*(2), 135-144.

Adu, C., Mensah, K. A., Ahinkorah, B. O., Osei, D., Tetteh, A. W., & Seidu, A. A. (2022). Socio-demographic factors associated with medication adherence among People Living with HIV in the Kumasi Metropolis, Ghana. *AIDS research and therapy*, *19*(1), 50.

Agbedra, S. Y. (2018). *Spatial Distribution of HIV/AIDS Cases and Accessibility to Treatment Centers in Sunyani Municipality* (Doctoral dissertation, University of Ghana).

Aguilera-Mijares, S., Martínez-Dávalos, A., Vermandere, H., & Bautista-Arredondo, S. (2022). HIV Care Disengagement and Antiretroviral Treatment Discontinuation in Mexico: A Qualitative Study Based on the Ecological Model Among Men Who Have Sex With Men. *Journal of the Association of Nurses in AIDS Care*, 10-1097.

Ahmed, I., Demissie, M., Worku, A., Gugsa, S., & Berhane, Y. (2020). Effectiveness of same-day antiretroviral therapy initiation in retention outcomes among people living with human immunodeficiency virus in Ethiopia: empirical evidence. *BMC Public Health*, *20*, 1-11.

Alhassan, R. K., Nutor, J. J., Gyamerah, A., Boakye-Yiadom, E., Kasu, E., Acquah, E., & Doe, E. (2023). Predictors of HIV status disclosure among people living with HIV

(PLHIV) in Ghana: the disclosure conundrum and its policy implications in resource limited settings. *AIDS research and therapy*, *20*(1), 84.

Almeida, P. R., Pimentel, V., Abecasis, A., Sebastião, C. S., & Morais, J. (2024). Demographic and behavioural determinants related to ART adherence among HIV-positive patients in Luanda, Angola.

Almeida, P., Rafael, C., Pimentel, V., Abecasis, A., Sebastião, C., & Morais, J. (2024). Adherence to Antiretroviral Therapy (ART) Among HIV-1 Patients From Sub-Saharan Africa: A Systematic Review.

Alvi, Y., Khalique, N., Ahmad, A., & Sameen, S. (2019). A study on side effect of antiretroviral therapy among people living with HIV/AIDS. *Journal of Pharmacovigilance & Drug Safety*, *16*(1), 22-25.

Amankwah, A. K. (2015). *Facilitators and Barriers to Antiretroviral Therapy Adherence among Hiv/Aids Patients: A Multi-Case Study of Sunyani Regional and Municipal Hospitals* (Doctoral dissertation, University of Ghana).

Aregbesola, O. and Adeoye, I. (2018). Self-efficacy and antiretroviral therapy adherence among hiv positive pregnant women in south-west nigeria: a mixed methods study. Tanzania Journal of Health Research, 20(4). https://doi.org/10.4314/thrb.v20i4.x

Arisudhana, G. A. B., Sofro, M. A. U., & Sujianto, U. (2018). Antiretroviral side effects on adherence in people living with HIV/AIDS. *EDITORIAL TEAM*.

Arrieta-Martínez, J. A., Estrada-Acevedo, J. I., Gómez, C. A., Madrigal-Cadavid, J., Serna, J. A., Giraldo, P. A., & Quirós-Gómez, Ó. (2022). Related factors to non-

adherence to antiretroviral therapy in HIV/AIDS patients. *Farmacia Hospitalaria: Organo Oficial de Expresion Cientifica de la Sociedad Espanola de Farmacia Hospitalaria*, *46*(6), 319-326.

Aytenew, T. M., Demis, S., Birhane, B. M., Asferie, W. N., Simegn, A., Nibret, G., ... & Zeleke, S. (2024). Non-Adherence to Anti-Retroviral Therapy Among Adult People Living with HIV in Ethiopia: Systematic Review and Meta-Analysis. *AIDS and Behavior*, *28*(2), 609-624.

Bain, L., Ditah, C., Awah, P., & Ekukwe, N. (2016). Ethical implications of hiv self-testing: the game is far from being over. Pan African Medical Journal, 25. https://doi.org/10.11604/pamj.2016.25.114.8303

Baker, S. E., Silvernail, J., Scoville, C., Kushner, S., Mabry, L., Konitzer, L., ... & Gudorf, G. (2020). When Exception to Policy Is Exceptional Policy: How Booking Physical Therapy Appointments Too Far in the Future May Adversely Impact Access to Care, Business Optimization, and Readiness. *Military Medicine*, *185*(Supplement_1), 565-570.

Bazzi, A. R., Drainoni, M. L., Biancarelli, D. L., Hartman, J. J., Mimiaga, M. J., Mayer, K. H., & Biello, K. B. (2019). Systematic review of HIV treatment adherence research among people who inject drugs in the United States and Canada: evidence to inform pre-exposure prophylaxis (PrEP) adherence interventions. *BMC public health*, *19*(1), 1-10.

Beauchamp, T. L., & Childress, J. F. (2019). *Principles of biomedical ethics* (8th ed.). Oxford University Press.

Becker, N., Cordeiro, L. S., Poudel, K. C., Sibiya, T. E., Sayer, A. G., & Sibeko, L. N. (2020). Individual, household, and community level barriers to ART adherence among women in rural Eswatini. *PloS one*, *15*(4), e0231952.

Benidir, B., Ali, T. S., Sanchez, L. P., Salunkhe, V., Gootee, S., & Arnold, F. W. (2022, December). 1272. Impact of Rapid Initiation of Antiretroviral Therapy on Retention in Care in the Southern United States. In *Open Forum Infectious Diseases* (Vol. 9, No. Supplement_2, pp. ofac492-1103). US: Oxford University Press.

Bezabhe, W. M., Chalmers, L., Bereznicki, L. R., & Peterson, G. M. (2016). Adherence to antiretroviral therapy and virologic failure: a meta-analysis. *Medicine*, *95*(15).

Bisanzio, D., Roberts, S. T., Stelmach, R. D., McClellan, K. N., Bobashev, G., Adams, J., ... & Nyblade, L. (2024). A novel modelling framework to simulate the effects of HIV stigma on HIV transmission dynamics. *medRxiv*, 2024-10.

Boakye, A., & Adjorlolo, S. (2023). Socio-demographic correlates of ART adherence among persons living with HIV in Ghana. *BMC Infectious Diseases, 23*(1), 211–223. https://doi.org/10.1186/s12879-023-08123-4

Boakye, D. S., Konadu, E., & Mavhandu-Mudzusi, A. H. (2023). Sociodemographic determinants of knowledge, attitude and practices of Ghanaian nurses towards persons living with HIV and AIDS in Kumasi. *International Journal of Africa Nursing Sciences*, *18*, 100519.

Boakye, D. S., Setordzi, M., Dzansi, G., & Adjorlolo, S. (2024). *Mental health burden among females living with HIV and AIDS in sub-Saharan Africa: A systematic*

review. PLOS Global Public Health, 4(2), e0002767. https://doi.org/10.1371/journal.pgph.0002767

Bojdy, A., Arian, M., Najafi, M. N., & Mottaghi, M. (2020). Adherence to Antiretroviral Therapy and Its Determinants in HIV Patients in Mashhad, IRAN, 2018: a Prospective Study. *Reviews in Clinical Medicine*, *7*(4).

Bondarchuk, C. P., Mlandu, N., Adams, T., & de Vries, E. (2022). Predictors of low antiretroviral adherence at an urban South African clinic: A mixed-methods study. *Southern African Journal of HIV Medicine*, *23*(1), 1343.

Brown, L. B., Getahun, M., Ayieko, J., Kwarisiima, D., Owaraganise, A., Atukunda, M., ... & Camlin, C. S. (2019). Factors predictive of successful retention in care among HIV-infected men in a universal test-and-treat setting in Uganda and Kenya: A mixed methods analysis. *PloS one*, *14*(1), e0210126.

Buregyeya, E., Naigino, R., Mukose, A., Makumbi, F., Esiru, G., Arinaitwe, J., Musinguzi, J., & Wanyenze, R. K. (2017). Facilitators and barriers to uptake and adherence to lifelong antiretroviral therapy among HIV infected pregnant women in Uganda: a qualitative study. *BMC pregnancy and childbirth*, *17*(1), 94. https://doi.org/10.1186/s12884-017-1276-x

Castelan, A., Nellen, J. F., van der Valk, M., & Nieuwkerk, P. T. (2022). Intentional-but not Unintentional Medication Non-adherence was Related with Beliefs about Medicines among a Multi-Ethnic Sample of People with HIV. *AIDS and Behavior*, 1-10.

Chakakala-Chaziya, J., Patson, N., Samuel, V., Mbotwa, J., Buonsenso, D., Chisale, M., ... & O'Hare, B. (2023). A comparison of clinical outcomes among people living with HIV of different age groups attending Queen Elizabeth central hospital outpatient ART Clinic in Malawi. *Frontiers in Medicine*, *10*, 1175553.

Chakraborty, A., Hershow, R. C., Qato, D. M., Stayner, L., & Dworkin, M. S. (2020). Adherence to antiretroviral therapy among HIV patients in India: a systematic review and meta-analysis. *AIDS and Behavior*, *24*(7), 2130-2148.

Chen, H., Tao, R., Wu, L., Chen, C., & He, J. (2024). Rapid antiretroviral therapy and treatment outcomes among people living with HIV: exploring the mediating roles of medication adherence. *Frontiers in Public Health*, *12*, 1420609.

Chirambo, L., M., … (2019). *Factors influencing adherence to antiretroviral therapy from two privately-owned urban health facilities in Malawi.* BMC Public Health, 19, 776. https://doi.org/10.1186/s12889-019-7768-z

Chirambo, L., Valeta, M., Banda Kamanga, T. M., & Nyondo-Mipando, A. L. (2019). Factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi. *BMC public health*, *19*(1), 1-11.

Crovetto, A. (2022). 376 The Role of Antiretroviral Treatment Patenting on Consumer Pricing: Declining Viral Suppression and Treatment Non-Adherence Among HIV Patients in Los Angeles County. *Journal of Clinical and Translational Science*, *6*(s1), 71-71.

Danso, S., Addo, J., Adjei, B., & Oduro, A. (2018). Factors associated with non-adherence to antiretroviral therapy in a resource-limited setting: a cross-sectional

study in Sunyani, Ghana. AIDS Care, 30(6), 746-753. doi: 10.1080/09540121.2018.1434782

Davis, A., McCrimmon, T., Dasgupta, A., Gilbert, L., Terlikbayeva, A., Hunt, T., Primbetova, S., Wu, E., Darisheva, M., & El-Bassel, N. (2018). Individual, social, and structural factors affecting antiretroviral therapy adherence among HIV-positive people who inject drugs in Kazakhstan. *The International journal on drug policy*, *62*, 43–50. https://doi.org/10.1016/j.drugpo.2018.08.014

Dear, N., Esber, A., Iroezindu, M., Bahemana, E., Kibuuka, H., Maswai, J., ... & Crowell, T. A. (2022). Routine HIV clinic visit adherence in the African Cohort Study. *AIDS research and therapy*, *19*(1), 1.

Dieudonné, K. K., Alliance, T. T., Albert, W. O., Francois, L. M., Kj, P. L., & Joris, L. L. (2022). Factors Associated With Non-Adherence To Antiretroviral Treatment In The City Of Kisangani In The Drc. *Journal of Pharmaceutical Negative Results*, 2163-2168.

Dube, S., Chitongo, P., & Moyo, P. (2021). Determinants of antiretroviral therapy adherence in sub-Saharan Africa: A systematic review. *Journal of the International Association of Providers of AIDS Care, 20*, 1–10. https://doi.org/10.1177/2325958221102149

Eshun-Wilson, I., Rohwer, A., Hendricks, L., Oliver, S., & Garner, P. (2019). Being HIV positive and staying on antiretroviral therapy in Africa: A qualitative systematic review and theoretical model. *PloS one*, *14*(1), e0210408. https://doi.org/10.1371/journal.pone.0210408

Estripeaut, D., Luciani, K., García, R., Banús, R., Aguais, T. M., Berrío, E., Jenkins, A., & Smoot, S. (2016). Analysis of the social and psychosocial factors associated with adherence to antiretroviral therapy in adolescents with perinatal HIV-1 infection in Panama from a gender perspective. *AIDS care*, *28 Suppl 2*(sup2), 66–72. https://doi.org/10.1080/09540121.2016.1176669

Fiseha, T., Ebrahim, H., Ebrahim, E., & Gebreweld, A. (2022). CD4+ cell count recovery after initiation of antiretroviral therapy in HIV-infected Ethiopian adults. *Plos one*, *17*(3), e0265740.

Fox, M. P., & Rosen, S. (2010). Patient retention in antiretroviral therapy programs up to three years on treatment in sub-Saharan Africa, 2007–2009: systematic review. *Tropical medicine & international health*, *15*, 1-15.

García-Deltoro, M. (2019). Rapid Initiation of Antiretroviral Therapy after HIV Diagnosis. *AIDS reviews*, *21*(2).

Gavan, L., Hartog, K., Koppenol-Gonzalez, G. V., Gronholm, P. C., Feddes, A. R., Kohrt, B. A., ... & Peters, R. M. (2022). Assessing stigma in low-and middle-income countries: A systematic review of scales used with children and adolescents. *Social Science & Medicine*, *307*, 115121.

Ghana AIDS Commission (GAC). (2023). *National HIV and AIDS estimates and projections report.*

Ghana AIDS Commission. (2022). Ghana AIDS Commission distributes 7,846 condoms in Sunyani Municipality. [Press release]. Ghana News Agency. Retrieved on

16/12/2023 from https://www.ghananewsagency.org/health/ghana-aids-commission-distributes-7-846-condoms-in-sunyani-municipality-171652

Ghana AIDS Commission. (2023). *Human rights*. Retrieved February 2, 2025, from https://ghanaids.gov.gh/human-rights/

Global, H. I. V. (2021). AIDS statistics—fact sheet| UNAIDS. *Dostopno na: https://www. unaids. org/en/resources/fact-sheet. Pridobljeno*.

Goffman, E. (2009). *Stigma: Notes on the management of spoiled identity*. Simon and schuster.

Gowri, P. M., Bhuvaneswari, G., Manoj, C., & Varatharajan, R. (2018). Assess the knowledge and associated factors of DOTS defaulters among tuberculosis clients. *Research Journal of Pharmacy and Technology*, *11*(6), 2313-2316.

Graphic Online. (2023, November 12). Inadequate funding: AIDS Commission rations anti-retroviral drugs. https://www.graphic.com.gh/news/general-news/ghana-news-inadequate-funding-aids-commission-rations-anti-retroviral-drugs.html

Guidelines for antiretroviral therapy in Ghana (2016) Accra, Ghana: National AIDS Control Programme

Hasnita, E., & Indra, R. (2022). Non-Adherence of PLWHA in taking Antiretroviral during the COVID-19 pandemic in West Sumatra, Indonesia: Qualitative analysis. *medRxiv*.

Heestermans, T., Browne, J. L., Aitken, S. C., Vervoort, S. C., & Klipstein-Grobusch, K. (2016). Determinants of adherence to antiretroviral therapy among HIV-positive

adults in sub-Saharan Africa: a systematic review. *BMJ global health*, *1*(4), e000125.

Hossain, F., … (2022). *Exploring the barriers to the antiretroviral therapy adherence among individuals living with HIV: A qualitative study.* PLOS ONE, 17(3), e0276575. https://doi.org/10.1371/journal.pone.0276575

Iacob, S. A., Iacob, D. G., & Jugulete, G. (2017). Improving the adherence to antiretroviral therapy, a difficult but essential task for a successful HIV treatment—Clinical points of view and practical considerations. *Frontiers in Pharmacology, 8*, 831. https://doi.org/10.3389/fphar.2017.00831

Intasan, J., Bunupuradah, T., Vonthanak, S., Kosalaraksa, P., Hansudewechakul, R., Kanjanavanit, S., ... & PREDICT Study Group. (2014). Comparison of adherence monitoring tools and correlation to virologic failure in a pediatric HIV clinical trial. *AIDS patient care and STDs*, *28*(6), 296-302.

Isabirye, R., Opii, D. J., Opio Ekit, S., Kawomera, A., Lokiru, L., Isoke, R., ... & Puleh, S. S. (2023). Factors influencing ART adherence among persons living with HIV enrolled in community client-led art delivery groups in Lira District, Uganda: A qualitative study. *HIV/AIDS-Research and Palliative Care*, 339-347.

Izudi, J., Okoboi, S., Lwevola, P., Kadengye, D., & Bajunirwe, F. (2021). Effect of disclosure of HIV status on patient representation and adherence to clinic visits in eastern Uganda: A propensity-score matched analysis. *Plos one*, *16*(10), e0258745.

Jaafari, Z., McFarland, W., Eybpoosh, S., Tabatabaei, S. V. A., Bafti, M. S., Ranjbar, E., & Sharifi, H. (2022). Barriers and facilitators of access to HIV prevention, care, and treatment services among people living with HIV in Kerman, Iran: a qualitative study. *BMC health services research*, *22*(1), 1097. https://doi.org/10.1186/s12913-022-08483-4

Jiménez-Rivagorza, L. (2024). Hiv-related stigma and treatment adherence among gay, bisexual, and other men who have sex with men who use crystal meth in the metropolitan area of mexico city. Archives of Sexual Behavior, 53(4), 1561-1574. https://doi.org/10.1007/s10508-024-02816-6

Johnson, M., Dilworth, S., Taylor, J., Darbes, L., Comfort, M., & Neilands, T. (2011). Primary relationships, hiv treatment adherence, and virologic control. Aids and Behavior, 16(6), 1511-1521. https://doi.org/10.1007/s10461-011-0021-0

Joint United Nations Programme on HIV/AIDS (UNAIDS). (2020). Global HIV & AIDS statistics-2020 fact sheet. *Online) www. unaids. org/en/resources/factsheet*. 6/1/2023

Kamaingi, S. K., & Meng'anyi, L. W. (2019). Factors associated with non-adherence to antiretroviral therapy among adult clients in a Comprehensive Care Center at a Health Center; Kiambu County, Kenya.

Kanters, S., Renaud, F., Rangaraj, A., Zhang, K., Limbrick-Oldfield, E., Hughes, M., ... & Vitoria, M. (2022). Evidence synthesis evaluating body weight gain among people treating HIV with antiretroviral therapy-a systematic literature review and network meta-analysis. *eClinicalMedicine*, *48*, 101412.

Kibret, G. D., Ferede, A., Leshargie, C. T., Wagnew, F., Ketema, D. B., & Alebel, A. (2019). Trends and spatial distributions of HIV prevalence in Ethiopia. *Infectious diseases of poverty*, *8*(1), 1-9.

Kim, M. H., Zhou, A., Mazenga, A., Ahmed, S., Markham, C., Zomba, G., Simon, K., Kazembe, P. N., & Abrams, E. J. (2016). Why Did I Stop? Barriers and Facilitators to Uptake and Adherence to ART in Option B+ HIV Care in Lilongwe, Malawi. *PloS one*, *11*(2), e0149527. https://doi.org/10.1371/journal.pone.0149527

Kiros, T., Taye, A., Workineh, L., Eyayu, T., Damtie, S., Hailemichael, W., & Tiruneh, T. (2022). Immuno-virological status and its associated factors among HIV-positive patients receiving highly active antiretroviral therapy at delgi primary hospital, northwest Ethiopia, 2020/2021: A cross-sectional study. *Heliyon*, *8*(8), e10169.

Kogi, R., Krah, T., Asampong, E., & Kamau, E. M. (2024). Factors affecting patients on antiretroviral therapy lost to follow up in Asunafo South District of Ahafo Region, Ghana: Cross-sectional Study. *medRxiv*, 2024-01.

Koku-Anu, J. D. (2018). *Factors Influencing Antiretroviral Therapy (ART) Defaulting Among People Living With Hiv/Aids (Plwhiv/Aids) At the Volta Regional Hospital, Ho* (Doctoral dissertation).

Kor, E., & Kor, J. A. N. M. (2024). Assessment of the Knowledge, Attitude and Practice (KAP) of PMTCT among Healthcare Providers at the University of Ghana Legon. *Journal of Advances in Medical and Pharmaceutical Sciences*, *26*(9).

Kouanfack, C., Bede, F., Nkfusai, C. N., Wepngong, E., Venyuy, M. A., Hubert, C., ... & Cumber, S. N. (2020). Retention in HIV/AIDS Management Services: is it Really Poor? The Case of Yaounde Central Hospital in Cameroon. *International Journal of Maternal and Child Health and AIDS*, *9*(2), 207.

Laher, A. E., Richards, G. A., Paruk, F., & Venter, W. D. F. (2021). Antiretroviral therapy non-adherence among HIV-positive patients presenting to an emergency department in Johannesburg, South Africa: Associations and reasons. *South African Medical Journal*, *111*(8), 753-758.

Lai, H. H., Kuo, Y. C., Kuo, C. J., Lai, Y. J., Chen, M., Chen, Y. T., ... & Yen, Y. F. (2020). Methamphetamine use associated with non-adherence to antiretroviral treatment in men who have sex with men. *Scientific reports*, *10*(1), 1-8.

Le Tourneau, N., Germann, A., Thompson, R. R., Ford, N., Schwartz, S., Beres, L., ... & Eshun-Wilson, I. (2022). Evaluation of HIV treatment outcomes with reduced frequency of clinical encounters and antiretroviral treatment refills: A systematic review and meta-analysis. *PLoS medicine*, *19*(3), e1003959.

Legesse, T. A., & Reta, M. A. (2019). Adherence to antiretroviral therapy and associated factors among people living with HIV/AIDS in Hara Town and its surroundings, North-Eastern Ethiopia: a cross-sectional study. *Ethiopian journal of health sciences*, *29*(3).

Leyva-Moral, J. M., Palmieri, P. A., Loayza-Enriquez, B. K., Vander Linden, K. L., Elias-Bravo, U. E., Guevara-Vasquez, G. M., ... & Aguayo-Gonzalez, M. P.

(2021). 'Staying alive'with antiretroviral therapy: a grounded theory study of people living with HIV in Peru. *BMJ global health*, *6*(10), e006772.

Lowane, M. P., & Lebese, R. T. (2022). Why adult patients on antiretroviral therapy miss clinical appointments in rural villages of Limpopo Province, South Africa: An exploratory study. *Health SA Gesondheid (Online)*, *27*, 1-8.

Lubaga, M., Gukiina, Dhafa, G., Musenze, Badaza, Bakwesegha, & Reynolds, S. (2013). Sex inequality, high transport costs, and exposed clinic location: reasons for loss to follow-up of clients under prevention of mother-to-child HIV transmission in eastern Uganda – a qualitative study. Patient Preference and Adherence, 447. https://doi.org/10.2147/PPA.S19327

Makhado, L., & Mongale, M. (2019). Factors influencing non-adherence to antiretroviral therapy in South Africa: a systematic review. *HIV & AIDS Review. International Journal of HIV-Related Problems*, *18*(4), 239-246.

Mengistie, A., Birhane, A., & Tesfahun, E. (2018). Assessment of adherence to antiretroviral therapy among adult people living with HIV/AIDS in North East, Ethiopia. *BioRxiv*, 492330.

Mgbako, O., Conard, R., Mellins, C. A., Dacus, J. D., & Remien, R. H. (2022). A Systematic Review of Factors Critical for HIV Health Literacy, ART Adherence and Retention in Care in the U.S. for Racial and Ethnic Minorities. *AIDS and behavior*, *26*(11), 3480–3493. https://doi.org/10.1007/s10461-022-03680-y

Micheni, M., Kombo, B. K., Secor, A., Simoni, J. M., Operario, D., van der Elst, E. M., Mugo, P., Kanungi, J., Sanders, E. J., & Graham, S. M. (2017). Health Provider

Views on Improving Antiretroviral Therapy Adherence Among Men Who Have Sex with Men in Coastal Kenya. *AIDS patient care and STDs*, *31*(3), 113–121. https://doi.org/10.1089/apc.2016.0213

Mitchell, E., Hakim, A., Nosi, S., Kupul, M., Boli-Neo, R., Aeno, H., ... & Kelly-Hanku, A. (2021). A socio-ecological analysis of factors influencing HIV treatment initiation and adherence among key populations in Papua New Guinea. *BMC Public Health*, *21*, 1-11.

Moosa, A., Gengiah, T. N., Lewis, L., & Naidoo, K. (2019). Long-term adherence to antiretroviral therapy in resource-limited settings: Challenges and opportunities. *Therapeutic Advances in Infectious Disease, 6*, 2049936119878285. https://doi.org/10.1177/2049936119878285

Mutaru, A. M., Ibrahim, A., Osuman, A. N. W., Agana, T. A., & Alhassan, A. S. (2023). Knowledge, attitude and clinical practice regarding HIV/AIDS among trainee nurses in north-eastern corridor, Ghana. *International Journal of Africa Nursing Sciences*, *18*, 100545.

Mutasa-Apollo, T., Ford, N., Wiens, M., Socias, M. E., Negussie, E., Wu, P., ... & Kanters, S. (2017). Effect of frequency of clinic visits and medication pick-up on antiretroviral treatment outcomes: a systematic literature review and meta-analysis. *Journal of the International AIDS Society*, *20*, 21647.

Mwiti, K., Magu, D., Everisto, O., Mutai, J., & Chepchirchir, A. (2024). Medical Appointment Adherence and Challenges Encountered by HIV Infected Children

at Kenyatta National Hospital, Kenya. *Journal of Health, Medicine and Nursing*, *10*(1), 57-65.

Nadeem, S., Yaqoob, M., & Liaqat, M. (2020). Hiv disclosure and hcp with a border: an ethical issue. J Clin Res Bioeth, 11(1). https://doi.org/10.35248/2155-9627.19.10.343

Nadio, E. C., Peter, E. A., Bitok, J., & Kariuki, P. (2020). Factors Associated with Non-adherence to Anti-Retroviral Therapy among Clients in Lodwar County and Referral Hospital, Turkana County, Kenya.

Nankinga, I. (2023). Factors associated with Adherence to ART among Adolescents Living with HIV/AIDS Attending Ndejje Health Centre IV, Wakiso District. A Descriptive Cross-Sectional Study. *Student's Journal of Health Research Africa*, *4*(9), 12-12.

Nawfal, E. S., Gray, A., Sheehan, D. M., Ibañez, G. E., & Trepka, M. J. (2024). A Systematic Review of the Impact of HIV-Related Stigma and Serostatus Disclosure on Retention in Care and Antiretroviral Therapy Adherence Among Women with HIV in the United States/Canada. *AIDS Patient Care and STDs*, *38*(1), 23-49.

Nelson, L. E., Nyblade, L., Torpey, K., Logie, C. H., Qian, H. Z., Manu, A., ... & Vlahov, D. (2021). Multi-level intersectional stigma reduction intervention to increase HIV testing among men who have sex with men in Ghana: Protocol for a cluster randomized controlled trial. *PloS one*, *16*(11), e0259324.

Nembot, F. D. (2022). Time of the First Antiretroviral Treatment (ART) Default and Factors Associated to Early ART Default in the Test and Treat Context: Evidence from the West region of Cameroon.

Nezenega, Z. S., Perimal-Lewis, L., & Maeder, A. J. (2020). Factors influencing patient adherence to tuberculosis treatment in Ethiopia: A literature review. *International Journal of Environmental Research and Public Health*, *17*(15), 5626.

Nezenega, Z. S., Perimal-Lewis, L., & Maeder, A. J. (2020). Factors influencing patient adherence to tuberculosis treatment in Ethiopia: A literature review. *International Journal of Environmental Research and Public Health*, *17*(15), 5626.

Nhemachena, T., Späth, C., Arendse, K. D., Lebelo, K., Keene, C. M., Zokufa, N., ... & Swartz, A. (2022). Between empathy and anger: healthcare workers' perspectives on patient disengagement from antiretroviral treatment in Khayelitsha, South Africa-a qualitative study.

Nigusso, F. T., & Mavhandu-Mudzusi, A. H. (2020). Magnitude of non-adherence to antiretroviral therapy and associated factors among adult people living with HIV/AIDS in Benishangul-Gumuz Regional State, Ethiopia. *PeerJ*, *8*, e8558.

Nketia, R., Mahama, S., Azure, S. A., Adobasom- Anane, A. G., Arthur, F. N., & Atta-Nyarko, D. (2022). Association between nutritional knowledge and dietary compliance among type 2 diabetes mellitus patients at the Bono Regional Hospital, Sunyani, Ghana. International Journal of Multidisciplinary Studies and Innovative Research, 10(1), 1397–1418. https://doi.org/10.53075/Ijmsirq/6867556758

Nutor, J. J., Doku, P. N., & Asante, K. O. (2024). Predictors of HIV treatment adherence and default in Ghana: Evidence from ART centers. *African Journal of AIDS Research, 23*(2), 123–135. https://doi.org/10.2989/16085906.2024.1000123

Nutor, J. J., Gyamerah, A. O., Duah, H. O., Asakitogum, D. A., Thompson, R. G., Alhassan, R. K., & Hamilton, A. (2024). The association of HIV-related stigma and psychosocial factors and HIV treatment outcomes among people living with HIV in the Volta region of Ghana: A mixed-methods study. *PLOS Global Public Health*, *4*(2), e0002994.

Nyaho Medical Centre. (May 2018). The Patient Charter - Ghana. Retrieved on 25/02/2025 from https://nyahomedical.com/2018/05/the-patient-charter-ghana/

Nyblade, L., Stockton, M. A., Saalim, K., Rabiu Abu-Ba'are, G., Clay, S., Chonta, M., ... & Nelson, L. E. (2022). Using a mixed-methods approach to adapt an HIV stigma reduction intervention to address intersectional stigma faced by men who have sex with men in Ghana. *Journal of the International AIDS Society*, *25*, e25908.

Nyundo, A. A. (2022). Neurocognitive decline as a major predictor of nonadherence to antiretroviral therapy among adults living with HIV in Dodoma region, central Tanzania. *Health Science Reports*, *5*(4), e669.

Obeagu, E. I. (2024). Breaking Barriers: Mitigating Stigma to Control HIV Transmission. *Elite Journal of Public Health*, *2*(8), 44-55.

Obeagu, E. I., & Obeagu, G. U. (2023). A Review of knowledge, attitudes and socio-demographic factors associated with non-adherence to antiretroviral therapy among people living with HIV/AIDS. *Int. J. Adv. Res. Biol. Sci*, *10*(9), 135-142.

Obeagu, E. I., Obeagu, G. U., Odo, E. O., Igwe, M. C., Ugwu, O. P. C., Alum, E. U., & Okwaja, P. R. (2024). Combatting stigma: essential steps in halting HIV spread.

Osayi, E. O., Ajayi, O., Onyeji, J., Isichei, M., Sagay, A. S., & Anderson, A. (2024). The prevalence of internalized stigma and its association with HIV viral suppression among fully disclosed adolescents and young adults living with HIV (AYLHIV) receiving HIV care in an HIV clinic in Plateau State, Nigeria. *Plos one*, *19*(5), e0303360.

Ouner, J. J., Thompson, R. G., Dey, N. E., Alhassan, R. K., & Gyamerah, A. O. (2025). Correlates of internalized stigma and antiretroviral therapy adherence among people living with HIV in the Volta region of Ghana. *BMC public health*, *25*(1), 342.

Owusu-Dabo, E., Lartey, M., & Boamah, E. (2019). Factors associated with non-adherence to antiretroviral therapy among people living with HIV in Ghana: a systematic review. Journal of the International AIDS Society, 22(5), e25280. doi: 10.1002/jia2.25280

Paramesha, A. E., & Chacko, L. K. (2019). Predictors of adherence to antiretroviral therapy among PLHIV. *Indian journal of public health*, *63*(4), 367–376. https://doi.org/10.4103/ijph.IJPH_376_18

Perger, T., Davtyan, M., Foster, C., Evangeli, M., Berman, C., Kacanek, D., ... & Bhopal, S. (2024). Impact of HIV-Related Stigma on Antiretroviral Therapy Adherence, Engagement and Retention in HIV Care, and Transition to Adult HIV Care in

Pediatric and Young Adult Populations Living With HIV: A Literature Review. *AIDS and Behavior*, 1-20.

Potsane, P. (2023). Factors associated with patients defaulting on HIV treatment at Helen Joseph Hospital, Gauteng province, South Africa. *African Journal of AIDS Research*, *22*(2), 85-91.

Prah, J., Hayfron-Benjamin, A., Abdulai, M., Lasim, O., Nartey, Y., & Obiri-Yeboah, D. (2018). Factors affecting adherence to antiretroviral therapy among HIV/AIDS patients in Cape Coast Metropolis, Ghana.

Prah, J., Hayfron-Benjamin, A., Abdulai, M., Lasim, O., Nartey, Y., & Obiri-Yeboah, D. (2018). Factors affecting adherence to antiretroviral therapy among HIV/AIDS patients in Cape Coast Metropolis, Ghana.

Rice, W., Turan, B., Fletcher, F., Nápoles, T., Walcott, M., Batchelder, A., … & Turan, J. (2019). A mixed methods study of anticipated and experienced stigma in health care settings among women living with hiv in the united states. Aids Patient Care and STDS, 33(4), 184-195. https://doi.org/10.1089/apc.2018.0282

Rodriguez, V. J., Alcaide, M. L., Sued, O., Aristegui, I., Radusky, P. D., Kozlova, S., ... & Jones, D. L. (2023). Detection of Antiretrovirals in Transgender Women With HIV Is Not Altered by Hair Treatments. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *94*(3), e3-e5.

Sabin, L., Longobardi, D., Poku, T. A., Abacan, A., Myint, M., Kyaw, Z., … Adu-Sarkodie, Y. (2014). Operations Research among Key Populations in Ghana.

Sanga, E. S., Mukumbang, F. C., Mushi, A. K., Lerebo, W., & Zarowsky, C. (2019). Understanding factors influencing linkage to HIV care in a rural setting, Mbeya, Tanzania: qualitative findings of a mixed methods study. *BMC public health*, *19*(1), 1-15.

Sefah, I. A., Mensah, F., Kurdi, A., & Godman, B. (2022). Barriers and facilitators of adherence to antiretroviral treatment at a public health facility in Ghana: a mixed method study. *Hospital practice*, *50*(2), 110-117.

Sefah, I. A., Mensah, F., Kurdi, A., & Godman, B. (2022). Barriers and facilitators of adherence to antiretroviral treatment at a public health facility in Ghana: a mixed method study. *Hospital Practice*, *50*(2), 110-117.

Senu, E., Sakyi, S. A., Ayisi-Boateng, N. K., Enimil, A. K., Opoku, S., Ansah, R. O., ... & Amoani, B. (2022). Factors associated with anti-retroviral therapy (ART) adherence among adult people living with HIV (PLWH): A 5-year retrospective multi-centre study in Kumasi, Ghana. *Dialogues in Health*, *1*, 100082.

Sheehan, L., Palermo, C. V., & Corrigan, P. (2022). Theoretical Models to Understand Stigma of Mental Illness. In D. L. Vogel & N. G. Wade (Eds.), *The Cambridge Handbook of Stigma and Mental Health* (pp. 11–30). chapter, Cambridge: Cambridge University Press.

Shubber, Z., Mills, E. J., Nachega, J. B., Vreeman, R., Freitas, M., Bock, P., Nsanzimana, S., Penazzato, M., Appolo, T., Doherty, M., & Ford, N. (2016). Patient-Reported Barriers to Adherence to Antiretroviral Therapy: A Systematic Review and Meta-

Analysis. *PLoS medicine*, *13*(11), e1002183. https://doi.org/10.1371/journal.pmed.1002183

Simelane, P. T., Simelane, M. S., & Amoateng, A. Y. (2022). Barriers and facilitators to adherence for antiretroviral therapy: the perspectives of patients from a wellness center in the Mpumalanga Province, South Africa. *African Health Sciences*, *22*(3), 455-462.

Skinner, C. J. (2014). Probability proportional to size (PPS) sampling. *Wiley StatsRef: Statistics Reference Online*, 1-5.

Ssuuna, J., Yeh, P. T., Kigozi, G., Nalugoda, F., Nakigozi, G., Kagaayi, J., ... & Chang, L. W. (2024). Household transport ownership and HIV viral suppression in rural Uganda: a cross-sectional, population-based study. *Research Square*.

Tarkang, E. E., Zotor, F. B., & Manu, E. (2023). Determinants of ART default and adherence in sub-Saharan Africa: A systematic synthesis. *Journal of Public Health in Africa, 14*(3), 134–142. https://doi.org/10.4081/jphia.2023.2342

Thomford, N. E., Dampson, F. N., Adjei, G., Eliason, S., Ekor, M., & Kyei, G. B. (2023). Psychometric assessment of HIV stigma in patients attending a tertiary facility: An initial validation of the Berger HIV stigma scale in a Ghanaian perspective. *Plos one*, *18*(4), e0282193.

Treves-Kagan, S., Steward, W. T., Ntswane, L., Haller, R., Gilvydis, J. M., Gulati, H., … Lippman, S. A. (2015). Why increasing availability of ART is not enough: a rapid, community-based study on how HIV-related stigma impacts engagement to

care in rural South Africa. BMC Public Health, 16(1), 87. https://doi.org/10.1186/s12889- 016-2753-2

Turan, B., Budhwani, H., Yigit, I., Ofotokun, I., Konkle-Parker, D. J., Cohen, M. H., ... & Turan, J. M. (2022). Resilience and optimism as moderators of the negative effects of stigma on women living with HIV. *AIDS patient care and STDs*, *36*(12), 474-482.

Turan, B., Fazeli, P., Raper, J., Mugavero, M., & Johnson, M. (2016). Social support and moment-to-moment changes in treatment self-efficacy in men living with HIV: psychosocial moderators and clinical outcomes.. Health Psychology, 35(10), 1126-1134. https://doi.org/10.1037/hea0000356

UNAIDS (2021). HIV and Stigma and Discrimination. Human Rights Facts Sheet Series. Retrieved February 18, 2025, from https://www.unaids.org/sites/default/files/media_asset/07-hiv-human-rights-factsheet-stigma-discrmination_en.pdf?utm_source=chatgpt.com

UNAIDS (2022). Estimates and additional data are available at aidsinfo.unaids.org https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf consulte le 6/1/2023

UNAIDS, D. (2019). UNAIDS Joint United Nations Programme on HIV. *AIDS20 Avenue Appia*, *1211*.

UNAIDS. (2020). Ghana country fact sheet. Retrieved from https://www.unaids.org/en/regionscountries/countries/ghana

UNAIDS. (2020). Prevailing Against Pandemics by Putting People at the Centre.

UNAIDS. (2023.). *Ghana – County Fact sheet*. Retrieved February 2, 2025, from https://www.unaids.org/en/regionscountries/countries/ghana

UNAIDS. (2024). *Global HIV and AIDS statistics — Fact sheet 2024.* https://www.unaids.org/en/resources/fact-sheet

UNAIDS. (2025, July 10). *Fact sheet – Latest global and regional statistics on the status of the AIDS epidemic*. https://www.unaids.org/en/resources/documents/2024/UNAIDS_FactSheet

Valeriano, J. J. D. L. S., Carvalho-Silva, W. H. V., Coelho, A. V. C., Moura, R. R., Arraes, L. C., Brandão, L. A. C., ... & Guimarães, R. L. (2020). Increased risk of dizziness in human immunodeficiency virus-infected patients taking zidovudine and efavirenz combination: a Brazilian cohort study. *Journal of Pharmacy and Pharmacology*, *72*(5), 719-727.

Velloza, J., Kemp, C. G., Aunon, F. M., Ramaiya, M. K., Creegan, E., & Simoni, J. M. (2020). Alcohol use and antiretroviral therapy non-adherence among adults living with HIV/AIDS in sub-Saharan Africa: A systematic review and meta-analysis. *AIDS and Behavior*, *24*(6), 1727-1742.

Viisainen, K., Baumgart dos Santos, M., Sunderbrink, U., & Couto, A. (2024). Gender and stigma in antiretroviral treatment adherence in Mozambique: A qualitative study. *PLOS Global Public Health*, *4*(7), e0003166.

Wekesa, P., McLigeyo, A., Owuor, K., Mwangi, J., Nganga, E., & Masamaro, K. (2020). Factors associated with 36-month loss to follow-up and mortality outcomes

among HIV-infected adults on antiretroviral therapy in Central Kenya. *BMC Public Health*, *20*(1), 1-11.

World Health Organization, 2017. (n.d.). Guidelines for managing advanced HIV disease and rapid initiation of antiretroviral therapy. 9749241550062, (4), 1082–1083. https://doi.org/10.1080/01449298308914472

World Health Organization. (2016). Ghana: country cooperation strategy 2016-2020. Retrieved from https://www.who.int/countryfocus/cooperation_strategy/ccs_gha_en.pdf

World Health Organization. (2021). HIV data and statistics. *World Health Organization*.

World Health Organization. (2023). *HIV strategic information for impact: Progress report 2023*. WHO Press.

Yu, Y., Luo, D., Chen, X., Huang, Z., Wang, M., & Xiao, S. (2018). Medication adherence to antiretroviral therapy among newly treated people living with HIV. *BMC public health*, *18*(1), 1-8.

Zhao, B., Ding, H., Song, W., Kang, M., Dong, X., Li, X., ... & Han, X. (2022). Antiretroviral therapy initiation within 7 and 8–30 days post-HIV diagnosis demonstrates similar benefits in resource-limited settings. *Aids*, *36*(12), 1741-1743.

APPENDIX IV: PARTICIPANT'S INFORMATION SHEET

Title of project: Factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region, Ghana.

Introduction

I am Ebenezer Nana Yaw Obimpeh-Nipamua, a Master of Science in Bioethics Student at the University of Ghana, School of Public Health. I would be grateful if you could spare some time to participate in this study and I would be indeed grateful if you are able to take part. You may contact me via telephone at **0557290390 / 0202264273**. Email: obimpeh27@gmail.com or enyobimpeh-nipamua@st.ug.edu.gh

Why is this research undertaken and what are its objectives?

Antiretroviral therapy (ART) reduces HIV-related diseases and deaths, reduces the amount of the virus in the individual, improves the immune system, and increases the patient's quality of life. Although ART services have been successfully established in Ghana, there are still challenges with treatment compliance with ART defaults being the biggest concern. Defaulting ART results in HIV treatment failures has several consequences including an increased risk of transmitting HIV and increased diseases and deaths, high costs for individuals and health facilities in using and providing alternative ART treatments. This study seeks to assess factors associated with HIV treatment default at Sunyani Municipal and Regional hospitals in the Bono region of Ghana.

The information obtained from this study could be useful in guiding the implementation of the protocols and guidelines to improve the management of HIV and reduce the burden of the disease on individuals, health facilities, and communities.

The objectives of this research project are therefore to:

1. To determine patient factors associated with treatment default among HIV patients receiving care at Bono Municipal and Regional hospitals.
2. To assess community factors associated with treatment default among HIV patients receiving care at Bono Municipal and Regional hospitals.
3. To identify health service factors associated with HIV treatment default at Bono Municipal and Regional hospitals.
4. To explore how stigma, privacy concerns, and discrimination in healthcare influence treatment default.

Who is participating in the research and is participation compulsory?

This study will be carried out at the Bono Regional and Municipal hospitals in the Sunyani Municipality. The study population will include all persons diagnosed with HIV and receiving ART services at the HIV clinic at the Regional and Municipal Hospitals.

Participation in this research is not compulsory. Participants are free to leave the study whenever they want, with no need to provide a reason. A participant's withdrawal will not have any negative consequences.

What will participants be asked to do?

Participants will be asked some questions on a paper about their own situations that may cause them to default on HIV treatment. Participants will also be asked to respond to questions about situations in the HIV clinics in the hospitals and the community they live in that may cause them to default on HIV treatment. The responses to the questions on the papers will be collected by the researcher. The entire duration for participants to respond to the questions may last from 15 minutes to 30 minutes.

What are the benefits of this research to participants?

Participants in this study will not receive any immediate benefits from it. However, participation will give participants the chance and advantage of adding to the creation of new knowledge that could aid the Ministry of Health, Ghana Health Service, Bono Regional Health Management Team, Regional and Municipal hospitals in Sunyani, and the Government of Ghana in improving the management of HIV and lowering the burden of the disease on people and communities.

What are the risks of participating in this research?

Apart from the time participants will spend answering the questions, participants in the study will not have any biological samples taken from them and won't be in any bodily danger. However, some participants might feel uncomfortable talking about delicate subjects related to HIV infection. As a result, participating in the study may require you to recall and describe uncomfortable memories that could cause mild emotional or psychological distress.

What use will be made of the collected information, and how will confidentially be ensured?

The data gathered will be used primarily to create research reports, which, if practical, may be sent to other participants and stakeholders (e.g. Bono regional health management team, Sunyani Regional and Municipal Hospitals) in a feedback workshop. Scientific paper(s) on the important emergent themes from the research may be submitted for publication in peer-reviewed journals to guarantee that the outcomes of this research are useful to the larger scientific community. The research's results will also be presented at seminars and conferences on global health both inside and outside of Ghana. Any information used in

papers or presentations based on this research will be anonymized. Participants' information will be kept completely confidential. The primary keeper of all the data generated by this study will be the Principal Investigator (Ebenezer Nana Yaw Obimpeh-Nipamua). The information will be kept for a maximum of three years after it has been obtained from participants. It will be kept on a personal computer that has password protection for both primary access and individual files. All personal data will be made anonymous so that no one may use it to identify them. Individual participants will not be identified by name, address, or any other codes. Instead, all participants' anonymity will be protected using pseudonyms. However, the implications of doing so will be fully discussed with a participant if they choose to be identified in the research. The researcher may then identify the participant if they still desire it.

Can participants change their minds and withdraw from the project?

Yes, participants will not be penalized if they choose to stop taking part in the project at any point. Participants will not be interviewed without their informed consent.

If you agree to take part in the study, you have the right to withdraw at any moment before and during the interview or conversation. You are also free to refuse to answer any questions or request that the tape recorder be turned off at any time.

Will individual participants receive any payment or gifts for taking part in the research?

Participants will not any payments for participation in this research. However, participants will be refreshed with water.

Has the study been reviewed and approved by an ethics committee?

This study has been reviewed by the Ghana Health Service Ethics Review Committee.

Will participants be given the participants' information sheet and consent form?

Before the study interviews are conducted, participants will receive copies of the participants' information sheet and the signed or thumb-printed consent form for their personal records.

Who is funding the research?

The research is funded by the principal investigator.

How much time will participants be given to deciding on whether to participate or not?

Participants will have enough time to determine whether to participate. However, because the data collection for this study is time-limited, a potential participant's failure to respond after three (3) days from the beginning of the consent process will be interpreted as a refusal to participate.

What if participants have any questions or concerns about this study?

Participants are free and encouraged to express any issues or questions they may have about any topic related to the research that they do not fully understand. Any participant with questions about this research should contact Ebenezer Nana Yaw Obimpeh-Nipamua (the principal investigator) of the School of Public Health, the University of Ghana on 0557290390, who will answer your question(s) as best as he can. You can also speak with the Administrator of the Ghana Health Service Ethics Review Committee, Madam Nana Abena Apatu, if you have any inquiries concerning the research's ethical components or your rights as a research participant on 0503539896 or email address: ethics.research@ghs.gov.gh

APPENDIX V: DATA COLLECTION INSTRUMENT: QUESTIONNAIRE

Topic: Factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region, Ghana

Dear Respondent,

The topic for the research is: "**Factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region**, Ghana" and would be grateful if you could take some time to answer the following questions below. All responses provided would be treated with the utmost confidentiality. Please indicate your answer with a tick (√) or write in the space provided.

Section A: Socio-Demographic Characteristics of respondents

1. What is your sex?

   Male ( ) Female ( )

2. What is your age in completed years? _____

3. What is your marital status?

a) Married ( )

b) Single ( )

c) Widowed ( )

d) Divorced/separated ( )

e) Other, please specify _____

4. What is your Religion?

a) Christian ( )

b) Muslim ( )

c) Traditionalist ( )

d) Other, please specify _____

5. What is your level of education?

a) Never been to school ( )

b) Primary ( )

c) Junior High School ( )

d) Senior High School ( )

e) Tertiary ( )

6. What is your occupation?

a) Unemployed ( )

b) Public Servant ( )

c) Private sector employee ( )

d) Self-employed ( )

e) Student ( )

f) Other, please specify _____

Section B: Patient factors associated with HIV treatment default

7. When did you start antiretroviral treatment after you were diagnosed with HIV/AIDS?

a) Within a week after diagnosis ( )

b) Within a month after the diagnosis ( )

c) Within a year after the diagnosis ( )

d) More than a year after diagnosis ( )

8. Have you ever missed your hospital appointment dates?

Yes ( ) No ( )

9. If yes to question 8, what was the reason(s) for missing clinic appointments? Please tick all that apply.

a) Forget appointment date ( )

b) Too busy to go to the clinic ( )

c) Felt better and did not feel like continuing with therapy ( )

d) Tired of being on medications ( )

e) Taken it for too long ( )

f) Having medicines on the appointment date ( )

g) Other, please specify _____

10. Have you ever experienced any side effects from any of the medicines you are taking?

Yes ( ) No ( )

11. If yes to number 10, what was the side effect(s) you experienced?

a) Nausea ( )

b) Vomiting ( )

c) Dizziness ( )

d) Skin Rashes ( )

e) Other, please specify _____

12. Did the side effect(s) make you not take your medicines or go back to the hospital?

Yes ( ) No ( )

13. Have you ever defaulted on treatment?

Yes ( ) No ( )

14. If yes, what is/was the reason for your default? Please tick all that apply.

a) Forget appointment date ( )

b) Too busy to go to the clinic ( )

c) Felt better and did not feel like continuing with therapy ( )

d) Tired of being on medications ( )

e) Taken it for too long ( )

f) Having medicines on the appointment date ( )

g) Other, please specify _____

Section C: Health service factors associated with HIV treatment default

15. In each of the questions, please tick in the box according to your level of agreement with the statement.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The health workers have good relationships with patients	☐	☐	☐	☐	☐
Clear instructions for taking medications were given	☐	☐	☐	☐	☐
Adequate information about the benefits of taking medications was given	☐	☐	☐	☐	☐
Adequate information about the dangers of defaulting medications	☐	☐	☐	☐	☐
The health workers discriminate against and stigmatized HIV patients	☐	☐	☐	☐	☐

16. When were you given education about the importance of taking your ART?

a) Before the initiation of ART ( )

b) At every visit ( )

c) Not given ( )

d) Other, please specify

17. Since you started taking your medicines, were you told how to take the medicines correctly?

    Yes ( ) No ( )

18. How often do you attend the ART center for medications?

a) Every 1 week ( )

b) Every 2 weeks ( )

c) Every 1 month ( )

d) Every 3 Months ( )

e) Every 6 months ( )

f) Every 1 year ( )

19. Are you comfortable with the arrangement of being asked to come to the clinic on some specific days within the week?

    Yes ( ) No ( )

20. Would you prefer to come to the clinic any day of the week instead of special/specific days like this?

    Yes ( ) No ( )

21. Is the location of the ART clinic good for you?

    Yes ( ) No ( )

22. Some people say separating the ART clinic from other "normal" departments of the hospital makes them uncomfortable because they can easily be identified by others. Choose from below your level of agreement with the above.

a) Strongly agree ( )

b) Agree ( )

c) Neutral ( ) .

d) Disagree ( )

e) Strongly Disagree ( )

23. On average, how long do you spend at the clinic?

a) Less than 1 hour ( )

b) 1-2 hours ( )

c) 2 hours ( )

d) More than 2 hours ( )

24. Do you think the time you spend at the hospital is too long?

Yes ( ) No ( )

25. If Yes to Question 24, where does the delay come from?

a) The laboratory ( )

b) The ART Nurse ( )

c) Pharmacy ( )

d) Others (Please indicate) _____

26. Do you pay money at the clinic for your medications?

Yes ( ) No ( )

27. If No, skip to question 30, If yes, what services do you pay for?

a) Consultation ( )

b) Lab test ( )

c) Treatment ( )

d) Medicine ( )

e) Other, please specify _____

28. How much money (GHS) do you spend for the following services at the clinic?

a) Consultation, GH₵_____

b) Lab test, GH₵_____

c) Treatment, GH₵_____

d) Medicine, GH₵_____

29. What happens if you do not have the money?

a) Miss Appointment ( )

b) Denied ARV drugs ( )

c) Denied laboratory service ( )

d) Other, please specify _____

30. Do the ARVs make you eat a lot?

Yes ( ) No ( )

31. Do you sometimes get worried about what to eat after taking your medicine?

Yes ( ) No ( )

32. How would you rate the services provided to you by the healthcare provider?

a) Excellent ( )

b) Very good ( )

c) Good ( )

d) Average ( )

e) Poor ( )

Section D: Community-related factors associated with HIV treatment default

33. Apart from the health workers, who else have you told about your HIV status?

a) Spouse/partner ( )

b) Family member ( )

c) Friend ( )

d) Neighbor ( )

e) Religious leader ( )

f) No one ( )

g) Other please specify _____

34. Do you keep your status secret for any of the following reasons?

a) Fear of rejection by family ( )

b) Fear of rejection by friends ( )

c) Fear of violence ( )

d) I will not get help from others if they know my status ( )

e) Fear that I will be stigmatized ( )

f) Fear that people will gossip about me ( )

35. Have you ever been treated differently by family members/friends because of your HIV status?

Yes ( ) No ( )

36. If yes to question to 35, which of the following best explains?

a) Social support was withdrawn ( )

b) Discriminated ( )

c) Stigmatized ( )

d) Isolated by family members ( )

e) Other, please specify _____

37. Does your culture/custom prevent you from going to the clinic on certain days?

Yes ( ) No ( )

38. How long does it take you to get to the ART clinic?

a) Within 30 mins ( )

b) 30 mins to 1 hour ( )

c) 1 hour ( )

d) 2 hours and above ( )

39. How do you get to the clinic?

a) Walk ( )

b) Taxi/Trotro ( )

c) Drive a car ( )

d) Given a lift ( )

e) Other, please specify _____

40. Do you ever miss appointments because you do not have money for transport?

Yes ( ) No ( )

Thank you for your time and participation.

This questionnaire is partly adapted from Koku-Anu (2018).

APPENDIX VI: CONSENT FORM

Project Title: Factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region, Ghana.

Introduction

Dear Participant, I am a Master of Science in Bioethics student at the University of Ghana School of Public Health. I am conducting a study on the topic: Factors associated with treatment default among HIV patients initiating treatment at two selected hospitals in the Bono region, Ghana. This study is part of the requirements for the award of the Master of Science in Bioethics degree. I would like to seek your approval and permission to ask you a few questions. The purpose of this study is to assess factors associated with HIV treatment default at Bono Municipal and Regional hospitals.

Nature of the study

The population of interest targeted in this research is Persons Living with HIV/AIDS (PLWHIV) who are accessing Antiretroviral (ART) at Municipal and Regional hospitals at Sunyani in the Bono region. The study involves the use of a questionnaire that will require participants to answer some questions that will take a maximum of 30 minutes. Participants for the questionnaire interview will be selected through a simple random sampling method.

Benefits of the Study

This research will help the hospitals taking care of you to know how the ART program is helping you. It will also show the problems you are facing as well as other persons receiving ART services. Findings from the study will help patients, healthcare providers, and the community as it could help draw useful lessons from it and implement measures to

enhance the health system. The information will also stimulate policymakers' attention, prompting them to pay closer attention to how ART services are provided and implement changes as needed.

Potential Risks

The study will not involve any significant risk or monetary cost. You will not be exposed to any clinical risks whatsoever. This study could, however, evoke some psychological and emotional discomfort for you because of the nature of some of the questions.

Confidentiality

Strict confidentiality will be enforced by using special codes to mask your identity. Please be assured that your name will not be mentioned anywhere in this research work. Every piece of information gathered from you will be destroyed after the analysis of the work has been done.

Withdrawal from the Study

Participation in this study is voluntary, and participants may withdraw at any time without any penalty. Your decision to leave will not affect you when you come back to this hospital or any other hospital for service. Participants can choose not to answer any individual question or all the questions, and no one will force you. However, I will be happy if you can continue to the end.

Contact for Additional Information

If you have any question(s) or further clarification concerning this study and/or the conduct of the researcher, please contact the researcher on 0557290390 / 0202264273. Email: obimpeh27@gmail.com or enyobimpeh-nipamua@st.ug.edu.gh.

Madam Nana Abena Apatu (Administrator), Ghana Health Service Ethical Review Committee Secretariat, Accra. Tel: 0503539896 or email address: ethics.research@ghs.gov.gh

Consent Declaration:

I……. have been well informed on the methodology and relevance of this research. I have also read (or was read and explained to me) the details of this research, and I agree to take part in it without any form of duress. I also understand that I can withdraw at any time in between. I have been assured of the anonymity and confidentiality of the research I consent to participate in this study.

…… ……

Signature or thumbprint of participant Date

…… ……

Signature of Researcher Date

INVESTIGATOR'S STATEMENT OF CONSENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Investigators signature: ……..Date:…….

For questions regarding the ethical aspects of this research or questions about your rights as a research participant, you may also contact Madam Nana Abena Apatu, the Administrator of the Ghana Health Service Ethics Review Committee, on 0503539896 or email address: ethics.research@ghs.gov.gh