

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
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**FACTORS ASSOCIATED WITH LINKAGE TO HIV CARE
SERVICES AMONG NEWLY DIAGNOSED HIV-POSITIVE
INDIVIDUALS: A CASE STUDY OF THE GREATER ACCRA
REGIONAL HOSPITAL**

BY

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DECLARATION

Except for the duly acknowledged references, I, Naadu Awuradwoa Addico, hereby declare that this dissertation is the result of my original work conducted under the supervision of Dr. Adom Manu. I affirm that this work has not been presented for any other degree in this University or elsewhere either in whole or part. I am responsible for the views expressed and the factual accuracy of its contents.



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Date.....



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(Supervisor)

10 October 2022

Date.....



DEDICATION

I dedicate this work to the Almighty God for the good health and strength to conduct this research.

I also dedicated this project to Mr. Kwasi Adu Manu for all the motivation he gave me throughout this study.

This work is dedicated to all Persons Living with HIV (PLHIV), especially to those who by no fault of theirs found themselves in this situation other than what they hoped for.

Thus, they should not give up and keep hope alive.



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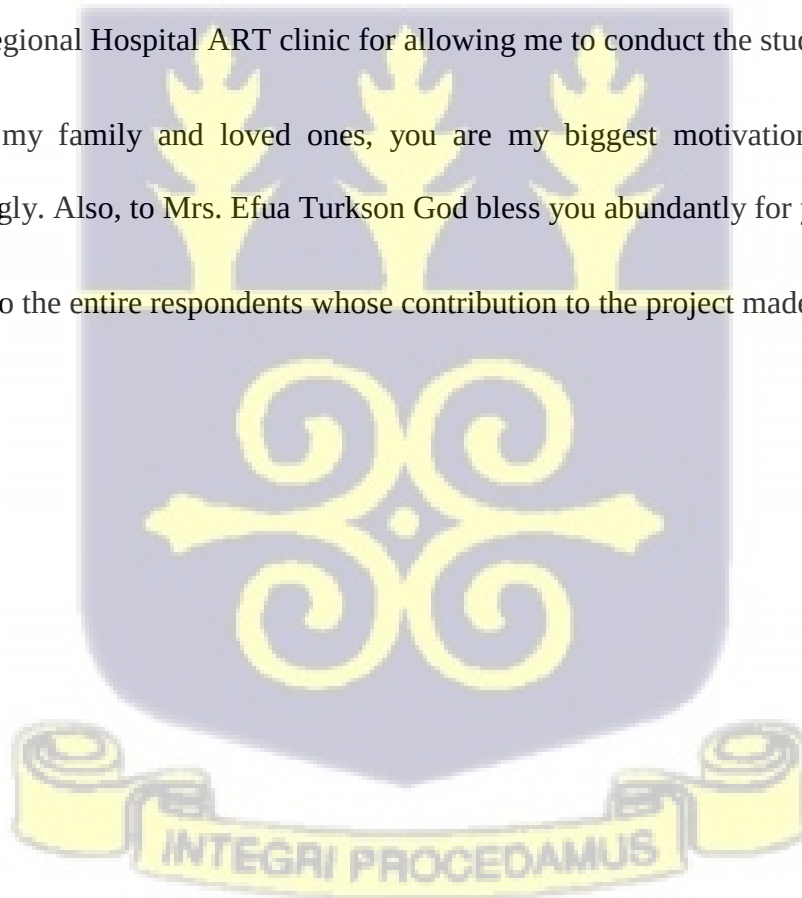
My sincere gratitude goes to the Lord God Almighty for his guidance and support throughout the entire period of the project.

Secondly, my heartfelt appreciation goes to my supervisor, Dr. Adom Manu, for his support, time, constructive criticisms, and above all his unprecedented encouragement that saw me through the entire project.

I also owe my profound gratitude to the management, staff, and clients of the Greater Accra Regional Hospital ART clinic for allowing me to conduct the study at their facility.

Now to my family and loved ones, you are my biggest motivation, God bless you exceedingly. Also, to Mrs. Efua Turkson God bless you abundantly for your support.

Finally, to the entire respondents whose contribution to the project made it a success.



ABSTRACT

Introduction: The Human Immunodeficiency Virus epidemic remains one of the greatest public health concerns, with more than 70 million people infected since its discovery and almost 35 million deaths. In HIV management, linkage to care service is key, persons living with HIV must be linked to treatment as soon as possible. Linkage to care is the patient initiation into HIV care after diagnosis, more precisely, the time between the HIV diagnosis date and either the first clinic attendance date, viral load date, first CD4+ count or HIV treatment start date, with early linkage measured within 3 months (90 days).

Objectives: This study aims to examine the factors associated with linkage to HIV care service among newly diagnosed HIV-positive individuals at the Greater Accra Regional Hospital.

Methodology: A cross-sectional design using both quantitative and qualitative approaches was conducted. A total of 371 newly diagnosed HIV-positive individuals (HIV positive in the last 12 months) were used for the study and 10 health service providers working at the ART Clinic were interviewed at the Greater Accra Regional Hospital. A structured questionnaire using KoBo Toolbox and interviewing guide was used to collect data. The data was entered and analyzed using STATAIC 16. Descriptive statistics, bivariate, and thematic analysis were performed.

Results: Different factors associated with linkage to HIV care services were identified. Being afraid other people will find out about HIV and believing HIV will be healed through faith were some HIV-related factors identified influencing linkage to HIV care services. Regarding structural factors reported, convenient clinic times and feeling discriminated against were identified to be associated with linkage to HIV care services.

About, the knowledge of service providers on factors contributing to low linkage to HIV care services, self-stigma, and difficulty in accepting the condition were important factors reported to influence linkage to HIV care services.

Conclusion: Linkage to HIV care services particularly frequency of hospital visitation and length of ART treatment is a vital approach toward appropriate management and treatment of HIV. Interventions and strategies should address issues surrounding stigma, discrimination, financial challenges, mental health, logistics, and human resource to improve the capacity of the ART clinic to ensure quality HIV care services.



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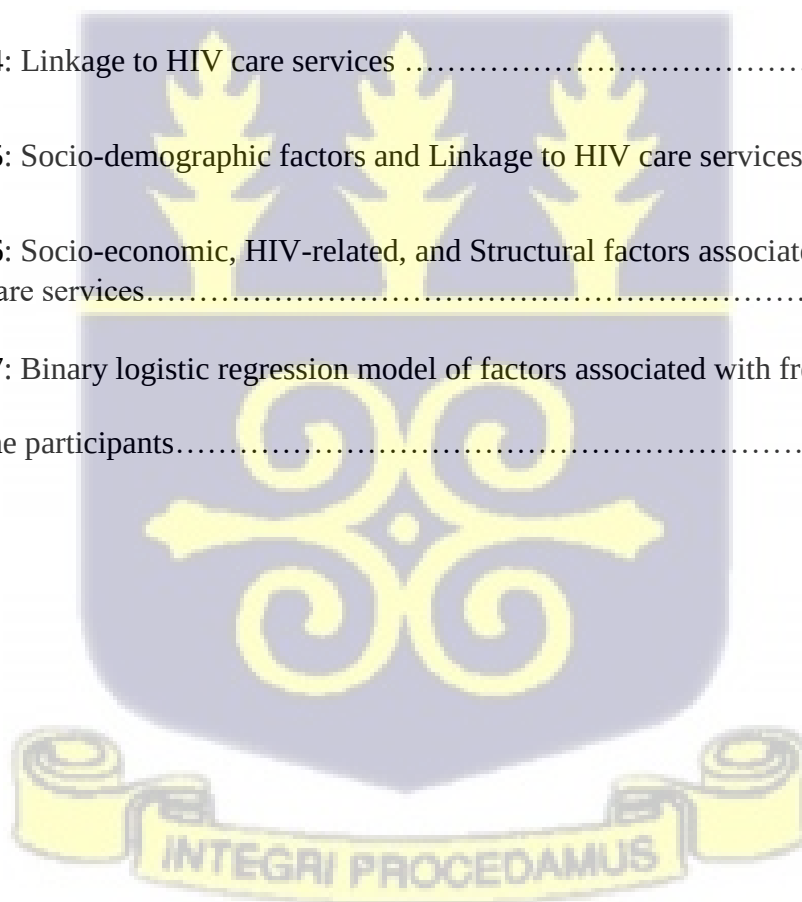
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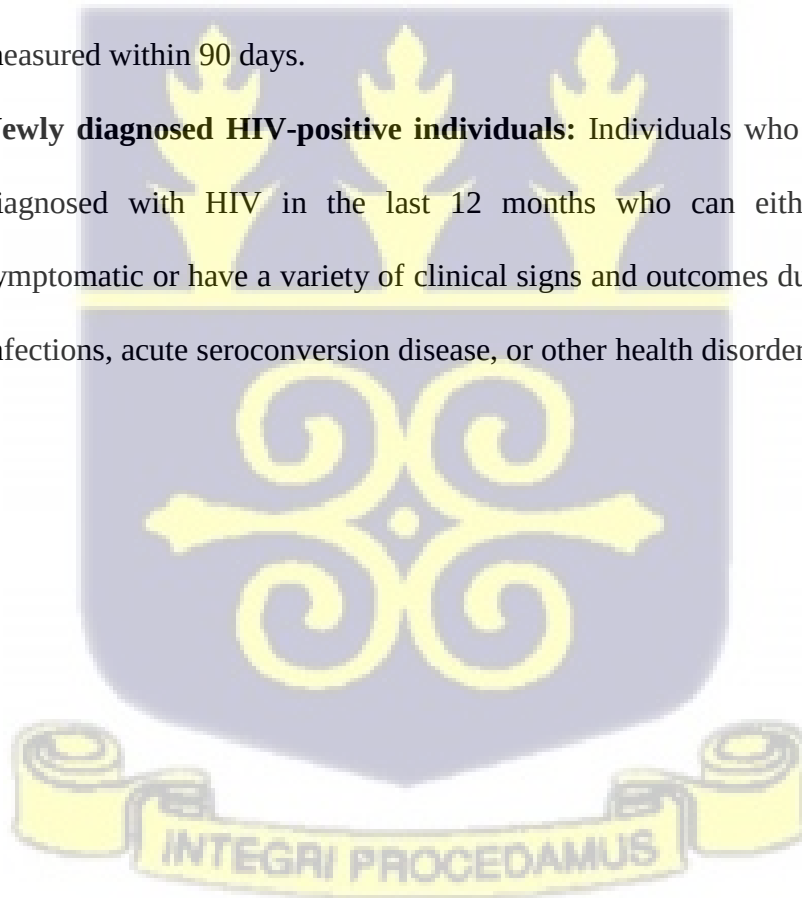
LIST OF ABBREVIATIONS

1		
ART	Antiretroviral therapy	
GARH	Greater Accra Regional Hospital	
GHS	Ghana Health Service	
HIV	Human Immunodeficiency virus	
MOH	Ministry of Health	
MTCT	Mother-to-child transmission	
NACP	National AIDS Commission Programme	
PLHIV	Persons Living with HIV	
UNAIDS	United Nations Programme on HIV/AIDS	
WHO	World Health Organization	



DEFINITION OF TERMS

- 1. HIV (Human Immunodeficiency Virus):** According to WHO (2022) it is a condition that targets the body's immune system, primarily CD4 cells, which are white blood cells. HIV damages CD4 cells, lowering immunity to opportunistic infections including tuberculosis and fungal infections, as well as chronic bacterial infections and several malignancies.
- 2. Linkage to HIV care services:** The period between receiving an HIV diagnosis and attending your first clinic appointment, getting your first CD4+ count, getting your viral load, or starting HIV antiretroviral therapy, with early linkage measured within 90 days.
- 3. Newly diagnosed HIV-positive individuals:** Individuals who have been newly diagnosed with HIV in the last 12 months who can either not have any symptomatic or have a variety of clinical signs and outcomes due to opportunistic infections, acute seroconversion disease, or other health disorders.



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Since its discovery in the United States of America (USA) in 1981, HIV and AIDS have become a significant global public health issue. Its adverse impact is felt and observed not just on individual and community wellbeing, but also in socioeconomic areas of life. The Human Immunodeficiency Virus (HIV) pandemic remains one of the greatest public health interests, with over 70 million people infected since its discovery and almost 35 million deaths. In 2017, it was projected that 37 million people universally were living with HIV (Owusu et al., 2019). In 2014, 24.7 million people in Sub-Saharan Africa were the worst affected by the epidemic (Owusu et al., 2019).

Currently in Ghana, the assessed number of persons with HIV is 342,307 (Males – 122,321 (36%) Females – 219,986 (64%) Adults (15+ years) – 316,352 (92%) Children (0–14 years) – 25,955(8%)) with a national prevalence of 1.70% (Kim et al., 2018) (Ghana AIDS Commission, 2019a). However, Ghana has seen a substantial rise in the number of persons who have received HIV testing and counseling, with 26,822,071 contraceptives delivered and 1,926,981 people receiving results (Ghana AIDS Commission, 2019b). According to excerpts from Ghana's National HIV and AIDS Policy, antiretroviral therapy (ART) was started on 28, 782 people in 2018.

Antiretroviral therapy (ART) is a treatment that consists of a combination of HIV/AIDS medications that decrease HIV replication. The six different types of inhibitors are nucleoside and nucleotide reverse transcriptase inhibitors (NRTIs, NtRTIs), non-

nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), fusion inhibitors (FIs), CCR5 co-receptor antagonists, and integrase strand transfer inhibitors (INSTIs) (National AIDS/STI Control Program, 2020).

In HIV management, linkage to care is key. To eliminate HIV/AIDS as a public health issue, individuals living with HIV must be linked to treatment as soon as possible. Dombrowski (2018) in his research on 'Linkage to HIV Care: Process for Estimating and Monitoring Linkage to Care' said a patient is linked to care when he/she follows a clinical review or WHO staging, an immunologic assessment (CD4 count), viral load test or has started ART.

This is a critical phase in the HIV cascade since it precedes the start of antiretroviral therapy (ART) and continued treatment for viral suppression. According to (Kim et al., 2018), delays in linkage to care result in a delay in receiving ART, faster disease progression, and higher mortality. In addition, antiretroviral therapy (ART) decreases HIV transmission rates and is crucial in avoiding new infections. For this reason, effective linkage to care is unquestionably essential in combating the epidemic.

Some studies done in Kenya and South Africa on the obstacles and facilitators to linked HIV care revealed fear of stigma, failure to disclose HIV status to family, being asymptomatic at the time of diagnosis, and unfavourable healthcare provider behaviors as obstacles to prompt HIV treatment (Owusu et al., 2019). Integration of HIV testing and HIV care services, strong patient-staff relationships, and brief clinic wait times were all listed as factors that made linkage easier.

Also in Uganda, (Nakanwagi et al., 2016) identified barriers to HIV care for female sex workers, included discrimination by hospital staff, delays at the health facility, a lack of money for transportation and food, fear of drugs, stigma, drug and alcohol use, fear of being seen by clients, dearth of knowledge about the treatment center, and delays in accessing treatment for those who needed it.

Although these obstacles have been identified, there is still a scarcity of data on HIV linkage among sex workers and other HIV demographics in Sub-Saharan Africa, especially on successful linkage models to guide the scale-up of HIV interventions among sex workers and HIV-positive people. However, there is a dearth of data based on factors associated with immediate linkage to care at ART facilities.

Few studies in Ghana have examined the factors influencing linkage to HIV care to improve adherence to ART and retention in care, as well as Persons Living with HIV (PLHIV's) overall quality of life. This study aims to explore the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals to help bridge this evidence gap.

1.2 Problem Statement

The completion of a first medical clinic visit after an HIV diagnosis is commonly regarded as linking to care services, which is a key milestone in effective HIV treatment. In the HIV treatment continuum, linkage to care is critical since it is a prerequisite for the initiation of antiretroviral therapy and viral suppression (Dombrowski, 2018). The essence of ensuring a linkage between HIV testing and counseling programmes and prevention, recovery, care, and support systems is emphasized in the 2012 WHO strategic HIV testing and counseling programme framework (WHO, 2013). All people diagnosed

with HIV in Ghana are eligible for care under the country's "test and treat all" policy as integrated into the 2016–2020 National HIV and AIDS strategic plan.

In 2019, 36,203 of the 69,120 newly diagnosed people were started on ARVs, resulting in a linking rate of 52 percent, which is the best in the last five years. Adults (15+ years) made up 95% (34,387) of those who were initiated, and females were the majority (71%). Likewise, just 51% of the 68,085 adults diagnosed were started on ARVs. This significant gap in ARV initiation must be addressed (National AIDS/STI Control Program, 2020). Interventions to increase linkage to care need to be evaluated more thoroughly. On the other hand, multiple systematic reviews and observational research demonstrate that several good practices will improve linkage to care.

These include integrating HIV testing, counseling, and treatment services; providing on-site or instant CD4 testing with same-day results; assisting with transportation if the ART site is a long distance from the HIV testing and counseling site; engaging community outreach volunteers to locate people who have not been followed up on; ensuring peer or expert patient support; and using innovative technology such as text messaging on smart phones (WHO, 2013).

Knowing the factors associated with linkage to HIV care services will aid policies and service providers to develop appropriate interventions and programs to enable newly diagnosed HIV-positive individuals to start early on ART and stay in care as they progress across the care continuum, attaining viral load suppression and high quality of life.

1.3 Conceptual framework

Linkage to HIV care services means putting in place interventions and programs to guarantee that HIV-positive people are effectively enrolled in medical care, psychological, and social services (National AIDS/STI Control Program, 2020). For an improved HIV/AIDS prognosis, a timely and efficient connection to HIV therapy, care, and support is critical. As a result, the most current WHO “test-and-treat” recommendations for HIV treatment and care urge that if someone tests positive for HIV, treatment should be started right at once, regardless of their CD4 count. However, treatment can only begin if the HIV-positive person is successfully linked to an approved HIV treatment and care facility or antiretroviral treatment program.

Ghana incorporated the "treat all" policy in its 2016–2020 National HIV/AIDS Strategic Plan, in conformity with 2016 WHO amalgamated guidelines on the use of antiretroviral medicines for treating and preventing HIV. The adoption of "treat all" necessitates the improvement of the country's health infrastructure to link and track HIV-positive clients so that they may be treated immediately. Patients are educated on the advantages of being in care while enabling services such as referral letters and advice in selecting a treatment facility and treatment alternatives that are provided as part of the linkage to the care process. Several factors may help or hinder the process of linking along the HIV care continuum from diagnosis to ART initiation.

These impacts can occur at the level of the patient, the health service provider, or the healthcare system, or they might be impacted by structural or contextual factors. Numerous studies have examined the challenges and enabling factors to linkage to care in HIV-endemic regions across the globe, including Africa based on reviewed literature.

Fear of stigma, failure to disclose HIV status to families and bad healthcare professional attitudes are all described as hurdles to prompt HIV treatment. Incorporating HIV testing and care services and strong patient-staff interactions were all highlighted as factors that enabled easy linkage.

Early linkage to HIV care, according to research, improves CD4 count, which is described as a steady increase between 100 and 150 cells/mm³ in 12 months and is regarded as a progression to viral suppression and retention in HIV care. CD4 testing is defined as a series of six care visits spaced over a year. This metric has been used to analyze HIV care retention across the world (Nakanwagi et al., 2016).



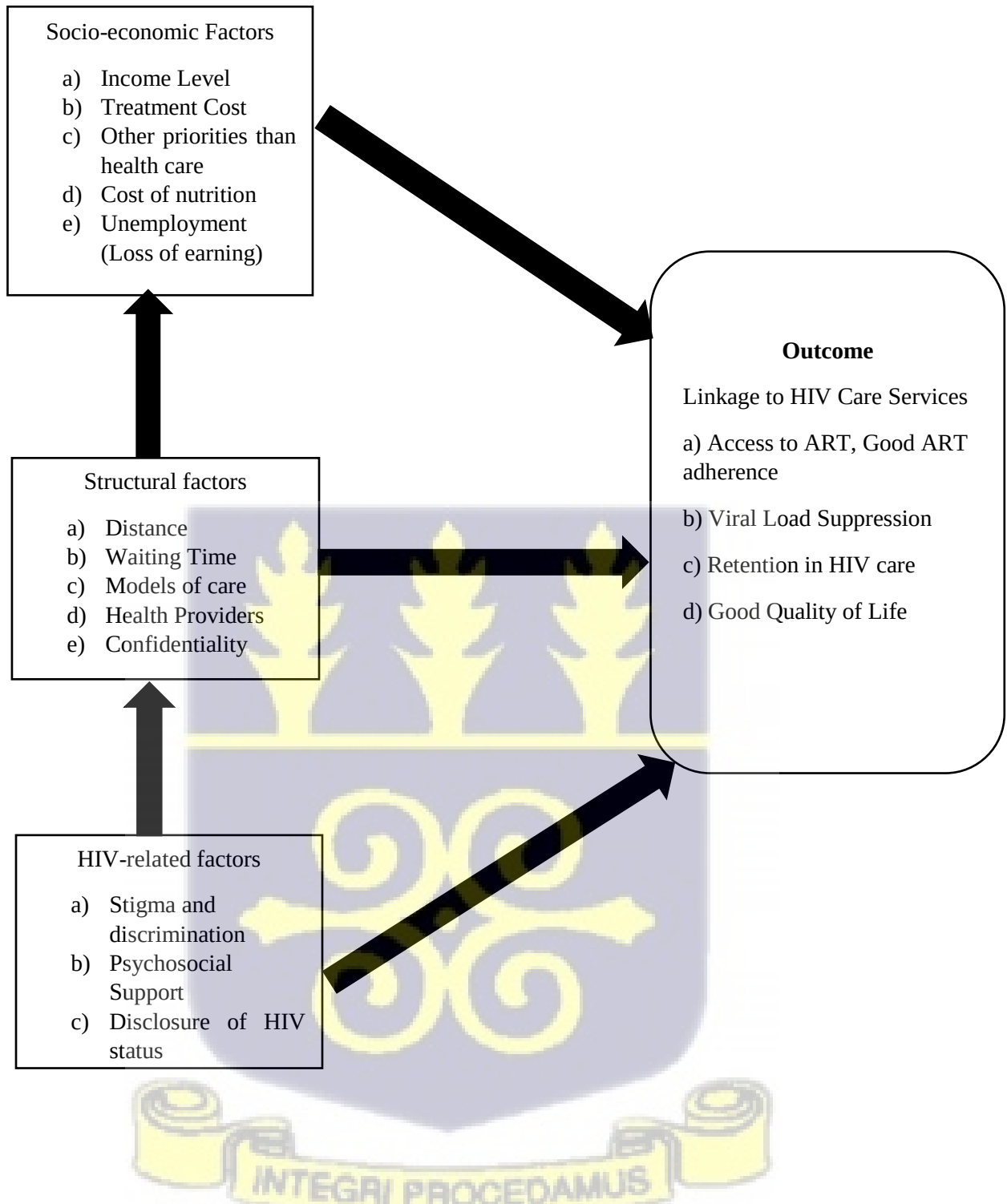


Figure 1.1: Conceptual framework for the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals (Nakanwagi et al., 2016).

1.4 Justification of the Study

PLHIV can attain their goals and maintain a good quality of life, according to studies, if they are detected early, linked to HIV care services, and kept in care. Early linkage to care is an important stage in the HIV care process before starting antiretroviral therapy and achieving undetectable viral load (Owusu et al., 2019). According to the Ghana AIDS Commission's HIV Sentinel Survey Report for 2019, there were 20,068 new HIV infections (2,972 children aged 0-14 years and 17,096 adults), and recent five and ten-year linear pattern analysis indicates rising HIV prevalence.

Persons living with HIV (PLHIV) who do not have immediate linkage to care would serve as the nation's reserves in the event of a future viral transmission surge. This cross-sectional study would uncover the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals. It could also aid to develop health-system interventions to integrate HIV services into routine care, include community outreach workers (Model of Hope) to identify people lost to follow-up, ensure peer or expert patient support, and use new technologies including mobile phone text messaging to improve ART use and adherence and, in turn, reduce viral load, improve clinical outcomes, and reduce HIV related deaths and co-morbidities.

1.5 Study Objectives

The general objective of the study is to examine the linkage to HIV care services and associated factors among newly diagnosed HIV-positive individuals.

Specific objectives of the study are to:

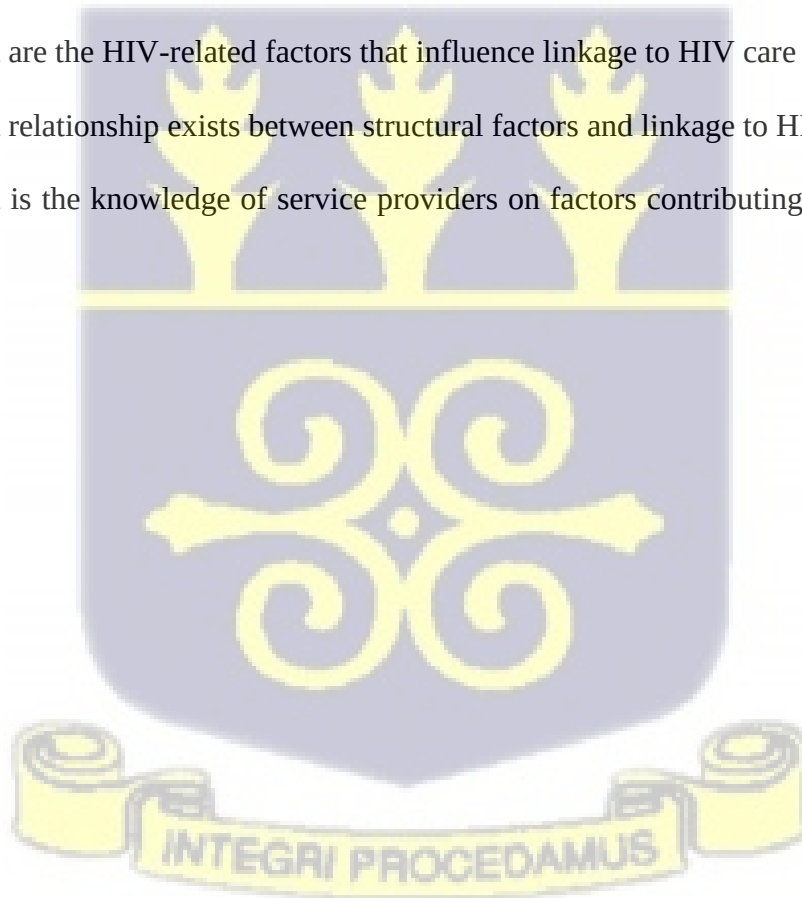
1. Assess the socio-economic factors affecting linkage to HIV care services.

2. Determine the HIV-related factors influencing linkage to HIV care services.
3. Establish the relationship between structural factors and linkage to HIV care services.
4. Explore the knowledge of health service providers on factors contributing to low linkage to HIV care services.

1.6 Research Questions

To address the study objective, the following research questions were investigated:

1. What are the socio-economic factors associated with linkage to HIV care among newly diagnosed HIV-positive individuals?
2. What are the HIV-related factors that influence linkage to HIV care services?
3. What relationship exists between structural factors and linkage to HIV care services?
4. What is the knowledge of service providers on factors contributing to low linkage to care?



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the reviewed literature on the factors associated with linkage to HIV care services among HIV-positive individuals, the knowledge of health service providers on factors contributing to low linkage to care, and the relationship between delayed linkage to care and retention in HIV care. The chapter is categorized into the following sub-headings: definition of concepts, factors associated with linkage to HIV care, knowledge of service providers on factors contributing to low linkage to care, and the relationship between delayed linkage to care and retention in HIV care.

2.2 Definition of concepts

- HIV is an abbreviation for the widely known disease Human Immunodeficiency Virus. The word Human means that the disease only affects human beings and is transmitted only between human beings. It is not transmitted between humans and animals. Immunodeficiency also explains that HIV breaks down the immune system making the body unable to protect itself from diseases and infections. Finally, the Virus is a microscopic organism that causes disease in the body (Ministry of Health, Ghana, 2001).
- Patients' linkage into HIV care following diagnosis is the period between the HIV diagnosis date and either the first clinic attendance date, the first CD4+ count, the viral load date, or the start date of HIV therapy, with early linkage measured within three months (Croxford et al., 2018).

- Newly diagnosed HIV-positive individuals can be defined as being diagnosed as HIV positive in the last 12 months and individuals may be asymptomatic or present with a wide range of symptoms related to opportunistic infections, acute seroconversion illness, or other clinical illnesses (Bishnu et al., n.d.; Wu et al., 2018).

2.3 Epidemiologic history of HIV

HIV was first identified in 1983 by a group of scientists in France led by Luc Montagnier and in the United States led by Robert Gallo (Gallo & Montagnier, 1998; Gallo & Montagnier, 2003). However, it was research led by Dr. Beatrice Hahn in the USA, in May 1983 that became widely accepted (Hahn et al., 1994). In her research, she identified two types of HIV namely HIV 1 and HIV 2. HIV 1 was believed to have originated from Simian Immunodeficiency Virus (SIV) found in chimpanzees while the second type; HIV 2 was also believed to have originated from the mangabey monkey originally found in some parts of sub-Saharan West Africa. Aside from her research, some researchers also explained the origin of HIV with two theories. These are the Hunter or Bushmeat theory and the Oral Polio Vaccine theory (OPV) (Hahn et al., 1994; Hooper, 2003).

According to the book '*The River*' written by Edward Hopper, two theories explain the existence of HIV and they are the Bushmeat Theory and OPV Theory (Wain-Hobson, 1999). The Bushmeat theory explains that hunters got infected with the Simian immunodeficiency viruses (SIV) from contact with animals' blood through cuts or bites that the hunters had at work. The monkeys were believed to be common in west-central

Africa. The second theory which is the OPV theory suggested that vaccines that were between 1957 and 1960 in DR Congo, Rwanda, and Burundi were infected with cells of chimpanzees. It was believed that the vaccine contained SIV and almost one million people were vaccinated (Hooper, 2003). In those days, many were torn in-between the two theories although the majority were in support of the “Hunter theory”. This was mainly because the discovery of the original cells of the polio vaccine and subsequent testing found no trace of the virus. Evidence indicated that HIV predates the African polio vaccination program by many years (Katrak, 2006; Moore, 2004; Klimas, Kornu & Fletcher, 2008).

One important thing which should not be forgotten is the fact that HIV affects individuals of all countries, races, cultures, and different economic statuses. The disease is mainly spread through sexual activity which makes HIV a sexually transmitted infection (STI). Nonetheless, there are other modes of HIV transmission including; mother-to-child transmission and exposure to infected blood (Shaw & Hunter, 2012). When HIV is not detected early, it graduates to another disease called Acquired Immune Deficiency Syndrome (AIDS). Since the disease is associated with sexual engagements, it implies a threat to the future survival of the human species therefore issues concerning HIV must be prioritized by health providers. Having said that, some people continuously misconstrue the whole idea of how the virus is transmitted. Some of these misconceptions include; hugging, being bitten by mosquitoes or other insects, sharing spoons and the same toilets or latrines (Shaw & Hunter, 2012).

HIV/AIDS was first reported in Ghana in 1986. It continued to rise since then till 2009 when it started to decline (National AIDS Control Program, 2015). AIDS can be said to

be a combination of opportunistic infections that occur due to the breakdown of a person's immune system which was a result of untreated HIV infection. This is the severest form of the disease and usually leads to death. Before an individual test positive for HIV, there is a period of incubation known as the window period (Murthy et al., 1999; Lee, Park & Kang, 2013; Laeyendecker et al., 2013). This is the time between when a person becomes infected and when antibodies to resist the virus are developed. During this time, a person can have an HIV test but the result will be negative and this is because it is still in the window period.

HIV affects the body by attacking the CD4 cells that protect the human body (Barnett, Walker, Landay & Denny, 2008; Gowda, Channabasappa, Dhar & Krishna, 2012). When it invades the CD4 cells, it renders them deficient in fighting germs. The germs then take advantage of the weakened immune system to attack the body. In a healthy adult, a normal CD4 count can vary a great deal but is typically 600 to 1200 cells per cubic millimetre of blood. However, the CD4 cells in an HIV-positive person are only considered good if it is between 600 and 350 millimetres therefore anything below that means the immune system is weak (Geldmacher et al., 2010; Gowda, Channabasappa, Dhar & Krishna, 2012).

In 2007, persons living with HIV amounted to 33 million people worldwide. In 2008, the number of persons living with HIV in the world increased to a projected 33.4 million (31.1 million–35.8 million) with an estimated 2.7 million new HIV infections (2.4 million–3.0 million) occurring. Sub-Saharan Africa reported 67% of People living with HIV and 72 percent of AIDS death in 2007 with the highest prevalence rate in 2008. The number of PLHIV in 2008 was around 22.4 million people in Sub-Saharan Africa

(UNAIDS 2005; UNAIDS 2008; Jacobi et al., 2013). This was a result of some influencing factors like socioeconomic, religious, cultural, and socio-political factors among others. Ghana is a low-prevalence country, with heterosexual transmission as the primary mode of infection (Pinkerton & Abramson, 1997; Coates, Richter & Caceres, 2008; Shaw & Hunter, 2012). Male circumcision at clinics, increased counseling, testing, and accessibility and affordability of ART among others account for the stable HIV prevalence in Ghana.

HIV infection is managed with Anti-Retroviral Therapy, sometimes referred to as Highly Active Anti-Retroviral Therapy (Sanga et al., 2019a). ART helps to reduce the viral load and to delay the onset of AIDS. Antiretroviral medication was being used by almost 4 million persons in low-and middle-income countries as of December 2008, a 10-fold rise in just five years (World Health Organization, United Nations Children's Fund, UNAIDS, 2009). Currently, universal prevalence among adults (the percent of people ages 15-49 who are infected) has stabled since 2001 and was 0.7% in 2019 (UNAIDS, 2020). According to the National AIDS Control Program (2019), Ghana has increased its coverage of antiretroviral drugs for HIV-positive pregnant women, resulting in a 76 percent reduction in new HIV infections among children, the largest reduction among nations with a high incidence of HIV-positive pregnant women.

2.4 Factors associated with linkage to HIV care services

Care refers to all clinical, physical, psychosocial, and spiritual assistance tailored to addressing the specific needs of people living with HIV and AIDS (Mayer, 2011). Caregiving is a continuum of activities from the time of HIV detection through the stages of AIDS till death. There are formal and informal caregivers. These include; providers at

government/private hospitals/clinics, home-based and community-based. e.g., NGOs, etc. The amalgamated guidelines on the use of antiretroviral drugs for treating and preventing HIV 5Cs: Consent, Confidentiality, Counselling, Correct Results, and Connection (WHO, 2015) hypothesize that people living with HIV must be enrolled in care as early as possible as it enables early assessment of their ART eligibility (because not all people living with HIV are eligible for ART), and timely initiation of ART as well as access to interventions to prevent further transmission of HIV, prevent other infections and co-morbidities which will, in turn, minimize loss to follow-up (Boeke et al., 2018; Croxford et al., 2018).

Numerous meta-analyses have found that integrating HIV testing, counseling, and services, providing immediate CD4 testing with same-day results, assisting with transportation if the ART site is far from the HIV testing and counseling site, involving community outreach workers to identify people who have been lost to follow-up and using new technologies like mobile Apps can all help improve linkage to care (Naik et al., 2018; Sanga et al., 2019a).

Linkage to care services usually includes the completion of the initial medical clinic visit after an HIV test is positive (Dombrowski, 2018). However, it is the process of ensuring interventions and programs are established to guarantee that HIV-positive people are effectively enrolled in medical care, psychological, and social services (Boeke et al., 2018). The completion of a visit with an HIV medical practitioner within one month after HIV diagnosis is the standard for successful linkage to care in the United States. Linkage to care is crucial for successful HIV treatment as delayed linkage impacts medical outcomes and HIV transmission, longer time to virologic suppression, increased risk of

hospitalization and death, and increased HIV transmission risk, also linkage experience lays the groundwork for future retention in care (Dombrowski, 2013).

Ammon, Mason, and Cokery in their study conducted in 2018 found that adherence to ART is one of the ways to maintain HIV infection. Before people start ART, service providers must have a detailed discussion with them about their willingness and readiness to initiate the ART, its regimen, dosage, and scheduling. This is because it is something that must be done judiciously and consistently to avoid defaulting. To establish a proper diagnosis of HIV infection, all patients living with HIV should be retested before starting ART. For any contraindications or dose adjustments, the therapy should take into account the patient's nutritional health, any pathologies, and any potentially interfering drugs (Europe, 2007; Vitalis, 2016).

According to (Kim et al., 2018; WHO, 2013), Individuals or their caregivers have the final say on whether to accept or reject ART. Not to mention that the initial ART regimen provides the best chance for good viral suppression and immunological healing, as well as the fact that successful ART necessitates taking the medications exactly as directed. Patients should be informed that many side effects are transitory or treatable and that substituting ARV medicines can be difficult. Also, ART can be provided again at later appointments if they opt to postpone initiation.

It is advised that patient information materials be given to patients as this can help patients' readiness and decision to start therapy. Patients on antiretroviral therapy (ART) are aware that while ARV medicines minimize the risk of HIV transmission, they cannot guarantee that other people will not get infected. Thus, to prevent HIV transmission to other individuals, they are recommended to have safe sex by using a condom and avoid

high-risk practices like sharing needles or syringes (Ankomah et al., 2016a; Zorilla, 2009).

There are several factors, which vary depending on age, setting, culture, health system, education, and caregiver support. Poverty, discrimination, low social support, family dysfunction, drug side effects, ineffective health systems, and HIV status disclosure are all factors that affect adherence to antiretroviral therapy (ART) (Ankrah et al., 2016; Sifa et al., 2019).

Another barrier to linkage to care is poverty. In high-income countries, studies demonstrate that health workers attribute no engagement in care to systemic barriers such as funds, transportation, limited vacation time, and so on. The case is however not the same in sub-Saharan African countries (Dombrowski, 2018). Psychosocial factors such as fear of others finding out about their HIV diagnosis, concern about medication side effects, stigma, and humiliation were all cited as barriers to care by people living with HIV. Other obstacles, such as inconveniently situated medical services, long consultation wait times, and language hurdles, all undermine the quality of linkage to HIV care services. (Nakanwagi et.al. 2016).

2.5 Knowledge of service providers on factors contributing to low linkage to care

As previously stated, linkage to care services is a critical initial step in successful HIV treatment and is often completed after the first medical clinic visit following an HIV diagnosis (Boeke et al., 2018; Nakanwagi et al., 2016). In the HIV care continuum, linkage to care is critical since it is a prerequisite for the start of antiretroviral medication and viral reduction (Hosek et al., 2005a; Sifa et al., 2019). The evidence demonstrates

that antiretroviral treatment significantly reduces the risk of developing HIV-related complications (Dombrowski, 2018). In addition, antiretroviral medication also significantly minimizes HIV transmission to others.

Notably, fast antiretroviral medication beginning after HIV diagnosis is a critical component of the worldwide campaign to end the pandemic (Mayer, 2011; National AIDS/STI Control Program, 2020). As a result, identifying HIV-positive people and successfully connecting them to care providers is critical to the overall HIV epidemic, both in terms of diagnosis and management (Dombrowski, 2013). This session addresses the current state of linkage to HIV care services, the primary constraints to linkage to HIV care, and solutions for increasing linkage to HIV care services at the healthcare facility level.

There have been significant advances in the discovery of efficient antiretroviral therapies (ARTs) that can reduce mortality and improve outcomes for individuals infected with the human immunodeficiency virus type 1 (HIV-1) over the last fifteen years (Ankomah et al., 2016a; Mayer, 2011). These medical breakthroughs have made HIV infection a lifelong, treatable illness that has already resulted in countless saved lives (Mayer, 2011). Despite the availability of antiretroviral therapy (ART), there are still hundreds and thousands of people living with HIV infection who are misdiagnosed, not in healthcare, or not accessing HIV treatment for several reasons. Leading to delayed linkage to care is defined when the initial CD4 count tested is less than 350 cells/mm³ and ART has not been started (Adejumo et al., 2015).

Moreover, despite the significance of receiving care as soon as possible following an HIV diagnosis, many patients are seen after the clinical period suggested by current

guidelines, which urge starting antiretroviral therapy (ART) when CD4 cell counts drop below 350 cells/mm³ (Mwamba et al., 2018; Uuskula et al., 2020; Van Schoor, 2011).

Noncompliance with HIV care has been linked to negative clinical outcomes such as delayed ART initiation, viral load regression, and deaths (Adejumo et al., 2015), other research has looked into why patients do not seek treatment after being diagnosed with HIV. Given the enormous benefits of antiretroviral therapy (ART) and current clinical HIV care, understanding the reasons for non-adherence to HIV treatment is critical. Furthermore, given the optimistic view that increased treatment of HIV-infected persons could slow transmission to other persons (Rao et al., 2013), improved linkage to care could have downstream benefits in slowing the further spread of the epidemic.

A nationwide survey was commissioned by Bristol-Myers Squibb in 2009 to investigate perceived barriers to HIV testing, care, and treatment. Consultations with healthcare practitioners and HIV-positive individuals were performed over the telephone, on the internet, and in person to determine why persons living with HIV were not accessing care or treatment services (Rao et al., 2013). According to the survey, healthcare providers undervalue the importance of emotional rather than physical factors that prevented patients from seeking HIV testing, care, and management.

Health providers were more likely to see structural barriers (finances, transportation, family care) and substance abuse as major obstacles to patients seeking care, while emotional factors like fear of HIV medication side effects, fear of others knowing, and stigma were the most frequently reported reasons for not seeking care after preliminary prognosis. At the facility level, structural/administrative perceived barriers included

unavailable or obscurely situated services, lengthy consultation wait times, and language barriers preventing HIV-positive individuals from accessing care.

More so, the quality of collaboration between local health departments and HIV treatment centers is another structural element affecting linkage and participation (Croxford et al., 2018). These findings imply that tight partnerships between public health systems and HIV-treatment systems inside communities can improve HIV-related care within communities, increasing linkage and engagement rates at ART clinics (Ankomah et al., 2016a; Kim et al., 2018). Linkage depends on both client-level characteristics (i.e., gender, race/ethnicity, and housing) and clinic/provider factors (i.e., public health authority and health qualifications) (Adejumo et al., 2015).

Clinic structural factors, such as relations between screening and treatment centers, might have a significant impact on linkage to HIV services. Longer-term care involvement can be influenced by well-trained healthcare professionals and a high-quality care system (Kapogiannis et al., 2015). Further study is needed to better understand the challenges that patients perceive that limit effective linkage and participation in care, and to create interventions to increase retention (Kapogiannis et al., 2015; Rao et al., 2013).

2.6 The relationship between delayed linkage to care and retention in HIV care

Linkage to long-term care, but not to initial care, has been attributed to viral load suppression and longevity. When compared to those who attend all of their regular clinic visits in the first year after starting HIV medical care, those who miss visits have more than twice the risk of long-term mortality (Dombrowski, 2018).

Many of the approaches that are shown to promote linkage to HIV care can also help with retention in HIV care; in particular, clinics providing HIV care should address challenges to care such as transportation issues, housing instability, drug dependency, and psychological issues. Clinics should also think about long-term programs that help retain patients who come in and out of care (*2019 HIV Sentinel Survey Report*, 2019; Ankomah et al., 2016a; Ankrah et al., 2016). Despite the similarities, linkage to HIV care and retention in HIV care are two separate processes.

Patient turnover after an HIV test is a major global issue, resulting in delayed ART commencement, unnecessary morbidity and mortality, substandard treatment outcomes, increased healthcare costs, and HIV transmission that could have been averted (Ayisi Addo et al., 2018a; UNAIDS, 2019). It is projected that 57 percent (42–70 percent) of patients diagnosed with HIV in Sub-Saharan Africa receive HIV treatment (Update, 2020).

In South Africa, a retrospective cohort study revealed that 25% of newly diagnosed persons were not linked to HIV care, and 35% of those were never started on ART (Naik et al., 2018). The majority of HIV-positive patients die before starting the 244 unified guidelines on the use of antiretroviral medications for treating and mitigating HIV transmission ART, according to data from community-based groups in seven African countries (Naik et al., 2018). Early ART commencement is anticipated to reduce deaths by 6–14 percent by reducing loss to follow-up (Naik et al., 2018).

Distance from HIV care centers, expenses, disclosure-related issues, stigma, and prolonged waiting periods at the clinic are all obstacles that may inhibit successful linkage to HIV care services (Sanga et al., 2019a). Men and young people tend to be less

likely to be linked to HIV care. As HIV testing services become more widely available, linkage to HIV care must be strengthened through initiatives that assist patients in the early stages of the care process. Depending on the specific circumstances, such as the healthcare delivery system, location, and target demographic, such strategies may differ (UNAIDS, 2019).

Patient retention issues jeopardize program and patient results, particularly the ability to achieve long-term viral suppression. The global drive to increase the number of individuals on ART must ensure that those who are on it remain in care services for the rest of their lives. At 12 months after starting ART, retention rates range from 64% to 94%, according to published studies (Ayisi Addo et al., 2018a; On, 2015).

After three years on ART, several nations report a retention rate of less than 60%, with substantial loss to follow-up indicating unclear results. Retention in ART programs is a significant difficulty in all contexts and demographics, particularly among children and adolescents, postnatal mothers, and males. Proximity to health facilities, transportation problems or unwillingness to fund travel costs, prejudice, disclosure-related concerns, being sick, and inadequate knowledge of the need for lifetime treatment are all reasons that may contribute to missed appointments (WHO, 2013; Zorilla, 2009).

Boeke et al. (2018) found significant variation in linkage and retention by clinic and municipality in their study. Within clinics, there was no clear relationship between linkage and retention ($r_s = 0.06$; $p = 0.82$). In the retention sample, 98 patients who were identified to be linked to care in the linkage sample also emerged. Patients who were linked to care within the first week of HIV diagnosis emerged to be more likely to be retained in care than those who were linked after one week, though the difference was not

statistically significant (68.7% vs. 53.3 percent; $p=0.18$), due to the study's limited statistical power.

Inferencing, At the 20 study clinics in central Uganda, linkage and retention was low (53.0 and 71.7 percent, respectively) and found to be lower in women, adolescents, and clients living in remote areas. Lower retention was seen in facilities with 1 or fewer expert clients to follow up with patients who missed appointments compared to 5 or more expert clients, although this association did not remain statistically significant in multivariable models. It's worth noting that the majority of patients who tested positive for HIV and were subsequently linked to care did so within one week of their diagnosis, implying that linkage support may be especially important in the first week following testing positive.

Between clinics, there was a lot of variation in linkage and retention, and linkage was not highly related to retention. Poor documentation mechanisms, insufficient funds for patient phone follow-up and home visits, and a scarcity of staff were all noted as factors that may have contributed to low linkage and retention at the health facility level. Furthermore, at several clinics, poor staff supervision and dedication proved to be a problem (Boeke et al., 2018).

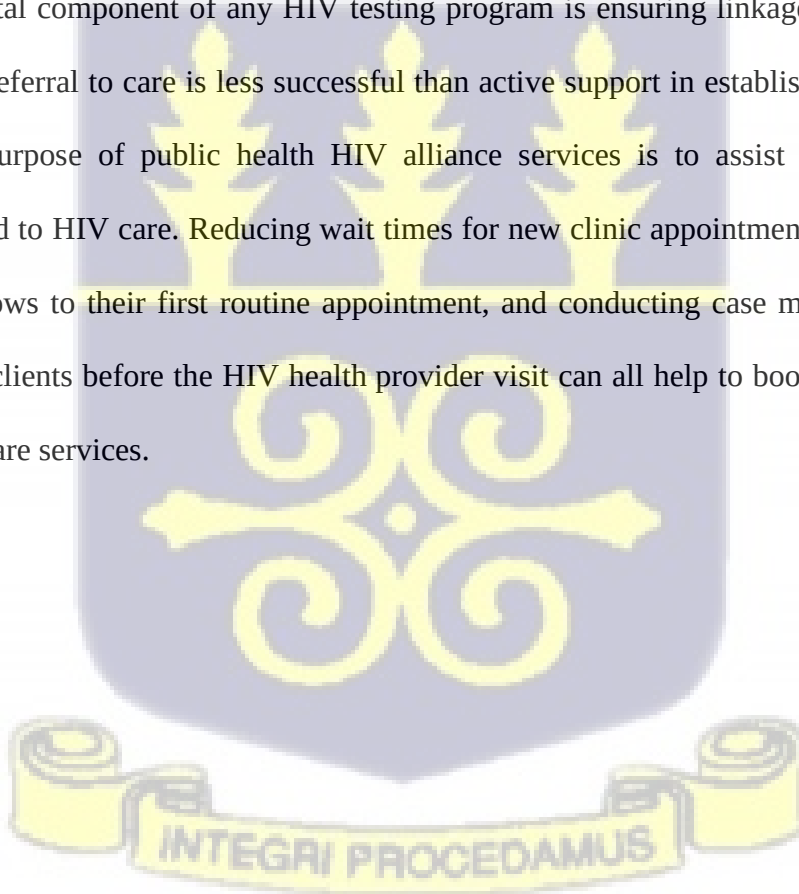
2.7 Summary

The fulfilment of the initial medical clinic visit within 30 days after an HIV diagnosis is commonly defined as linkage to HIV care services. A major component of reducing the HIV epidemic is providing rapid linkage to treatment and commencing antiretroviral therapy, ideally within 7 days, for those newly diagnosed with HIV. The fulfilment of a

visit with an HIV medical practitioner within one month after HIV diagnosis is the gold standard for successful linkage to HIV care services while reporting for linkage within three months is still done.

According to the Center for Disease Control (CDC), around 80% of people were linked to care within one month of receiving an HIV diagnosis, and 88 percent were linked within three months of receiving an HIV diagnosis in 2018. Substance abuse, inadequate access to health insurance and access to basic care before HIV diagnosis, and living in a high-poverty region are all risk factors for delayed linkage to HIV care services.

A vital component of any HIV testing program is ensuring linkage to care services. Passive referral to care is less successful than active support in establishing care linkage. A key purpose of public health HIV alliance services is to assist people in getting connected to HIV care. Reducing wait times for new clinic appointments, doing outreach to no-shows to their first routine appointment, and conducting case management intake for new clients before the HIV health provider visit can all help to boost rates of linkage to HIV care services.



CHAPTER THREE

METHODS

3.1 Introduction

This chapter provides details on the methodology used to conduct the study. It discusses the research design, study area, sampling size and technique, approaches to data collection, and data analysis and presentation.

3.2 Study Design

This study employed a cross-sectional design using both quantitative and qualitative approaches. A structured questionnaire was used to collect data from newly diagnosed HIV-positive individuals using KoBoToolbox to obtain quantitative data. In addition, qualitative data were collected from health service providers at the ART clinic using a structured interviewing guide.

3.3 Study Area

The study was conducted at the Greater Accra Regional Hospital. The Greater Accra Regional Hospital (GARH) started as a hospital for European expatriates around 1928 and was later designated as the Ridge Regional Hospital in 1997. The hospital is located along the Castle Road, about 200 meters from the African Union roundabout. The Hospital occupies a total land space of about 15.65 acres. GARH is a tertiary referral hospital, in the Greater Accra region. The hospital is a 620-bed facility, and provides 24 hours/7 days a week Out-patient care, Emergencies, and, Referrals and offers specialist services including Spine Health, Medical Outreach, Cardiology, General Pediatric Care, Obstetrics and Gynecology, Neonatal Care/Intensive Unit Care, Neurosurgery Care,

Urology Services, and, Gastroenterology to about thousands of clients daily (Owusu et al., 2018).

Participants for the study were selected from the Anti-Retroviral Treatment (ART) Clinic. GARH is one of the pioneer providers of ART treatment centers with an enrolment of about 2700 clients currently. It also provides HIV testing and counseling, infant diagnosis, viral load testing, STI prevention, and curative services to its HIV-infected clients. It has an ART clinic that runs during weekdays to cater to the health needs of HIV patients. In line with the national policy, it also provides free access to antiretroviral (ARV) drugs, patient care, and prophylaxis (National AIDS/STI Control Program, 2020).

3.4 Study Population

The study population was HIV-positive individuals currently attending the ART clinic at the Greater Accra Regional Hospital and all Health Service Providers working at the ART Clinic.

Inclusion Criteria

- ❖ All HIV-positive patients who reported at Greater Accra Regional Hospital ART-clinic within the study period.
- ❖ All HIV-positive patients who have been tested or referred after testing for treatment in the last 12 months at Greater Accra Regional Hospital ART-clinic within the study period.
- ❖ All HIV-positive patients whose records are available at the Greater Accra Regional Hospital ART clinic.

- ❖ All Health Service Providers working at the Greater Accra Regional Hospital ART Clinic within the study period.

Exclusive Criteria

- ❖ All HIV-positive terminally ill patients.
- ❖ All HIV-positive patients who are not mentally sound.

3.5 Study Variables

The Greater Accra Regional Hospital operates the ‘test and treat’ policy recommended by the WHO. Thus, all newly diagnosed HIV-positive individuals are immediately referred for ART services. Therefore, for this study ART use was used as a proxy for linkage to HIV care services.

Dependent Variable	
Linkage to HIV care services	Patients’ length of ART use
Independent Variable	
Socio-economic factors	I have reliable transportation to the health facility
	I have enough time to attend medical appointments
	I have a stable living situation
	I have health insurance
Structural factors	I can find providers and/or interpreters who speak the same language as me
	Clinic times are convenient for me
	I have felt discriminated against when seeking care.
HIV-related factors	I am afraid other people will find out that I have HIV if I seek care.
	I believe that my HIV will be healed through my faith
	I prefer to use natural and herbal treatments
	Sometimes I feel depressed, anxious, or have other mental health concerns

3.6 Sample Size Determination

Quantitative Respondents

❖ The Cochran (1977) formula was used to compute the sample size.

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where: N = sample size

e^2 = desired level of precision (margin of error) (0.05)

p= estimated proportion of the population with attribute in question (50% or 0.5)

z= z value of confidence interval found on a Z table (95%)

$$N = Z^2 \alpha/2 \times P (1-P) \div E^2$$

$$N = 1.96^2 * 0.5 (1-0.5) \div 0.05^2$$

$$N = 3.8416 * 0.25 \div 0.0025$$

$$N = 384.16$$

$$N = 385$$

The sample size was adjusted with a 5% for non-responsive.

$$5/100 * 385$$

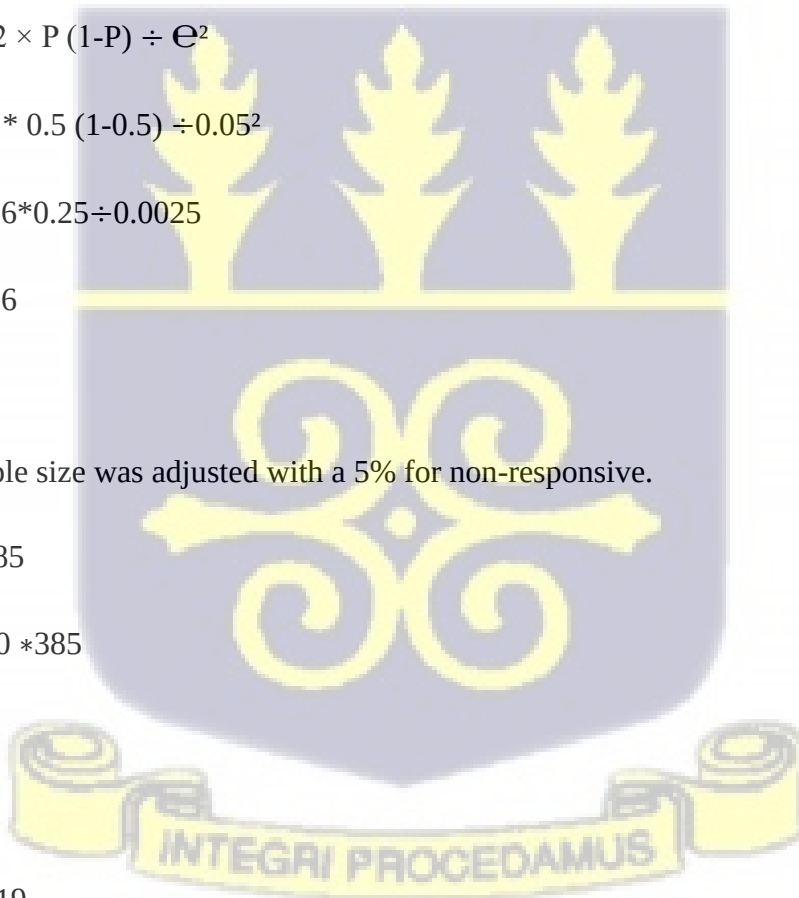
$$= 0.05/100 * 385$$

$$= 19.25$$

$$= 19$$

$$N = 384 + 19$$

$$N = 403.$$



A five percent non-response rate was used because HIV studies are sensitive and the PLHIV may not be willing to speak to issues concerning the topic.

Since the study dealing a finite population of HIV-positive clients, the sample size was further adjusted using the **Finite population correction factor** $(n) = \frac{n_0 N}{n_0 + (N-1)}$

Where;

N = PLHIV population at the ART clinic at Greater Accra (Ridge) Hospital=2700

n_0 = sample size required = 403

$$n = \frac{2700 \times 403}{2700 + (403-1)}$$
$$= 350.7$$
$$= 351 \text{ participants}$$

Qualitative interviewees

- ❖ Guest et al. (2020) recommends at least six interviews to reach 70% saturation.

Thus, for this study, ten ART health service providers at the GARH ART clinic were interviewed.

3.7 Sampling Method

Since the study was facility-based, a consecutive sampling method was used to recruit participants, both newly diagnosed HIV patients and health service providers working at the ART Clinic. It is most commonly used in clinical studies because it is cost-effective, less time-consuming, valuable and allows the researcher to recognize and correct their mistakes to improve future results (Acharya et al., 2013; Sampling, n.d.). With this sampling technique, every subject meeting the inclusion criteria and available was selected and interviewed until the required sample size was achieved.

3.8 Data Collection Instruments

A structured questionnaire and a structured interview guide were the main data collection tools used for the study. The questionnaire was made up of open and closed-ended questions to ensure the collection of quantitative responses from newly diagnosed HIV-positive patients via KoBoToolbox. Additionally, with an aid audio recorder, a structured interviewing guide was used to collect responses from health service providers at the ART clinic.

3.9 Data Collection Technique

Five research assistants were recruited for the quantitative data collection. Data was collected via both in-person and phone interviews to meet the required sample size owing to the limited duration for data collection and the current COVID-19 pandemic. The questionnaire was set up on the KoboToolBox server by the principal investigator. The KoboCollect App a product/tool of the KoboToolBox was then installed on each research assistant's mobile phone and given a unique password for access to the questionnaires.

Research assistants required no internet connection to enter the responses from respondents. Questionnaires were administered to selected respondents who have been tested or referred after testing for treatment in the last 12 months and had their records available at the Greater Accra Regional Hospital ART clinic. However, an internet connection was required to submit the saved questionnaires on the KoboCollect App to the KoboToolBox server to be validated and collated by the principal investigator.

The qualitative interview responses on the other hand were collected by the principal investigator with the aid of an audio recorder with permission from the participants. Interview audios were subsequently manually transcribed and labeled properly for analysis.

3.10 Data Management

Data was collected using KoboCollect App to facilitate accurate data entry and minimize data extraction errors. Data was subsequently downloaded from the KoboToolbox server in Microsoft excel format. Downloaded data was then cleaned thoroughly for relabeling of variables, coding, and checking for missing values and double entries. Data was finally exported into STATAIC 16 for Quantitative analysis.

Similarly, responses from the interview after transcription were cleaned thoroughly through careful reading, and missing texts from inaudible sounds were replaced with notes taken by the interviewer.

3.11 Data processing and Analysis

This study was analyzed data based on two approaches; Quantitative data analysis and Qualitative data analysis. Both approaches were adopted to achieve a wholesome

understanding of the factors associated with linkage to HIV care services thereby enhancing the credibility of the study.

Analysis of Quantitative Data

Responses generated from the KoBoToolBox server were downloaded into Microsoft Excel. Data were then exported to STATAIC 16 and labeled appropriately for analysis. Descriptive statistics precisely, frequency tables, percentages, were used to analyze and present data on the demographics of respondents. Likewise, chi-square tests were used to assess respondents' understanding of factors associated with Linkage to HIV care services and a binary logistic regression model was used to establish the predictive relationship between the socio-demographic, factors associated with linkage to HIV care services and patient's length of ART use.

Analysis of Qualitative Data

The Qualitative thematic analysis approach was adopted for the qualitative aspect of the study. Themes were generated based on the objective of the study. Sub-themes were then extracted from a data set and patterns established, to understand the knowledge of service providers on low linkage to HIV care services.

3.12 Quality control

The following measures were adopted to ensure data quality and integrity;

1. Research assistants were given orientation and training before data was collected.
2. All participants were duly informed about the study and the questionnaires were brief, elaborate, and easy to understand.

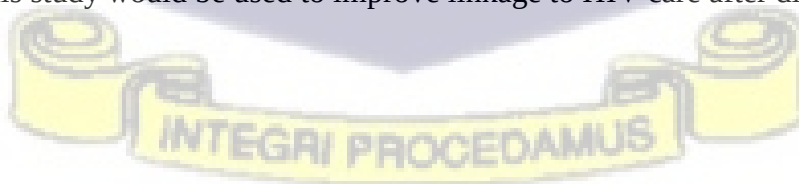
3. Each research assistant was visited during the data collection phase unannounced to observe the delivery of the data collection instrument and also interact with the interviewed participant to verify questions and responses for the in-person interviews.
4. The principal investigator selected 50 respondents randomly, 10 per research assistant, and called back to verify questions and responses. (i.e., 12% of the total required sample size)
5. The data collected were checked and cleaned by the principal investigator for completeness and accuracy.
6. All filled questionnaires were cross-checked to ensure that they are complete to reduce the number of missing data.

3.13 Ethical Considerations

The following ethical issues were considered in the study:

1. Ethical clearance was sought from the Ghana Health Service Ethics Review Committee (GHS-ERC:034/10/21) and (GHS/RDD/ERC/21/551).
2. Permission was sought from the leadership of the Greater Accra Regional Hospital to enable me to conduct the study at the HIV (ART) clinic.
3. Written/Verbal informed consent was obtained from respondents.
4. All respondents who agreed to participate in the research work were well informed about the aim of the study.

5. Participation in this study was voluntary, and respondents were not under any obligation to respond to questions or participate in the study if they did not want to.
6. All respondents were assured of confidentiality. Thus, information in the study records was kept strictly confidential. Data was protected and stored securely. No reference was made in oral or written reports which could be linked to the participants.
7. Respondents were made to understand that even with the consent to participate in the study they are at liberty to withdraw at any stage of it without any sanctions. Opting out was not going to affect their future care at the facility.
8. The procedure for conducting this research was not invasive. As such, it was not expected that there will be any risk posed to the participants by participating in this research. However, some of the questions might have appeared sensitive to the participants.
9. There was a potential risk of contracting COVID-19 under the current circumstances of the Covid-19 pandemic. Thus, all COVID-19 safety protocols were strictly adhered to.
10. There was no direct benefit for participation in this study. But the findings from this study would be used to improve linkage to HIV care after diagnosis.



CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents a detailed analysis of data collected from 371 respondents, (exceeding the required sample size of 351) and 10 health service providers at GARH ART Clinic. It discusses the findings of the results that are based on the objectives of the study. The study aimed to explore the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals at the Greater Accra Regional Hospital ART clinic. Specifically;

1. Assess the socio-economic factors affecting linkage to HIV care services.
2. Determine the HIV-related factors influencing linkage to HIV care services.
3. Establish the relationship between structural factors and linkage to HIV care services.
4. Explore the knowledge of service providers on factors contributing to low linkage to HIV care services.

4.2 Socio-demographic characteristics of respondents

Table 4.1 presents the distribution of 371 newly diagnosed HIV-positive individuals whose data were reviewed based on their socio-demographic characteristics. Newly diagnosed HIV-positive individuals whose ages were below 20 years accounted for 19.4% whereas nearly half 49.9% were within the 20–29 years group. Respondents whose ages were 50 years and above represented 2.4%. It was observed that males, accounted for 47.2% and female respondents represented 52.8%.

Table 4.1: Socio-demographic characteristics of newly diagnosed HIV-positive individuals

Variables and categories	Frequency (%) N=371
Age (in years)	
Below 20	72 (19.4)
20-29	185 (49.9)
30-39	65 (17.5)
40-49	40 (10.8)
50 and above	9 (2.4)
Sex	
Male	175 (47.2)
Female	196 (52.8)
Marital Status	
Single	225 (60.6)
Married	50 (13.5)
Separated	35 (9.4)
Divorced	16 (4.3)
Cohabiting	32 (8.6)
Widow (er)	13 (3.5)
Educational Level Completed	
Nil	34 (9.2)
Primary	11 (3.0)
JHS	97 (26.1)
SHS/Tech	179 (48.2)
Tertiary	50 (13.5)
Occupation	
Full time	110 (29.6)
Part-time	73 (19.7)
Self-employed	95 (25.6)
Unemployed	93 (25.1)
Religion	
Christian	280 (75.5)
Muslim	79 (21.3)
Traditional/none	10 (2.7)
Missing	2 (0.5)
Level of Income	
Below Ghs500	160 (43.1)
Ghs500-Ghs1500	145 (39.1)
Ghs1500-Ghs2500	13 (3.5)
Missing/None	53 (14.3)

(Source: Field Work, 2021)

The marital status of respondents was assessed among newly diagnosed HIV-positive individuals, it was realized that 13.5% were married, 60.6% were single and 14.3% were divorced. The study revealed that newly diagnosed HIV-positive individuals who have SHS /technical education accounted for 48.2% and 13.5% had tertiary education whilst

9.2% of respondents had no form of education. For religious association, 75.5% of the participant were Christians, and 29.6% were Muslims.

Table 4.2 summarizes the socio-demographic characteristics of the health service providers interviewed at the Greater Accra Regional Hospital ART clinic. The total number of respondents chosen was 10 during the data collection and out of the 10 participants, 4 participants were Staff Nurses, 2 Counselors (Model of Hope), 1 Senior Statistician, I Clinic Matron, and 1 Doctor in charge of the clinic. Out of the 10, health staff interviewed, 5 were aged between 30-39 while 2 were aged between 20-29. Also, 6 of the participants interviewed were female and 4 were males. 5 were both single and married.

Table 4.2: Socio-demographic characteristics of health service providers

Characteristic	Frequency (%) N=10
Age-group	
20-29	2(20.0)
30-39	5(50.0)
40-49	2(20.0)
50+	1(10.0)
Sex	
Male	4(40.0)
Female	6(60.0)
Marital status	
Single	5(50.0)
Married	5(50.0)
Profession (Rank)	
Staff Nurse	3(30.0)

Rotational Nurse	1(10.0)
Principal Nursing Officer	1(10.0)
Doctor	1(10.0)
Pharmacist	1(10.0)
Senior Statistician	1(10.0)
Counsellor	2(20.0)
Religion	
Christian	9(90.0)
Muslim	1(10.0)

(Source: Field Work, 2021)

4.3 Factors associated with Linkage to HIV care services

Respondents' potential impact of some perceived factors associated with linkage to HIV care services was assessed on a 3-point Linkert scale. Table 4.3 below presents the responses of participants. 35.9% reported having high reliable transportation to the health facility while 46.8% indicated low to sometimes feeling anxious or depressed. Nearly half of the respondents gave moderate responses to finding the clinic times convenient whereas 63.1% reported not having health insurance.

Table 4.3: Factors associated with linkage to HIV care services

Factors	N	Low	Moderate	High
		n (%)	n (%)	n (%)
I have reliable transportation to the health facility	370	138 (37.3)	99 (26.8)	133 (35.9)
I have enough time to attend medical appointments	370	99 (26.8)	117 (31.6)	154 (41.6)
I have a stable living situation	368	136 (37.0)	132 (35.9)	100 (27.2)
I can find providers and/or interpreters who speak the same language as me	367	70 (19.1)	67 (18.3)	230 (62.7)
I have health insurance	369	83 (22.5)	53 (14.4)	233 (63.1)

Clinic times are convenient for me	366	68 (18.6)	160 (43.7)	138 (37.7)
I am afraid other people will find out that I have HIV if I seek care.	367	180 (49.0)	88 (24.0)	99 (27.0)
I believe that my HIV will be healed through my faith	365	160 (43.8)	131 (35.9)	74 (20.3)
I prefer to use natural and herbal treatments	361	267 (74.0)	50 (13.9)	44 (12.2)
Sometimes I feel depressed, anxious, or have other mental health concerns	365	171 (46.8)	87 (23.8)	107 (29.3)
I have felt discriminated against when seeking care	367	216 (58.9)	91 (24.8)	60 (16.3)

(Source: Field Work, 2021)

The respondent's linkage to HIV care services was assessed. From Table 4.4, All participants reported being recommended for ART and provided with adherence counseling. The majority 63.9% indicated visiting the hospital for review and medication very often. Also, nearly half 46.6% reported a length of time on continuous use of ART between 1 to 3 months. More than two-thirds 81.7% indicated health personnel as a source of support whereas 31.3% indicated family. However, linkage to HIV care services for this study was measured using the frequency of hospital visitation and length of ART use.

Table 4.4: Linkage to HIV care services

Variables & categories	Frequency (%)
Have you been recommended for ART treatment?	N=371
Yes	371 (100.0)
If yes was adherence counseling done?	

Yes	371 (100.0)
Are you on ART? (ARV treatment and Adherence)	
Yes	371 (100.0)
How often do you visit the hospital for review and medication	
Very often	237 (63.9)
Not often	96 (25.9)
Once in a while	37 (10.0)
Missing	1 (0.3)
Patient length of time on continuous use of ART	
≤ 3 months	173 (46.6)
Between 4 to 6 months	122 (32.9)
Between 7 to 9 months	49 (13.2)
Between 10 to 12 months	27 (7.3)
Source of support (multiple responses)	
<i>From health personnel</i>	303 (81.7)
<i>From family</i>	116 (31.3)
<i>From church</i>	4 (1.1)
<i>From any other source</i>	68 (18.3)

(Source: Field Work, 2021)

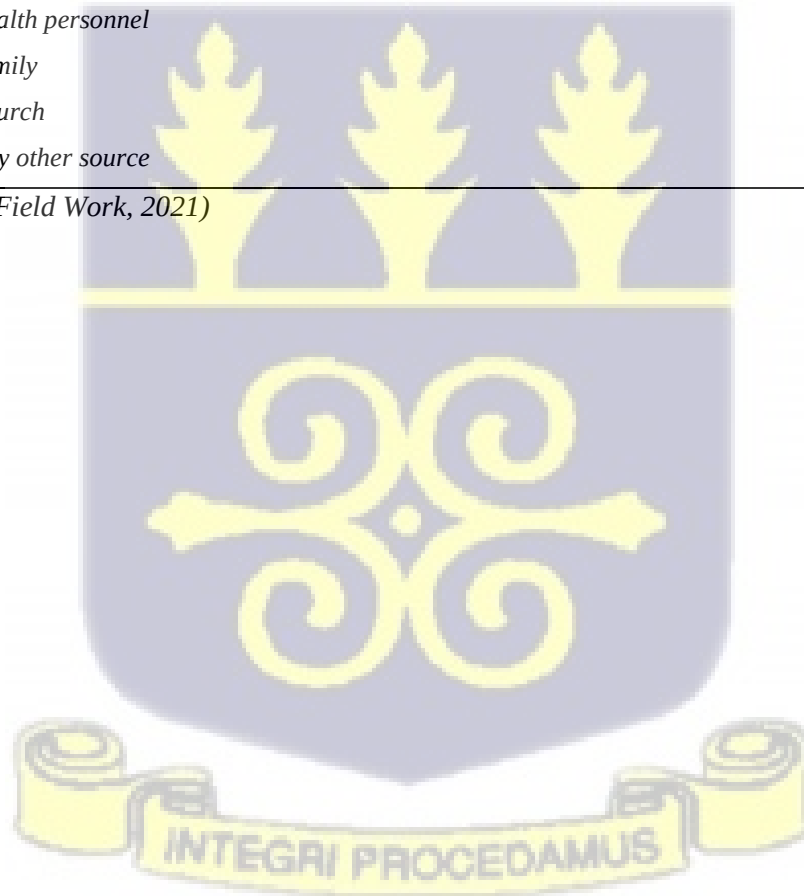


Table 4.5: Socio-demographic factors and Linkage to HIV care services

Variables & categories	Length of ART use				Frequency of hospital visitation			
	Total N=371	1-3 months N=173	4-12 months N=198	p-value	Total N=370	Not often N=133	Often N=237	p-value
Age (in years)				0.093				0.36
Below 20	72	41 (56.9)	31 (43.1)		72	29 (40.3)	43 (59.7)	
20-29	185	88 (47.6)	97 (52.4)		184	69 (37.5)	115 (62.5)	
30-39	65	22 (33.8)	43 (66.2)		65	22 (33.8)	43 (66.2)	
40-49	40	17 (42.5)	23 (57.5)		40	9 (22.5)	31 (77.5)	
50 and above	9	5 (55.6)	4 (44.4)		9	4 (44.4)	5 (55.6)	
Sex				0.45				0.75
Male	175	78 (44.6)	97 (55.4)		174	64 (36.8)	110 (63.2)	
Female	196	95 (48.5)	101 (51.5)		196	69 (35.2)	127 (64.8)	
Marital Status				0.18				0.48
Single	225	112 (49.8)	113 (50.2)		224	84 (37.5)	140 (62.5)	
Married	50	19 (38.0)	31 (62.0)		50	13 (26.0)	37 (74.0)	
Separated	35	13 (37.1)	22 (62.9)		35	15 (42.9)	20 (57.1)	
Divorced	16	5 (31.3)	11 (68.8)		16	7 (43.8)	9 (56.3)	
Cohabiting	32	19 (59.4)	13 (40.6)		32	11 (34.4)	21 (65.6)	
Widow (er)	13	5 (38.5)	8 (61.5)		13	3 (23.1)	10 (76.9)	
Educational Level Completed				0.18				0.67
Nil	34	11 (32.4)	23 (67.6)		34	12 (35.3)	22 (64.7)	
Primary	11	4 (36.4)	7 (63.6)		11	3 (27.3)	8 (72.7)	
JHS	97	50 (51.5)	47 (48.5)		97	34 (35.1)	63 (64.9)	
SHS/Tech	179	80 (44.7)	99 (55.3)		179	70 (39.1)	109 (60.9)	
Tertiary	50	28 (56.0)	22 (44.0)		49	14 (28.6)	35 (71.4)	
Occupation				<0.001				0.044

Full time	110	63 (57.3)	47 (42.7)		110	31 (28.2)	79 (71.8)
Part-time	73	18 (24.7)	55 (75.3)		73	34 (46.6)	39 (53.4)
Self-employed	95	40 (42.1)	55 (57.9)		94	30 (31.9)	64 (68.1)
Unemployed	93	52 (55.9)	41 (44.1)		93	38 (40.9)	55 (59.1)
Religion				0.33			0.14
Christian	280	136 (48.6)	144 (51.4)		279	94 (33.7)	185 (66.3)
Muslim	79	31 (39.2)	48 (60.8)		79	36 (45.6)	43 (54.4)
Traditional/none	10	5 (50.0)	5 (50.0)		10	3 (30.0)	7 (70.0)
Level of Income				0.37			0.013
Below Ghs500	160	67 (41.9)	93 (58.1)		160	68 (42.5)	92 (57.5)
Ghs500-Ghs1500	145	69 (47.6)	76 (52.4)		145	39 (26.9)	106 (73.1)
Ghs1500-Ghs2500	13	4 (30.8)	9 (69.2)		12	3 (25.0)	9 (75.0)

(Source: Field Work, 2021)

The Association was tested between socio-demographic characteristics, length of ART use, and frequency of hospital visitation. The study found no significant association between sex (p value=0.4), marital status ($p=0.18$), educational level ($p=0.18$), level of income ($p=0.37$) and length of ART use. In addition, there was no significant association between age ($p=0.39$), religion ($p=0.14$), and frequency of hospital visitation. However, there was a significant association between occupation ($p=0.001$; $p=0.044$), length of ART use and frequency of hospital visitation respectively. (Table 4.5).



4.3.1 Socio-economic factors affecting linkage to HIV care services

The association between socio-economic factors (reliable transportation, medical appointment, stable living situation, health insurance) and linkage to HIV care services (length of ART use and frequency of hospital visitation) was assessed. From Table 4.6, there was a significant association between reliable transportation ($p=0.016$); medical appointments ($p=0.001$); stable living conditions ($p=0.001$); health insurance ($p=0.008$) and length of ART use.

In addition, for all newly diagnosed HIV-positive individuals who reported visiting the hospital for review and medication, there was a significant association between reliable transportation ($p=0.001$); medical appointments ($p=0.001$); stable living conditions ($p=0.001$); health insurance ($p=0.032$) and hospital visitation.

4.3.2 HIV-related factors influencing linkage to HIV care services

The association between HIV-related factors (afraid other people will find out, HIV will be healed through my faith, prefer to use natural and herbal treatments, mental health concerns) and linkage to HIV Care Services (length of ART use and frequency of hospital visitation) was also assessed. From Table 4.6, there was a significant association between afraid other people will find out their status ($p=0.002$); HIV will be healed through my faith ($p=0.001$), and length of ART use. However, there was no significant association between preferring to use natural and herbal treatments ($p=0.96$); mental health concerns ($p=0.74$), and length of ART use.

Furthermore, there was a significant association between afraid other people will find out their status ($p=0.016$); HIV will be healed through my faith ($p=0.001$); preferring to use natural and herbal treatments ($p=0.044$) and frequency of hospital visitation. But no

significant association between mental health concerns ($p=0.088$) and frequency of hospital visitation.

4.3.3 The relationship between structural factors and linkage to HIV care services

The association between structural factors (providers who speak the same language, convenient clinic times, felt discriminated against) and linkage to HIV care services (length of ART use and frequency of hospital visitation) was also assessed. From Table 4.6, there was a significant association between providers who speak the same language ($p=0.001$); felt discriminated against ($p=0.001$), and length of ART use. However, there was no significant association between convenient clinic times ($p=0.12$) and length of ART use. Likewise, there was a significant association between all structural factors indicated and the frequency of hospital visitation except for feeling discriminated against ($p=0.200$).

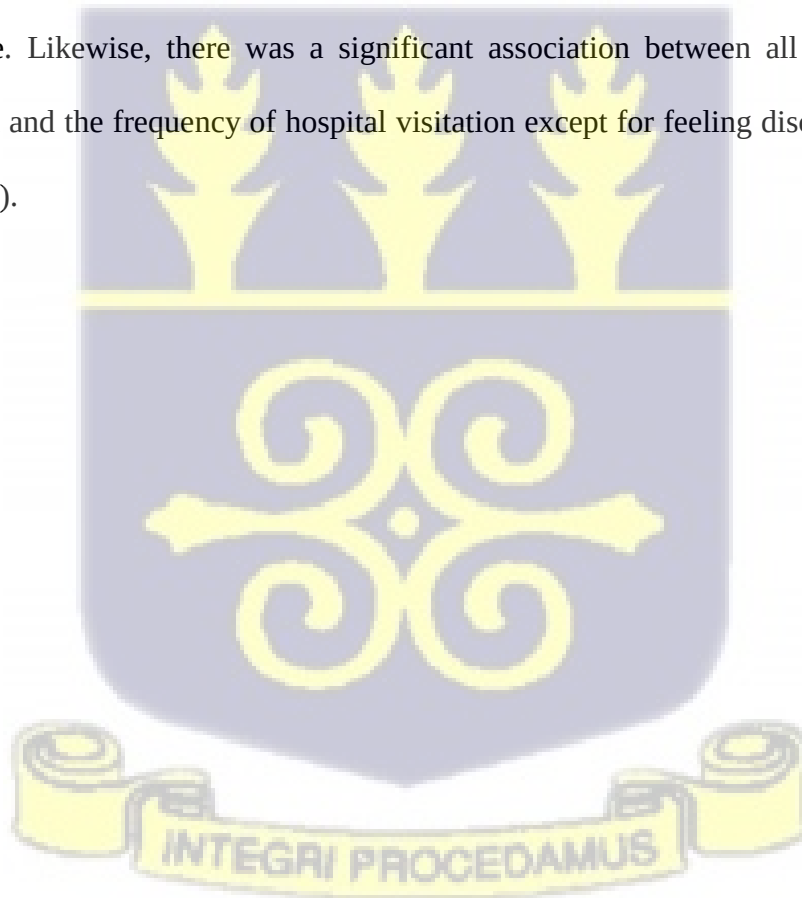


Table 4.6: Socio-economic, HIV-related, and Structural factors associated with Linkage to HIV care services

Variables & categories	Length of ART use			P-value	Frequency of hospital visitation			p-value
	Total N=371	≤ 3 months N=173	4-12 months N=198		Total N=370	Not often N=133	Often N=237	
<u>SOCIO-ECONOMIC</u>								
I have reliable transportation to the health facility				0.016				<0.001
Low	138	51 (37.0)	87 (63.0)		138	74 (53.6)	64 (46.4)	
Moderate	99	50 (50.5)	49 (49.5)		99	37 (37.4)	62 (62.6)	
High	133	71 (53.4)	62 (46.6)		132	22 (16.7)	110 (83.3)	
I have enough time to attend medical appointments				0.001				<0.001
Low	99	31 (31.3)	68 (68.7)		99	56 (56.6)	43 (43.4)	
Moderate	117	58 (49.6)	59 (50.4)		117	49 (41.9)	68 (58.1)	
High	154	83 (53.9)	71 (46.1)		153	28 (18.3)	125 (81.7)	
I have a stable living situation				<0.001				<0.001
Low	136	46 (33.8)	90 (66.2)		136	74 (54.4)	62 (45.6)	
Moderate	132	82 (62.1)	50 (37.9)		131	34 (26.0)	97 (74.0)	
High	100	44 (44.0)	56 (56.0)		100	25 (25.0)	75 (75.0)	
I have health insurance				0.008				0.032
Low	83	29 (34.9)	54 (65.1)		83	39 (47.0)	44 (53.0)	
Moderate	53	33 (62.3)	20 (37.7)		53	14 (26.4)	39 (73.6)	
High	233	109 (46.8)	124 (53.2)		232	79 (34.1)	153 (65.9)	
<u>HIV RELATED FACTORS</u>								
I am afraid other people will find out that I have HIV if I seek care.				0.002				0.016
Low	180	98 (54.4)	82 (45.6)		179	54 (30.2)	125 (69.8)	
Moderate	88	40 (45.5)	48 (54.5)		88	31 (35.2)	57 (64.8)	
High	99	32 (32.3)	67 (67.7)		99	47 (47.5)	52 (52.5)	
I believe that my HIV will be healed through my faith				<0.001				<0.001
Low	160	53 (33.1)	107 (66.9)		160	83 (51.9)	77 (48.1)	
Moderate	131	69 (52.7)	62 (47.3)		131	25 (19.1)	106 (80.9)	
High	74	48 (64.9)	26 (35.1)		73	24 (32.9)	49 (67.1)	
I prefer to use natural and holistic treatments				0.96				0.044
Low	267	123 (46.1)	144 (53.9)		267	85 (31.8)	182 (68.2)	
Moderate	50	24 (48.0)	26 (52.0)		49	23 (46.9)	26 (53.1)	
High	44	21 (47.7)	23 (52.3)		44	20 (45.5)	24 (54.5)	
Sometimes I feel depressed, anxious, or have other mental health concerns				0.74				0.088
Low	171	78 (45.6)	93 (54.4)		171	72 (42.1)	99 (57.9)	

Moderate	87	43 (49.4)	44 (50.6)		87	26 (29.9)	61 (70.1)
High	107	47 (43.9)	60 (56.1)		106	34 (32.1)	72 (67.9)
<u>STRUCTURAL FACTORS</u>							
Clinic times are convenient for me				0.12			<0.001
Low	68	24 (35.3)	44 (64.7)		67	44 (65.7)	23 (34.3)
Moderate	160	78 (48.8)	82 (51.2)		160	53 (33.1)	107 (66.9)
High	138	68 (49.3)	70 (50.7)		138	35 (25.4)	103 (74.6)
I can find providers and/or translators who speak the same language as me				<0.001			<0.001
Low	70	13 (18.6)	57 (81.4)		70	40 (57.1)	30 (42.9)
Moderate	67	26 (38.8)	41 (61.2)		67	30 (44.8)	37 (55.2)
High	230	131 (57.0)	99 (43.0)		229	61 (26.6)	168 (73.4)
I have felt discriminated against when seeking care				<0.001			0.200
Low	216	107 (49.5)	109 (50.5)		216	76 (35.2)	140 (64.8)
Moderate	91	27 (29.7)	64 (70.3)		91	29 (31.9)	62 (68.1)
High	60	35 (58.3)	25 (41.7)		59	27 (45.8)	32 (54.2)

(Source: Field Work, 2021)



4.3.4 Binary logistic regression model of factors associated with frequent visitation among the participants

The binary logistic regression model was used to assess the crude and adjusted odds of frequency of visits to the clinic among newly diagnosed HIV-positive patients.

From the adjusted, the odds of frequent visits were over 3 times high among the self-employed compared to the unemployed (AOR: 3.69, 95% CI: 1.33-10.24, $p=0.012$).

Compared to those who have been on ART for 1-3 months, the adjusted odds of the frequent visit were 82% less among those who had been on ART for 4-12 months.

For the socio-economic factors, the adjusted odds of frequent visits were over 4 times high among those who have highly reliable transportation to the facility compared to those who had low (AOR: 4.40, 95% CI: 1.60-12.08, $p=0.004$).

In terms of HIV-related factors, the adjusted for frequent visits was 70% less among those highly afraid other people will find out that they have HIV if they seek care (AOR: 0.30, 95% CI: 0.11-0.83, $p=0.020$). Also, the adjusted odds of frequent visit were 77% less among those who moderately prefer natural and herbal treatments (AOR: 0.23, 95% CI: 0.08-0.65, $p=0.005$). (Table 4.7)

In terms of structural factors, the adjusted odds of frequent visits were over 2 times high among those who consider clinic times to be moderately convenient (AOR: 2.21, 95% CI: 1.00-4.89, $p=0.050$) or highly convenient (AOR: 2.83, 95% CI: 1.08-7.46, $p=0.035$). (Table 4.7)

Table 4.7: Binary logistic regression model of factors associated with frequent visitation among the participants

Variables & categories	Unadjusted model		Adjusted model	
	COR [95% CI]	P-value	AOR [95% CI]	P-value
Age (in years)				
Below 20	1.00 [reference]		1.00 [reference]	
20-29	1.12 [0.64, 1.96]	0.681	1.42 [0.53, 3.86]	0.487
30-39	1.32 [0.66, 2.65]	0.438	1.13 [0.27, 4.70]	0.861
40-49	2.32 [0.96, 5.60]	0.061	1.24 [0.24, 6.55]	0.799
50 and above	0.84 [0.21, 3.41]	0.811	1.32 [0.16, 10.69]	0.795
Sex				
Male	1.00 [reference]		1.00 [reference]	
Female	1.07 [0.70, 1.64]	0.753	1.10 [0.58, 2.11]	0.769
Marital Status				
Single	1.00 [reference]		1.00 [reference]	
Married	1.71 [0.86, 3.40]	0.128	0.59 [0.17, 1.97]	0.388
Separated	0.80 [0.39, 1.65]	0.545	0.58 [0.15, 2.26]	0.435
Divorced	0.77 [0.28, 2.15]	0.620	0.49 [0.08, 3.06]	0.447
Cohabiting	1.15 [0.53, 2.50]	0.733	0.86 [0.25, 3.03]	0.816
Widow (er)	2.00 [0.53, 7.49]	0.303	1.23 [0.15, 10.49]	0.847
Educational Level Completed				
Nil	1.00 [reference]		1.00 [reference]	
Primary	1.45 [0.32, 6.54]	0.625	1.48 [0.27, 7.99]	0.647
JHS	1.01 [0.45, 2.29]	0.980	1.09 [0.31, 3.80]	0.897
SHS/Tech	0.85 [0.39, 1.83]	0.676	0.77 [0.24, 2.48]	0.658
Tertiary	1.36 [0.53, 3.49]	0.517	0.97 [0.18, 5.13]	0.972
Occupation				
Full time	1.76 [0.98, 3.17]	0.059	1.87 [0.69, 5.06]	0.217
Part-time	0.79 [0.43, 1.47]	0.462	1.65 [0.62, 4.39]	0.314
Self-employed	1.47 [0.81, 2.69]	0.205	3.69 [1.33, 10.24]	0.012
Unemployed	1.00 [reference]		1.00 [reference]	
Religion				
Christian	1.65 [0.99, 2.74]	0.054	2.25 [1.00, 5.08]	0.051
Muslim	1.00 [reference]		1.00 [reference]	
Traditional/none	1.95 [0.47, 8.12]	0.357	2.71 [0.54, 13.48]	0.223
Length on ART				
≤ 3 months	1.00 [reference]		1.00 [reference]	
4-12 months	0.24 [0.15, 0.39]	<0.001	0.18 [0.09, 0.39]	<0.001
I have reliable transportation to the health facility				
Low	1.00 [reference]		1.00 [reference]	
Moderate	1.94 [1.14, 3.28]	0.014	2.07 [0.91, 4.75]	0.084

High	5.78 [3.28, 10.20]	<0.001	4.40 [1.60, 12.08]	0.004
I have enough time to attend medical appointments				
Low	1.00 [reference]		1.00 [reference]	
Moderate	1.81 [1.05, 3.11]	0.032	0.68 [0.29, 1.63]	0.392
High	5.81 [3.28, 10.30]	<0.001	2.12 [0.74, 6.06]	0.159
I have a stable living situation				
Low	1.00 [reference]		1.00 [reference]	
Moderate	3.41 [2.03, 5.71]	<0.001	0.94 [0.39, 2.23]	0.880
High	3.58 [2.03, 6.30]	<0.001	0.82 [0.24, 2.80]	0.747
I have health insurance				
Low	1.00 [reference]		1.00 [reference]	
Moderate	2.47 [1.17, 5.22]	0.018	1.47 [0.48, 4.47]	0.500
High	1.72 [1.03, 2.86]	0.038	1.32 [0.56, 3.07]	0.523
I am afraid other people will find out that I have HIV if I seek care.				
Low	1.00 [reference]		1.00 [reference]	
Moderate	0.79 [0.46, 1.37]	0.405	0.70 [0.28, 1.71]	0.430
High	0.48 [0.29, 0.79]	0.004	0.30 [0.11, 0.83]	0.020
I believe that my HIV will be healed through my faith				
Low	1.00 [reference]		1.00 [reference]	
Moderate	4.57 [2.68, 7.81]	<0.001	4.48 [1.67, 12.01]	0.003
High	2.20 [1.23, 3.93]	0.008	2.34 [0.79, 6.92]	0.125
I prefer to use natural and herbal treatments				
Low	1.00 [reference]		1.00 [reference]	
Moderate	0.53 [0.28, 0.98]	0.043	0.23 [0.08, 0.65]	0.005
High	0.56 [0.29, 1.07]	0.080	0.37 [0.11, 1.21]	0.099
Sometimes I feel depressed, anxious, or have other mental health concerns				
Low	1.00 [reference]		1.00 [reference]	
Moderate	1.71 [0.98, 2.96]	0.057	1.15 [0.41, 3.22]	0.787
High	1.54 [0.93, 2.56]	0.096	1.81 [0.70, 4.68]	0.218
Clinic times are convenient for me				
Low	1.00 [reference]		1.00 [reference]	
Moderate	3.86 [2.11, 7.06]	<0.001	2.21 [1.00, 4.89]	0.050
High	5.63 [2.99, 10.62]	<0.001	2.83 [1.08, 7.46]	0.035
I can find providers and/or interpreters who speak the same language as me				
Low	1.00 [reference]		1.00 [reference]	
Moderate	1.64 [0.84, 3.23]	0.149	1.21 [0.44, 3.33]	0.711
High	3.67 [2.10, 6.41]	<0.001	1.11 [0.41, 2.97]	0.841

I have felt discriminated against when seeking care

Low	1.00 [reference]		1.00 [reference]	
Moderate	1.16 [0.69, 1.96]	0.577	1.37 [0.52, 3.62]	0.525
High	0.64 [0.36, 1.15]	0.139	0.33 [0.10, 1.10]	0.072

COR: crude odds ratio. AOR: adjusted odds ratio. CI: confidence interval. (Source: Field Work, 2021)



4.4 Knowledge of service providers on factors contributing to low linkage to HIV care services

Below is a detailed analysis and the findings of the data collected. Qualitative thematic analysis was used to analyze the interviewed data of service providers. Data were transcribed and hand-coded into themes. The themes were generated based on the objective and previous related studies and sub-themes were developed from participants' responses. The key themes that emerged from the study were;

1. Knowledge of linkage to HIV care services.
2. Facilitators for low linkage to HIV care services.
3. Strategies to improve linkage to HIV care services.

4.4.1 Knowledge of Linkage to HIV care services

Understanding of Linkage to HIV care

All respondents understood linkage to HIV care as immediately starting treatment after being diagnosed with HIV, this includes adherence, post counseling, and starting medication right away per the World Health Organization Test and Treat protocol in line with the 95-95-95 target at ART clinic after clients accept their results and no longer in denial. Result also indicates that on average 15-20 patients are linked to care monthly with the ratio of women being high. Due to the increased health-seeking behaviour among women and compulsory HIV testing during pregnancy.

“Linkage to HIV care is the process from testing to placing the patient on treatment”
(Doctor-In-Charge, 30-39years)

“Linkage to HIV care means someone who has tested positive and is referred to an ART clinic for treatment. Secondly when treatment start at the clinic after clients accept their results and are no longer in denial” (Senior Statistician, 30-39 years)

Treatment Initiation Plan and Mechanism

Findings for respondents indicated that counseling is a major prerequisite before and after diagnoses which are often done by the Model of Hope at the ART clinic, who are certified counselors also living with HIV before a client sees the doctor for further assessment and starting of medication. General counseling is done before the initial testing. Counseling is done for negative tested clients on preventive measures and HIV-positive patients on the condition before the start of treatment. The final or post counseling is done to reassure the patient and provide directions on the dosage and information on the side effects of the medications. This is also known as adherence counseling. They are also educated on the difference between HIV and AIDS and other lifestyle choices and changes. Also, counseled to accept and deal with any emotional implications that come with a positive diagnosis.

Two (2) of the respondents who were counselors said most clients during counseling do not have sufficient information about HIV and are denied HIV test results and are reluctant to start medication if not addressed the medication is likely to be abused and taken wrongly. Likewise, clients are counseled for them to understand that being HIV positive is not the end of the world and through medications they can prolong their lifespan, one can live a healthy lifestyle, and achieve all aspirations.

The test and treatment protocol recommends clients be started on ARVs immediately after counseling. However, this is not the case for clients who come with opportunistic infections such as TB, on dialysis and require some lab tests like Full Blood Count, Liver

and Kidney Functioning Tests before treatment. Hence, starting treatment ultimately results in a delayed linkage to HIV care.

“Pre-counseling is done before a client is tested. If the test comes out positive, second counseling is done and consent is sought from the client to be on the medication. What I do is to counsel the client on the implications of not taking the medications” (Nurse, 20-29years)

“We follow the WHO protocol of Test and Treat. Clients are started on treatment immediately after testing positive and monitored for viral suppression. Patient before testing goes through pre and post counseling likewise adherence counseling by the Model of Hope to psychologically prepare them for the outcome of the test. Test and treat is for all except the ones unfit such as having TB or on dialysis” (Senior Statistician, 30-39years)

4.4.2 Facilitators for low linkage to HIV care services

Social Life and Interpersonal Factors

Almost all the participants cited that clients reported self-stigma, the stigma for family and friends, and difficulty in accepting the condition as some key limitations to immediate linkage to HIV care and preventing them from seeking treatment timely. Clients often during counseling said they were scared of being seen at the ART clinic by clients, and their friends, and concerned about rumours being other people in the community who may know of the status. However, all health staff interviewed at the ART clinic said they endeavor to create a stigma-free environment to make clients comfortable.

Nonetheless, when they are only given instructions without allowing them to ask questions, they usually leave with lots of doubt and this creates difficulty in adhering to the ARVs properly. To maximize social support the creation of social media platforms mainly WhatsApp was mentioned as a motivator. The Models of Hope, counselors who

are also living with HIV use the platform to communicate with clients on how to get their medications to them easily and give continuous advice on treatment adherence and healthy life choices.

“We try to create an environment where they are comfortable and feel at home. But when you just give them instructions without allowing them to speak, they usually leave with lots of doubt and this creates compliance issues with the medication” (Pharmacist, 30-39years)

Across all interviews, the health staff mentioned financial constraints as a key factor for delayed linkage to HIV care, which was mainly due to the cost of living, cost of transportation to the facility for medication frequently, and the routine laboratory tests such as viral load, liver, and kidney functioning tests after treatment initiation. The majority of the respondents also asserted that owing to financial constraints, some clients result to seek out spiritual solutions and take other herbal concoctions as an alternative treatment to their condition leading to detrimental consequences and death in some cases. Although the financial constraints were mentioned as a hindrance, all respondents iterated that the introduction of the “test all, treat all” policy ensure all persons who tested positive for HIV are immediately started free on the ARVs before being required to do any laboratory tests. This was not so initially and patients who were not financially sound to do the other tests were prevented from seeking the treatment which eventually delay linkage to HIV care and clients to be lost to follow-up.

“Self-stigma and Family issues prevent most clients from coming for medications for fear of meeting a familiar person. If proximity is an issue, we discuss with the client and refer them to a facility that is out of their community for privacy” (Principal Nurse Officer, 40-49years).

Facility-Related Factors

All health staff interviewed reported that the clinic has minimal challenges concerning logistics and supply of medications as it is a referral center. However, the issue the facility is facing is currently a lack of communication between the hospital ward and the ART clinic. The clinic is quite isolated from the hospital's ward as part of their stigma-free strategy but oftentimes HIV positive clients on admission are discharged without being linked to the facility for treatment because there are not properly established channels to successfully engage them in HIV care. Another hindrance stated by 2 respondents was an instance where a client is not ready for medication because of opportunistic infections, which have to be treated before being put on ARVs, thus in a case where a client tests for TB, the patient is treated for 2 weeks before being put on the ARVs, this leads to delayed linkage. Likewise, the linkage from the testing point to the treatment center was one health system challenge stated by some respondents.

“Once a patient is referred to your facility, he or she needs to be escorted not just given directions to the facility. This is a challenge because most patients after being given directions, do not report to the clinic. Due to this challenge, we initiate them before we allow them to continue at any other facility” (Principal Nursing Officer, 40-49years)

“Logistics is not a challenge in the facility. The only challenge is when we are treating opportunistic infections, some of the patients pass on before treatment starts. Structural challenges would have to do with a lack of communication between the ward and clinic. So, for linkage to be improved, I think we will need dedicated nurses who will bridge that gap between the ward and clinic.” (Doctor-In-Charge, 30-39years)

4.4.3 Strategies to improve linkage to HIV care services

Improvement Mechanisms

Across all interviews, respondents highlighted mass testing, screening in communities to identify those infected, and putting them on treatment immediately as a distinct mechanism to improve linkage to HIV care services. Other respondents also stated frequent follow-up visits at home to diagnosed patients, Intensive counseling, and

enforcing the ‘test all, treat all’ directive across all ART clinics as also efficient mechanisms to improve linkage to HIV care services.

“Insufficient testing is the problem because of fear, so more education and mass testing should be encouraged” (Senior Statistician, 30-39years)

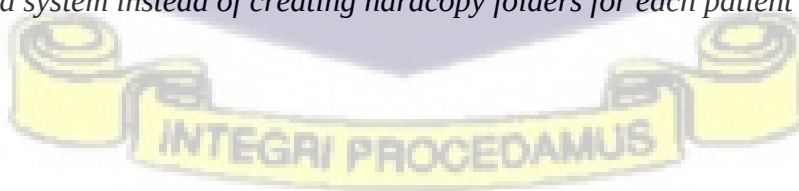
“Community outreaches and home visits to reactive patients should be done to give them a sense of belonging” (Staff Nurse, 20-29years)

Resource Needed for Increased Linkage Rate

Responses from participants indicated that for efficient and increased linkage rate at the facility, the clinic needed adequate human resources specifically, a phlebotomist who can run their lab tests. Also, laboratory equipment such as a scanning machine, and a new viral load machine as the current one is not functioning for the facility to become a complete clinic. Other respondents also said a paperless and digitalized system within the clinic with stable internet and a computerized network linking the other departments in the hospital is needed for the efficient running of the facility. More so, respondents also said incentives and specialized training in HIV treatment and preventive measures will be a great motivation to build their capacity and effective healthcare delivery.

“We have a broken-down viral load machine which we haven’t been able to use for some months now and this affects the treatment plan of clients and whether they are responding to the medications given” (Counsellor (Model of Hope), 50+years).

“We currently do not have a stable internet at the facility. We could also use a digitalized system instead of creating hardcopy folders for each patient” (Staff Nurse, 20-29years).



CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

This chapter discusses the results of the findings from the research which was based on the research objectives. This study adds to the small but growing number of researches in the Ghanaian context that has attempted to examine the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals.

5.2 Socio-economic factors affecting linkage to HIV care services

From the study, newly diagnosed HIV-positive individuals reported reliable transportation, time to attend a medical appointment, stable living situation, and affordability of health insurance as key socio-economic factors associated with their linkage to HIV care services specifically frequency of hospital visitation for review and medication and their length of ART use. A substantial number of newly diagnosed HIV-positive individuals who visited the hospital often reported they had high reliable transportation to the ART clinic and a high amount of time to attend medical appointments. This outcome is in line with findings from a previous study which indicates assisting with transportation if the ART site is far from the HIV testing and counseling site and having reliable access to a health facility can help improve linkage to care (Naik et al., 2018; Sanga et al., 2019). The present study also establishes that the majority of newly diagnosed HIV-positive individuals who had used ART between 4 to 12 months indicated not being able to afford health insurance and had a low stable living situation, attributed to financial constraints, and unstable housing conditions. This result is similar to findings by Ankomah et al. (2016) b; *NACP Annual Report 19_Final*, n.d.

which suggests that high financial costs associated with accessing and prolonged use of ART likewise, being HIV/AIDS positive could trigger poverty and unemployment, and may decrease regular clinic attendance and eventually affecting leading viral load suppression.

Evidence from the study shows that the newly diagnosed HIV-positive individual's frequency of hospital visits and their length of ART use was relatively not impacted by having a reliable means of transportation, attending a medical appointment, having a stable living situation, and ability to afford health insurance. This contradicts results from previous empirical studies which indicated addressing the social determinants of health, including poverty, employment and barriers to care such as transportation problems, unstable housing through socioeconomic interventions such as transportation support for persons with HIV to attend their clinic visits and giving financial incentives may also assist some patients to more fully establish care during the early stages of their treatment and develop a stronger bond with the care system (Mikkelsen et al., 2017; Ruria et al., 2017). Findings from the study revealed that the ART clinic through their Models of Hope and Community Adolescent Treatment Supporters (CATS) provides peer-to-peer support to newly diagnosed HIV-positive individuals primarily to offer information and counselling, ART initiation, adherence and also track those with missed appointments. Likewise, follow them up and ensure they are retained on treatment. This, therefore, accounts for the difference in observation between the two studies. Another reason is that the provision of ART medication in Ghana is at no cost and is easily accessible by all who need it, thus no health insurance is required.

5.3 HIV-related factors influencing linkage to HIV care services

Evidence from the study revealed there was a significant association between newly diagnosed HIV-positive individuals being afraid other people will find out their status; being healed through faith and their length of ART use. However, there was no significant association between mental health concerns; prefer to use of natural and herbal treatments and the length of ART use.

This finding is similar to the people living with HIV stigma index report by the Ghana AIDS Commission (2014) which reported that PLHIV respondents avoided all forms of social segregation and other forms of discrimination through non-disclosure of their HIV status to individuals and groups outside the health care delivery system with a striking majority of respondents, above 85% on the average, reporting they had never experienced any form of HIV related social marginalization during the 12 months preceding the survey.

Furthermore, an average number of newly diagnosed HIV individuals who visited the hospital for review and medication often and not often respectively reported being less afraid other people will find out their HIV status. This finding contradicts a previous study that revealed that the lack of fear of disclosure is an important barrier to linkage to care. HIV-positive individuals sometimes fail to disclose their HIV status to their significant others for fear of outcomes such as intimate partner violence and divorce (Ayisi Addo et al., 2018b; Sanga et al., 2019b).

Results from the study also indicated that some newly diagnosed HIV-positive individuals who visited the hospital regularly and used ART between 4 to 12 months said they less believed their HIV will be healed through faith. The study's finding opposes the

results of research published by Philbin et al., (2014) who found that some newly diagnosed HIV-positive persons had certain spiritual beliefs which negatively impacted linkage to HIV care services. Participants reported that some people believed that prayers and usage of holy water can heal HIV, thus influencing their decision to link to HIV care services.

Correspondingly, the study revealed that a major proportion of newly diagnosed HIV-positive individuals who reported their length of ART use between 4 to 12 months and visited the hospital often said they are less likely to prefer to use natural and herbal treatments. These results also contradict earlier studies which highlighted that HIV positive individuals believed that their condition could be due to witchcraft and supernatural forces so natural and herbal treatments are effective over treatments at the hospital for them to get better (Hosek et al., 2005b; Nakigozi et al., 2013).

Regarding mental health concerns, the study reported that newly diagnosed HIV-positive individuals were more likely to feel anxious or depressed. However, other studies agreeing with this result reveal that the majority of the HIV-positive patients in this study felt that the future seemed dark to them, irrespective of whether or not they had suicidal ideation, and also that many HIV-positive individuals have high levels of depressive symptoms (Asch et al., n.d.; Shittu et al., 2014).

5.4 The relationship between structural factors and linkage to HIV care services

To facilitate linkage to HIV care services, the study revealed that the following structural factors; health providers' ability to speak the same language, convenient clinic times, and feeling discriminated against, impacted the said outcome of newly diagnosed HIV-

positive individuals. Among newly diagnosed HIV-positive individuals who visited the hospital often for reviews and medication, and used ART was between 4 to 12 months, the study indicated that a greater proportion reported having providers who spoke a similar language to them.

They indicated it was easy communicating with health providers during counseling and other engagement sessions. This finding is similar to earlier studies that reported healthcare providers' moral and practical support and good patient-staff relationships enhance linkage to HIV care services (Guidelines for antiretroviral therapy in Ghana national HIV/aids/ STI control programme Ministry of Health / Ghana Health Service, 2008; State of Florida Integrated HIV Prevention and Care Plan, n.d.). Contrarywise, the perceived experience of negative provider attitudes, lack of respect, and/ or use of abusive language from healthcare providers to patients was reported by the study participants to hinder successful linkage to HIV care service (Macpherson, 2013; MacPherson et al., 2012).

More so, some of the newly diagnosed HIV-positive individuals who visited the hospital regularly, and whose length of ART use was within 12 months reported that clinic times were convenient for them and indicated it influenced the visit to the hospital. Those who found the clinic times convenient and had providers who spoke the same language were more likely to continue ART medication for up to 12 months and over. Other researchers have found delays associated with linkage to HIV care services from ART clinics as a major barrier. Delays resulted from long waiting times before care was received. This long waiting time is often the result of a limited number of trained healthcare personnel at ART centers. Intensifying the challenge is the fact that only specific days in a month are

dedicated to all ART clients to be attended to (Addo-Atuah et al., 2012; Mutevedzi & Newell, 2014).

The study finding also established that newly diagnosed HIV-positive individuals who visited the hospital often and length of ART use within 12 months felt less discriminated against when seeking care at the ART clinic. The results contradict the evidence from a study conducted which highlighted a great deal of the self or internal stigma experienced by a majority of HIV-positive persons bounded on obsession about being the target of public gossip, together with verbal abuse/assault or harassment (Casale et al., 2019; Harris et al., 2021). Similarly, perceived stigma, various forms of misinformation, and prohibitive clinic policies are major barriers to linkage to HIV care services documented in several studies (Ghimire et al., 2011; Moyo & Macherera, 2021).

5.5 Knowledge of service providers on factors contributing to low linkage to HIV care services

The study shows that service providers understood linkage to HIV care as immediately starting treatment after being diagnosed with HIV, this includes adherence and post counseling and starting medication right away per the World Health Organization Test and Treat protocol. Linkage to care services defined by earlier studies refers to the process of initiating HIV-related medical, psychological, and social services for newly diagnosed HIV-positive persons. Failures in linkage are associated with lower levels of viral suppression, and a greater likelihood of viral resistance (Ulett et al., n.d.).

The study established that Health service providers reported counseling is a major requirement before and after diagnoses which are often done by the Model of Hope at the ART clinic. This result is in line with a study that found that counseling was the main

strategy used to ensure adherence by patients as this was reported by a majority of the facilities that participated in the study. Inversely other studies indicated that although counseling on the need to adhere to treatment may be useful especially when it is individualized, in some settings counseling alone is less effective (Sanga et al., 2017; Wachira et al., 2014)

In addition, although clients ought to be started on ARVs immediately after counseling owing to the test and treatment protocol, this is not the case for clients who present with opportunistic infections such as TB, on dialysis and require some lab tests like Full Blood Count, Liver and Kidney Functioning Test for treatment before starting treatment, eventually delaying linkage to HIV care services. This finding is similar to an empirical study that highlighted the need to reexamine the quality and content of post-test counseling when communicating positive HIV test results. To improve linkage to HIV care services, there is a need to address perceptions of risk with taking ART and trust in the health care system (Beer et al., 2012; Nakigozi et al., 2013b).

The findings of this study also revealed that almost all the participants cited that client reported self-stigma, the stigma for family and friends, and difficulty in accepting the condition as some major hindrances to immediate linkage to HIV care and preventing them from seeking treatment timely. This finding is consistent with a study conducted by Barnes et al., (2011) that indicated that HIV-related stigma and discrimination are universally recognized as a barrier to accessing HIV prevention, treatment, and care services.

UNAIDS defines HIV-related stigma and discrimination as: "...a 'process of devaluation' of people either living with or associated with HIV and AIDS (*Reduction of*

HIV-Related Stigma and Discrimination, n.d.). Discrimination follows stigma and it is seen as the unfair and unjust treatment of an individual based on his or her real or perceived HIV status”(Stigma and Discrimination of People Living with HIV in Ghana a Major Challenge in the fight against AIDS, n.d.).

Furthermore, the results of the study showed that the ART clinic is quite isolated from the hospital's ward as part of their stigma-free strategy but oftentimes HIV positive clients on admission are discharged without being linked to the facility for treatment because there are not properly created channels to successfully engage them in HIV care. Likewise, the linkage from the testing point to the treatment center was one health system challenge stated by some respondents.

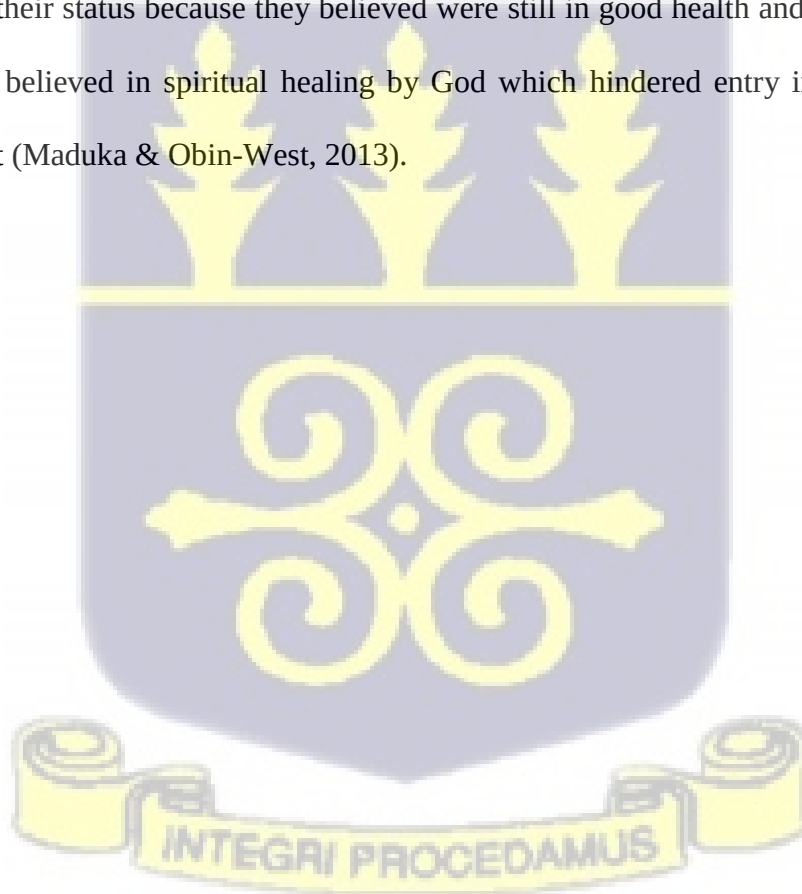
Results from a previous study revealed that among the first most important barriers the participants reported were delays associated with long-distance to treatment centers, shortage of drugs and other commodities (Wachira et al., 2012). These barriers are also very similar to what has been documented in other previous studies where barriers to linkage in care at the health system level included poorly organized clinic procedures and lack of resources including staff and equipment at the clinic (Wachira et al., 2014).

Financial constraints emerged as a key factor for delayed linkage to HIV care services from the study. This was mainly due to the cost of living, the cost of transportation to the facility for medication frequently, and the routine laboratory tests such as viral load, liver, and kidney function tests after treatment initiation. This finding is consistent with several studies that highlighted financial constraints as a prominent barrier to linkage to care. While the current direct cost of ART in Ghana is relatively insignificant, many HIV-

positive persons are still not able to afford to pay this cost and other additional indirect costs.

This is partly because current approaches to providing care include multiple clinic visits, which are costly for the patient in terms of money and time (Elul et al., 2014).

Health service providers also reported that some clients result to seek out spiritual solutions and take other herbal concoctions as an alternative treatment to their condition leading to detrimental consequences and death in some cases. Results similar to this study indicated some HIV-positive persons who had received HIV testing and been counseled doubted their status because they believed were still in good health and physically strong and also believed in spiritual healing by God which hindered entry into HIV care and treatment (Maduka & Obin-West, 2013).



CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Linkage to HIV care services is an essential step toward good lasting management of HIV infection. The findings of this study indicate that having reliable transportation, a stable living situation, and going for medical appointments are the socioeconomic factors that impacted the linkage to HIV care services among newly diagnosed HIV-positive individuals. Also, preference to use natural and herbal treatments and mental health concerns were HIV-related factors also reported being associated with the linkage to HIV care services among newly diagnosed HIV-positive individuals. Likewise, the feeling of being discriminated against was indicated as a structural factor influencing the linkage to HIV care services among newly diagnosed HIV-positive individuals.

Lastly, a myriad of enablers for low linkage to HIV care services included social and interpersonal factors and facility-related factors. Interventions targeted at improved early linkage rate, retention in HIV care, suppressed viral load and quality wellbeing must address barriers surrounding stigma, discrimination, financial challenges, and mental health issues to improve the capacity of ART clinics to implement quality care, particularly to adhere to the global 'Test and Treat' model of HIV treatment and care acclaimed by the World Health Organization. These challenges and the corresponding strategies are particularly important from the perception of both patients and health service providers.

6.2 Recommendations

1. Ghana Health Services and relevant stakeholders particularly the National AIDS Control Programme and Ghana AIDS Commission should expand programmes, treatment, and mass testing interventions to reach all HIV-positive individuals who need treatment and care.
2. GARH should consider integrating mental health information and referral services into the comprehensive counseling package for newly diagnosed HIV-positive individuals at the ART clinic.
3. Support and funding from donor agencies ought to be sought by GARH to improve linkage to HIV care services at the health system level through refurbishing the ART clinic with resources including advanced HIV training kits and equipment particularly a viral load machine to boost treatment regimens and successful linkage rates.
4. The quality of life of PLHIV should be assessed as part of HIV service provision at the GARH ART clinic.
5. There should be education and sensitization by stakeholders such as the Ghana AIDS Commission to the public to help reduce HIV-related stigma and discrimination. This will enable PLHIV to live positively without fear.

6.3 Limitations of the study

1. The study was conducted in one facility as a case study therefore the generalization of these findings must be done with caution.

2. The risk of bias, as the researcher's personal opinions and preferences, may influence the research.
3. The cross-sectional nature of the study limited the extent to which we can draw conclusions regarding temporality or the causal nature of observed associations.



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APPENDICES

Appendix 1: Participants Information Sheet

PARTICIPANTS INFORMATION SHEET (NEWLY DIAGNOSED HIV-POSITIVE INDIVIDUALS)

The Information Sheet provides information about the research for participants to make an informed decision of whether to participate in the study or not. It outlines the nature of the research, what the research involves, risks, benefits, compensation.

Title of Study

“FACTORS ASSOCIATED WITH LINKAGE TO HIV CARE SERVICES AMONG NEWLY DIAGNOSED HIV-POSITIVE INDIVIDUALS: A CASE STUDY OF THE GREATER ACCRA REGIONAL HOSPITAL”.

Introduction: The principal investigator (PI) is Naadu Awuradwoa Addico, a Master of Public Health (MPH) student at the School of Public Health of the College of Health Sciences, University of Ghana. My email address is ariesaddico97@gmail.com. My telephone number is 0200813845/0572154047.

Background and Purpose of Research: I am researching the topic: “Factors Associated with Linkage to HIV Care Services Among Newly Diagnosed HIV-Positive Individuals: A Case Study of The Greater Accra Regional Hospital, a tertiary referral facility in the Accra Metropolitan District of the Greater Accra Region”.

Nature of research: The research is a cross-sectional study with a quantitative and qualitative approach to examine the factors associated with linkage to HIV care. It would

be conducted among 351 newly diagnosed (HIV positive in the last 12 months) HIV-positive individuals attending ART clinic and 10 Health Service Providers working at the Greater Accra Regional Hospital's ART Clinic during the study period.

PARTICIPANTS INVOLVEMENT

- **Duration /what is involved:** A structured questionnaire would be used to elicit information from the study participants after the aim of the study has been explained to them and they are interested in participating. The questionnaire would be administered in the English Language for literate respondents (newly diagnosed HIV-positive individuals) and translated into Twi or Ga for non-English literate respondents. This would last for 30 minutes.
- **Potential Risks:** There is a potential risk of contracting COVID-19 under the current circumstances of the Covid-19 pandemic. Therefore, the following interventions will be put in place to ensure the safety of the study participants and the research assistants;
 - The researcher and research assistants will be in personal protective equipment that includes a full gown, facemask, face shield, gloves, and boot covers.
 - Participants will wash their hands with soap under running water as observed by the research assistants before receiving the questionnaire
 - Participants will sanitize their hands with alcohol-based rubs after filling out the questionnaires.

- Social distancing will be maintained between the participants and the research assistants.
- Also, some of the questions may appear sensitive to the participants such as circumstances surrounding their diagnoses of HIV, thus participants are at liberty NOT to answer questions they deem sensitive.
- **Benefits:** Participants would have the opportunity to gain some knowledge on the factors associated with linkage to HIV care services among newly diagnosed HIV-positive individuals since each participant would be educated after data collection.
- **Costs:** There would be no cost incurred by participants for taking part in the study except for their time.
- **Compensation:** There is no compensation for completing this questionnaire. Your efforts and time to help in this research are, however, thoroughly appreciated.
- **Confidentiality:** The information in the study records will be kept strictly confidential. Data will be stored securely and measures will be taken to protect the security of data. No reference will be made in oral or written reports which could link you to the study. You will NOT be asked to record your name so that no one can match your identity to the answers that you provide.

- **Voluntary participation/withdrawal:** Participation in the study is voluntary and not compulsory. Participants have the right to decide whether or not they want to be part of the study. You can also withdraw your consent at any time during the study.
- **Outcome and Feedback:** Findings of the study will be shared with the selected hospital which may improve health service delivery at the ART Clinic.
- **Feedback to participant:** A report would be presented to various stakeholders such as the Ministry of Health (MOH), Ghana Health Service, and GARH who formulate policies in HIV care and its related issues. The report will be published in a journal.
- **Funding information:** This study is funded by the principal investigator.
- **Sharing of participants Information/Data:** Participant information or data would be kept by the principal investigator. Filled questionnaires would be kept under lock and key, with only the principal investigator having access. It would not be shared with anyone else.
- **Provision of Information and Consent for participants**

A copy of the information sheet and consent form will be given to you to sign or thumb-print before participation in the study.

Whom to Contact for Further Clarification/Questions:

For any clarifications or concerns concerning this research, please contact Naadu Awuradwoa Addico at Population, Family and Reproductive Health Department, School of Public Health on telephone number 0200813845/0572154047. You can also contact me by e-mail at ariesaddico97@gmail.com. For further clarification on ethical issues kindly contact the Ghana Health Service Ethical Review Committee Administrator, Nana Abena Apatu on phone number 0503539896 or e-mail at ethics.research@ghsmail.org.



PARTICIPANTS INFORMATION SHEET (HEALTH SERVICE PROVIDERS)

The Information Sheet provides information about the research for participants to make an informed decision of whether to participate in the study or not. It outlines the nature of the research, what the research involves, risks, benefits, compensation.

Title of Study

“FACTORS ASSOCIATED WITH LINKAGE TO HIV CARE SERVICES AMONG NEWLY DIAGNOSED HIV-POSITIVE INDIVIDUALS: A CASE STUDY OF THE GREATER ACCRA REGIONAL HOSPITAL”.

Introduction: The principal investigator (PI) is Naadu Awuradwoa Addico, a Master of Public Health (MPH) student at the School of Public Health of the College of Health Sciences, University of Ghana. My email address is ariesaddico97@gmail.com. My telephone number is 0200813845/0572154047.

Background and Purpose of Research: I am researching the topic: “Factors Associated with Linkage to HIV Care Services Among Newly Diagnosed HIV-Positive Individuals: A Case Study of The Greater Accra Regional Hospital, a tertiary referral facility in the Accra Metropolitan District of the Greater Accra Region”.

Nature of research: The research is a cross-sectional study with a quantitative and qualitative approach to examine the factors associated with linkage to HIV care. It would be conducted among 351 newly diagnosed (HIV positive in the last 12 months) HIV-positive individuals attending ART clinic and 10 Health Service Providers working at the Greater Accra Regional Hospital’s ART Clinic during the study period.

PARTICIPANTS INVOLVEMENT

- **Duration /what is involved:** A semi-structured interview guide would be used to elicit information from the study participants after the aim of the study has been explained to them and they are interested in participating. The interview guide would be administered in the English Language for health service providers with the aid of an audio recorder. This would last for 30 minutes.

- **Potential Risks:** There is a potential risk of contracting COVID-19 under the current circumstances of the Covid-19 pandemic.

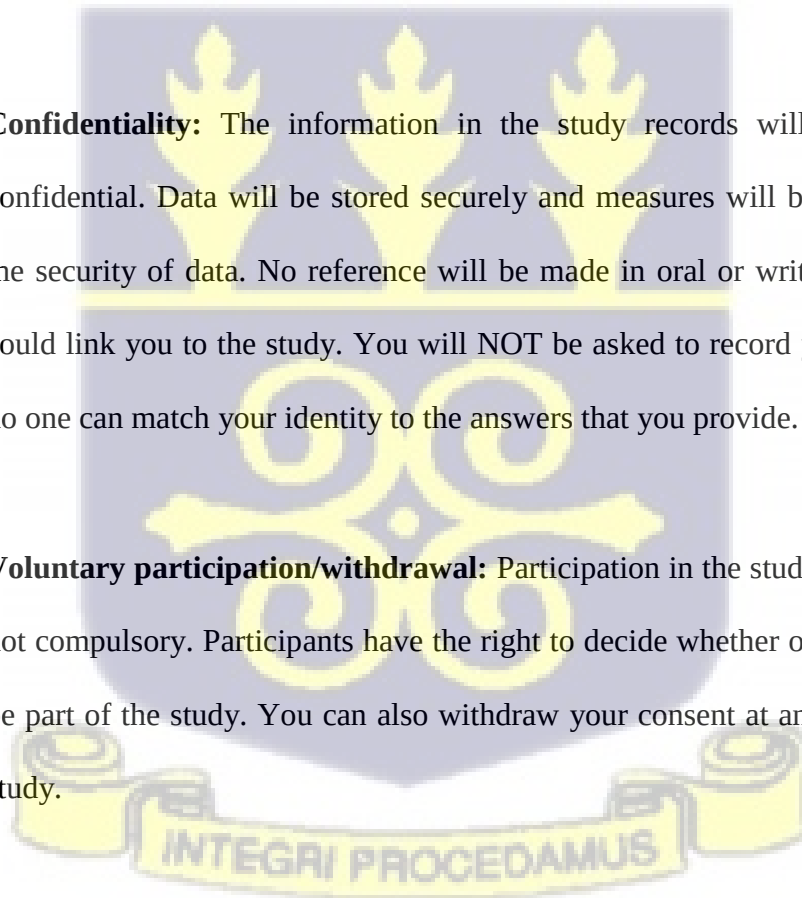
Therefore, the following interventions will be put in place to ensure the safety of the study participants and the research assistants;

- The researcher and research assistants will be in personal protective equipment that includes a full gown, facemask, face shield, gloves, and boot covers.
- Participants will wash their hands with soap under running water as observed by the research assistants before receiving the questionnaire
- Participants will sanitize their hands with alcohol-based rubs after filling out the questionnaires
- Social distancing will be maintained between the participants and the research assistants

- **Benefits:** Participants would have the opportunity to gain some knowledge on the factors contributing to low linkage to HIV care services among newly diagnosed

HIV-positive individuals since each participant would be educated after data collection.

- **Costs:** There would be no cost incurred by participants for taking part in the study except for their time.
- **Compensation:** There is no compensation for participating in the interviewing session. Your efforts and time to help in this research are, however, thoroughly appreciated.
- **Confidentiality:** The information in the study records will be kept strictly confidential. Data will be stored securely and measures will be taken to protect the security of data. No reference will be made in oral or written reports which could link you to the study. You will NOT be asked to record your name so that no one can match your identity to the answers that you provide.
- **Voluntary participation/withdrawal:** Participation in the study is voluntary and not compulsory. Participants have the right to decide whether or not they want to be part of the study. You can also withdraw your consent at any time during the study.
- **Outcome and Feedback:** Findings of the study will be shared with the selected hospital which may improve health service delivery at the ART Clinic.



- **Feedback to participant:** A report would be presented to various stakeholders such as the Ministry of Health (MOH), Ghana Health Service, and GARH who formulate policies in HIV care and its related issues. The report will be published in a journal.
- **Funding information:** This study is funded by the principal investigator.
- **Sharing of participants Information/Data:** Participant information or data would be kept by the principal investigator. Audio and transcribed audio files would be kept under lock and key, with only the principal investigator having access. It would not be shared with anyone else.
- **Provision of Information and Consent for participants**
A copy of the information sheet and consent form will be given to you to sign or thumb-print before participation in the study.

Whom to Contact for Further Clarification/Questions:

For any clarifications or concerns concerning this research, please contact Naadu Awuradwoa Addico at Population, Family and Reproductive Health Department, School of Public Health on telephone number 0200813845/0572154047. You can also contact me by e-mail at ariesaddico97@gmail.com. For further clarification on ethical issues kindly contact the Ghana Health Service Ethical Review Committee Administrator, Nana Abena Apatu on phone number 0503539896 or e-mail at ethics.research@ghsmail.org.

Appendix 2: Consent Form

STUDY TITLE: “Factors Associated with Linkage to HIV Care Services Among Newly Diagnosed HIV-Positive Individuals: A Case Study of The Greater Accra Regional Hospital”.

PARTICIPANTS’ STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants’ Information Sheet read and all questions satisfactorily explained to me in a language I understand (.....). I fully understand the contents and any potential implications as well as my right to change my mind (i.e., withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant.....

Participants’ SignatureOR Thumb Print.....

Date.....

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the
aforenamed participant to the best of my ability in the (.....) language to
his proper understanding.

All questions, appropriate clarifications sorted by the participant, and answers were also
duly interpreted to his/her satisfaction.

Name of Interpreter.....

Signature of Interpreter..... OR Thumb Print

.....

Date:.....

Contact Details.....

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet were read and explained satisfactorily to the participant in the language, he/she understood (.....) language

I confirm that he/she was given the opportunity to ask questions/seek clarifications and the same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name.....

Signature..... OR Thumb Print

Date.....



INVESTIGATOR STATEMENT 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.

Researcher's name.....

Signature

Date.....



Appendix 3: Structured Questionnaire

Topic: “Factors Associated with Linkage to HIV Care Services Among Newly Diagnosed HIV-Positive Individuals: A Case Study of The Greater Accra Regional Hospital”.

Date:

Patient’s ID code.....

SECTION A-Socio-demographic Characteristics				
No	Question	Response	Code	Skip
I.	Age (in years)	1. Below 20 2. 20-29 3. 30-39 4. 40-49 5. 50 and above		
II.	Sex	1. Female 2. Male 3. Prefer not to say		
III.	Marital Status	1. Married 2. Single 3. Divorced 4. Separated 5. Widow (er) 6. Cohabiting		

IV.	Educational Level	1. Nil		
		2. Primary		
		3. JHS		
		4. SHS/Tech		
		5. Tertiary		
		6. Other		
V.	Location (Where do you stay)			
VI.	Occupation (<i>choose only one</i>)	1. Full time		
		2. Part-time		
		3. Self-employed		
		4. Unemployed		
VII.	Religion	1. Muslim		
		2. Christian		
		3. Traditional		
		4. Other		
		5. None		
VIII.	Level of Income	1. <Ghs500		
		2. Ghs500-Ghs1500		
		3. Ghs1500-Ghs2500		
		4. Above Ghs2500		
SECTION B- Factors associated with linkage to HIV care services.				
On a scale of 1-5, how will you rate the potential impact of these barriers? (1- extremely low, 2- low, 3- neutral, 4- high, 5- extremely high)				
I.	I have reliable transportation to the health facility	1. Extremely low		
		2. Low		

		3. Neutral		
		4. High		
		5. Extremely high		
II.	I have enough time to attend medical appointments	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
III.	I have a stable living situation	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
IV.	I can find providers and/or interpreters who speak the same language as me	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
V.	I have health insurance	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
VI.	Clinic times are convenient for me	1. Extremely low		
		2. Low		

		3. Neutral		
		4. High		
		5. Extremely high		
VII.	I am afraid other people will find out that I have HIV if I seek care.	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
VIII.	I believe that my HIV will be healed through my faith	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
IX.	I prefer to use natural and herbal treatments	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
X.	Sometimes I feel depressed, anxious, or have other mental health concerns	1. Extremely low		
		2. Low		
		3. Neutral		
		4. High		
		5. Extremely high		
XI.	I have felt discriminated against when seeking care.	1. Extremely low		
		2. Low		

		3. Neutral		
		4. High		
		5. Extremely high		
SECTION C- Linkage to HIV care services.				
I.	When were you diagnosed with HIV			
II.	Have you been recommended for ART treatment?	1. Yes 2. No		
III.	If yes was adherence counseling done?	1. Yes 2. No		
IV.	Are you on ART? (ARV treatment and Adherence)	1. Yes 2. No		
V.	How often do you visit the hospital for review and medication	1. Very often 2. Not often 3. Once in a while		
VI.	Patients' length of ART use	1. ≤ 3 months 2. Between 4 to 6 months 3. Between 7 to 9 months 4. Between 10 to 12 months 5. Discontinued ART completely		
VII.	If ART was discontinued, what was the reason?			
VIII.	Are you able to freely discuss with your health	1. Yes		

	provider about your complications and challenges?	2. No		
IX.	What support do you get to help start or adhere to your medication	1. From health personnel 2. From family? 3. From church? 4. From any other source?		



Appendix 4: Interview Guide for Health Staff

Section D - Assess knowledge of service providers on factors contributing to low linkage to care.

Date:

Service Provider code.....

Section A

a. Age:

b. Sex:

1. Male
2. Female

c. Marital status:

1. Single
2. Married
3. In relationship
4. Cohabiting

d. Profession (Rank):

1. Registered General Nurse
2. Enrolled Nurse
3. Community Health Nurse
4. Registered Community Health Nurse
5. Midwife

6. Other (specify):

e. Religion:

1. Christian
2. Muslim
3. Traditional
4. Other.....

Section B

1. What is your understanding of linkage to HIV care?

.....

.....

.....

.....

2. Currently, how are newly diagnosed HIV-positive individuals linked to HIV care plans in this facility?

.....

.....

.....

3. What mechanisms or systems are in place to help newly diagnosed HIV clients to start treatment?

.....

.....

.....

.....

4. How many clients diagnosed with HIV have started ARV treatment in the past month?
 - a. 1-5
 - b. 6-10
 - c. 11-15
 - d. 16-20
 - e. more than 20

5. How comfortable do clients feel discussing their medical challenges with you?

Section C

1. Which of the following factors do you think prevents newly HIV diagnosed clients from starting HIV e.g., ARV treatment?
 - a. Socio-economic Factors (Income level, Cost of Treatment)
 - b. Structural Factors (Waiting time, Distance)
 - c. HIV-related Factors (Stigma, Psychosocial support)

- a. Which of the following factors contribute to delayed linkage to care at the facility level?

Financial

 - a. Logistics
 - b. Social
 - c. Medical

2. Kindly share with us your day-to-day experiences at the clinic?

.....

.....

.....

.....
.....

3. In your way, how can immediate linkage to HIV care be improved?

.....
.....
.....

4. What additional resources do you need to facilitate successful linkage to care or improve the facility linkage rate?

.....
.....
.....



Appendix 5: Ethical Clearance

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

*In case of reply the
number and date of this
Letter should be quoted.*



My Ref. GHS/RDD/ERC/Admin/App 121/551
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
Tel: +233-302-681109
Fax + 233-302-685424
Email: ethics.research@ghsmail.org
10th December, 2021

Naadu Awuradwoa Addico
P.O. Box DC 360 Dansoman-Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	GHS-ERC: 034/10/21
Study Title	Factors Associated with Linkage to HIV Care Services among Newly Diagnosed HIV-Positive Individuals: A Case Study of the Greater Accra Regional Hospital
Approval Date	10 th December, 2021
Expiry Date	9 th December, 2022
GHS-ERC Decision	Approved

This approval requires the following from the Principal Investigator

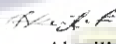
- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED... 

Dr. James Akazili
(Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra