**UNIVERSITY OF GHANA**

# FACILITATORS AND BARRIERS TO ANTIRETROVIRAL THERAPY ADHERENCE AMONG HIV/AIDS PATIENTS: A MULTI-CASE STUDY OF SUNYANI REGIONAL AND MUNICIPAL HOSPITALS

**BY**

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**A THESIS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PHILOSOPHY IN HEALTH SERVICES MANAGEMENT**

**JULY 2015**

## DECLARATION

I do hereby declare that this study is the result of my own research and that no part of this work has been presented for another degree in the University of Ghana or elsewhere. All references have been duly acknowledged.

I bear sole responsibility for any shortcomings.

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Angela Kwakyewaa Amankwah Date

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**CERTIFICATION**

I hereby certify that this Thesis was supervised in accordance with the procedures laid down by the University of Ghana.

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DR LILY YARNEY DATE

(SUPERVISOR)

## DEDICATION

I dedicate this work to Mr. and Mrs. Amankwah, Mr. and Mrs. Owusu Amankwah, Priscilla Serwaa Amankwah, Alfred Kuma Amponsah, Prince Albert Amankwah and my Family Members.

## ACKNOWLEDGEMENT

Glory to God for giving me wisdom and grace to complete my Thesis. My honest appreciation goes to my supervisor for her guidance, inspiration and support. Dr. Lily Yarney, may God richly bless you. My sincere gratitude goes to my Daddy for his love, care and support. I appreciate the warm welcome I received from health workers at the Sunyani Regional and Municipal Hospitals. I am grateful for your support in gathering clients for interviews. To my family and friends thank you for being there for me. Ella, Adwoa, Botwe Foster, Raymond, Andy, Zenabu, Debby, Sammy, Vera, Lardi, Emily may God bless you.

It would have been impossible to undertake this research without the permission from managers of Sunyani Regional and Municipal hospital. I am very beholden for giving me the opportunity to using your facility for research.

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| | |
|---|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| ART | Antiretroviral Therapy |
| ARV | Antiretroviral |
| CD4 | Cluster of Differentiation 4 |
| DOT | Directly Observed Therapy |
| DHIMS | District Health Information Management System |
| FDGs | Focus Group Discussions |
| GHS | Ghana Health Service |
| HIV | Human Immune Deficiency Virus |
| HAART | Highly Active Antiretroviral Therapy |
| MEMs | Medication Electronic Monitoring System |
| MOH | Ministry of Health |
| NRITIs | Nucleoside Reverse Transcriptase Inhibitor |
| NHIS | National Health Insurance Scheme |
| PI | Protease Inhibitor |
| PMTCT | Prevention Mother to Child Transmission |
| PLHIV | People Living with HIV |
| RNA | Ribonucleic Acid |
| SMH | Sunyani Municipal Health |

| | |
|---|---|
| SPSS | Statistical Package for the Social Sciences |
| TH | T-helper Lymphocyte |
| UNAIDS | United Nations Programme on HIV/AIDS |
| UNICEF | United Nations Children Fund |
| WHO | World Health Organization |

**ABSTRACT**

HIV and AIDS was discovered as far back as 1981, however a cure for it is yet to be found. The only remedy to treat the disease is Adherence to Antiretroviral therapy. Over the years, non-adherence to ART has become an important issue in HIV and AIDS treatment. In this regard, the study sort to assess facilitators and barriers to antiretroviral therapy adherence among HIV and AIDS clients seeking care at Sunyani Regional and Municipal Hospitals. The key purpose guiding the study was to find out the influence of individual, social, and service factors on adherence to ART. To achieve the objectives, a multi-case study design which allowed for inter facility comparison and a mixed method approach was used to collect data. Purposive sampling was use to select 141 respondents. With the quantitative approach, questionnaire were administered to 120 respondents. For qualitative approach, in-depth interviews were conducted for 5 health professionals while 16 others were selected for focus group discussions. Chi square analysis was utilized to analyze quantitative data while qualitative data was transcribed and analyzed thematically. All respondents had 100% adherence in three days assessment, but 25% did not take medication fully in the seven day's assessment. The main facilitators of adherence to ART comprised: existence of support; health promotion activities; free supply of ARVs; and cordial relationship with health professionals. Adherence barriers were: transportation cost; cost of non-ARVs; delay in service delivery; and different schedules for drugs and consultation. Since all the barriers are facility based, it is recommended that services such as drug delivery systems be improved to ensure satisfactory care.

# CHAPTER ONE

## 1.0 INTRODUCTION OF THE STUDY

### 1.1 Background of the Study

Humanity is faced with chronic diseases such as Diabetes, hypertension, asthma, Cancer (in its various forms) among others. Some of these diseases have no cure and thus, can only be managed. The seriousness of these diseases emanates from the magnitude of damage they can do to the quality of life of patients, which is why they are of foremost public health concern. Notwithstanding the prevalence of many serious ailments, this study is limited to discussion of Acquired Immune Deficiency Syndrome (AIDS) caused by Human Immune Deficiency Virus (HIV), as one of the diseases for which no cure has been found yet. HIV and AIDS have become a health scare in the world since its discovery in 1981 in the US (Joint United Nations Programme on HIV and AIDS & World Health Organization, 2003).

A report by UNAIDS and WHO in 2007 indicates that 33.2 million people were having HIV of which adults accounted for 30.8 million worldwide. Newly infected number was 2.5 million people of which 2.1 million were adults. Deaths associated with HIV and AIDS was 2.1 million people and out of this number, 1.7 million adult deaths were recorded. The report further indicates that everyday about 6,800 people get infected with HIV and 5,700 die as a result of insufficient access to treatment and prevention of HIV and AIDS.

HIV is still a challenge in Ghana, between 1986 and 2006, 121,050 cases were recorded. An estimate of 279,000 people were reported to be living with HIV in 2006 (Dzokoto & Ghana AIDS Commission, 2008). The occurrence of the disease seems to be on a downward trend. However the pattern may be described as irregular due to the fact that occurrences of the disease has been observed to rise and fall over a period of time (2003-2008). This trend was identified in the yearly HIV sentinel survey carried out among antenatal attendants. The prevalence was from 3.6% in 2003 to 2.7% in 2005. The prevalence rate then increased to 3.2% in 2006 and reduced to 2.2% in 2008. Aside the unstable degree of incidence, the pattern of the disease is also not even across the country. There are variances in the regional distribution of the dominance of the disease. Some parts record high prevalence, principally mining and border towns, while others have a lesser rate of prevalence. A major reason for high prevalence in these areas is thought to be the increased commercial activities in those areas, with its attendant attraction of people from all walks of life. A survey conducted in the country revealed that the occurrences of the disease increased in some regions while Brong Ahafo remained the same (Ghana AIDS Commission, 2012).

The recent estimates of prevalence is about 225,478 people infected. Of these it was projected that 100,336 males and 125,141 females were harbouring the disease. The disease prevalence in children was 30,395 and People who died from AIDS were 15,263 (National AIDS Control Programme, 2011). The number of infected persons receiving treatment was 599,007 by the end of 2011 (National AIDS Commission, 2013).

Just like the other chronic illnesses such as Diabetes and hypertension, HIV has no cure. The disease can be managed to enable the individual have a prolonged life. Many

scientists have worked endlessly to discover the cure of the disease but till date, a cure has not been found. The upgrading of clinical research has led to the discovery of antiretroviral drugs giving a new hope to people with HIV. These drugs have been endorsed for prolonging the life expectancy of HIV infected people. The drug enables people living with HIV to have control over the disease by suppressing the multiplication of the virus in the body (Mills *et al*., 2006). The drug combination is able to suppress the HIV RNA thereby enhancing CD4 lymphocyte counts (Mugavero *et al.,* 2006).

Highly Active Antiretroviral Therapy is currently the most effective method of reducing mortality and opportunistic infection accompanied by HIV. Antiretroviral therapy can be started when patients including positive pregnant women have a CD4 count below 350 cells/ml (Ministry of Health/Ghana Health Service, 2010). Since the introduction of ART in the management of HIV, it has produced a remarkable results. Reports by the UNAID (2012) suggested that since 1999 ART has increased the life expectancy rate of people living with the disease in low and middle income countries. It has been reported that About 8 million people had access to ART by the end of 2011.

Antiretroviral therapy was not part of Ghana's public health care system until June 2003. The Health Ministry earmarked two places in the Manya Krobo district as pilot sites. The treatment included counseling and testing, management of sexually transmitted diseases and prevention of mother to child transmission. It was realized that the therapy had made improvements in the management of the disease at the pilot sites. To ensure a reduction in the spread and mortality caused by the disease, treatment sites were expanded. Since its introduction, the treatment sites as of December, 2009 increased from 2 to about 138 and an estimated number of 33, 7745 PLHIV were receiving ART. According to the 2010

report by the MOH and GHS, about 123,245 PLHIV (110,494 adults and 12,751 children) will be given access to ART by 2015 to achieve the universal target. (MOH/GHS, 2010).

Treatment is by complying with drug combination therapy. For adults, it is recommended that two of nucleoside reverse transcriptase inhibitors (NRTIs) plus a non-nucleoside reverse transcriptase inhibitor be administered as fixed dose combination in the initial stage of treatment. Treatment for the second phase consists of two nucleoside reverse transcriptase inhibitor (NRTIs) plus Ritonavir-boosted protease Inhibitor (PI) administered for adults (WHO 2013).

### 1.2 Factors Influencing Effective HIV and AIDS Treatment

Despite the fact that there has been improvement in the management of HIV, the new challenge associated with treatment is adherence to the treatment regimen. Studies conducted on HIV treatment adherence in the Southern States of United States of America revealed that effective adherence leads to about 90% to 95% reduction in the spread of the virus where (HIV RNA levels in the blood) (Mugavero *et al.,* 2006). HAART has been noted to be the effective measure for reducing opportunistic infections and increasing the life expectancy rate of infected persons. This therapy has been adopted by many countries in the world. Sub Saharan Africa which accounts for the major disease burden have benefited from this. The improvements in access to ART drugs have reduced the occurrence of new infection especially in PMTCT (Ampofo, 2009).

A lot of factors affect the treatment success of HIV. Among the factors, strict adherence to treatment regimen appears to be crucial. The reason being that a high level of

adherence is required for drugs to work effectively, which also ensures the avoidance of the development of drug resistance (Nachega *et al.,* 2006). Drug resistance alters treatment by enabling the virus to multiply regardless of the dose taken. The danger associated with drug resistance is that it increases the chances of spreading the disease, particularly with regard to mother to child transmission. However realization of effective compliance by infected people to the requirements of the treatment regime depends on their ability to accept the treatment recommendation. This has proven to be a big challenge for PLHIV (Mills *et al*., 2006). Although ART has been proven to be effective, countries which have been able to implement it have all come up against the challenge of patient adherence to treatment programme.

**1.3 Statement of the Problem**

Since the discovery of ART, many countries have adopted it into their health systems. There has been improvement in access to Highly Active Antiretroviral Therapy (HAART) and ART. Leading to reduction in deaths and diseases associated with HIV. The existence of non-adherence can impede the sustainability of programmes intended at successful HIV and AIDS care. Studies regarding drug adherence and its effect are in the exploratory phase (Ellis D. A., Naar-King, Phillippe, & Secord, 2006). Although the drug combination therapy has shown massive improvements in HIV related deaths, non-adherence is thought to account for the treatment failure in most cases (Obirikorang, Selleh, Abledu, & Fofie, 2013).

Recent study conducted in some African countries suggested that there has been improvement in transmission rate. The number of newly infected people has reduced.

Even though there has been laudable achievements in ART access, treatment of adherence has not been obtained. In Malawi, it was revealed that almost half of the people who started ART were no longer attending clinic after 5 years. Kenya recorded about 40% discontinuity of treatment (Carlucci *et al.,* 2006).

A lot of studies carried out on adherence in low and middle income countries identified factors such as financial constraints, stigma and inadequate information as hindrance to adherence (Nachega, 2006). These factors tend to gain prominence in places with high poverty levels, which generally fits the circumstances of many African countries. Most of the people affected with the disease happen to be in deprived areas where health care accessibility is not optimal. Even though these challenges exist, a lot of resources have been channelled into accelerating access to ART. There is no doubt that accessibility has been improved as reported by UNAIDS in 2012. There are a lot of factors that are yet to be discovered. Ghana for instance have dealt with financial access by subsidizing the cost of ART. People living with HIV have access to free health care. They receive free supply of antiretroviral (ARV) drugs.

Drug adherence depends on both the patients and the relation that exist between providers and patients. Understanding the patient's perspective and reactions after commencing treatment will aid treatment adherence. Studies that applied the objective adherence measure revealed that about 70% of prescribed doses are taken in the treatment of HIV (Horne, Cooper, Gellaitry, Date & Fisher, 2007).

A lot has been done in the area of treatment adherence (Horne *et al.,* 2007; Chesney *et al.,* 2000; Conway, 2007; Mills *et al.,* 2006). Most of these studies were carried out in

developed countries and Southern Africa. Though there are studies in Ghana (Obrikorang *et al.,* 2013; Ohene & Forson, 2009) these studies were conducted in only one facility. This research goes beyond what has been done in Ghana by using a multi case study method to identify whether there are differences in adherence to ART in these two facilities. Again these studies considered individual factors. The research adds social and facility support structures as a way of improving research outcomes.

Again, since the implementation of HAART in 2003, studies on HIV have been directed at reducing new infections. Though there are reports on enhanced effect months into therapy, diminutive data have been published bearing in mind ART adherence and issues concerning treatments (Ohene & Forson, 2009). This has the potential to impact negatively on HIV treatment effectiveness and needs to be urgently addressed. This paper therefore seeks to investigate factors that influence HIV treatment adherence in Sunyani Regional and Municipal hospitals and make recommendations to address them as a way forward for improving treatment effectiveness.

## 1.4 Objectives of the Study

### 1.4.1 Main Objective

The main objective of the study was to assess factors that influence adherence to antiretroviral therapy among HIV and AIDS patients. The study sought to bring to bear the individual characteristics, influence of social support and service delivery factors on adherence to antiretroviral therapy.

### 1.4.2 Specific Objectives

The study considered the following specific objectives

1. Assess individual characteristics that influence adherence to ART.
2. Identify the influence of social factors on adherence to ART.
3. Ascertain the influence of service delivery factors on adherence to ART.
4. Explore the extent to which differences exist in adherence to ART in the two facilities.

## 1.5 Research Questions

To achieve the set objectives, the following research questions were posed.

1. What are the major individual characteristics that influence adherence to ART?
2. What social relations have effect on treatment compliance to ART?
3. What are the service delivery factors that aid treatment compliance to ART**?**
4. Are there differences in terms of adherence to ART in the two health facilities?

## 1.6 Significance of the Study

The main aim of the study is to provide evidence based research to enhance the ability of people living with HIV and AIDS to adhere to antiretroviral therapy. Since the success of highly active antiretroviral therapy relies on the willingness of clients to adhere to treatment requirements, assessing factors which influence their adherence is crucial for achieving optimal health outcomes. This study therefore assesses facilitators and barriers to ART among HIV/AIDS patients receiving care at the Sunyani Regional and Municipal

Hospitals in Ghana. Adherence to medication is an emerging issue in the management of chronic diseases. Taking medication consistently for a life time is challenging and most people get fed-up after some time. In effect, treatment processes are distorted leading to negative results in health outcomes like mortalities and infections. This study therefore hopes to provide an insight into factors which affect adherence to long time therapies with emphasis on HIV and AIDS care.

Also, an individual's ability to comply with medication depends on one's commitment as well as support from the society and health facility. The study hopes to unravel issues pertaining to factors which affect adherence to ART from the individual perspective, social and service delivery aspects which impede or aid ART adherence. Exposure to these important elements in adherence to medication may provide insight into the dynamics of ART adherence and gaps which need to be addressed.

Again, health workers are essential resources for management of chronic illnesses. Their activities can impact positively or negatively on health seeking behaviours. Patients' decisions to adhere sometimes depend on how health workers relate to them. Cordial relationship between providers and patients may aid adherence to ART. Discoveries of the study may inform health professionals on how clients perceive services rendered to them. It may also give an insight to management on how to improve HAART service delivery.

Furthermore, the study may uncover setbacks on Highly Active Antiretroviral Therapy Policy which aims at enhancing the lives of people living with HIV and AIDS. Feedback from the study may provide challenges faced by the initiative and suggest ways to

address them. Ghana AIDS Commission, Ministry of Health and Ghana Health Service may adopt suggestions to ensure access to ART and dealing with HIV and AIDS issues.

### 1.7 Scope of the Study

The study is limited to two institutions, the Regional and Municipal hospitals in Sunyani. These health facilities are considered based on high patronage by the people in the Brong Ahafo Region. These hospitals have special days on which only HIV and AIDS clients attend as a way of facilitating their access to healthcare. The study encompasses people with different social, ethnic and religious backgrounds and geographical regions with divergent views on what influences their adherence to ART treatment. The Sunyani Municipal hospital serves people from the Sunyani community while the Regional Hospital serves people from different areas. The municipal hospital is in the middle of the capital while the regional is quite far from the main township. Location of the clinic has some influence at regular attendance of clinic as scheduled. With issues of stigma, people may prefer to attend clinic where they will not be seen. The study therefore intends to find out whether there could be differences in adherence of ART between these two health facilities.

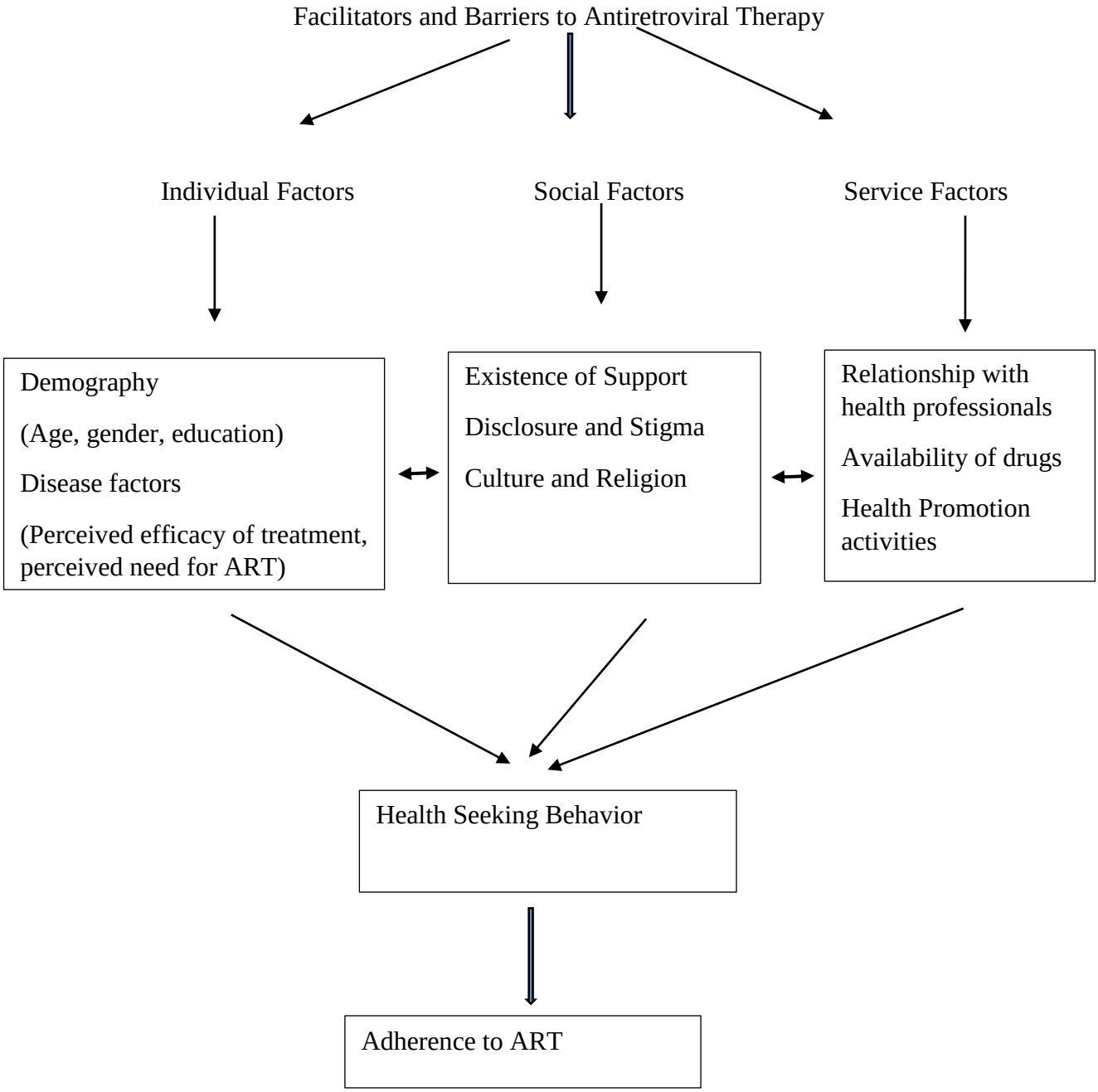
### 1.8 Organization of This Thesis

This study is structured into five (5) main chapters. Chapter one introduces the study by discussing the background of the study, problem statement and research objectives. Other areas covered in chapter one include; research questions, significance of the study, and scope of the study. Chapter two presents literature review on factors which influence adherence to ART. This was followed by theoretical framework on adherence to

antiretroviral therapy. Chapter three discusses methodology of the work. Research design, study areas and research population are discussed. This is preceded by discussion of sample size and sampling technique, data collection procedure as well as how data were analysed. The fourth chapter presents the research findings, analysis and discussion of findings. Summary of research findings, conclusions and recommendations are discussed in chapter five.

### 1.9 Conceptual Framework on Factors Influencing Adherence to Antiretroviral Therapy

**Figure 1: Conceptual Framework Facilitators and Barriers to Adherence of ART**




Source: (Posse, Meheus, Asten, Andre, & Baultussen, 2008) with additions.

Compliance with treatment therapy can be viewed from three main perspectives. The individual level, the social level and facility level. Usually, adherence is assessed at only the individual level but the other aspects play a vital role in ensuring adherence to treatment. The study dwells on the health belief model and information motivation model to explore factors which influence adherence to ART.

For most individuals with chronic ailments, taking treatment can be challenging. There are a lot of factors which influence one's ability to comply with treatment requirements. Adherence is usually influenced by individual's perception and need for treatment. Human beings are rational beings therefore they will take action when it is beneficial. If clients perceive the therapy as essential then adherence might be obtained. On the contrary, if one has no need for the treatment, then adherence cannot be certain. Adherence to Antiretroviral therapy is influenced by gender, literacy rate, employment, religion among others.

An important influence of health care is accessibility. To ensure continuity of care, ART must be accessible to clients without any barriers. Notwithstanding this, clients usually face structural and geographical barriers. For fear of stigma, some people travel long distances to receive care. High cost of transportation inhibits their ability to attend clinic or refill their drugs on regular basis.

Conversely, optimal adherence can be achieved when one has social support. These structures enable clients to cope with the disease. Having some support from family and friends in taking treatment has a significant influence on adherence to treatment. Social support can be in the form of financial assistance, monitoring of pills taking, among

others. Again, the disease is associated with stigma which hinders most clients from adhering to treatment. Some clients may fail to visit the pharmacy for refill on seeing that there is someone he or she knows at the pharmacy. Another influence is culture and religion. The belief that HIV is a spiritual disease or can be cured in the shrine or prayer camp has influence on adherence. People with these strong beliefs fail to continue treatment therapy.

Another essential factor that has a considerable influence on adherence is facility structure or service delivery factor. The relationship between health professionals in terms of information flow, confidentiality, quality service delivery among others influence adherence to treatment. Adequate supply or availability of both human and logistic resources also aids or hinders adherence to ART.

In conjunction, individual factors, social structures and facility structures influence health seeking behaviours. When an individual is motivated by the society he or she lives in, it enhances the individual's ability to seek care when the need arises. When social support is absent, one may not even realize the need for existence thereby reducing adherence to treatment.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### Introduction

This section is a review of literature on factors that influence treatment adherence of HIV. Three main factors are considered here; the individual characteristics, social support and facility based structures that affect adherence.

### 2.1 Definition of Adherence in the Management of HIV and AIDS

For treatment therapy to be initiated, the client's readiness is important. Clients must be informed about the risks and benefits of initiating treatment. They also have to understand the relevance of medication adherence and how it affects their health condition (Bartlett, Cheever, Johnson, & Douglas, 2004). Adherence to HIV and AIDS treatment therapy especially medication appointments is necessary for the primary care of infected individuals. There is no universal definition of adherence to treatment (Machtinger & Bangsberg 2006; Simoni, Frick, Pantalone & Tuner, 2003). However, adhering to medication denotes sticking to the prescribed dosage of medication and how the drug is to be taken. It entails following directives for taking treatment and complying with all requirements. The requirements may include the time frame to take medication, the type of diet to take, period to seek review among others.

During the adherence summit by WHO in June 2001, it was noted that most researchers define adherence as "the extent to which patients followed instructions". This definition is thought to be inconsistent with what adherence really entails. This is because the

process of adhering to treatment is not merely following instructions but also involves a series of voluntary actions that culminate in a patient's effort to seek medical attention as well as the commitment to follow drug regimens. The report from the WHO adherence meeting adopted the definition of Haynes and Rand (WHO, 2003). Adherence was thus defined as "the extent to which a person's behaviour taking medication, following a diet, and/or executing lifestyle changes, correspond with agreed recommendations of a health care provider".

Machtinger & Bangsberg (2006) defined adherence as "the extent to which a patient takes medication in the way intended by a health care provider". To them adherence and non-adherence are statements of fact and not necessarily expressions of responsibilities towards the patients or the provider.

Simoni *et al*., (2003) adopted the definition by Jani A.A. (2002), medication adherence "has been defined as "the ability of the person living with HIV/AIDS to be involved in choosing, starting, managing, and maintaining a given therapeutic combination of medication regimen to control viral (HIV) replication and improve immune function."

The various definitions of adherence to treatment suggest that adherence relies on the patient as well as the health professional. Health professionals are to communicate effectively with patients in terms of how to take medications as well as other recommendations associated with the drugs. The patient on the other hand, must understand the process and accept to comply with directives given. Adherence in this study is defined as the willingness of an individual to take medication as directed by the health service provider and comply with treatment requirements. Adherence to

medication entails taking prescribed dosage at the scheduled time and keeping clinic appointments.

### 2.1.2 Need for Adherence

For people living with HIV, adherence to medication is important to reduce the spread of the virus. The nature of the virus is such that it multiplies and mutates rapidly enabling it to overcome the immune system. As a result of this, very high drug compliance is necessary to reduce the chance of the virus becoming drug resistant. According to (Wood, Kerra, Tyndalla, & Montaner, 2008), patients who do not adhere to treatment have lower CD4 cell count (6 cells/mm3) and higher mortalities.

When the HIV virus gets into the human body, the virus attacks the CD4 cells making them unable to multiply. The T cells and B cells in the body are responsible for protecting the body against infections. The CD4 protein aids the T cells to perform its functions. Therefore, the HIV virus exploits a normal TH lymphocytes protein for binding itself to its target cell. Infection of TH cells by HIV can be stopped if monoclonal antibody made against CD4 is added to these lymphocytes preceding attack by HIV. The anti-CD4 antibody works by shelling up the CD4 molecules which prevent HIV particles from logging to CD4 and binding itself to TH cell surface (Luc, 2005).

In order to limit the activity of the virus, the therapy ensures that viral loads are reduced keeping CD4 counts high. If there is less medication in the bloodstream, the virus is able to mutate enabling it to build resistance to the drug. This hinders future treatment options for the disease, making it hard for clients to treat infections (Chesney, 2000). This makes antiretroviral therapy very important to ensure reduced morbidity and mortality

(Machtinger & Bangsberg, 2006). The required adherence level for a successful treatment outcomes is 95% and above (Lima *et al.,* 2008; Paterson *et al.,* 2000).

### 2.1.3 Measurement of Adherence

In assessing whether clients comply with medication, three main methods can be used. They include the subjective method, the objective method and physiological method. The subjective method is based on the self-report of patients or other reports on adherence.

With the subjective method, questionnaires are administered to clients for them to fill. This method is usually referred to as self-reported adherence. It can be done by the pharmacist who records client's pills intake. Questions on whether the clients have missed doses and what might have influenced this are asked (Chalker, *et al*., 2009). The data gathered are used to ascertain why clients refused to adhere to treatment. This method is easy to assess adherence, the underlining assumption being that clients are very honest with their report of adherence (Machtinger & Bangsberg, 2006). The subjective method also uses a medical chart to assess level of adherence. If the subjective method is employed, there is the need to assess the behaviour of clients towards their daily intake of drugs.

In the objective method directly observed treatment (DOT), pill count, pharmacy refill records, use of mechanical or electronic monitors of pills or drug use are the assessment tools. There are various alternatives for analyzing adherence using the objective method. The DOT method employs direct observation of medication taken by clients. Health worker observes the patients taking the drugs directly. The method confirms adherence since the drug is taken in the presence of the health worker. Effective as it can be as used

for treating tuberculosis, this method is costly and experience with stigma and long life treatment of HIV and AIDS makes it not efficient for measuring adherence to ART (Steel, Nwokike, & Joshi, 2007).

One method is the use of Medication Electronic Monitoring System (MEMs cap). With this method, a computer chip is embedded in a pill-bottle cap to record the period of each opening of the bottle. This bottle is designed to identify when each pill is taken from the bottle. Assessing adherence with this method is done by dividing the number of time-appropriate bottle openings by the number of expected doses over the study period (Machtinger and Bangsberg, 2006).

Another method that can be adopted is the use of pill count. This provides the time period of drug dispenses. Health professionals count the number of pills remaining in a drug bottle clients bring. This is recorded and assessed with the number of pills that clients should have taken (Turner, 2002). Another option is paying unannounced visits to clients at their resident to assess their level of drug taking. Health professionals check the quantity of drug clients possess. The remaining doses of medication are counted against what is expected to be taken to confirm adherence. The excess of what is remaining represents missed doses (Chesney, 2000). Again this method can be used to assess refill attendance. Appointments cards can be used to verify the date clients showed up for antiretroviral drugs against the date clients were scheduled. When records indicate refills are not taken in the time that is expected, then it is assumed clients are missing doses and that accounts for the delay in refills (Turner, 2002).

Pharmacy count is effective in combination with MEMs cap (Medication Electronic Monitoring System) a physiological method. With this method, an electronic monitoring system is used to ascertain adherence to ART The device is a pill bottle with caps that has an electronic chip to record each time the bottle is opened (Tuner, 2002). In studies that used the MEMs Cap, it was identified that adherence was significantly associated with successful virologic outcome (Paterson *et al.*, 2000).

Most studies on adherence to treatment combine both the subjective and objective methods. Researchers use the self-report in comparison to pill count. This is to have accurate information on adherence since self- report only cannot be reliable (Chesney, 2000). Nonetheless employing one method for measuring adherence cannot predict optimal adherence accurately (Steel *et al.*, 2007). The study utilizes self-reported adherence to medication to assess ART adherence among clients who patronize Sunyani Regional and Municipal Hospital. The study utilized three and seven days reported adherence. Therefore self-reported adherence is appropriate trusting that clients are honest with how they took their medication.

### 2.3 Individual Characteristics that Influence Adherence to ART

In the treatment of any disease, the commitment of the individual to follow treatment plan is vital. If the individual fails to accept the disease condition and make a decision to work towards its successful medication, treatment will not be effective. Usually, general drug compliance is influenced by factors associated with the individual. According to Forgarty *et al*., (2002) daily activities can make people forget to take their medication or leave them behind. For instance, emergency travel can make patients forget their drugs.

Also, people may sleep through dose times so they are unable to take all the required doses. Forgaty *et al.,* (2002), also stated that some people simply get fed up with the drug regimen and stop taking the drugs. For HIV treatment, it is important to identify the perception individuals have about treatment to ensure compliance. Padarath, Searle & Esu-Williams (2006) cited poverty, food insecurity, lack of basic amenities like water, illiteracy and unemployment as barriers to testing and treatment of HIV and AIDS. A study in Nigeria also attested that non-adherence was a problem in the clinic under study. The main barriers that influenced adherence to ART were; feeling of being healthy, forgetfulness, and reluctance to disclose status (Olowookere, Fatiregun, Akinyemi, Bamgboye, & Osagbemi, 2008).

Many studies have been carried out on the individual attributes that affect ART compliance. (Boyarinova, 2007; Spirea *et al.,* 2002; Murray *et al.,* 2009; Grierson, Koelmeyer, Smith, & Pitts, 2011; Lucas, Chaison, & Moore 1999; Reif, Golin & Smith 2005). Some studies identified gender, age, literacy level, employment, knowledge of the disease, treatment side effects as well as medication scheduling as factors that influence adherence.

Research on adherence to antiretroviral therapy identified gender as a key factor that influenced adherence. Investigations identified that women were less adherent to treatment. It was said that women were vulnerable when it comes to HIV and this influenced their ability to adhere to treatment. They are usually not empowered to continue treatment (Bailey *et al.,* 2014; Murray *et al.,* 2010; Nagarina, Popenoe,Kilewo, Biberfeld, & Ekstrom, 2013). According to Ferguson, Stewart, Funkhouser, Westfall, & Sagg, (2002), women and men experience different forms of barriers when it comes to

HIV issues. More women are likely to face stigma and discrimination than men. Stigma faced by women affects their adherence to ART and access to healthcare (Carr & Gramling, 2004). Women tend not to be motivated to take drug regimen. Some also are unable to seek regular medical attention because of the social ridicule that comes with attending HAART. A qualitative study carried out on adherence to ART recommended that there should be more HIV and AIDS programmes and interventions to enable women adhere to treatment (Roberts & Mann, 2000; Roberts 2000).

A study conducted to assess factors that account for the discontinuity of ART confirmed the above argument. The study revealed that women were negatively associated with adherence to ART (Hanif, et al., 2013). They tend not to be motivated to take drug regimen as a result of stigma. This is probably the result of a belief in many cultures that HIV is contracted through immoral behaviour. Women in most cultural settings are expected to live a chaste life therefore an HIV positive woman is looked upon as having deviated from some moral standards. Men in most cultural settings are permitted to marry more than one so if a man show certain behaviours are accepted. A man who acquires HIV may be seen as unlucky and not a social deviant. That is why women and men may experience different form of stigma. Notwithstanding this, men and women may have different level of adherence depending on the kind of support one receives in treatment process.

Dissimilar, an assessment of mortalities among patients on ART revealed that men had a higher mortality rate than women. The study made known that men present late for ART at a worse clinical stage and are also not adherent to treatment in comparison to women (Taylor-Smith, Tweya, Harries, Schoutene, & Jahn, 2010). Men were also associated

with difficulty in taking medication in a prospective study conducted in Brazil (Bonolo, et al., 2013).

On the contrary, a study by Fogarty *et al.*, (2002) disproved that gender had influence on adherence to ART. The study revealed that gender was not steadily related with adherence to ART. Although there was a disparity in adherence between the young and old, the study observed that gender had less influence on adherence. What accounts for the disparity in these findings can be contextual. In some parts of the world women are comparatively better empowered therefore they are able to have control over many aspects of their lives. In other cultures however, women are the vulnerable group and are less informed when it comes to HIV treatment. Some studies also found age as an influence on adherence to ART. These studies associated non-adherence to young people (Tufano, Amara, Cardoso, & Malbergier, 2014) Ammassari *et al*., 2001)

Studies on HIV stigma and its influence on adherence identified that clients are unable to take their drug regimen as a result of perceived stigma (Curioso, Kepka, Cabello, Segura, & Kurth, 2010; Rintamaki, Davis, Skripkauskas, Bennette, & wolf, 2006). Many people tend to conceal their treatments to prevent discrimination from their friends and loved ones. In Tanzania, it was revealed that the persistent stigma in the region associated with HIV was a main drawback to treatment compliance (Mshana, *et al*., 2006). According to Padarath, Searle & Esu-Williams (2006), stigma in the family and community was an obstacle to testing and treatment of HIV and AIDS. Participants in their study reported difficulty in disclosing their status for fear of stigma and discrimination. The research revealed that stigma was less in cases where there was an already infected loved one. A similar study by Kagee & Delport (2010) identified that, if patients were seen by their

family members or colleagues taking ART drugs or attending clinic, it could subject them to stigma and discrimination. To avoid this client's preferred seeking care far away and waited till no one was watching before taking medication. In a focus group discussion, participants admitted that disclosure of status and stigma that accompanied it had influence on taking drugs (Kagee, et al., 2011).

Another area of interest is knowledge and perception of HIV and AIDS, a contributory factor to adherence to ART. Knowledge and perception of HIV and AIDS is influenced by the flow of information. Information about the disease process, treatment procedure, drug resistance, non-adherence and its effects are vital for attaining compliance to ART.

Studies have revealed that in countries with resource challenges there is usually low health literacy (Kalichman & Simbayi, 2004). Low educational level has been associated with non-adherence to ART in some studies (Gokran, Narkheda, Pardeshi, & Doibale, 2012; Karcher, Odera, Kurz & Harms 2007). Clients with low literacy tend to view medication as only a tertiary measure and not prophylactic measure. They believe that unless health deteriorates, there is no need seeking healthcare. This has a negative influence on adhering to treatment (Kagee & Delport, 2010 ). Another study conducted by Kagee *et al.,* (2011) found out that health literacy influenced pill taking and clinic attendance. Clients were less informed about the medication regimen and this affected their compliance to treatment. Posse & Baltussen, (2009) also asserted that if information provided at the health facility is clearly understood by clients they are able to adhere to treatment. In affirmation of this, a study carried out on the effect of knowledge, attitudes and beliefs on HIV in South Africa proved that knowledge about effects of non-adherence to ART had positive influence on adherence (Nachega *et al.,* 2005).

Other important factors which influence ART adherence are treatment side effects and medication scheduling. Medication taking is accompanied by dealing with its side effects which account for patients missing doses (Ogbochi, Modeste, Lee, Gleason, & Matnard-Tucker, 2014). Many PLWHIV complain of their inability to do active work after commencing treatment (Mills *et al.,* 2006). This affects their willingness to follow treatment measure. A mixed method research approach identified that, belief in taking medication as an important remedy to improve health was a factor to high level of adherence to medication. Belief that ARVs was important to ensure good health was an important basis for adherence to ART. On the contrary, clients who thought they needed to take medication only when they were sick were non-adherent to ART (Murphy, Roberts, Martin, Marelich, & Hoffman, 2000). This revelation is possible because most people seek healthcare when one's health has deteriorated. In such a situation, medication is perceived as important for cure of the disease. In this regard, people who are tested HIV positive at a very late stage of the condition are likely to take medication seriously to avoid going back to that health condition. Luszczynska, Sarkar & Knoll (2007) confirmed that benefits from medication had influence on adherence to ART. Patients with resilient certainty about benefits of medication regarding their physical functioning, ability to cope with the disease and improved health elicited better adherence to treatment.

An enabling factor that promotes adherence to ART is acceptance of HIV status. Studies have found that acceptance of status enables patients to develop positive attitudes aimed at ensuring good health by complying with directives. The difference between pre-diagnosis poor health and post-treatment improvement in health serves as a motivator to adhere to treatment. An individual's aspiration to look healthy and to avoid being

identified as HIV positive, reinforced adherence to ART (Nama, *et al*., 2008). In this study, self-denial was found to be responsible for non-adherence to Antiretroviral Therapy. Similarly, a study in Tanzania confirmed that experiencing substantial progresses in health after beginning ART and self-assurance in medication was a motivator to adhere to ART. Apparent need to stay healthy for their families accelerated adherence to ART. To safeguard adherence, participants established tactics to recollect pills taking daily (Watt *et al.*, 2009). Another study in South Eastern United states confirmed that strong intentions to adhere, effectiveness of treatment coupled with higher level of perceived general health correlated strongly with adherence to ART (Holstad, Pace, De, & Ura, 2006) Interestingly, Mugavero *et al.*, (2006) in a cohort study provided insight that people with lifetime traumatic events were more likely to be non-adherent to ART.

### 2.4 Social Factors that Influenced Adherence to ART

General drug adherence is successful if the available social support structures create an enabling environment to aid medication compliance. People living with HIV require positive support from the society to live with the disease. This is not normally achieved especially in developing countries. Drug adherence is influenced by stigma, family support, and social infrastructure, among others.

Although revealing status can expose one to stigma, having someone to assist in adhering to medication and treatment requirements can enable PLWHIV adhere to ART. Good social support predicts better adherence (Afolabi, Afolabi, MA, & Olowookere, 2013). Some clients indicate having someone to remind you of the time to take treatment aids

their adherence. People like partners, siblings, parents and friends had high moral influence on the attitude of PLHIV towards treatment. They had an influence in the health decision of PLHIV therefore their support promotes good adherence (Nachegba *et al.*, 2006). Among 260 HIV positive individuals surveyed, living alone accounted for poor adherence to treatment (Pratt *et al.*, 2001). This is complemented by Simoni *et al.*, (2006) who found that social support from family and friends and self-efficacy influenced adherence.

In four focus group discussions, participants expressed that support was very helpful in adherence to ART. Participants who had support from friends, family, partners among others attested that the encouragement they received from these people promoted their adherence to ART. Such people reported high adherence levels. On the contrary, unwillingness to take medication in public or in the watch of family and friends was a barrier to adherence of medication (Murphy *et al.*, 2000).

Not much different from Murphy *et al.*, (2000), a mixed method study in China on the role of family care givers on adherence to ART revealed that family responsibility is an important component to promote adherence to ART among persons living with HIV and AIDS. The study identified providing access, knowledge and motivation to people living with HIV as key components of promoting adherence by family care givers. Patients with family support reported superior adherence to ART (Fredriksen-Goldsen, *et al*., 2011).

Having someone to confide in and to support in terms of taking drugs is vital for adherence. Godin, Co^te, Naccache, Lambert, & Trottier (2005), confirmed this submission. Their study identified that there was high adherence among individuals who

had companions. Likewise, Nama *et al.,* (2007) in an adept interview found that finding someone trustworthy whom they could share the encumbrance of being HIV positive was a motivator to adhere to ART. Similarly, according to Greeff, Phetlhu & Makoae, (2008), being accepted after disclosure of status as well as being involved in support groups had a positive influence on adherence. Deducing from the conviction above, social support in HIV treatment can be derived from involvement in programmes like health education, counselling, among others gives people living with HIV some level of motivation. This involvement creates an avenue for peer support which may enhance HIV patient's ability to comply with treatment requirements.

The attainment of positive health outcomes depends on the accessibility of care to clients. The nearness to health facility has an influence on its utilization. If clients are living close to health care facilities, they are able to attend HAART as scheduled. On the other, if they have to access a distant facility, they are less likely to attend clinic days on schedule.

Among the factors which influence adherence in low and middle income countries include transportation cost and the ability of rural folks to access regular HAART. Most people rely on public transport systems and are thus adversely affected by hikes in transport fares. Transportation cost prevents people from attending clinic to restock their drugs (Mills *et al.,* 2006; Kagee *et al.,* 2007). This was emphasized by Hardon, Akurut & Comoro, (2007) & Trzynka & Erlen, (2004). Their studies confirmed that the burden of having to endure high transport costs to receive treatment prevented clients from accessing health care. This assertion is reinforced by Posse & Baltussen, (2009) who found that having to travel long distances to receive care was a hindrance to effective

management of HIV. In their study, about 93% of respondents who were unemployed confirmed transportation as a challenge to adherence.

Other studies have found that people living in urban areas tend to be more adherent than people living in rural areas. Most people in rural areas do not have health posts near them. They sometimes have to walk long distances to seek healthcare. People in urban areas on the other hand, have a well-structured economic infrastructure that enhanced their ability to replenish their drug prescriptions on schedule. Rural folks on the hand, are less privileged and may face high cost of transportation therefore are unable to replenish their drugs on schedule (Kangee & Delport, 2010). Rural folks are deprived of basic social amenities like roads, means of transport, and health facilities among others. Health posts are situated far from rural areas therefore people either walk long distances or suffer transportation difficulties to reach a health facility for assistance. Again, most people prefer seeking healthcare where they cannot be identified as HIV positive therefore they bypass the health centres close to them. They prefer taking medication in the city to going to a nearby health facility. This is why clients have transportation challenge affecting their ability to comply with medication requirement.

Nutrition is yet another challenge to adherence to ART. Effective treatment of the disease requires that PLWHIV have a nutritious diet. Usually, during clinic days, dietitians counsel clients on the required diet needed to boost their immune system and also reduce the drug side effects. In low income countries however, the majority of the population cannot afford required nutritional meals and this has negative influence on adherence to ART.

HIV treatment drug regimen may increase appetite for food, especially during the initial stages of therapy. A study in Uganda, Tanzania and Botswana identified that participants were unable to meet the expenses of food requirements after commencing treatment. This food insecurity affected the consistency of dose intake. Food security is important since the side effects of taking drugs without food can be fatal (Hardon, Akurut & Comoro, 2007). Similar results were found in a study by Kangee *et al.,* (2011).

Some religious and cultural practices also have influence on the treatment of HIV. Several myths surrounding the AIDS disease have their origin in some cultural beliefs. For instance, some communities believe that the disease is spiritual and is visited on people who have offended the gods. There are also people who believe that the disease can be transmitted through witchcraft. This has influence on adhering to therapy in that if a PLWHIV believes infection was by spiritual means, that person may not accept orthodox method of treatment. In such instances, there is always a conflict between spiritual beliefs and orthodox medicine, which adversely affects the success of ART (Walker *et al.,* 2004).

Similarly, some practices of religion affect adherence to treatment of HIV and AIDS. A cross sectional survey of three hundred and eighteen (318) people in Ibadan, Nigeria on factors mitigating adherence to ART revealed that participants who missed medication attributed it to fasting. The study concluded that religious beliefs and practices were therefore a major influence on uptake of antiretroviral therapy. Beliefs in Islam and Christianity played a significant role in modelling health behaviour (Olowookere *et al.,* 2008).

Some clients discontinue treatment and seek help from charismatic healers. This affects the ability of the virus to be suppressed increasing risk of morbidity and mortality. A study in Uganda revealed that participants who sought spiritual care for the disease were less adherent. Belief in spiritual healing was identified as a barrier to continuity of ART. (Wanyama, et al., 2007).

The African society has a lot of traditional healing practices. Traditional Health Practitioners play a vital role in health service delivery especially in resource constrained areas. The trust in these practitioners sometimes affects the ability of clients to adhere to treatment. Walker et al., 2004 as cited by Kagee *et al.*, 2011, argued that despite the fact that traditional healers' treatment compliments biomedicine, they may distort the adherence process. The cultural setting permits the healers to provide attractive services like cure for all illness creating some sort of uncertainties about the efficacy or effectiveness of ART.

In a study to identify barriers to participation of HIV and AIDS services by Padarath, Searle & Esu-Williams, (2006), participants reported seeking care from traditional and allopathic healers complimentary to biomedical treatment. Although clients received treatment from the clinics, they also opted for traditional medicine to improve their health. The reason behind this could be that people had faith in their cultural practices and are therefore unwilling to go against such practices. A strong confidence in the local medical practices making it difficult for people to do away with.

In Botswana, a one-on-one in-depth interview revealed that a study population that reported good adherence identified faith in God concerning biomedicine to enhance their

health. Participants who were not adherent did not demonstrate similar faith in God but used traditional medicine in addition to ARVs (Nama *et al.,* 2007). Thus some people believe in traditional medicine but complement it with biomedicine. Although, there was no proof traditional medicine could heal HIV and AIDS, some people insisted on using it.

### 2.5 Service Delivery Factors that Influence Adherence to ART

Positive health outcomes at times depend on the relationship between health workers and clients. Health workers must have effective communication with clients with respect to how treatment would be started. In the case of chronic diseases' management, there has to be a friendly approach to clients to enable them accept treatment procedure and comply. If there is effective interaction between clients and health professionals, the former are able to openly declare their challenges in taking drugs, which would enables appropriate measures to be initiated. The ability of clients to win the hearts of health workers have an effect on drug compliance and total health outcomes.

The study of Murphy *et al.,* (2000) discovered that the relationship between clients and health providers was a significant influence on adherence to ART. Patients' satisfaction with health care and quality of communication among clients and health providers was an important influence on adherence to ART. Partakers who had good communication and positive interactions with health providers said they took their medication as prescribed while those who had poor interaction reported low-level of adherence.

In addition, a study in Karnataka India, identified service factors as a barrier to treatment and testing of ART. The study revealed that the main barrier from the health service side was perceived quality of care provided. There were complaints of discrimination among

staff which influenced perception of quality of care. For most respondents, discrimination at the point of service delivery was a major barrier to treatment of HIV and AIDS (Beattie & Bhattacharjee, 2009).

Cordial relationship between health professionals and clients requires considerable confidentiality and privacy. This may not always be forthcoming. The result is that clients do not have trust in the health workers and have fears of stigma if they open up. The assurance that health workers are trust-worthy plays a vital role in treatment compliance. If clients have doubts that health workers will not disclose information, they tend not to attend clinic regularly (Posse & Baltussen, 2009).

Evidence from a high resource setting revealed that belief, trust and confidence are positively associated with adherence and continuation of treatment (Golin, Lui & Hays, 2002; Remien, Hirky, Johnson, Weinhardt, Whittier, 2006). The argument raised here was that in high resource settings, there tended to be free flow of information and clients were thus well informed about their health rights. This enabled them to have adequate care from health workers. Again, in these settings, favourable patient-health worker ratio enabled clients to have access to a single provider thus increasing their belief and trust. This good relationship is associated with adherence to HAART (Beach, Keruly, & Moore, 2006). Another study done in Tanzania also revealed that being attended to by PLWHIV staff served as a motivation for clients to adhere to treatment (Watt *et al.*, 2009). Contrary to these findings, Padarath, Searle & Esu-Williams (2006) found making too many trips to the hospital, inappropriate conduct of health professionals and delay in treatment to be major barriers to participating in HIV and AIDS treatment.

It is noteworthy that without regular drug supply, HIV therapy will not be effective. Availability of drugs and logistics is therefore important for the management of HIV/AIDS. Some countries, particularly in resource limited settings, have a challenge of regular drug and logistics supply. There are instances of severe drug shortages in some health facilities. This makes it difficult for clients to continue treatment, as it disrupts the consistency of drug supply to patients (Patel, Hirschhorn, Fullem, Ojikutu, & Oser, 2010).

In a survey by WHO in 2008, of 91 low and middle income countries studied, 34% had a shortage of one stock of ART. The issue of drug shortage was associated with poor procurement and supply chain management practices. Information flow between procurement and supply units was not good enough. This issue accounted for the regular drug and logistic shortage in ART (WHO, 2009 as cited by Patel *et al.*, 2010).

Inadequate infrastructure and resources make it difficult to attend to clients on time. Health workers are usually few compared to the number of clients they have to attend to daily. Therefore clients have to wait long hours before they are attended to. It has been stated that countries in Sub-Saharan Africa have improved ART access but failed to consider increasing the number of health workers. Possible consequences of this is that health workers may be overwhelmed with work and thus souring relationship with their clients (Barnighause, Bloom & Humair 2007; Damme, Kober & Kegels 2008). Inadequate personnel such as doctors, nurses and counsellors among others, affected the efficiency of facilities studied by Padarath, Searle & Esu-Williams (2006). There were complains of shortages of logistics which impeded their activities.

An important factor that can impede adherence to ART in terms of regular clinic attendance is waiting time. Spending long hours in hospital queues can be a barrier to adherence, as these hours spent away from work could become a threat to livelihoods. A study conducted in Botswana confirmed that having to leave work for a day or a day half for clinic was a challenge to attending clinic. This issue was a major concern for clients who had not been able to disclose their status to their employers for fear of stigma. Finding excuses all the time to leave work was a challenge and influenced adherence (Hardon *et al.*, 2007).

Efforts to influence behavior in a way to achieve optimal health outcomes necessitate health promotion. Health promotion was defined by WHO as *"the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individuall2 or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment"*(WHO, 1986). Health promotion activities have been utilized in reducing the spread of HIV and AIDS as well as achieving adherence to ART.

A systematic review conducted from January 1996 to May 2005 on effectiveness of patient supporter revealed a positive effect. The study indicated patient supporter system led to improve adherence. The supporter's assisted patient to comply with medication requirements.

Another study to evaluate strategies to improve ART adherence found adherence counselling and counselling with treatment supporter contributed to adherence to ART.

Though there was no difference between the two, counselling in either case produced effective adherence (Mugusi, et al., 2009).

A study on effects of adherence enhancement programs revealed intervention group had a better adherence level than the comparison group. With treatment aids, the intervention group had high health literacy and therefore adhered to treatment than the comparison group. The intervention influenced their perception of quality relationship and communication that existed with their health professionals (Servellen, et al., 2005).

Similarly (Tuldra 2000 as cited by Ickvoicks & Meade, 2002) attested intervention groups of their study produced high adherence levels of 90%. The intervention was health education by the pharmacist and the use of phone calls. This enhanced the ability of patients to adhere to ART

In Nigeria, a study concerned with motivational group support adherence and the use of risk reduction behavior among women had a positive impact on adherence to ART. Women who were involved in a motivational group as an intervention reported a high self-report adherence (Holstad *et al.,* 2012

**2.6 Summary**

Adherence to antiretroviral therapy depends largely on the individual, social support and facility support. From literature, adherence to ART is influenced by stigma from the society. Stigma either against men or women prevents them from taking drugs as scheduled especially in public. Apart from stigma, religious beliefs prevents people from continuing their treatment leading to drug resistance. To curb this, there has to be

effective information flow and cordial relationship between clients and their health professionals. This can motivate clients to adhere to treatment.

## 2.7 THEORETICAL FRAMEWORK

### 2.7.1 Health Belief Model

Peltzer, Preez, Ramalagan, & Jane, (2010) points out that there are insufficient studies investigating treatment compliance utilizing the health behavior models. There are little studies utilizing health belief model in Africa as well as Information Motivation Behavior theory. These theories are usually used in health promotion and behavioral change programs or initiatives.

Health belief model is one of the oldest theories for behavior change. It was designed in 1950 with focus on individual knowledge and beliefs for adopting a behavior. Exploring individual behavior requires focusing on factors existing within the individual self or mind (intrapersonal factors). These factors play a major role in adaptation of behaviors. They include; attitudes, beliefs, motivation, past experience and skills, self-concept among others (Redding, Rossi, & Rossi, 2000).

The health belief model postulates that adaptation of a health behavior is dependent on beliefs about threat to wellbeing as well as effectiveness and outcomes of the actions or behavior. The model talks about the individual's perception of threat posed by a health problem (susceptibility, severity), the benefits of avoiding threats and factors that influence the decision to act (barriers, cues for action and self-efficacy) (Morris, Marzon, Dandy, & O'Brien, 2012).

In this regard, an HIV infected individual will commence treatment based on the threat of opportunistic infections associated with the disease. Complications associated with the disease reduce the quality of life of infected individuals. The drug combination is able to sustain a PLWHIV for a considerable length of time, thus enabling one to live a normal life. For fear of dying early, an individual may embrace the therapy and comply with treatment. On the contrary, if the individual fails to attach urgency to the treatment plan, non-adherence can be possible.

Some studies carried out in Zambia and Tanzania revealed that clients who happened to be bread winners of their families complied with treatment plan (Posse *et al.*, 2005). For fear of leaving their children orphans, clients are more likely to comply with treatment schedules and medication.

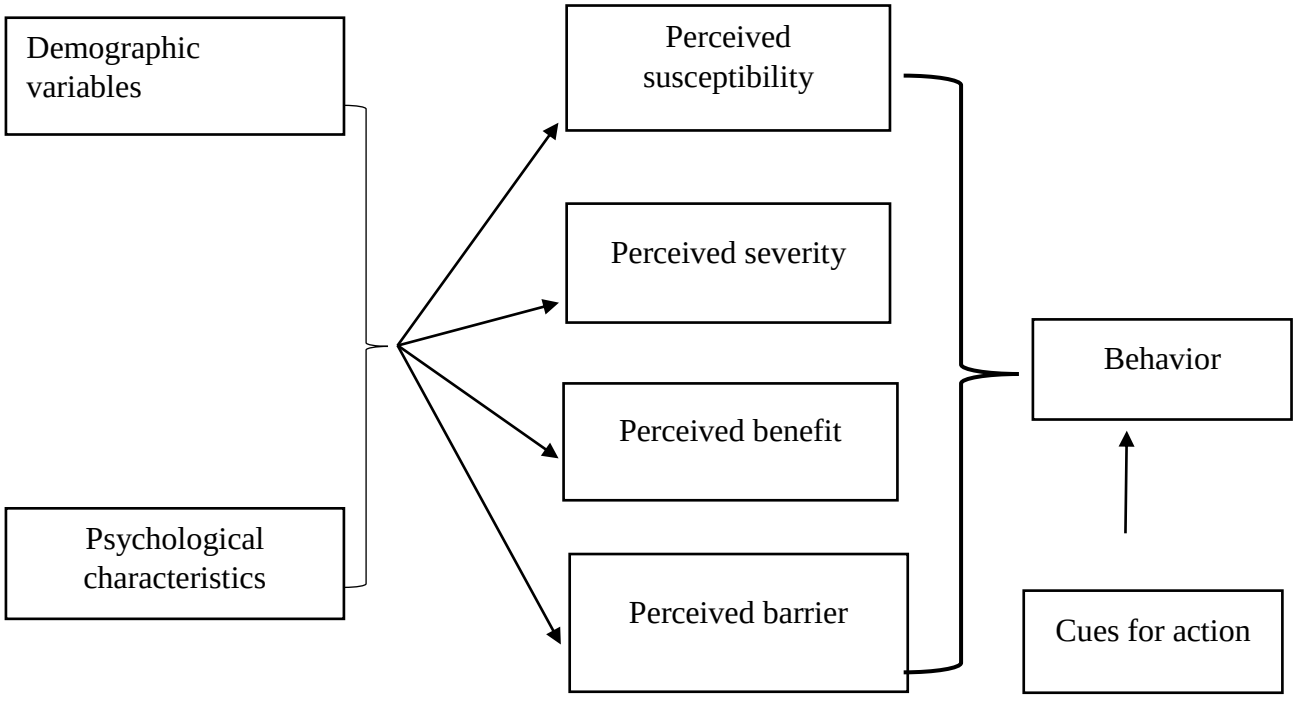
The perceived benefit aspect of the model is concerned with engaging in a behavior as a result of a perceived achievement. The effectiveness of reducing the threat of the disease is measured against the perceived cost of the side effects. If the outcome is beneficial, then the individual will engage in that behavior. Effectiveness of ART may serve as a facilitator to treatment adherence. If the outcome of starting therapy is positive then the individual is likely to continue treatment. On the other hand, if after commencing treatment the individual is unable to cope with the side effects of the drug as well as the food requirements then probably continuing treatment will be difficult.

The perceived barriers, which in this case are a negative consequence of engaging in therapy, will be stigma, relationship with health staff, access to treatment center and social support. Disclosure of status usually paves way for stigma and discrimination.

PLHV usually have the challenge of disclosing status. In a case where client is related to a health professional in charge of HIV treatment, the individual will have a challenge of attending clinic for fear of stigma. Most people are unable to take their drug openly so in case they are with people at a time dose needs to be taken, they tend to miss it.

Another important factor for effective treatment here is relationship with health professionals. Adequate information about treatment plan, effects and management of side effects aids adherence. Confidentiality that exists between health professionals and clients is an important element for management of any disease. Again access to health facility can be a barrier to adherence. The location of the treatment center is important to ensure clients continuity of attendance. Figure 2 below depicts the health behavior model

**Figure 2: Health Belief Model**




Source; (Botworth, Oddone, & Weinberger, 2008)

### 2.7.2 Information Motivation Behavior Model

Information motivation theory developed by Fisher & Fisher 1992 has been effective in providing framework for counselling services. The theory was utilized in ascertaining the dynamics of health behavior and adherence to ART by Fisher J., Fisher, Amico, & Harman, 2006; Kachliman *et al.*, 2002; Kalichman *et al.*, 2001. The theory indicates whether or not a health behavior is performed. Information has to deal with the person's access to HIV issues. If clients are well informed about ART or HAART, it will have influence on their adherence. Information concerning side effects, treatments requirements among others is vital for effective adherence. Adequate information is gained through counseling procedures, consultations and refills. Usually, health posts are over-crowed making it difficult for health professionals to reach everyone during health education programs. Therefore, clients are unable to have access to health professional to share their challenges with them. This has influence on adherence especially when one is depressed and has no one to talk to.

The motivation aspect is the drive that influences behavior. It entails activities or structures available that influence adherence. How well people will embrace the therapy is dependent on the kind of motivation one receives. Some people are motivated by the fact that their health conditions improve upon starting treatment. Others too are motivated by the fact that they need to survive for their families especially bread wieners. The theory specify that if a person is well informed, motivated to act and has the skills and confidence to take action, they are more likely to initiate and maintain health promotion behaviors.

In the context of adherence to ART, the models draws attention to the fact that an individual's willingness to comply with medication emanates from three major perceptions. First of all if the disease is perceived to be severe and ART can reduce the risk of dying, the individual would adhere to treatment. This perception is influenced by the existence of information on HIV and AIDS. Information on how severe the disease is and how to manage it as well as support from family and friends can influence adherence to treatment.

# CHAPTER THREE

# 3.0 METHODOLOGY

## Introduction

This chapter describes the methods that were used in the study. It explains the research design, study areas, population, sampling technique, sample size, data collection instruments, ethical consideration, research process, and data analysis methods.

## 3.1 Study Design

In order to ascertain factors that influenced adherence to antiretroviral therapy, multi-case study design was used. This design ensures that two or more cases are studied for in-depth analysis. Multi case study design was deemed appropriate as it permitted inter-facility comparison of adherence to antiretroviral therapy.

## 3.2 Study Areas

Two study areas were chosen for the study namely, the Sunyani Regional Hospital and the Sunyani Municipal Hospital. These hospitals were deemed appropriate for the study owing to the high patronage of Antiretroviral Therapy services by people in the Brong Ahafo Region.

### 3.2.1 Sunyani Regional Hospital

The Sunyani Regional Hospital was established on 11$^{th}$ May, 1927 by the British Colonial Masters as a hospital for Western Ashanti. The facility has undergone expansion since its establishment. It has been transformed into an ultra-modern hospital with the

state-of-the-art medical facilities. Its vision is "To be a World Class Healthcare Organization of repute applying "Best Practices" in the Medical and Nursing Care and in Training high caliber Medical Personnel". The hospital's mission is "To provide quality driven, result-oriented, customer-centered and efficient healthcare services in a well maintained environment by adequate number of well-motivated, competent and contended workforce who respect and value clients".

Currently it has 330 beds, 15 wards and a twenty-four hour emergency care. The facility provides OPD and other specialist care. The HAART centre is separated from the main hospital. The facility had 352 new clients enrolled on ART, 255 females and 97 males (DHIMS January to October, 2014).

### 3.2.2 Sunyani Municipal Hospital

Sunyani Municipal Hospital was built in the year 1927. It served as a Regional Hospital until October, 2004 when its status was changed to a Municipal Hospital after the establishment of a bigger facility. The new facility was used as the regional hospital. Currently, the hospital has 63 bed facility providing services such as out-patient, in-patient, general surgery, ultrasound/ X-Ray, ART among others. The hospital is managed by a six-member team comprising: the Medical Superintendent; Head of Administration; Head of Finance; Head of Nursing; Head of Pharmacy; and the Clinical Coordinator. Currently, there are 132 nurses working in the various departments in the facility (SMH Half Year Report, 2014).

### 3.3 Study Population

The study population consisted of all clients diagnosed as HIV positive who attended ART clinic at the Sunyani Regional and Municipal Hospitals. In addition, health professionals who attended to them were included to ascertain their views and contributions to ART adherence.

### 3.4 Sampling Technique and Sample Size

Purposive sampling technique was used to select adult clients who were 18 years old and above. HIV and AIDS is associated with stigma and people with the disease dissociate themselves from any activity that is likely to expose them as PLWHIV. This makes it difficult to sample HIV and AIDS Patients using probability sampling technique. They are usually hard to reach therefore, the respondents were invited to partake in the study until a sample of 120 consisting of 60 participants from each facility was obtained for the quantitative study.

Health professionals who had at least one year working experience with HIV treatment were also sampled using purposive sampling technique. They were selected based on their roles on Highly Active Antiretroviral Therapy. Five health professionals were engaged in in-depth interviews as part of the qualitative study. They comprised of two health records officers one served as HIV coordinator and the other HIV counselor, a representative from the pharmacy department in charge of ART adherence counseling, a clinician in charge of clinical consultation and a nurse in charge of HAART clinic.

Sixteen (16) clients were also selected for the qualitative study to participate in focus group discussions. Participants were grouped into two according to their gender. Each group comprised of 8 participants.

### 3.5 Data Collection Methods and Instruments

The study used a mixed method approach utilizing qualitative and quantitative methods. The quantitative part of the study used questionnaire administration. The questionnaire was divided into five parts: the first part sought to find out individual characteristics including demography and disease factors which influenced adherence to ART; the second part considered social factors including existence of support, existence of stigmatization, culture and religion which influenced adherence to ART; the third part was service delivery factors including relationship with health professionals, availability of drugs and health promotion activities which had the potential to influence adherence to ART; and the fifth part sought to find out clients' adherence to ART within three and seven days assessment.

The Qualitative aspect took the form of in-depth interviews utilizing interview guides and focus group discussions using focus group discussion guides through an independent moderator. These were adapted from Hardon *et al.*, (2007).

### 3.6 Ethical Consideration

Approval of the study was sought from Ghana Health Service Ethical Review Committee. Following this, permission was sought from the hospital authorities of the health facilities before data was collected. Similarly, every respondent was approached to

express consent prior to participation. Before participants were interviewed, each was given a consent form to read and sign. For individuals who could not read, the purpose of the study was explained to them and if they accepted to partake, their thumbprints were taken. All respondents were given assurance that any information they provided was strictly going to be used solely for academic purposes and their confidentiality was therefore assured. Finally, any knowledge adopted in the study was duly credited to those it was obtained from.

### 3.7 Research Process

Pre-test of the research tools were carried out to identify its validity. The questionnaire was revised according to the results of the pre-test to enhance data collection. The questions for the quantitative methods were asked in the local dialect (Twi) which were then translated into English. Also, the focus group discussions were conducted in Twi. A research assistant and the researcher moderated the discussion.

The study sought to have four focus group discussions but clients at the Municipal Hospital were rather elusive and despite spirited efforts, could not be organized for group discussions. The study therefore had to make use of participants from only Sunyani Regional hospital for the focus group discussions. The focus group discussion took place at the Sunyani Regional Hospital premises. Two separate discussions were conducted separating men from women, 8 members in each group to ensure effective participation.

Data were collected within a two-month period, visiting the health facilities on their clinic days, which were Wednesdays for Sunyani Municipal Hospital and Fridays for Sunyani Regional Hospital.

## 3.8 Data Analysis

### 3.8.1 Analysis of Quantitative data

The Statistical Package for Social Sciences (SPSS) version 20 was used to analyze the quantitative data. First, the demographic characteristics and responses were determined in frequencies and percentages. Following this, adherence to ART was analyzed in three days and seven days assessment. The seven days assessment was further used to find out the relationship between the individual, social and service delivery factors and adherence to ART utilizing Chi Square analysis. Subsequently, the same method was used to assess the differences between the two health facilities.

### 3.8.2 Analysis of Qualitative data

Interviews and focus group discussions were recorded and transcribed. Data were categorized according to similar patterns that were identified. Major themes were then developed which formed the basis of the analysis. Finally, the research report was done with the themes being analyzed in line with the study objectives. Where possible, verbatim statements were quoted in the study to support major themes.

# CHAPTER FOUR

## 4.0 PRESENTATION OF AND DISCUSSION OF STUDY FINDINGS

### Introduction

This chapter presents the findings of the study under the following themes; demographic characteristics, individual factors that influence adherence to ART, Social factors that influence adherence to ART, service delivery factors that influence adherence to ART and the differences between adherence levels of the two health facilities.

### 4.1 Demographic Characteristics of Respondents

Table 4.1 shows the demographic characteristics of HIV and AIDS client's respondents. The majority of the respondents were females (65.8%, n=79) while the males were (34.2%, n=41). Respondents were almost evenly distributed across the age groups. With the level of education, the majority 45 (37.5%) were junior high levers. With 7 each having tertiary and no formal education. There were other 28 (23.3%) and 33 (27.5%) who had primary and senior high education respectively.

**Table 4. 1: Demographic Characteristics of Respondents**

| Variables | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Gender | Female | 79 | 65.8 |
| | Male | 41 | 34.2 |
| Total | | 120 | 100 |
| Age | 18-29 | 32 | 26.7 |
| | 30-39 | 33 | 27.5 |
| | 40-49 | 34 | 28.3 |
| | 50 and above | 21 | 17.5 |
| Total | | 120 | 100 |
| Level of Education | Primary | 28 | 23.3 |
| | Junior high | 45 | 37.5 |
| | Senior high | 33 | 27.5 |
| | Tertiary | 7 | 5.8 |
| | No formal education | 7 | 5.8 |
| Total | | 120 | 100 |
| Employment status | Employed | 103 | 85.8 |
| | Unemployed | 17 | 14.2 |
| Total | | 120 | 100 |
| Religion | Christianity | 85 | 70.5 |
| | Islam | 30 | 25.0 |
| | Traditional | 1 | 0.8 |
| | Other | 4 | 3.3 |
| Total | | 120 | 100 |

### 4.2 Adherence to Antiretroviral Therapy

Respondents in the study were fairly adherent to ART. Adherence to ART in three days assessment was (100%, n=120). However, 75% (n=90) respondents were adherent in seven days assessment. Few were non adherent (25%, n=30) as indicated in figure 3. As illustrated in Table 4.2, the main reasons for missing medication was forgetfulness and travelling (8.3%, n=10 and 5.8%, n=7) respectively. This information was consistent with responses from the focus group discussion. Participants indicated forgetfulness, travelling and busy schedules hindered them from adhering to medication.

**Figure 3: Adherence to Antiretroviral Therapy**

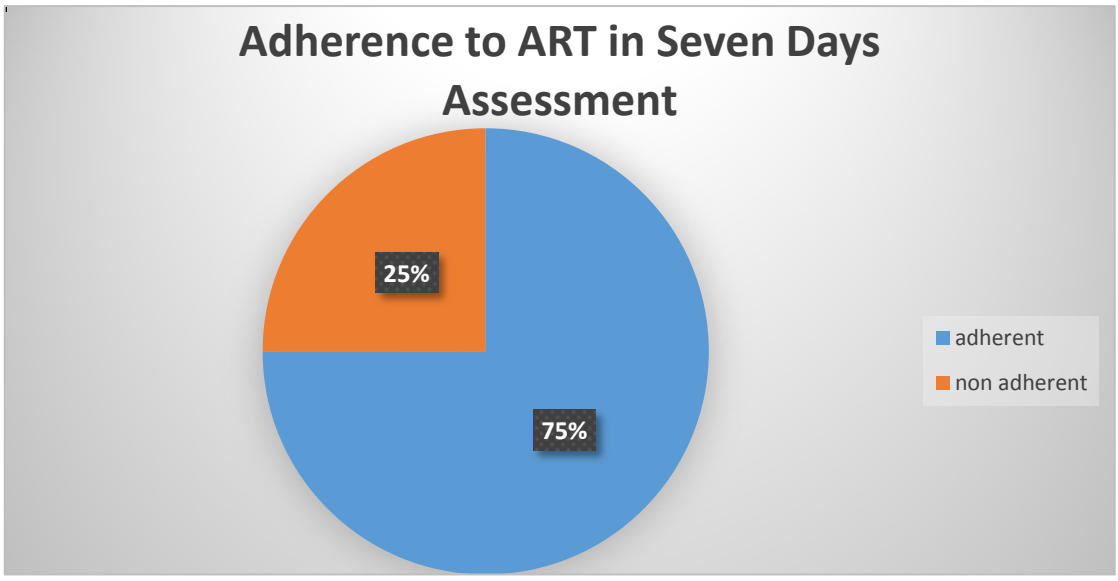


**Table 4. 2: Factors Associated with Non-adherence**

| Risk Factors | frequency | percentage |
|---|---|---|
| Forgetfulness | 10 | 8.3 |
| Sleeping through a dose | 3 | 2.5 |
| Busy schedule | 7 | 5.8 |
| Travelling | 9 | 7.5 |
| Didn't want people to see me take the drug | 1 | 0.8 |
| Not applicable | 90 | 75 |
| Total | 120 | 100 |

### 4.3 Individual Factors that Influenced Adherence to ART

#### 4.3.1 Influence of Age, gender, education and adherence to ART

The results in Table 4.3 indicate statistically that there is no difference between gender (p=0.317), age (p=0.520) and educational level and adherence to ART (0.195). However, interviews with health professional's revealed age and gender had an influence on adherence to ART. Young people usually men were associated with non-adherence to ART. Women regardless of their age were more adherent to ART than men. The reason being that the health records indicated that women had a high turn up rate for treatment than men.

A nurse at the Sunyani Municipal Hospital revealed that;

> *Young men find it very difficult accepting this situation of being HIV positive. Some will come and tell you they don't believe it. If you go through the books you will realize women adhere much more than men. Men don't want to come because of stigma especially young guys. For women because at the time they come they are pregnant and may want to protect the babies they adhere to treatment.*

Another person also shared that;

*Women are much more adherent than men and they account for 98% of adherence level while men account for 90%. Men like to take risk so they wait for last minutes before seeking treatment.-(A health professionals acting as a Counselor)*

**Table 4. 3: Gender, Age, Education and Adherence to ART**

| **Variables** | **Adherent** | | **Non-adherent** | | $\chi^2$ | **df** | **P value** | **Confidence Level** | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Lower bound** | **Upper bound** |
| **Gender** | frequency | % | frequency | % | 1.00 | 1 | 0.317 | 0.317 | 0.369 |
| Female | 57 | 63.3 | 22 | 73.3 | | | | | |
| Male | 33 | 36.7 | 8 | 26.7 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Age** | | | | | 2.60 | 3 | 0.520 | 0.469 | 0.647 |
| 18-29 | 21 | 23.3 | 11 | 36.7 | | | | | |
| 30-39 | 25 | 27.8 | 8 | 26.7 | | | | | |
| 40-49 | 27 | 30.0 | 7 | 23.3 | | | | | |
| 50 and above | 17 | 18.9 | 4 | 13.3 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Education** | | | | | 6.051 | 4 | 0.195 | 0.188 | 0.346 |
| Primary | 19 | 21.1 | 9 | 30.0 | | | | | |
| Junior high | 35 | 38.9 | 10 | 33.3 | | | | | |
| Senior high | 27 | 30.0 | 6 | 20.0 | | | | | |
| Tertiary | 6 | 6.7 | 1 | 3.3 | | | | | |
| No education | 3 | 3.3 | 4 | 13.4 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

### 4.3.2 Perceived Efficacy, Perceived and Adherence to ART

There was no statistically significant relationship between Perceived efficacy (p=0.062), perceived need (p=0.736) and adherence to ART as indicated in Table 4.3.2. Improvement in health after commencing treatment and the importance of treatment to respondents did not influence adherence to ART. Responses from the focus group discussions varied from these findings. Participants expressed their health condition had improved upon starting treatment which informed them to adhere to ART.

A participant shared his experience on ART:

> *As for the drugs they are very good without them I would not be alive today. I have been on treatment for about 9 years prior to ART, I was not healthy. I had low weight and chronic illness. Currently, I am very healthy. I have a good appetite for food which boost my immune system. – (Women FDG)*

Another expressed that;

> "*Ever since I started treatment, I have never fallen sick before. Initially I experienced drug side effects so the drugs were changed now I am very healthy.* – (men FDG).

**Table 4. 3.2 : Perceived Efficacy, Perceived Need and Adherence to ART**

| Variables | Adherent | | Non-adherent | | $X^2$ | df | P value | Confidence Level | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Perceived efficacy** | frequency | % | frequency | % | 7.345 | 3 | 0.062 | 0.180 | 0.337 |
| Better | 86 | 95.6 | 28 | 93.3 | | | | | |
| No change | 0 | 0 | 2 | 6.7 | | | | | |
| Worse | 2 | 2.2 | - | 0.0 | | | | | |
| Indifferent | 2 | 2.2 | - | 0.0 | | | | | |
| Total | 90 | 100 | 30 | 100% | | | | | |
| **Need of treatment** | | | | | 0.114 | 1 | 0.736 | 0.975 | 1.000 |
| Yes | 88 | 96.7 | 29 | 96.7 | | | | | |
| No | 2 | 3.3 | 1 | 3.3 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

## 4.4 Social Factors that Influence Adherence to ART

### 4.4.1 Existence of support, existence of stigma, effect of disclosure and adherence to ART

Findings from the study as shown in Table 4.4.1 points out there was no statistically significant difference between existence of support (P=0.96), existence of stigma (P=0.96), effects of disclosure (P=0.059) and adherence to ART. In effect social support in the form of support from family members and friends and stigma after disclosure had no influence on adherence to ART.

In variance, the interviews and focus group discussions specified support from loved ones in the form of financial aid, encouragement, information, reminder of medication facilitated adherence to ART. There were consensus from health professionals that treatment of supporters were relevant for achieving optimal adherence.

> *"Some patients have mental conditions as a result of the disease so they may not appreciate the need to take medication so the supporter helps in adhering to medication as scheduled"- (A clinician at the Regional Hospital)*

A participant also shared that;

> *I have a nurse friend who assists me in diverse ways. I receive support from my family members and the nurse friend. When I am unable to take my medication at the hospital, my sister take them on my behalf. The nurse friend also gives me encouragement to cope with the disease. Without the support from these people in my life I wouldn't be alive today. - (Women FDG)*

**Table 4.4. 1: Existence of support, existence of stigma, effect of disclosure and adherence to ART**

| Variables | Adherent | | Non-adherent | | $\chi^2$ | df | P value | Confidence Level | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Existence of support** | Frequency | % | Frequency | % | 2.764 | 1 | 0.96 | 0.46 | 0.154 |
| Yes | 80 | 88.9 | 23 | 76.7 | | | | | |
| No | 10 | 11.1 | 7 | 23.3 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Existence of stigma** | | | | | 2.764 | 1 | 0.96 | 0.46 | 0.154 |
| Yes | 4 | 4.4 | - | | | | | | |
| No | 77 | 85.6 | 24 | 80 | | | | | |
| No response | 9 | 10 | 6 | 20 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Disclosure and adherence to ART** | | | | | 6.660 | 3 | 0.084 | 0.059 | 0.174 |
| Good relation | 20 | 22.2 | 1 | 3.3 | | | | | |
| Receive support | 59 | 65.6 | 23 | 76.7 | | | | | |
| Aid adherence | 1 | 1.1% | - | - | | | | | |
| No response | 10 | 11.1 | 6 | 20 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

### 4.4.2 Culture, Religion and Adherence to ART

The study found out whether belief in spirituality and traditional medicine engrained in culture and religion influenced adherence to ART. The results provided that there is no statistically significant difference between belief in spirituality (p=0.815), belief in traditional medicine (p=0.084) and adherence to ART (see Table 4.4.2).

Likewise, the focus group discussions indicated participants did not rely on spiritual healing and traditional medicine as a cure for HIV. Although prayer was regarded as a complementary remedy to HIV cure, participants appreciated the need to take medication.

> *It is good to pray but the medicine is important. Once you know your status you have to take the drugs as scheduled and pray that God in his mercies will heal you.* - (women FDG)

Health professionals at the Municipal Hospital indicated belief in spirituality hindered their clients from adhering to treatment.

> *Clients generally adhere to treatment about 40% discontinue after taking medication for a month or two and feel they are healthy, resort to prayer camps for cure and return when their health deteriorates.* - (A health professional acting as HIV counselor)

**Table 4.4. 2: Culture, Religion and Adherence to ART**

| Variables | Adherent | | Non-adherent | | $\chi^2$ | df | P value | Confidence Level | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Belief in spirituality** | frequency | % | frequency | % | 0.055 | 1 | 0.815 | 0.975 | 1.00 |
| Yes | 26 | 28.9 | 8 | 26.7 | | | | | |
| No | 64 | 71.1 | 22 | 73.3 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Belief in traditional medicine** | | | | | 6.660 | 1 | 0.084 | 0.059 | 0.174 |
| yes | 24 | 26.3 | 12 | 40 | | | | | |
| No | 66 | 73.3 | 18 | 60 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

### 4.5 Service Delivery Factors that Influenced adherence to ART

#### 4.5.1 Relationship between Health Professionals and their clients

The study proved that relationship with health professionals had a statistically significant relationship with adherence to ART. Perception about services and Privacy had a relation with adherence to ART (p=0.008 and 0.001) as indicated in Table 4.5.1.

This was not different from the focus group discussion response. Participants expressed that there was a good relationship between participants and their health providers. This relationship enabled them to comply with medication requirements. However, there were some health professionals who did not treat them well.

> *We don't have any problem with our health providers. Health workers attend to us very well. They keep our information privately and are good to us. We are able to tell them the challenges we face and they listen to us. The only problem is there are some few workers who do not treat us with respect they are usually new staff.-(men FDG)*

**Table 4.5. 1: Relationship between Health Professionals, Clients and Adherence to ART**

| Variables | Adherent | | Non-adherent | | $x^2$ | df | P value | Confidence Level | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Perception of service delivery** | Frequency | % | frequency | % | 11.778 | 3 | 0.008 | 0.00 | 0.025 |
| Satisfactory | 78 | 86.7 | 18 | 60 | | | | | |
| Average | 10 | 11.1 | 10 | 33.3 | | | | | |
| Dissatisfied | 1 | 1.1 | 2 | 6.7 | | | | | |
| Indifferent | 1 | 1.1 | | | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Respect from staff** | | | | | 0.234 | 1 | 0.629 | 0.975 | 1.00 |
| Yes | 86 | 95.6 | 28 | 93.3 | | | | | |
| No | 4 | 4.4 | 2 | 6.7 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Privacy** | | | | | 11.429 | 1 | 0.001 | 0.000 | 0.025 |
| Yes | 88 | 97.8 | 24 | 80 | | | | | |
| No | 2 | 2.2 | 6 | 20 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Satisfactory Communication** | | | | | 3.409 | 1 | 0.065 | 0.079 | 0.204 |
| Yes | 88 | 97.2 | 27 | 90 | | | | | |
| No | 2 | 2.2 | 3 | 10 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

### 4.5.2 Availability of drugs, health promotion and adherence to ART

Respondents in the study received ARVs for free at the health facility which in many ways contributed to adherence to ARV. However, they bore the cost for only non-ARVs which was purchased outside the health facility. This free supply of drugs at the facility was statistically significant in relationship with adherence to ART (p=0.008).

A further probe in how respondents are supplied with drugs revealed the facilities sometimes faced drug shortages. But drugs are dispensed in a way that every client received drugs for at least one month supply to enhance continuity of treatment. If a particular drug was out of stock, health professional switched regimen and supplied alternative drugs. This initiative was regarded as barrier by all participants of the focus group discussion.

> *Initially, the doctors used to give 5 months interval for appointment and we were given drugs to cover that period. Of late, the doctor can give 2 months interval but the pharmacist dispense drugs to cover for only two weeks. It makes it difficult adhering to these separate schedules. We travel long distances to attend ART services. I will appreciate if the system is revise to reduce transportation cost. Once you are not sick the pharmacist should provide drugs to cover 6 months to enhance our ability to adhere to treatment requirements.*

Respondents in the study had appreciable level of adherence to ART because they received constant health promotion in the form of regular counseling. It is evident that counseling sections enabled respondents to adhere to ART as presented by Table (4.5.2),

there was a statistically significant relationship between relevance of counseling and adherence to ART (p=0.018).

**Table 4.5. 2: Availability of drugs, health promotion and adherence to ART**

| Variables | Adherent | | Non-adherent | | $X^2$ | df | P value | Confidence Level | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Supply of drugs at facility** | frequency | % | frequency | % | 7.059 | 1 | 0.008 | 0.000 | 0.025 |
| Yes | 81 | 90 | 21 | 70 | | | | | |
| No | 9 | 10 | 9 | 30 | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |
| **Payment of drugs** | | | | | 0.336 | 1 | 0.562 | 0.530 | 0.704 |
| Yes | 25 | 27.8% | 10 | 33.3 | | | | | |
| No | 65 | 72.2% | 20 | 66.7 | | | | | |
| Totals | 90 | 100% | 30 | 100 | | | | | |
| **Affordability of drugs** | | | | | 0.719 | 1 | 0.397 | 0.386 | |
| Yes | 79 | 87.8% | 28 | 93.3% | | | | | |
| No | 11 | 12.2% | 2 | 6.7% | | | | | |
| Totals | 90 | 100% | 30 | 100% | Totals | 90 | 100 | 30 | |
| **Regular counseling** | | | | | 1.739 | 1 | 0.187 | 0.257 | |
| Yes | 85 | 94.4% | 30 | 100% | | | | | |
| No | | | | | | | | | |
| Total | 90 | 100% | 30 | 100% | | | | | |
| **Relevance of Counseling in ART adherence** | | | | | 5.638 | 1 | 0.018 | 0.001 | |
| Yes | 85 | 94.4% | 24 | 80% | | | | | |
| No | 5 | 5.6% | 6 | 20% | | | | | |
| Total | 90 | 100 | | | | | | | |

### 4.6 Barriers to ART Adherence

The factors that hindered adherence to ART in the study were service delivery factors as shown in Table (4.6). Respondents generally had less challenges with health professionals (34.2%, n=41). Those who expressed some challenges attributed delay at the pharmacy, delay at service delivery, health workers not prompt to work, drug refill schedules and preferential treatment, transportation cost, cost of non ARVs and treatment requirements as barriers they faced. Similar barriers were raised in the focus group discussion. Respondents had a challenge with service delivery at the pharmacy. There were complaints that usually they spent almost the whole day at the clinic waiting for drugs. This was due to the fact that staff at the pharmacy were not prompt to work. They come to work very late. Some were emphatic that they dodged their employers to come for refills so if they delayed, it spoke badly of them influencing their workplace relationships.

> *"We are satisfied with the kind of treatment we receive from health professionals. Our major challenge is the time the pharmacy department comes to work. We try to come early so we can go back to our daily activities but we end up spending the whole day at the clinic. Now the time is 11am the staff at the pharmacy are now coming to work. We have complained several times but nothing has been done about it." – (men FDG)*

**Table 4.6: Barriers to ART Adherence**

| Variable | frequency | percentage |
|---|---|---|
| **Challenges with health professionals** | | |
| Delay in service delivery | 16 | 13.3% |
| Delay at the pharmacy | 35 | 29.2% |
| Workers not prompt to work | 10 | 8.3% |
| Drug refill schedules | 9 | 7.5% |
| Preferential treatment | 9 | 7.5% |
| No challenge | 41 | 34.2% |
| Total | 120 | 100% |
| **Availability of drugs and ART adherence** | | |
| transportation cost is a barrier | 35 | 29.3% |
| motivation is derived from free drug supply | 61 | 50.8% |
| treatment requirement is a challenge | 7 | 5.8% |
| cost of non ARV drugs is a barrier | 13 | 10.8% |
| No response | 4 | 3.3% |
| Total | 120 | 100% |

### 4.7 Differences between Sunyani Regional and Municipal Hospitals

The results in Table 4.7 indicates there is no statistically significant relationship between adherence to ART among respondents of the two health facilities (p=0.673). This was emphasized by interaction with Sunyani Regional HIV/TB coordinator at the Regional Public Health Unit.

Information gathered confirmed there is just a peripheral difference among the two health facilities. Records at the Regional Health Directorate stipulate in 2014, a total of 4539 were enrolled on ART at Sunyani Regional Hospital. 2491 were initiated on ARVs out of this, 655 (26.29%) were males of which 298 (30.69%) were lost to follow up. The females recorded 1836 (73.71%) and 673 (69.31%) were lost to follow up. Sunyani Municipal however enrolled 543 on ART, 283 clients were initiated on ARVs; 51 (18.7%) were males out of this 14 (10.53%) were lost to follow up. 232 (89.43%) females were registered and 119 were lost to follow up. Those lost to follow up are classified as non-adherent in this study.

This indicates that more HIV and AIDS cases are recorded at Regional Hospital than the Municipal Hospital. In all cases recorded, there are more females than males confirming the results in Table (4.1). Also, there is a marginal difference in the number of clients lost to follow up at Regional and Municipal Hospitals (39% and 47%) respectively.

**Table 4.7: Differences in ART Adherence between Respondents of Sunyani Regional and Municipal Hospitals**

| | Adherence | | Non-adherence | | $x^2$ | df | P value | Confidence Level (95 %) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower bound | Upper bound |
| **Health facilities** | Frequency | % | frequency | % | 0.178 | 1 | 0.673 | 0.767 | 0.900 |
| Municipal | 46 | 51.1% | 14 | 46.7% | | | | | |
| Regional | 44 | 48.9% | 16 | 53.3% | | | | | |
| Total | 90 | 100 | 30 | 100 | | | | | |

# CHAPTER FIVE

# 5.0 DISCUSSION OF FINDING

## 5.1 Adherence to Antiretroviral Therapy

Antiretroviral therapy is the effective treatment measure to prevent progression from AIDS to death. The drug combination therapy enables suppression of the HIV in the blood stream which in turn enables the immune system to function well to prevent opportunistic infection. This information was well communicated to respondents in the study. Many scholars assert that non adherence to ART is common among HIV and AIDS patients (Carlucci *et al.*, 2006; Nachega *et al*., 2006; Olowookere *et al.*, 2008) but this study disproves this assertion.

The quantitative and qualitative data indicated respondents were informed on the need to adhere to ART, with the majority of respondents fairly adhering to ART as indicated in Figure (4.2). Participants were involved in HIV treatment procedure which enhanced their commitment. As stated by (Machtinger & Bangsberg, 2006) this kind of involvement aided adherence to long term therapies like HIV treatment. Only 30 (25%) people were non adherent.

On the issue of non-adherence, social activities were the main cause of missing doses. Some of these activities included travelling, busy schedules, funerals, and others which made them forget to take medication.

## 5.2 Facilitators to ART Adherence

### 5.2.1 Individual Factors that Influence

The study showed in the quantitative data that individual factors did not influence adherence to ART. However, the Qualitative data indicated that age, gender, perceived need and perceived efficacy influenced ART adherence. Non-adherence to ART in the qualitative study was associated with young men, this is because young men were regarded as less likely to accept long term therapies. What might account for the disparity between the qualitative and quantitative study was that health professionals made the submission based on their existing health records where more women were recorded to be adherent than men.

Likewise perceived efficacy and Perceived need was regarded as factors that influenced adherence in the qualitative study. Studies have established that people who see ART care as a curative measure usually discontinue treatment when their health condition improved (Gokran, Narkheda, Pardeshi, & Doibale, 2012; Karcher, Odera, Kurz & Harms 2007; Murphy *et al*., 2000). Similarly, there were some participants who discontinued treatment after improvement in their health in the study. Others too were motivated to adhere to ART because they saw an improvement in their health. They were informed to adhere to prevent them from going back to their previous bad health condition. These people regarded ART as important because they had achieved benefit through the efficacy of treatment. Consistently some studies identified that achievement or benefit derived from medication influence adherence to ART (Holstad, *et al*., 2006; Luszczynska, Sarkar & Knoll, 2007; Simoni *et al.,* 2006).

The health belief model, physiological features like age and gender as well as perceived benefits had an impact on the behavior of participants to adhere to ART. Contrary, physiological aspect like age, gender and education did not have a strong influence on adherence to ART in the study. Indicating that an individual willingness to adhere to medication depends on the perceive benefits irrespective of the person's physiological features.

### 5.2.2 Social Factors that influenced adherence to ART

The study further showed in the quantitative analysis that social factors did not influence adherence to ART. Disparately, the qualitative study provided an insight that social factors like existence of support and disclosure without stigma influenced adherence to ART. For instance, as part of treatment procedures, each client presented a treatment supporter to serve as a link with health professionals. The treatment supporter acted as a monitor of clients in the absence of a health professional. This strategy enable respondents to have someone to support them. This study therefore confirms other studies that attest that good social support aids adherence to ART (Afolabi et al., 2013Fredriksen-Goldsen, *et al*., 2011; Nachegba *et al.,* 2006).

There was less stigma after disclosure which enabled respondents to adhere to treatment. They were able to disclose their status to family members and friends who in turn supported them to adhere to treatment requirements. This was revealed in the quantitative and qualitative study. Disclosure of status led to support because health professional's passes confidants (treatment supporters) through series of counseling to inform them on how to care for people living with HIV and AIDS. This could be the reason why there

was less stigma as indicated in Table (4.4.1). Studies have established that existence of stigma prevented people living with HIV and AIDS to adhere to treatment (Curioso *et al*., 2010; Kagee, *et al*., 2011; Mshana, *et al*., 2006; Rintamaki *et al*., 2006). An example is taking the medication in public. When a situation like this happens, people prefer to miss the medication for fear of being identified as HIV and AIDS patient. Although there was less stigma, respondents were careful with making people identify them as HIV and AIDS patients. This was identified in the qualitative studies.

According to the quantitative data, reliance on spirituality and the use of traditional medicine was not common with respondents studied. Their decision to stick to ARVs was influenced by counseling services, which convinced them HIV had no cure and adhering to medication was the only way to live long in good health. However, some studies found culture and religion as barriers to ART adherence (Olowookere *et al.*, 2008; Wanyama, *et al*., 2007; Walker *et al.*, 2004). Although respondents attested they did not rely on spirituality, some health professionals indicated their client's defaulted treatment because of reliance on spirituality. Findings confirm information on the relevance of adherence to medication influenced the behavior of respondents. As stated by the information motivation theory, information received on the treatment requirements of ART aided adherence to ART.

### 5.2.3 Service Delivery Factors that Influenced Adherence to ART

Health professional play a vital role in achieving optimal adherence to ART. The sought of relationship that exists between them and clients influences clients decision to continue treatment (Beach, Keruly, & Moore, 2006; Murphy *et al.*, 2000). From the study, privacy

and perception of services was statistically significant in the quantitative study (p=0.008) because there was a supportive non-judgmental care from health providers which sort to bring the clients need first. This sort of treatment enabled respondents to accept treatment procedure and adhere to them. It was emphasized in the qualitative study that information was kept confidential which made them express their challenges freely for it to be addressed. This made respondents listen to every instruction given by health professionals and heeded to them. Confirming that trust, privacy and confidentiality with health professionals is associated with adherence to ART (Golin, Lui & Hays, 2002; Remien, Hirky, Johnson, Weinhardt, Whittier, 2006; Posse & Baltussen, 2009).

Another factor that aided adherence in the study was availability of affordable drugs. Drug supply at the facility was statistically significant (p=0.008) as indicated in Table (4.5.2). A further probe revealed that respondents received drugs at the facility for free which motivated them to adhere to refill schedules. These drugs were mainly antiretroviral drug combination which was subsidized so respondent did not bear the cost. The supply system also ensured that each respondent received drugs when he or she came for refill to ensure continuity of treatment. As indicated by WHO (2009), without effective drug supply system adherence to ART cannot be achieved. Health workers at the facility studied were informed on the need to have regular drug supply to respondents which accounted for their ability to adhere to treatment.

Other factors that influenced client's ability to adhere to treatment was health education, counseling and monitoring. These activities were done on regular basis that was why

health promotion was statistically significant (p=0.018). Respondents received regular counseling which informed their behavior. As suggested by the information motivation model, the counseling services informed respondents on the need to adhere to medication which enabled them stick to ART and not rely so much on spirituality and herbs. This same counseling enabled them obtain support from those they disclosed their status to. Health promotion activities facilitated adherence to ART by informing respondents on how HIV is treated and how to live a normal life in good health.

### 5.3 Barriers to ART Adherence

Respondents in the study faced some obstacles in the treatment process. Most of the barriers they faced were service delivery related. Though the services were regarded useful, respondents indicated they waste the whole day for such services which prevented them from adhering to them. Treatment procedures require that respondents go for laboratory checks on timely basis afterwards they had to consult the doctor for further checks. Individuals who felt they were healthy did not understand why they had to visit the doctor regularly. They felt they should be given the opportunity of seeing the doctor only when they felt sick rather than coming for regular reviews. Apart from laboratory test and consultations, they were obliged to visit the hospital at least every month for their drugs. Such appointments keep them away from their activities they whole day making it difficult to adhere to them.

For fear of stigma, some respondents traveled as far as Togo, Cote Devoir, Accra, Kumasi and others to seek care at the facilities studied. HIV services too are structured in a way that one must stick to one facility for treatment to enhance monitoring. This makes

it difficult for respondents from far places to replenish their drugs at ease because of transportation cost. Another aspect of treatment requirement that made it a barrier was drug scheduling especially for respondents at the Regional Hospital. There were different appointments for drugs and consultations which made respondents spend much on transportation. Not different, transportation cost for drug refill was also identified as barriers in studies by (Hardon, Akurut & Comoro, 2007; Kangee & Delport, 2010; Mills *et al.,* 2006; Trzynka & Erlen, 2004)

In addition, delay in services delivery especially at the pharmacy was a challenge for most respondents. This delay was associated to workers not prompt to work and preferential treatments given to people who knew health workers. This was a major concern since some respondents had to dodge their employers to seek healthcare. This was not different from a study in Botswana, which showed that finding excuses all the time to leave work for a day or half for clinic was a challenge to ART adherence (Hardon *et al.,* 2007). Those who had not been able to disclose their status to their employees for fear of stigma found it difficult to ask permission all the time.

### 5.4 Challenges Faced By Health Professionals

Inadequate personnel including doctors, nurses, and counselors among others is said to impede the success of ART efficiency (Padarath, Searle & Esu-Williams, 2006). Similar challenges were found at the facilities studied. The Sunyani Municipal Hospital for instance had no clinician to attend to HIV and AIDS clients. Health professionals stressed that there were increasing number of patients and fewer staff to handle them. This was

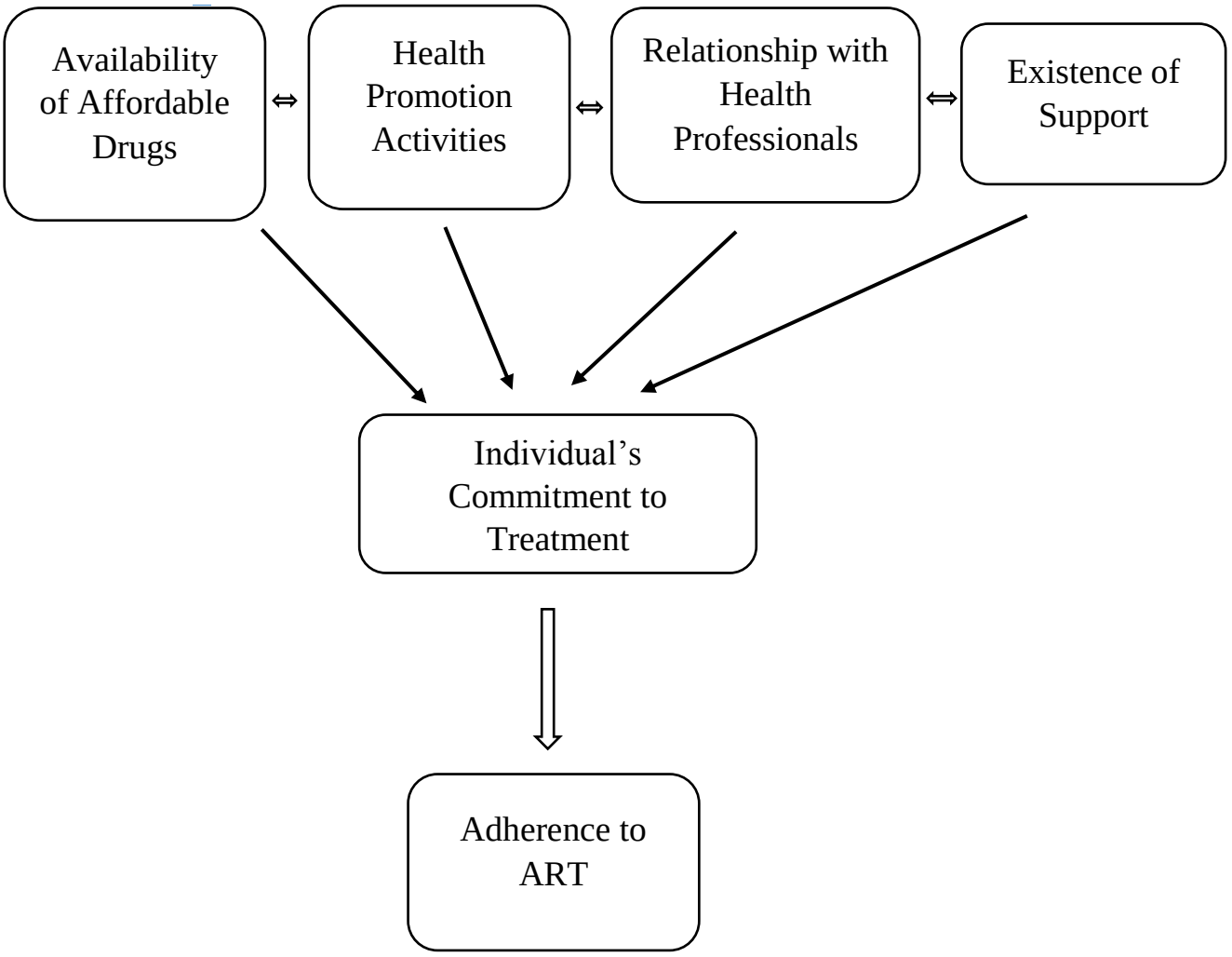
shared by nurse at Municipal Hospital, later confirmed by a clinician at the Regional Hospital. Although there were some supporting staff to assist, the work load have been left in the hands of selected few. This made it stressful dealing with HIV and AIDS clients. Nonetheless, health professionals enjoyed the work they did. It was advocated for more nurses and clinicians be trained to help handle HIV and AIDS cases. They also expressed the need for some motivation to enable them deliver quality services.

Another challenge was the insufficient supply of logistics for the treatment of HIV and AIDS. Treatment procedure for HIV and AIDS require regular CD4 count assessment. The absence of a reagent for testing CD4 count was a threat to an enriched service delivery. This limits effective and efficient monitoring health progress. Non-availability of drugs also influenced effective dispensary of drugs. For respondents at the Sunyani Municipal hospital, the location of clinic days was a threat to stigma for them. HIV and AIDS cases were handled with other OPD cases. This exposed their clients to stigma which was a treat to ART adherence. In this regard, health professionals recommended the need for a separate facility to enhance service delivery.

### 5.5 Conceptual Framework on Factors that Influence Adherence to ART

The key factors that influenced adherence to ART from the study are availability of drugs, health promotion activities, relationship with health professionals and existence of support as indicated in Figure 4.

**Figure 4: Conceptual Framework on Adherence to ART**



Adherence to antiretroviral therapy from the study is defined as the ability of the patient to follow medication schedule and dosage as prescribed by the clinician. From the study, the main factor that influenced adherence to ART was commitment from the individual which was sometimes influenced by: existence of support; relationship with health professionals; availability of affordable drugs; and health promotion activities. Participants studied received their health information from health promotion activities which included counselling, monitoring and health education, this informed their decision to accept and comply with treatment requirements. There was a cordial relationship between respondents and their health service providers. They were able to communicate with their service providers enabling them adhere to treatment. Also, they were enrolled on the National Health Insurance Scheme (NHIS) for free. This enabled them have access to their drugs (ARVs). Free drugs motivated respondents to comply with refill appointment schedules thereby enabling them have ARVs all the time.

Furthermore, each respondent had a treatment supporter who ensured he or she adhered to treatment requirements. The treatment supporters assisted respondents in taking medication, financial aid, and health information, among others. These factors facilitated adherence to ART. Nonetheless, barriers like transportation cost, appointment schedules, and delay in service delivery did not prevent respondents from adhering to treatment. Though, they sometimes felt reluctant to come for treatments, they were motivated by their improved health outcomes to continue therapy.

# CHAPTER SIX

## 6.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

### Introduction

This section draws on previous chapters to conclude the study. The previous section explained the findings of the study. This section provides a summary of the study, importance of the findings and recommendations. It is guided by the research objectives, individual factors that influence adherence to ART, Social support influence on ART adherence and service factors that influence ART adherence.

### 6.1 Summary

Acquired Immune Deficiency Syndrome, caused by Human Immune Deficiency Virus, is one of the diseases for which no cure has been found yet. Fortunately, clinical research has led to the discovery of antiretroviral therapy which can be used to prolong the lives of individuals living with HIV and AIDS. Though there has been improvement in the management of HIV and AIDS non-adherence to ART is an emerging challenge that is gaining prominence. Adherence to ART depends on individual factors, social and service delivery factors.

From the quantitative study, individual factors such as demography and disease factors did not have influence on adherence to ART. However, the qualitative method indicated that age and gender and perceived efficacy influenced ART adherence.

Social factors did not have statistically significant influence on adherence to ART in the quantitative approach. However, the qualitative approach indicated social factors like existence support and disclosure without stigma facilitated adherence to ART.

Service factors were a major influence on adherence of clients. There was a good relationship between clients and their health care providers. There was also free supply of ARVs with effective counseling services which facilitated adherence to ART.

In a nutshell, Facilitators of ART adherence included; Perceived efficacy, perceived benefit, existence of support, relationship with health professionals, availability of free drugs and health promotion activities. Barriers to ART were; delay in service delivery, delay at the pharmacy, transportation cost, refill schedules, location of treatment center and cost of non ARVs.

**6.2 Recommendations**

At the Sunyani Regional Hospital, respondents had different appointment schedules for drugs and consultations. This was a barrier to most clients. Concerns were raised that travelling for drugs and returning after two weeks for consultation made it difficult to adhere to treatment requirements. Some respondents who felt healthy refused to adhere to clinic schedules but were found to refill their drugs on schedule. This made the treatment procedure incomplete. Health workers also indicated that this system made identifying defaulters inaccurate. Some might be recorded as non-adherent in consulting but might be recorded as adherent at the pharmacy. Clients' on the other hand, needed to be assessed by clinicians periodically for progress. Spending a whole day queuing for drugs and returning in two weeks to see the doctor was unbearable for many respondents. It was

suggested that health workers took a look at the system and consider making appointment days for refills and consulting coincide.

The regular refill attendance increased transport cost; a barrier to ART adherence. With effective procurement, drugs can be dispensed to patients for a longer duration thus reducing transport cost. Health managers and policy-makers may need to review ART procurement processes periodically to infuse more dynamism and effectiveness. Greater effort can be made to ensure that clients receive drugs under more convenient arrangements.

Also, delay in service delivery could be associated with fewer health professionals attending to numerous patients. The study revealed that health workers were over-stretched during clinic days, resulting in stressful working conditions. Stress associated with work can impede quality healthcare delivery. It is therefore suggested that more personnel can be trained on HIV and AIDS to help reduce the workload (this was strongly suggested by health professionals).

In addition, what drives people to work in achieving organizational goals is motivation. It varies from person to person. For some, motivation means money, for others free lunch, acknowledgement, and so on. Health professionals, though satisfied with their work, expressed the need for motivation. It is suggested that the management of Sunyani Regional and Municipal Hospitals organize special events to motivate staff in charge of ART. This will enable them continue their good work on improving the lives of people living with HIV and AIDS.

Non- ARV drugs meant to compliment ARVs to improve the health of clients are expensive. It may be worthwhile to consider subsidizing Non-ARV drugs especially for clients who cannot do without. This will heighten their commitment to adhering to antiretroviral therapy.

### 6.3 Conclusion

Adherence of antiretroviral therapy is crucial for sustained health. The study revealed HIV and AIDS patients utilizing the services of Sunyani Regional and Municipal Hospitals fairly adhere to treatment. The study confirmed that adherence to ART relies on the individual and facility support systems. Individuals living with HIV and AIDS were committed to improve their health and live long for their families. They were prepared to comply with treatment requirements notwithstanding the challenges they faced. Existence of social support from health professionals, family members and free drug supply enhanced adherence to ART. Furthermore, existing facility structures in the form of counseling, relating well with clients, assisting clients to cope with the condition, assisting clients to take refills among others, aided adherence to ART. However, some barriers to treatment adherence faced by clients appeared to come from the health facilities. Efforts should be made to address these barriers to ensure that clients do not discontinue treatment.

### 6.4 Limitations of the Study

The study is limited in design, sample size and measurements of adherence. Adherence to ART is best assessed in a longer timeframe. Individuals involved need some follow up visits for a period of three to six months to confirm if adherence is indeed high. However,

the study used seven days to assess adherence to ART. Again, the sample size is not enough to generalize adherence in the two facilities. Furthermore, measuring adherence with self-report is not reliable and one method alone cannot predict adherence (Chesney 2000; Steel *et al*., 2007). Therefore, the study employing only self-report limits it from affirming optimal adherence among respondents.

### 6.5 Suggestions for Future Studies

The study explored facilitators and barriers to antiretroviral therapy adherence. All issues surrounding adherence to ART could not be exhausted in the study. Further studies could be conducted to find out the extent to which clients adhere to medication employing different methodological approaches.

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# APPENDICES

## Appendix I

### Informed consent for Clients

My name is Angela Kwakyewaa Amankwah. I am a student of University of Ghana undertaking a research on facilitators and barriers to adherence of antiretroviral therapy.

The study tries to bring to fore the various factors that influence adherence to ART. Participants are required to share their experiences on ART by responding to questions. Personal information that will lead to identification of clients will not be included in the questionnaire. Questionnaire clients will respond to will be anonymous so they will not be identified. You are free to be part of the study and decide to leave as you want. It is however assured that your privacy and confidentiality will be respected. You can choose a place of convenience to answer the questions.

Clients will have the opportunity of listening to one another in a way deriving motivation to cope with treatment regimens. If there is a barrier from the facility it will be addressed to aid service delivery since the results will be given to the facility. For further information and clarification, participants can call 0246444824

"I have read or have had someone read all of the above, asked questions, received answers regarding participation in this study, and am willing to give consent to participate in this study."

Signature or mark of volunteer Date

_____ _____

I certify that the nature and purpose in this research have been explained to the above individual.

Name and Signature of Person Who Obtained Consent

……..

**Consent for Health Professionals**

My name is Angela Kwakyewaa Amankwah. I am a student of University of Ghana undertaking a research on facilitators and barriers to adherence of antiretroviral therapy.

The study tries to bring to fore the various factors that influence adherence to ART. Health professionals are required to respond to questions to ascertain the facilitators and barriers to ART adherence in their view. Participants have the free will to be part or exist from the study anytime.

Personal information that will lead to identification of respondents will not be included in the interview guide. Privacy and confidentiality of information given is assured. To ensure this, health professional can select the time and where they want to be interviewed. Health professional will be informed as how far clients are faring with treatment and how their counselling activities are influencing client's behavior.

For further information and clarification, participants can call: 0246444824

"I have read or have had someone read all of the above, asked questions, received answers regarding participation in this study, and am willing to give consent to participate in this study."

I certify that the nature and purpose, in this research have been explained to the above individual.

Name and Signature of Person who Obtained Consent

_____

## Appendix II

**Questionnaire and Interview guide**

No.

Questionnaire for clients

Facilitators and Barriers to adherence of antiretroviral therapy a multi-case Study of Sunyani Regional Hospital and Dormaa Municipal Hospital.

Please tick the category that correspond to you

**INDIVIDUAL FACTORS**

**Demography**

1. What is your gender? a. female () b. male () c. other ()
2. How old are you? a. 18-29 () b. 30-39 () c. 40-49 () d. 50 and above ()
3. Level of education a. Primary () b. Junior High () c. Senior High () d. Tertiary () e. no education () f. other ……..
4. What is your employment status? a. employed () b. unemployed ()
5. What religion do you belong to? a. Christianity () b. Islam () c. Traditional Religion () d. other ……..

**Disease factors**

6. How long have you been on therapy? a. 3 months – 6 months () b. 7months – 1 year () c. 2 years to 3 years () d. 4 years and above ()
7. How do you feel about your health since you started treatment? a. better () b. there is no change () c. worse ()
8. Do you think ART is important? Yes () No ()
   Give reasons

……

……

……

……

9. Have you had your treatment changed at any moment since you were started on ARVs? Yes () No ()
10. If yes why was it changed? a. drug side effects b. non-availability c. high cost

**SOCIAL FACTORS**

**Social support**

11. Do you have any support to take medication and manage with the disease? Yes () No ()
12. From whom do you get social support in managing with the disease?
    Family members () b. friends () c. peer educators () d. social organizations ()
13. How do they support you?
    Assist in taking medication () b. emotional support () c. financial support () d. information support e. others please specify……
14. Are you satisfied with the support given you?
    Highly satisfied () b. averagely satisfied () c. not satisfied () d. indifferent ()

**Stigma**

15. Have you disclosed your status to anyone? Yes () No ()
16. Who did you disclose your status to?
    Family member b. friends () c. peer educator d. others please specify
    ……
    …….
17. Have you been able to relate well with them after disclosure? Yes () No ()
18. Has disclosure affected your adherence to medication? Yes () No ()
19. Please explain further
    ……
    ……
    ……
    ……
    ……

**Culture and religion**

20. Do you belief HIV is curable by spiritual means? Yes () No ()
21. If yes why?

……
……
……
……

22. Do you belief in traditional medicine? Yes () No ()
23. Do you take traditional medicine in addition to ART? Yes () No ()
24. If yes why?

……
……
……
……
……

**SERVICE FACTORS**

**Relationship with health professionals**

25. What do you think of the service you receive here? Satisfactory () average satisfaction () dis-satisfactory () indifferent ()
26. Do you feel respected by health professionals? Yes () No ()
27. Do you have privacy during consultation and counseling? Yes () No ()
28. Are you able to tell health workers your challenges in taking medication freely? Yes () No ()
29. What are the challenges you face with health professional attending to you?

……
……
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……

**Availability of drugs**

30. Do you always get prescribed drugs at the facility? Yes () No ()
31. Do you pay for the drugs? Yes () No ()
32. Are you able to afford the drugs? Yes () No ()
33. Has the therapy affected your income? Yes () No ()
34. How has it affected your ability to comply with treatment?

……
……
……
……
……

**Health promotion activities**

35. Do health professionals counsel you on regular basis? Yes () No ()
36. Has it enhanced your ability to cope with the therapy? Yes () No ()
37. If yes how?

……

……

……

……

**INFORMATION ON ADHERNCE TO TREATMENT**

1. How many drugs are you supposed to take?

   …….

2. What are their names……
3. What is the dose prescribed per day?

   **.....**

4. How many tablets are you supposed to take at a time?

   ……

5. Are you supposed to take medications with food?

   ……

   How many doses do you take every day?

   ……

6. How many pills did you take yesterday?

   ……..

7. How many did you take three days ago?

   .....

8. Did you miss a dose the past week? ……

9. How many doses did you miss during the week?

   ……..

10. If you missed medication during the period, what were the reasons for missing doses?

    Circle as many as it applies. A. forgetfulness b. sleeping through a dose c. busy schedule d. travelling e. felt depressed f. didn't want people to see me take the drug g. felt the drug was no more effective h. didn't want side effects i. was unwell j. the drugs were too many k. didn't want to take drug on empty stomach l. wanted to avoid cost of buying more drugs

11. Have you ever missed an appointment? Yes () No ()

If yes what caused you to miss appointment

a. Distance to health facility b. occupied by work duties c. financial constraints d. others please specify

   ……

**FOCUS GROUP DISCUSSION**

**Name of Facility Interviewed**

**Interview number**

**Group interviewed**

**Topics for discussion**

1. Treatments available for HIV. What is your judgement about these? (Use of ARVs; traditional medicines; spiritual healing; and perceived benefit (s) of treatment).
2. Experiences with use of ART. (adherence, adverse effects, pill burden, lack of food, lifestyle issues)
3. Attitudes of health workers towards clients. (Privacy, confidentiality, being listened to, time spent with patient, waiting time, satisfaction of services).
4. Counseling issues. (experiences with counseling, importance of counseling on adherence, support given by health workers)
5. Discrimination and stigma (disclosure issues, people disclosed to, reaction after disclosure, influence of stigma on adherence)
6. Social support issues. (what form of support is available, how does in influence adherence)
7. Reasons for non-adherence
8. Issues on how to enhance adherence (sources of motivation to enhance adherence)

**Guidelines for semi-structured interviews with health workers**

**Background information on informant**

**Gender**

**Age**

**Profession**

**Role in ART programme**

**Drugs, treatment and procedures**

1. Which treatment guidelines for HIV/AIDS management do you use at this facility? (Give details if necessary, e.g. national guidelines etc.)
2. What is your procedure when a patient is put on ARV drugs for the first time?
3. What is your procedure when a patient switches regimens?
4. In what ways are ARV-users informed about and prepared for ARV treatment?
5. What kind of information do they receive? Please describe it to us:
   - The disease process (i.e. HIV and AIDS)
   - How the disease affects the body
   - How ARVs work
   - How to use them
   - The need to continue treatment
   - What to do if a pill is forgotten
   - Possible interactions with other drugs (including traditional medicine)
   - Which side effects can occur & what to do if they occur
   - When and where to get re-supply of ARVs
6. Have you had periods where your patients have not been able to get their medications because they were not available in stock?

**Adherence issues**

7. Generally speaking, do your patients keep their appointments?
8. How do you think your patients do, generally speaking, in terms of adherence to ART?
9. What do you use to determine adherence?
10. We would like to get your views on the following from your experience :
    - How would you compare adherence between women and men?
    - How would you compare adherence between older patients and younger patients?
    - How does a patient's educational level affect adherence?
    - How do you think that cost to patients influences adherence?
11. How do you think the distance to the health facility affects adherence?
12. From your experience how do you think the following affect adherence?
    - Having or not having a treatment-support partner?
    - Duration of treatment?
    - Side effects?
13. What strategies are in place to monitor adherence?**Challenges and staff support**
14. What are the main challenges you and your colleagues face more generally in your work? (If necessary, prompt re workload, stress, burnout)
15. Is any special support made available for staff engaged in management of HIV/AIDS at this facility? If no, do you think there is a need to have such support?
16. Is there anything you would like to see done differently in this facility? If yes, what?

**Please is there anything you would like to tell us?**

## Appendix III

### Some Results of Quantitative data

**Table 1 Existence of social support**

| Variable | Frequency | Percentage |
|---|---|---|
| **Existence of support** | | |
| Yes | 103 | 85.8% |
| No | 17 | 14.3% |
| Total | 120 | 100% |
| **Source of support** | | |
| Family | 88 | 73.3% |
| Friends | 9 | 7.5% |
| Peer | 5 | 4.2% |
| Social groups | 3 | 2.5% |
| Total | 120 | 100% |
| **Forms of support** | | |
| Assistance to take medication | 50 | 41.7% |
| Emotional support | 32 | 26.7% |
| Financial support | 20 | 16.7% |
| Others | 1 | 8% |
| Not applicable | 17 | 6.9% |
| Total | 120 | 100% |

**Table 2 Belief in spirituality and traditional medicine**

| Variable | Frequency | Percentage |
|---|---|---|
| **Belief in spirituality as a cure** | | |
| Yes | 34 | 28.3% |
| No | 86 | 71.7% |
| **Belief in Traditional medicine** | | |
| Yes | 34 | 28.3% |
| No | 86 | 71.7% |
| Total | 120 | 100% |

| | | |
|---|---|---|
| **Use of Traditional Medicine** | | |
| Yes | 5 | 4.2% |
| No | 115 | 95.8% |
| Total | 120 | 100% |

**Table 3 Service delivery factors**

| variable | frequency | percentage |
|---|---|---|
| **Perception of service** | | |
| Satisfactory | 96 | 80% |
| Dissatisfactory | 3 | 2.5% |
| Average satisfaction | 20 | 16.7% |
| Indifferent | 1 | 0.8% |
| Total | 120 | 100% |
| **Challenges with health professionals** | | |
| Delay in service delivery | 16 | 13.3% |
| Delay at the pharmacy | 35 | 29.2% |
| Workers not prompt to work | 10 | 8.3% |
| Drug refill schedules | 9 | 7.5% |
| Preferential treatment | 9 | 7.5% |
| No challenge | 41 | 34.2% |
| Total | 120 | 100% |

**Table 4 Availability of Drugs**

| variable | frequency | percentage |
|---|---|---|
| **Availability of drugs at the facility** | | |
| Yes | 102 | 85% |
| no | 18 | 15% |
| Total | 120 | 100% |
| **Payment of drugs** | | |
| yes | 35 | 29.2% |
| no | 85 | 70.8% |
| Total | 120 | 100% |

| | | |
|---|---|---|
| **Availability of drugs and adherence issues** | | |
| transportation cost is a barrier | 35 | 29.3% |
| motivation is derived from free drug supply | 61 | 50.8% |
| treatment requirement is a challenge | 7 | 5.8% |
| cost of non ARV drugs is a barrier | 13 | 10.8% |
| No response | 4 | 3.3% |
| Total | 120 | 100% |

**Table 5 Adherence to Appointment Schedule**

| **Variable** | **Frequency** | **Percentage** |
|---|---|---|
| Have you ever missed appointment | | |
| Yes | 50 | 41.4% |
| No | 70 | 58.3% |
| Reasons | 120 | 100% |
| Total | | |
| Distance to health facility | 11 | 9.2% |
| Occupied by work duties | 15 | 12.5% |
| Financial constraints | 4 | 3.3% |
| Others | 20 | 16.7% |
| Not applicable | 70 | 58.3% |
| Total | 120 | 100% |

**GHANA HEALTH SERVICE ETHICAL REVIEW COMMITTEE**

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

*My Ref. :GHS-ERC: 3*
*Your Ref. No.*

Research & Development Division
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P. O. Box MB 190
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*Tel: +233-302-681109*
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3rd March, 2015

Angela Kwakyewaa Amankwah
University of Ghana
Legon-Accra

**ETHICAL APPROVAL - ID NO: GHS-ERC: 04/10/14**

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

**"Facilitator and barriers to adherence of Antiretroviral Therapy (ART) among HIV/AIDS patients. A Multi-Case Study of Sunyani Regional and Municipal Hospitals"**

This approval requires that you inform the Ethical Review Committee (ERC) when the study begins and provide Mid-term reports of the study to the Ethical Review Committee (ERC) for continuous review. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification without ERC approval is rendered invalid.

You are also required to report all serious adverse events related to this study to the ERC within seven days verbally and fourteen days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your sponsor before any publication of the research findings.

Please note that this approval is given for a period of 12 months, beginning March 3rd 2015 to March 2nd 2016.

However, you are required to request for renewal of your study if it lasts for more than 12 months.

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

SIGNED.....

DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

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

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