

**FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL
THERAPY AMONG SERO-POSITIVE CLIENTS AT MBAGATHI
DISTRICT HOSPITAL-NAIROBI**

By

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DECLARATION

I, Mary N. Musembi, declare that this dissertation is my original work which is done in partial fulfillment of the award of Masters Degree in Nursing (Community Health) at the University of Nairobi and it has not been published or Submitted from any Academic work by anyone else except where due references have been made in the text.

SIGN.....

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DEDICATION

To my loving husband David Nthumbi for facilitating my studies through financial support and to my two little daughters Judy and Jully for giving me peace of mind during my study.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immuno- deficiency Syndrome.
ART	Antiretroviral therapy
CCC	Comprehensive Care Clinic.
CDC	Center for Disease Control
CD4	Cluster Differentiation 4
FBO	Faith Based Organization
HAART	Highly Active Antiretroviral Therapy
HBM	Health Belief Model
HIV	Human Immuno-deficiency syndrome
KAIS	Kenya AIDS Indicator Survey
KNA	Kenya National Guideline for Antiretroviral Therapy
KNBS	Kenya National Bureau of Statistics
KDHS	Kenya Demographic and Health Survey
KNH	Kenyatta National Hospital
MDH	Mbagathi District Hospital
MOH	Ministry of Health.
NACC	National Aids Control Council
NASCOP	National AIDS and STI Control Programme.
OI	Opportunistic Infection
PLWHIV	People Living With HIV/AIDS.
SPSS	Statistical Package for Social Sciences.
UNAIDS	Joint United Nations Programm
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Adherence- It is an extent to which clients behavior coincides with the prescribed health care regimen as agreed upon through a shared decision making process between the client and a health care provider.

Affecting- Factors that would influence how a HIV-positive client would adhere or not adhere to antiretroviral therapy treatment.

Antiretroviral drugs- Are drugs that are used by HIV positive clients that act at different stages of HIV cycle to stop the multiplication of HIV virus.

Antiretroviral therapy – It is the treatment of Sero-positive clients with a combination of at least three to more antiretroviral drugs.

Attitude- It is the degree to which the person has a favorable or unfavorable evaluation of the behavior in question.

Barriers- These are factors that prevent the effectiveness of an intervention that is desired to improve the outcome by an individual.

Client- Any SERO-positive individual above 18 years on antiretroviral drugs who has been registered at CCC.

Eligibility for ART – SERO- positive client with either AIDS defining illness, CD4 count of below 200.

Factors - One of the several things that influence something, or anything that affects how a client takes or adheres to the ART regimen.

Knowledge regarding ART Adherence - Is the client's awareness on the importance of maintaining high levels of more than 95% and the consequences of a client gets as result of poor adherence

Near perfect adherence- It is adherence level of more than 95% to obtain optimum treatment outcomes.

Non-adherence – It is a client's failure to follow the collaborative process of more than 95% of prescribed treatment regimen.

Opportunistic infections- Bacterial, Fungal or Viral infection that occur when immune system is suppressed.

SERO-positive – it is the presence of HIV viruses in the blood after testing

Viral load - It is the level of virus in the blood

ABSTRACT

Antiretroviral therapy (ART) has shown to improve the Health and prolong the lives of most SERO-positive clients. As compared to other therapies, the efficacy of Antiretroviral therapy depends on strict adherence to the regimen. This poses the greatest challenges ever to many clients initiated on the therapy. Obtaining the full benefit from the therapy is a complex individual behavioral process influenced by many broader factors. The study sought to determine factors that influence Adherence to Antiretroviral Therapy among the SERO-positive clients initiated on ART. A cross-sectional study design was conducted at Mbagathi District Hospital, Comprehensive Care Clinic in the months of July and August, 2013. Convenient sampling method was used to select the 85 respondents for the study. A structured-self administered questionnaire was used to collect the data. It was then analyzed by use of Statistical Package for Social Sciences (SPSS). Version 14-0. Relationships were determined by use of a chi-square test and a P-value of less than 0.05 was considered to be significant.

The findings revealed gender inequalities in the study where more women (72.2%) were infected with HIV/AIDS as compared to male's counterparts (27.8%). Most people severely affected by the scourge were found to be from the child-bearing age group between 15-49 years with majority (42.6%) aged between 25-34 years. Statistical analysis also showed a significant relationship between age (25-34) and ART adherence ($P=0.039$). Educational levels were found to have no influence on ART adherence with statistical analysis of ($P=0.3$). Majority (80%) of the respondents were found to be knowledgeable about ART. Statistical analysis showed significant relationship between ART adherence and knowledge ($P=0.001$). Despite this, stigmatization and discrimination upon one's disclosure of HIV status was found to be on increase at (56.0%) and (24.1%) respectively and was also found to influence ART adherence negatively.

Factors significantly associated with high ART adherence levels were adequate knowledge regarding the therapy, accessibility of the ART and positive attitude towards the therapy. However, Stigmatization and discrimination were found to be obstacles to effective ART adherence. There are increased HIV infections among the child-bearing age group (15-49 years) with more HIV infections among women.

Therefore Ministry of Health through planners, policy-makers and implementers of ART need to establish stigma- reduction, Care and support programs in all Comprehensive Care Clinics country-wide and also set up Health education programs targeting not only young adults, women and adolescents but also to individuals from higher educational levels.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND INFORMATION

Adherence to Antiretroviral therapy (ART) is a powerful predictor of survival for People living with HIV/AIDS (PLWHIV) (WHO, 2010). ART has improved the Health of many SERO-positive individuals who otherwise would have died. However, treatment efficacy relies on strict Adherence which constitutes a serious challenge to those clients receiving the Therapy. Various factors have been shown by recent studies to influence the ways in which the SERO-positive clients take their prescribed ART.

ART has improved the Health of many ART has improved the Health of many Adherence to antiretroviral therapy involves client's ability to follow a treatment plan, that is take medications at the prescribed times, frequencies, following restrictions regarding food, fluid and other medications (WHO, ART guidelines, 2010). A critical aspect of ART adherence is the client's involvement and readiness to take the prescribed antiretroviral drugs. Although, effective adherence levels have not been fully defined for Highly Active Antiretroviral Therapy (HAART), levels of adherence below 95 per cent have been associated with virologic and immunologic response while other studies suggest that levels of above 95% achieve far much greater benefits (Paterson et. al 2010). It is now well established that the viral suppressing effect of HAART requires strict adherence to prescribed schedules where a client is expected to either miss one dose or none of the prescribed regimen. This has however been a challenging issue to many clients especially in resource limited settings. It is also essential to reach and maintain therapeutic levels of these drugs (NACC, 2008). Consequently, a Low level of adherence to HAART involves client's inability to reach and maintain adherence levels of or above

95%. This has therefore shown to result to inadequate suppression of viral replication, frequent episodes of opportunistic infections, and continued destruction of CD4 cells, progressive decline in immune function and disease progression and poorer health outcomes (Chesney, 2007).

Four categories of factors have been identified by recent studies to influence adherence to antiretroviral therapy. These include Clients factors, Client-Health Provider Relationships, Medication Regimen and Disease Characteristics. The dramatic reduction in HIV associated morbidity and mortality since the wide spread introduction of HAART is well recognized in all countries where such therapies have been made available. However, recent studies show that extremely high levels of adherence to such therapies which may often be complex in terms of pill burden, dietary restrictions and dosing frequencies are required to ensure optimal benefit (KAIS, 2010).

In the last couple of years, there has been rapid progress in scaling up Anti-Retroviral Therapy (ART) for People living with HIV/AIDS (PLWHIV) world-wide, Sub-Saharan African being no exception (WHO et al., 2009). It is estimated that 44% of the people with advanced HIV infection are currently receiving ART world-wide (WHO, 2010). However, the success should not only be measured through the number of people receiving ART at a given time, but also taking into account their clients successful adherence to the treatment. The virologic efficacy of ART or high adherence level is better achieved if the client sticks to the treatment regimen of more than 95% (WHO, 2008). However, in resource poor settings this is not easy to achieve as many clients fail to adhere in the long term duration the ART is required.

The widespread accessibility of the ART has changed the course of HIV infection in developed countries with comparable benefits being observed in resource limited settings. Recent studies have shown a sharp progress in ART access globally through combined efforts of affected countries and international partners. For example two Countries in sub-Saharan Africa that is Botswana and Namibia have reached international treatment coverage of 80% or more (UNAIDS 2010). Bargensberg, (2009) reported tremendous increase in supply of HAART in resource limited settings. This dramatic availability of ART meant that more clients in need of ART were able to access them even in the low income countries.

In Kenya, ART is available in all public, private and even faith based organizations (FBO) at no cost. The Government of Kenya has also put strategic measures in place where CCCs have been established all over country-wide including remote areas. This is to ensure that every client eligible for the therapy gets it. Currently more than 99% of those clients who require ART can access them in a resource limited settings however WHO believes that at least more than 3 million people needing care should be able to access ART (MOH, 2010).

The regimen has been simplified to fewer doses, less food and fluid restrictions and is more tolerable but treatment still requires high adherence level of or more than 95%. Recent studies have shown reduced numbers of illnesses related to HIV infection world-wide from the peak of 2.1 to 1.8 million in 2009 and a slight increase in adherence rate in Sub Saharan African countries. (UNAIDS/WHO, 2011).

The critical factors that influence adherence fall into four main categories: Clients factors such as active drug or alcohol use, age, sex, cultural beliefs and ethnicity; medication

regimen such as dosing complexity, side effects, number of pills, food restrictions; provider-client relationships such as attitudes, beliefs and system of care/service delivery such as long distance travel, inconvenient appointments. Of all these, client's behavior is the critical link between a prescribed regimen and treatment outcome. The effectiveness of ART will only fail if the client does not take medication as prescribed or refuse to take them at all (Chesney, 2009).

In the medical world, it is believed that pill burden strongly influence adherence. However, the effect of pill burden on ART adherence is closely associated with disease stage. Symptomatic clients perceive a higher risk for complications as a result of non adherence than do asymptomatic ones. It is also noted that dosing schedule and food restrictions appear to have more influence on adherence than pill burden. Clients on twice dosing report better adherence than those on three times or more dosage frequencies (Paterson, 2010).

1.2 PROBLEM STATEMENT

Non-adherence issues have been common especially in sub-Saharan African countries. It is not known why the clients find it hard to reach the recommended near perfect adherence levels of or above 95 per cent and therefore there is need to establish this. If the clients' issues are not extensively addressed, there might be a possibility of clients in developing viral resistance. The antiretroviral regimen has also been associated with unbearable side effects such as neuropathy, diarrhea and headache. In addition to these, there are so many pills to be swallowed about 16-20 per day including the pills to prevent opportunistic infections. This becomes a major challenge for many SERO-positive clients. They therefore end- up taking few of the pills or discontinuing the whole regimen

in order to get relieved from the pill burden. Food and fluid restrictions have also been associated with ART as compared to other medications. This makes the regimen a unique one. Clients may also find it difficult to fit the ART regimen in their life situations resulting to a lot of disruptions, stresses. Such inconveniences may make them skip some doses of the ART regimen. Various factors have been associated with poor adherence to antiretroviral therapy. These include negative attitudes towards ART, Inaccessibility of the ARVs, inadequate knowledge about the therapy, poverty, cultural and religious beliefs, illiteracy and age. Therefore such factors need to be addressed so that clients are empowered and enlightened more on the importance of maintaining high ART adherence levels and the implications of non-adherence. The problem of ART adherence has been there since its introduction in 1990s. Many studies have also been done regarding ART adherence, strategies put in place but still issues regarding ART adherence seem to be stagnating. This study is therefore intended to identify those factors that influence ART adherence and make recommendations so that guidelines can be provided in order to help combat the problem of non-adherence.

1.3 PURPOSE OF THE STUDY

The main purpose of this study was to establish factors which influence adherence to Antiretroviral Therapy among the SERO- positive clients. The factors found to influence ART adherence negatively leading to low adherence levels of less than 95%, necessary recommendations would be made to address them from the lowest individual levels.

1.4 STUDY JUSTIFICATION

The AIDS pandemic continues to have a great impact on morbidity and mortality in sub-Saharan Africa with 22.4 million people reported to be living with HIV infection and an

estimated 2.4 million AIDS related deaths reported in 2009 alone (WHO. 2010). HAART has shown to alter the course of HIV disease dramatically with decreased mortality and morbidity since its introduction in 1990s. However high adherence levels of or more than 95 percent is required to get the full benefits of the therapy. Such benefits include prolonging and improving quality of lives of SERO-positive clients, preventing disease progression and reducing viral load (WHO, ART treatment guidelines, 2010). Although the use of ART has shown good results in reduction of mother- to- child transmissions, recent studies have reported quite a number of child mortalities related to AIDS. This is of a major concern. This is important because few child mortality rates are among factors which determine a healthy nation. Non-adherence to ART has also shown to impact negatively on country's economy in different ways. The population of child bearing age between 15-49 years is the most affected by the scourge. It is at this age which according to Kenya Health indicator survey report (2010) are said to be economically active. Also most people in this age group are within the child-baring age. If they do not adhere well to ART regimen, there might result to increased number of orphans with few people to take care of them.

The issue of non-adherence has also shown to occur in situations where clients are initiated on the therapy when not ready, have inadequate knowledge about HIV/ART, or even without being thoroughly counseled. This is a major concern because the clients need to take such drugs for a life time. In order to minimize issues of non-adherence to ART, strategies have internationally been put in place where the regimen has been simplified from "mono", "bi" to triple therapy. In addition to this, the regimen has fewer side effects, less frequency dosages, less food and fluid restrictions and is more tolerable. There has been therefore high expectations that many clients would be be able to

maintain adherence rate of greater than 95%. However, this has not been the case. Recent studies have shown that majority of clients such as those from resource limited settings have not been able to achieve this.

Little is known about the exact level of ART adherence and the factors that influence adherence to ART in resource limited settings. There are few research reports about adherence of ART among clients on HAART in Kenya. Also, the roles of socio-demographic characteristic, psychosocial factors as predictors of adherence have produced largely inconsistent results. This study therefore endeavored to identify those factors which influence adherence to ART especially those which result to non-adherence so that guidelines can be provided to empower the clients on importance of maintaining high levels of ART adherence.

1.5 RESEARCH QUESTIONS

1. What are the factors that influence adherence to antiretroviral therapy among the SERO- positive clients on Antiretroviral Therapy?
2. What is the level of knowledge of clients regarding adherence to antiretroviral therapy?
3. What are the reasons for defaulting the prescribed Antiretroviral Therapy?

1.6 STUDY OBJECTIVES

1.6.1 Main Objective

To determine factors affecting adherence to antiretroviral therapy among the SERO – positive clients at Mbagathi District Hospital.

1.6.2 Specific objectives

- i. To determine the socio-demographic characteristics of the clients infected with HIV/AIDS on ART.
- ii. To assess the level of knowledge regarding adherence to antiretroviral therapy among the SERO-positive clients.
- iii. To determine reasons for non-adherence to the prescribed antiretroviral therapy.

1.7 EXPECTED BENEFIT OF THE STUDY

The knowledge gained in this study will help in making recommendations regarding development of appropriate health education strategies to empower clients about the importance of adhering to prescribed ART. It will also help the ART planners and implementers of ART in reviewing the ART guideline so as to make the necessary changes regarding Adherence to antiretroviral therapy from the individual, community to national levels.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

Antiretroviral Therapy has greatly improved the overall health of individuals living with HIV/AIDS. Several studies have reported increased virologic and immunologic effectiveness of ART and the consequent reduction in mortality and morbidity associated with HIV/AIDS. Perfect adherence to HIV medications is critical for successful treatment particularly for prevention of viral replication (Chesney, 2009). According to (Hirries et al, 2010), the length and quality of life among the people living with HIV/AIDS have dramatically changed with advent of ART. Regimens have been simplified in recent years to fewer doses, less food and fluid restrictions and are generally more tolerable, but treatment regimen still requires high adherence levels of or above 95% in order to be effective.

2.2 GLOBAL UPDATE ON HIV TREATMENT.

The number of annual AIDS –related deaths world-wide has steadily decreased from the peak of 2.1 million in 2004 to an estimated 1.8 million in 2009. The decline reflects the increased availability of ART as well as care and support to people living with HIV particularly in resource limited settings. It is also as a result of decreasing incidence of HIV in the late 1990s (Bargnsberg, 2008). As per KDHS, report (2011) out of 1.6 million PLWHIV, 59% are women, 1.1 million children have been orphaned, with more new infections reported from age group of 15-35 years.

The effects are especially evident in sub-Saharan Africa, where an estimated 320,000 (20%) fewer people died of HIV/AIDS related causes in 2009 as compared to 2004,

When ART accessibility and availability began to be dramatically expanded in resource limited settings (WHO/UNAIDS, 2010). The following were the key findings of the WHO/UNAIDS 2010 report: An additional 1.2 million people received ART in 2009, bringing the total number of people receiving treatment in low and middle- income countries to 5.2 million, a 30% increase as compared to 2008. At the end of 2009, 36% of the 15 million people in need of ART were receiving the therapy in low and middle – income countries and fewer people were dying of AIDS related causes. About 14.4 million life- years have been saved since 1996 world-wide.

In addition to these, the number of Health facilities delivering ART have increased by 36% in 2009. The average number of people receiving ART per health facility rose from 260 in 2008 to 274 in 2009 according to data submitted by 99 countries world-wide. Half or more of all adults eligible for treatment were receiving ART in 29 of the low and middle income countries. Eight countries namely Botswana, Cambodia, Croatia, Cuba Guyana, Namibia, Romania and Rwanda have achieved the antiretroviral treatment coverage of more than 80% .

From then, there has been tremendous availability and accessibility of ART World-wide. Its use has therefore transformed what was once a fatal disease to a more manageable chronic disease. The quality and length of life among People living with HIV/AIDS has been dramatically changed. Regimen has also been simplified with most clients reporting few side effects and as well as few adverse reactions (WHO, 2010)

In sub-Saharan Africa, many researches have been done on ART adherence. Recommendations and guidelines have also been put in place regarding HIV and ART

but still many clients have not been able to maintain recommended adherence levels of or more than 95% (WHO, 2009).

2.3 TREATMENT OF HIV-INFECTION IN KENYA

The first case of HIV in Kenya was reported in 1984. Kenya was slower than other African countries such as Uganda, and Botswana to aggressively respond to the HIV/AIDS epidemic by promoting safer sex practices. On recognizing the magnitude of HIV/ AIDS problems, The government declared AIDS a national disaster. In October 2000, the National AIDS Control Council (NACC) that reports directly to the office of the president announced a Kenya National HIV/AIDS strategic plan. This plan outlined a multi-sectoral approach for five priority areas which included Prevention and Advocacy; treatment, continuum of care and support; evaluation and research; mitigation of social economic impact; and management and coordination of HIV treatment.

Kenya government started providing ART to public health sectors in 2001 where five sites were established. By the year 2003, NACC estimated that 1.5 million people were infected with HIV/AIDS with 1.8 million orphans. In 2005, the number of PLWHIV reduced to 1.4 million. By the year 2011, an estimated 1.6 million Kenyans were living with HIV/AIDS. This represented nearly four-fold increase in 1990s where over 400,000 people estimated to be living with HIV/AIDS. (Kenya National Bureau of Statistics 2010). Although HIV /AIDS infection is most likely to affect young adults, a considerable number of older people are living with HIV/AIDS. In 2009, one out of 11 PLWHIV were aged between 50-to 64 years with 60% of the new HIV infections from age group 15 to 35 years (KNBS, 2010).

Kenya like other developing countries uses antiretroviral therapy as one of the strategies to treat HIV infections. This is good effort because morbidities and mortalities related to HIV/AIDS have drastically been reduced. ART use has transformed HIV infections to a chronic manageable illness. The rate of new HIV infection has fallen by 40%, 69% of SERO-positive pregnant mothers have been able to receive ARVs to prevent transmissions to their unborn babies and 83% of all adults eligible for ART were able to receive them (NASCOP, 2011). The treatment is available in all public health institutions; faith based organizations (FBO) as well as private hospitals at no cost. The WHO, Kenya National ART (2010) guideline outlined the following ART goals:- Improve and prolong the quality of lives of people living with HIV/AIDS (PLWHIV), reduce viral load hence halt disease progression, Reduce mother-child, transmission, achieve immune reconstitution and reduce morbidity and mortality associated with HIV infections. However in order to achieve these goals and for the clients to get full benefits out of them, It is recommended that, there should be significant increase in awareness of HIV disease in all social groups and increase accessibility of ART to all Clients (MOH,2010). This has therefore resulted in reduced number of orphans, reduced expenses for palliative care and reduced incidences of opportunistic infections (NASCOP, 2010). Despite increase in availability of ART Country wide, the country's struggle against HIV is far from over. The number of PLWHIV continue to increase as effective treatments help maintain good health and increase longevity. However, a small percentage of clients have still not been able to benefit from the HIV prevention and treatment services especially from remote areas. According to NASCOP, (2011), Accessibility to treatment in urban areas has increased, with 72% of the adults eligible for treatment have been able to access the therapy. Around 200,000 additional people on

ART treatment in 2011 than 2009. However, as compared to other countries, the proportion of children receiving ART in Kenya is still very poor (31%).

As for today more than 2.2 million people in Kenya are living with HIV/AIDS which totals to almost 7% of the total population .Adult HIV prevalence was 6.2% by 2010 which was lower than at the epidemic. About 30 to 40% of the babies are born to HIV infected mothers. HIV/AIDS may be the major cause of child death worse than measles and Malaria in future (KDHS, 2010).

At comprehensive care clinic, clients are assessed to determine their eligibility for ART before being initiated on antiretroviral therapy (ART). Then, extensive counseling related to HIV/AIDS and use of HAART in its mitigation is done. Clients are then counseled on mode of action, side effects, ART interactions with other drugs and implications of poor adherence (WHO, ART guidelines 2010).

In relation to this, the National Aids Control Council and National AIDS/STI Control Programme reported a decrease in AIDS related deaths by 29% between 2007 and 2010. This has been thought to account for the increased prevalence rates as people live longer with HIV infection.

2.4 ADHERENCE TO ANTIRETROVIRAL THERAPY

The relationship between the adherence and therapeutic successes has been demonstrated across a range of highly active antiretroviral therapy (HAART). Regimen comprises of nucleoside reverse transcriptase inhibitors, protease inhibitors and non-nucleoside reverse transcriptase inhibitors. HAART has shown to improve CD4 cell counts, and in turn decrease morbidity and mortality among HIV- infected clients. These benefits of HAART

in the management of HIV are well established in a number of settings (Paterson, 2007). However, the success depends on the client's ability to adhere to the prescribed ART.

Antiretroviral therapy has greatly improved the overall health of individuals living with HIV/AIDS. Several studies have reported increased virologic and immunologic effectiveness of ART and the consequent reduction of mortality and morbidity associated with HIV/AIDS (Perry et. al 2009).reported that High levels of adherence to HIV medications is critical for successful treatment, particularly for prevention of viral replication. Regimens have been simplified in recent years with fewer doses, less food fluid restrictions and are generally more tolerable but treatment still requires high levels of adherence to avoid virological failure. (Paterson, 2007)

The success to ART adherence depends mainly on the client's ability to adhere and is influenced by factors which may be within or beyond clinical environment. An extremely high level of more than 95% is required to guarantee treatment effectiveness. However, non-adherence can lead to clinical, immunological and virological failure with the latter resulting to drug resistant (WHO/UNAIDS, 2009).

In sub-Saharan Africa, initial findings about adherence have been promising. A meta-analysis study found that a pooled estimate of 77% of clients in African settings achieved an adequate adherence levels as compared with just 55% of clients in North America. In addition, high levels of adherence and positive outcomes of ART have been observed in remote health settings (UNAIDS, 2009).

2.5 FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY

Chesney, (2007) states that before measures are implemented to improve adherence, it is essential to identify the main factors that contribute to inability of the clients to take their medications as expected .There are variety of factors which influence ART adherence. The World Health Organization (WHO) characterizes these factors as “Interacting Dimensions” that is; they exert positive or negative influences on treatment adherence. They include socio-economic factors such as unemployment, lack of money, stigma and discrimination, long distance travel to access care, inadequate food; Health system related factors such as inadequate knowledge by the health care provider on importance of ART adherence ,inconvenient appointments, inability of the health provider to plan the care with the client; client related factors such as low level of education, medication fatigue, poor self- confidence, beliefs about the disease, inadequate knowledge to medication regimen; Disease related factors such as pill burden, difficult side effects, complicated regimens,/ poor fit between the medication regimen, clients lifestyle and eating patterns.

Further studies were done by J. R. Ickovics & S. C. Meads (2002) and categorized Factors that influence adherence to Antiretroviral therapy into five main ways which included clients factors, treatment regimen factors, disease characteristic, client-provider relationships and clinical settings/ systems of care.

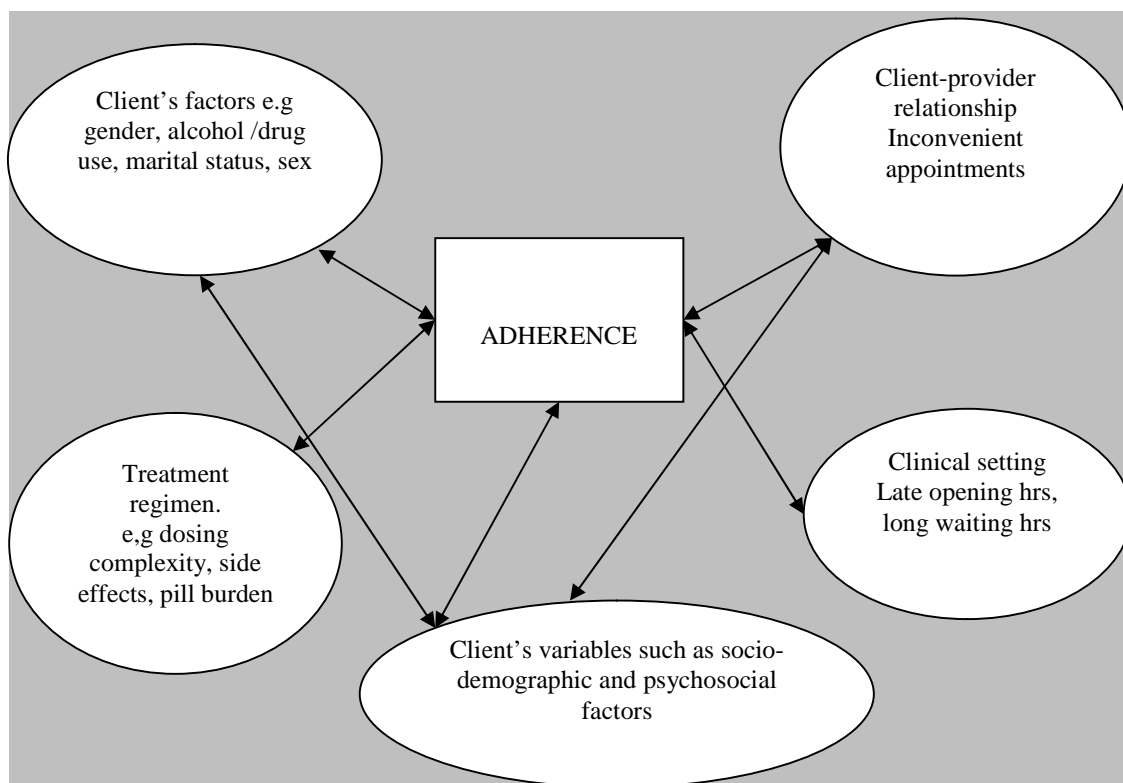


Figure 1: Interrelationships of the Key factors influencing ART adherence

Source: Literature review, modified by the Author

2.5.1 Client's factors

Client's factors studied include: socio-demographic characteristics such as gender, ethnicity, educational level, unemployment; psychosocial factors such as active drug or alcohol use, degree of social support, social stability, depression and other psychiatric illnesses. Recent studies have found that male sex, white ethnicity, older age, higher level of education and literacy correlate with better adherence however, depression, active drug or alcohol consumption result to poor adherence to ARV drugs (Chesney, 2009).

Client's knowledge about the ART regimen and the understanding of the relationship between the poor adherence and build-up of resistance predicts better adherence to the

ART. (Paterson, 2007) reported that client's behavior is the critical link between a prescribed regimen and treatment outcomes. Client's knowledge and beliefs about disease and medicine can influence adherence in many ways. Understanding the relationship between adherence and disease progression, the consequences of poor adherence and impact it will have on the life of an individual client and the whole family is of vital importance. A client who is more knowledgeable about HIV, the importance of maintaining the recommended adherence levels would tend to follow all the instructions regarding medication intake as compared to the client with no such information. In addition, negative beliefs regarding efficacy of HAART may also influence ART adherence behavior resulting to non-adherence (Paterson, 2010).

2.5.2 Medication Factors

HAART consists of complex regimen that can include up to 20 pills with multiple dosing throughout the day and specific food and fluid related instructions. These are often difficult to follow for majority of the clients. The higher the pill burden the lower the adherence level.(Chesney,2010)

Dosing schedules and food restrictions appear to have more influence on adherence than pill burden. NASCOP, (2009) on Meta analysis reported that clients on twice daily doses or less reported better adherence as compared to those with three or more daily doses.

Side effects have also been consistently associated with decreased adherence. Those clients who experience more adverse reactions are less likely to continue with the therapy. HAART can also lead to serious adverse effects including nightmares, hallucinations, neuropathy and diarrhea. The literature clearly shows that optimal

adherence occurs with medications that remove symptoms whereas adherence is reduced by medications that bring about side effects. Clients quickly discontinue therapy or request for change of medications if they experience side effects, both real and perceived account for more regimen changes than treatment failure (Chesney, 2008).

2.5.3 Client-Provider relationship

A meaningful and supportive relationship between a client and a health care provider helps a client to overcome significant barriers to antiretroviral therapy adherence.

This relationship plays an important role in improving adherence to prescribed ARV drugs. It is believed to be a motivating factor for adherence to HAART. Trust and confidence in provider has been shown to increase the levels of ART adherence (Altice et al., 2008).

Patient overall satisfaction and trust with the health care provider and the patient's opinion on the provider's competence, provider's willingness to include the client in decision making process. Two recent studies done on client- provider relationship to show the effect of trust of the client on physician and the impact on client's ART adherence showed that good relationship improved the adherence ten-fold when compared to those clients who had no trust on the physician (Paterson,2010).

Other factors that have been identified to strengthen the relationship include – perception of the provider competence, quality and clarity of communication, compassion shown by the provider and involvement of the client in the treatment decisions have identified as motivators of ART adherence. However, other factors such as inconvenience of the regimen where a client becomes frustrated by the health care provider especially in

situations where misunderstandings occur, treatment becomes complex and side effects becomes unmanageable have shown to result to non-adherence (WHO,2009).

2.5.4 Disease Characteristics

Based on evidence from other chronic diseases that the degree of symptoms and immunologic status are negatively associated with adherence, however, few HIV studies examined this directly except in one study that showed that prior opportunistic infections increased adherence. Clients who have had a serious OI may perceive their illness to be severe and adhere better to their treatment. Disease characteristics such as stage and duration of HIV infection associated with opportunistic infections lead to non-adherence. This mostly applies to those clients who have lost hope in life resulting into low self-efficacy, extreme anxiety and denial that they have HIV infection.(Bagnsberg,2010).

2.5.5 Clinical Setting and service delivery

Although existing data is limited, aspects of the clinical setting may be associated with improved adherence. A friendly, supportive and non judgmental attitude of the health care providers, convenient appointment scheduling and confidentiality contribute to better adherence (NACC, 2009).

Structural factors not directly related to clients or medications also play a major role in influencing ART adherence. Limited availability and accessibility of ART and health care facilities, health care beliefs, waiting time, opening time, availability of counseling services, social, economic and psychosocial support for PLWHA plays a major role in influencing the degree of adhering to the prescribed ART regimen (MOH, 2010).

2. 6 REASONS FOR DEFAULTING ANTIRETROVIRAL THERAPY

Non-adherence can lead to inadequate suppression of viral replication, continued destruction of CD4 cells, progressive decline in immune functions and disease progression. A number of factors have been reported to have a major impact on the ways the clients adhere to the prescribed antiretroviral therapy.

Studies done by (Chesney et al., 2008) reported the following as reasons given by various clients from different settings for defaulting the prescribed ART regimen:

Discomfort with disclosure of HIV status is one of the reasons for defaulting the prescribed regimen. Fear of rejection or discrimination may prevent a client from disclosing their HIV status to family members, friends thereby losing out the social support. Active drug or alcohol use as such clients may have problems in adhering to the regimen either by forgetting to take the drugs correctly or skipping the whole regimen.

According to NASCOP, (2009) the influence of alcohol consumption, active drug use and ART adherence showed that clients with behavioral and psychosocial problems put them at risk of defaulting antiretroviral medications. Alcoholism and drug addictions are among them and their use is associated with significant skipping of multiple doses of ART.

Depression and psychiatric illnesses have shown to play a major role especially where clients have AIDS related dementia. This may lead to inability of the client to remember when, how or the number of pills to be taken altogether. However, negative attitude of the health care provider has also shown to play a major role in client's intake of the

prescribed ART. Clients who perceive their providers as having antipathy towards them are understandably reluctant to adhere to the prescribed ART regimen and therefore may end up defaulting some doses of the regimen. A difficult life situation which includes lack of housing, unemployment, financial constrains. A client may perceive lack of income, food and support for their children as urgent needs than taking medications properly (Chesney, 2007).

Antiretroviral therapy may require dosing schedules, different food intake patterns (some ARVs need to be taken with food, others with or without fatty foods. Clients on ART are therefore required to adhere on this complex and this becomes difficult to many clients. Also ART requires a client to take those drugs for life and consistently even in absence of symptoms. Some clients therefore may end up stopping the treatment thinking that they have been cured (Horsman, 2010)

Medication use may disclose ones HIV status especially in situations where a client is not willing or ready to disclose to partner, family members or friends. The client may end up skipping that dose in fear of loosing family support.

2.7 ACCESSIBILITY OF ANTIRETROVIRAL THERAPY.

In the last couple of years, there has been a rapid progress in scaling up the antiretroviral (ART) for people living with HIV/AIDS world-wide. Recent studies have shown a dramatic increase in treatment coverage in many resource limited countries. For example Botswana and Rwanda have been able to achieve universal access target coverage of 80% or more. It is also estimated that, 44% of the clients in Sub-Saharan countries with advanced HIV infection are currently receiving antiretroviral drugs (WHO, 2010).

By 2003, only 5% of the people needing ART in Kenya were receiving it. In the year 2006, Kenya president announced that ARVs would be provided for free in public hospitals and health centers. By 2009, the number of people receiving ART significantly increased to 336,980. However due to 2010 change in WHO Treatment guidelines, the proportion of people eligible remained at 48%.

By 2010, access to treatment increased further to around 61% since then the access has risen by a further 69%. This expansion of ART has led to a 50% decrease in AIDS related deaths since 2005. Despite increase in access, the overall coverage for children is very low 31% of the children needing ART are able to access it.

Kenya like other developing countries uses ART as one of the strategies to mitigate the HIV infection. Recent studies have shown that 1.4 million people living with HIV/AIDS (PLWHA) have been initiated on the therapy (CDC,2008).The National AIDS Control Council has therefore reported a decrease in AIDS related deaths of 32% by 2009. The Ministry of Health, Kenya in collaboration with non-governmental organizations (NGOs) have jointly provided measures to ensure that every client who is eligible for the therapy regardless of the location, get access to the therapy by establishing many clinics including in the remote areas. However, it is projected that as Kenya push to achieve universal access to HIV prevention, treatment, care and support would result in 57% fewer new HIV infections by 2030 than in the year 2005, lower AIDS related deaths by 41% and reduce HIV prevalence by more than 60% (KDHS,2012).

2.8 KNOWLEDGE REGARDING ANTIRETROVIRAL THERAPY

From the time HIV was first recognized in Kenya, the universe of knowledge about the epidemic has continually expanded. Although, major progress has been achieved in Kenya in response to HIV, the epidemic remains one of the country's greatest health and development challenges (NASCO, 2010). Clients who understand their HIV disease and the relationship between treatment, adherence and successful outcome report high levels of ART adherence than those who do not have an understanding (Paterson, 2009). A meta-analysis study was carried out to compare the knowledge regarding ART adherence in Urban and Rural areas in Northern Nigeria. The results showed that those clients who possessed inadequate knowledge regarding ART, reported poor adherence levels of below 50% as compared to those clients who were knowledgeable about the disease, ninety- percent (90%) of the clients had adherence levels of more than 95% of whom 89% were from Urban areas, (KNDHS, 2008) This perfect adherence was therefore as a result of client's awareness of the consequences of non-adherence and the impact it had on the lives including those of family members.

Health care providers need to be knowledgeable about the HIV and ART adherence, possess necessary skills needed especially in counseling, be knowledgeable about the importance of providing good client- provider relationship, which recent studies have shown to enhance ART adherence (MOH, 2010).

2.9 THEORETICAL FRAMEWORK

The purpose of theoretical framework is to make scientific findings more meaningful and generalizable.

With reference to this study, the health belief model framework (HBM) was used. HBM is a social- psychological model that attempts to explain and predict individual health behavior by focusing on the attitude and beliefs of individuals. The model was developed in the 1950s by Rosenstock with an intention to predict which individuals would or would not take specific action to avoid illness. Rosenstock assumed that to be in good health and to stay so it is an objective common to all people. The HBM is based on the three major components namely individual perceptions, modifying factors and variables affecting the likelihood of taking recommended health action. The model assumes that an individual will take health related action if that person perceives susceptibility, severity of condition, benefits in taking an action to reduce the risk and believes in being able to successfully execute the action required to produce the desired outcome without barriers (Becker, & Rosenstock 1997).

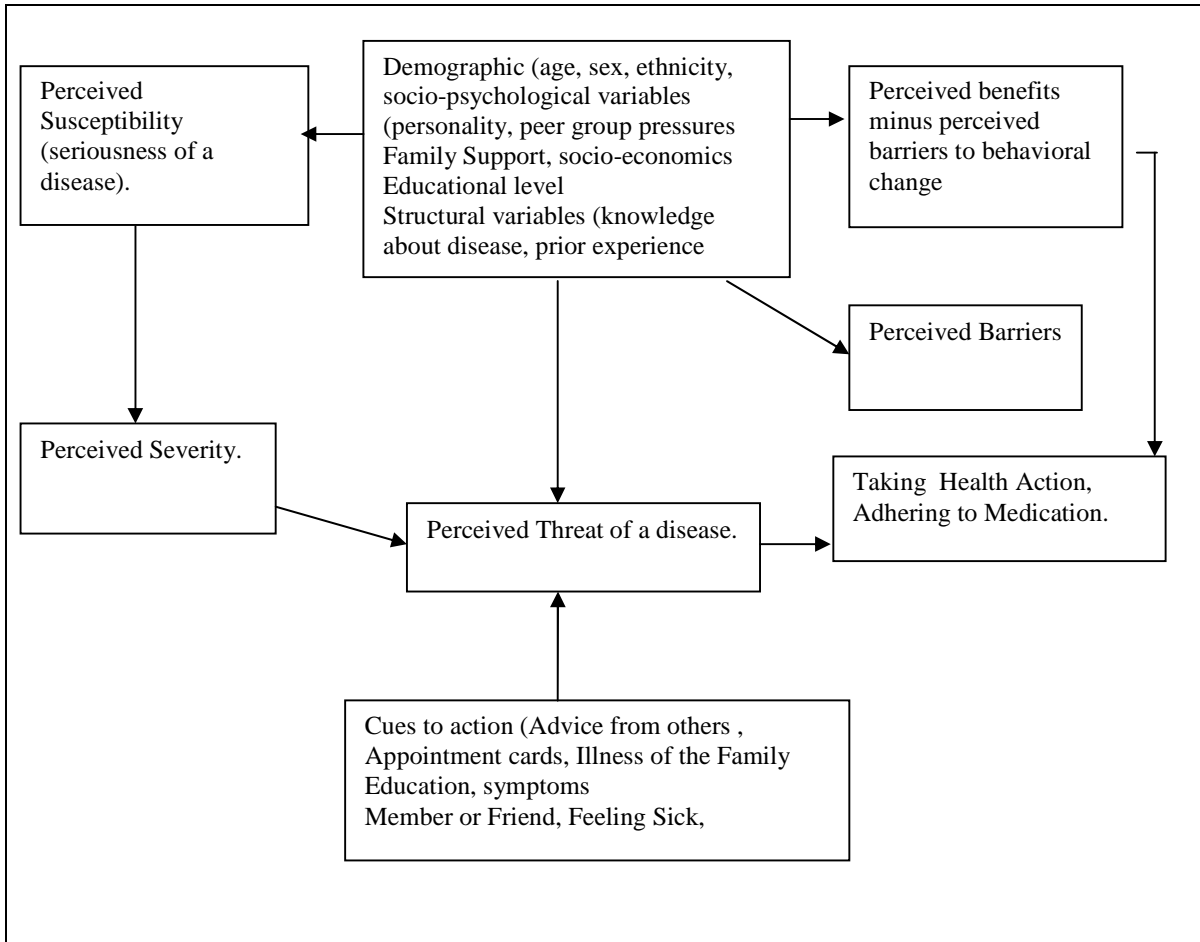
With reference to the concepts introduced about the HBM, adherence can be taken to be the desired health related action or behavior that can be influenced by perceptions, beliefs, attitude of an individual. If such factors are not re-enforced or addressed, they may lead to non-adherence.

2.9.1 Relationship of the Key concepts of the Health Belief Model

Individual perception

Modifying Factors

Likelihood of an action



Source: from literature review modified by the author.

Figure 1: Relationship of the Key Concepts of Health Belief Model

a) Individual perceptions include the following variables:

Perceived susceptibility; when people believe they are at risk for a disease, they will be more likely to do something to prevent it from happening and when they are not at risk of susceptibility they will do the opposite. Therefore HIV positive client's belief that they are susceptible to AIDS when they do not take their Antiretroviral drugs well. This perception is influenced by various factors such as age, gender, or cultural beliefs.

Perceived severity: This indicates an individual's belief about the seriousness or severity of the disease. It also come from the beliefs a person has about the difficulties a disease would create or the effects it would have on his life in general. When the perception of susceptibility is combined with seriousness, it results in perceived threat. Knowledge and beliefs of the consequences of having AIDS include muscle wasting, skin rashes Hospitalization, loss of job and early death. This perception is likely to influence an individual to take a health action which leads to a perceive threat of deterioration.

b) Modifying factors

Modifying factors that influence person's perceptions include demographic variables such as age, gender, marital status and ethnicity. An unmarried person may adhere better to treatment regimen than married one because of the freedom they might have to make choices and decisions

Socio-psychological variables;

Cultural and spiritual beliefs may encourage or hinder engaging in preventative health behaviors such as use of condom. Structural variables such as past experience, knowledge about the HIV and prior contact with it may have positive influence on adherence to

ART. Other factors include economic status, communication may influence on decision and choices made by an individual on health actions.

Cues to action: These are events, people or things that move people to change behavior. Cues can either be internal or external. Internal cues include feeling of fatigue, uncomfortable symptoms or thoughts about the condition of another HIV positive client who is close. External cues that may affect adhering to drugs may be advice from others, pill taking reminders, and illness of family member of a friend.

c) Likelihood of an action: This is the behavior adapted in order to reduce threat based on the perceived benefits and barriers of the behavioral change.

Perceived benefits of the action: This is the person's opinion of the value or the usefulness of adopting a new behavior in decreasing the risk of developing the disease or alleviating the existing symptoms well.

Perceived Barriers of the action: This is an individuals own evaluation of the obstacles in the way of adapting a new behavior or continuing with the same behavior. Perceived barriers to adhering to ART including pill burden, food restrictions, dosing schedule, side effects and stigma may lack support from family members or friends as disease has a social stigma.

2.10 CONCEPTUAL FRAMEWORK

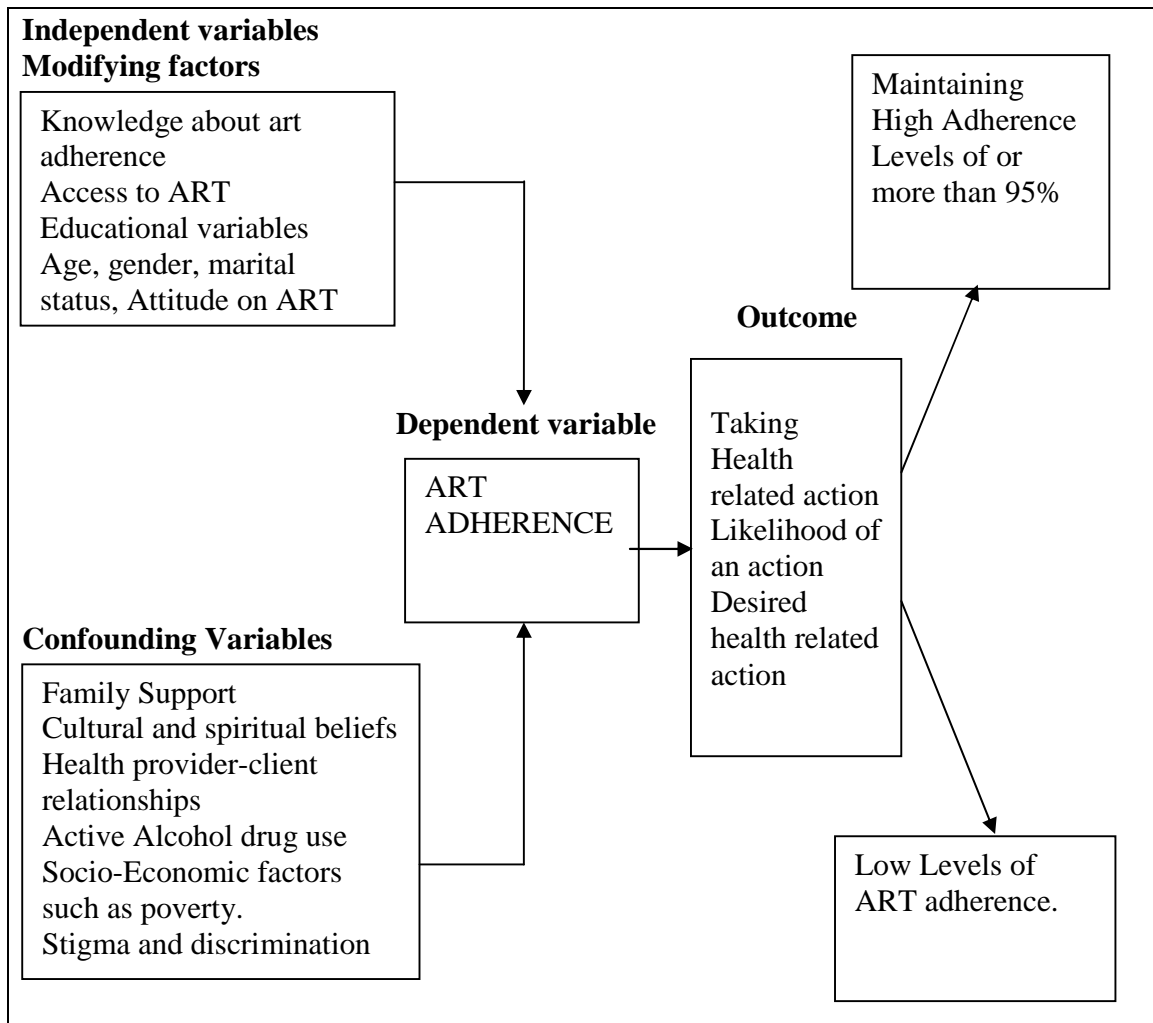


Figure 3: Conceptual framework

CHAPTER THREE: STUDY METHODOLOGY

3.1 STUDY DESIGN

This was a cross-sectional descriptive study. Data was collected over a period of four weeks in the months of July and August, 2013.

3.2 STUDY SITE

The study was conducted at Comprehensive Care Clinic, Mbagathi District Hospital, and Nairobi.

3.3 STUDY POPULATION

The study population included all SERO-positive clients who were registered at the Comprehensive care clinic.

3.4 SAMPLING METHOD

A convenient sampling method was used in which all clients who visited the clinic for various services within the period of study and met the inclusion criteria were recruited in the study. A sample size of eighty-five clients was drawn from 109 clients who were already registered and initiated on the therapy. Since the list of the clients registered in the clinic appeared in the register book (RB), it was used as the sampling frame.

3.5 SAMPLE SIZE DETERMINATION.

The sample of size was calculated using fisher's formular,1998.

$$n = \frac{Z^2 P (1-P)}{d^2}$$

Where: **n**= the desired sample size

z= is the standard normal deviation usually set at 1.96 which corresponds to 95% confidence interval.

d= degree of precision usually set at 0.05 (5%).

P= 50% which equals to 0.5% (estimated proportion of clients on ART with adherence level of greater than 95%)

Since prevalence rate is not known, then prevalence of 50% was used as indicated by Mugenda and Mugenda, (2003)

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

$$n = 1.96^2 \times 2500/25$$

$$n = 38.4 \times 10$$

$$n = 384$$

The target population in this study was less than 10,000 implying that the sample size would be smaller. The final sample size **Nf** was estimated using the following formula proposed by Mugenda and Mugenda 2003.

$$\mathbf{Nf} = \mathbf{n/1+ (n/N)} \text{ (Mugenda and Mugenda, 2003).}$$

Where; **Nf** = desired sample for a population less than 10,000

n = desired sample size for a population greater than 10,000.

N = estimate of the population size = 109 (clients in CCC initiated on ART).

Therefore the desired sample is: $384/1+ (384/109)$

$$nf = 384/ (1+3.52)$$

$$nf = 384/4.52)$$

$$\mathbf{nf} = \mathbf{85}$$

3.6 INCLUSION AND EXCLUSION CRITERIA

3.6.1 Inclusion criteria in the study:

The following inclusion criteria were used to identify the study population;

- i. All SERO-positive clients above 18 years of age.

- ii. The Clients must have been registered at Comprehensive Care Clinic- MDH.
- iii. Clients who were initiated on the antiretroviral therapy.
- iv. Clients who were able to give an informed consent.

3.6.2 Exclusion Criteria in the study:

- Clients who were under 18 years of age.
- SERO-positive not registered in the clinic.
- Sero- positive not on ARVs
- Clients who declined to give consent.
- Clients with inadequate information.

3.7 STUDY TOOLS

A Structured self-administered questionnaire was used to obtain the data. The questions were in both English and Kiswahili. The respondents were requested to choose the version of their choice. However, the investigator was available to give any assistance where possible.

3.8 DATA HANDLING

Immediately after the respondents finished filling in any questionnaire, the investigator kept them under the lockable cupboard where unauthorized persons could not access them.

3.9 STUDY VARIABLES

3.9.1 Dependent variable - ART Adherence

3.9.2 Independent study variables

These included-: Knowledge regarding ART adherence, reasons for defaulting ART, Adherence to Antiretroviral Therapy, Attitude towards ART medication and Accessibility to antiretroviral drugs.

Confounding variables included - Socio- demographic characteristic such as age, gender, marital status, educational levels.

The outcome of study variables included either maintaining high adherence levels of greater than 95% or reporting low adherence levels of below 95%.

3.10 PRE-TESTING

The structured self-administered descriptive questionnaire was pre- tested among SERO-positive clients who were already on antiretroviral therapy. This was done at Kenyatta National Hospital (KNH) Comprehensive Care Centre.

3.11 DATA MANAGEMENT AND ANALYSIS

The data collected was edited to ensure conformity and keyed into a computer. Data analysis was done using Statistical Package for Social Science (SPSS) version 14-0 and Excel for windows XP. Descriptive statistics for socio-demographic characteristics were obtained to characterize the study respondents. Depending on the type of variable, a summary of appropriate measurement scale was used to describe distribution of these variables. The summarized statistics were then presented in tables, pie Charts and Bar graphs. Level of Adherence was calculated from client's response to having missed any of the prescribed medications for the previous three days. High level of adherence was defined as having adhered to all prescribed ART. Low levels of adherence were defined

as having missed one or more doses of the prescribed ART. Chi square test was used to compare categorical variables and to test for relationship between independent and outcome variables. P value of 0.05 was considered to be significant.

3.12 MINIMIZATION OF ERRORS AND BIAS

To minimize errors and bias, a standard self-administered descriptive questionnaire was used. The filled- up questionnaires were then edited to ensure completeness and accuracy immediately after completion.

3.13 KEY ASSUMPTIONS

The study assumed that the respondents provided reliable and accurate data that was useful in making conclusions in relation to the study.

3.14 ETHICAL CONSIDERATIONS

3.14.1 Ethical approval

Approval to carry out the study was obtained from School of Nursing Sciences, University of Nairobi and clearance obtained from **KNH/UON** Ethics and Research Committee. Also permission was sought from Medical Superintendent Mbagathi D Hospital before collecting data at the comprehensive care clinic.

3.14.2 Informed consent process

Informed consent was obtained from participants before the administration of the research questionnaire. This was on the basis of appropriate information given in the consent form and adequate time given to consider the information and ask questions. The consent was a written form with details on ethical considerations, procedure of the study, confidentiality, benefits, risks and the right not to participate or withdraw at any time. The investigator was based in the reception where all the clients attending the clinic that day must pass and register for their files to be removed. The respondents were then

screened for eligibility immediately after reporting for their cards to be removed in the reception. Then those who met the inclusion criteria were informed, explained and requested to sign the consent form. The questionnaire was then administered. The investigator was there to assist respondents reported any difficulties in filling in of the questionnaire or any question concerning the study.

3.14.3 Confidentiality

Confidentiality and anonymity of the data was maintained as the data was not availed to any person not involved in the study. The respondents were not required to write their names in the questionnaire. The investigator was guided by the fundamental ethical principles when conducting the study. These included respect of persons, beneficence and justice. These ethical principles are based on human rights that need to be protected in research such as privacy, anonymity and confidentiality. (Brink et al., 2007:13).

3.14.4 Risks

There were no anticipated risks in participating in the study. However, those respondents who reported difficulties in using English version of the questionnaire were requested to use Kiswahili version.

3.14.5 Benefits

There was no direct benefit to the participants. Although information obtained from the study created awareness to the community members about the importance of maintaining recommended ART adherence level of or above 95% and factors which could likely result to low levels of adherence.

3.15 STUDY LIMITATIONS

This was a cross-sectional study which measured adherence at a single point in time, however adherence is known to be a dynamic process that may change over time; thus multiple contacts with the respondents could have provided more useful information on adherence. Only respondents who had turned in the clinic participated in the study, defaulters might have different views.

CHAPTER FOUR: RESULTS

4.0 INTRODUCTION

A total of Eighty-five (85) SERO-positive clients were enrolled in the study. The findings of data analysis were presented and organized into the following:-

- i) Socio-demographic characteristics of the Participants
- ii) Attitude towards Antiretroviral therapy.
- iii) Respondents' reason for defaulting of Antiretroviral Therapy.
- iv) Accessibility of the ART in the Health Facilities.
- v) Knowledge regarding Antiretroviral Therapy.

4.1 SOCIO- DEMOGRAPHIC INFORMATION.

4.1.1 Distribution of the respondents by Gender

Out of 85 respondents who participated in the study, 72.9 % were females while 27.1% were males. These figures presented an approximate female to male ratio of 3:1. The study is consistent with the one done by KNBS (2010) which reported higher prevalence rate among females (8%) than males (4.3%) and among the total number of new infections, women accounted for 59.1%.

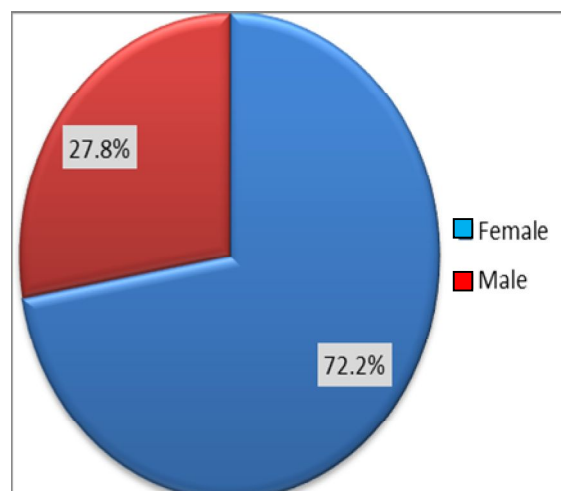


Figure 3: Respondents Distribution by Gender

4.1.2 Distribution of the respondents by marital status

The highest (48.1%) of the respondents who participated in the study were singles, married respondents were 5.6%, while divorced/separated and widowed were 38.9% and 7.4% respectively.

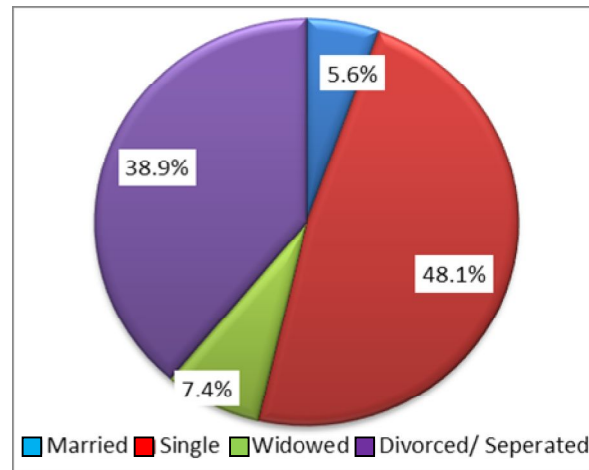


Figure 4: Respondents Marital Status

4.1.3 Distribution of the Respondents by their Ages in years

Age of the respondents varied from 18- 64 years .The Mean age was 39.5. Majority (42.6%) were aged between 25 -34 years, sixteen (16.7%) were aged between 35-44 years while a few (3.7%) between 55-64 years. The high numbers reported in this age group could have been contributed by the increased risk of sexual behaviors among the young people (UNAIDS, 2012). National AIDS Control Council (NACC, 2010) also reported that young people between 15-35 years are believed to make up more than 60% of the new HIV infections. Statistical analysis also showed a significant relationship between age (25-34 years) and defaulting of ART (P=0.039).

Table 1: Correlation between respondents' age and defaulting of ART.

Age in years	Missed prescription		P-value
	Yes	No	
15-24	25.0%	75.0%	0.045
25-34	13.0%	87.0%	0.039
35-44	22.2%	77.8%	0.043
45-54	0.0%	100.0%	0.035
55-64	5.0%	95.0%	0.004

4.1.6 Respondents' Distribution by their Religion

Slightly over half 44 (51.7%) of the respondents were Catholics, 33 (38.9%) were Protestants. Muslims comprised of 5 (5.6 %) of the respondents while others 3 (2.6 %).

4.1.7 Distribution of the respondents by their levels of education.

Figure 6 below predicts distribution of the respondents in terms of levels of education.

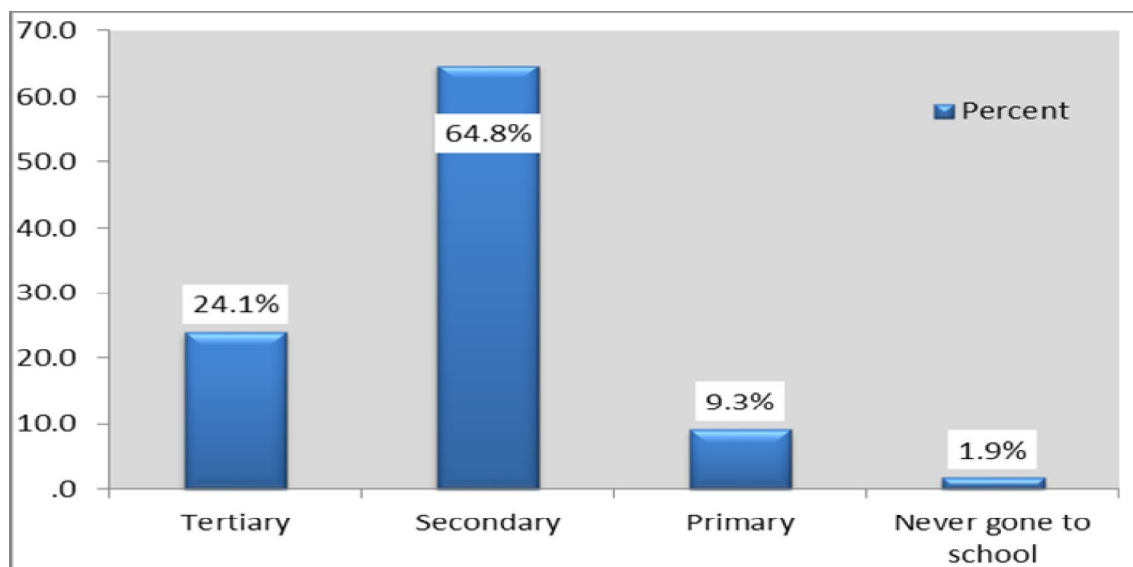


Figure 5: Respondents levels of Education.

Only one 1 (1.9%) of the respondents reported having never gone to school. Majority of the respondents 55 (64.8%) reported having attained secondary level of education. Primary educational level was attained by 8 (9.3%) of the participants while 20 (24.1%) reported having attained tertiary levels of education. The findings showed inconsistent results from one study done by Paterson et al (2009) which indicated that individuals with higher education report better adherence levels than the ones with inadequate education. Statistical analysis also showed no significant association between adherence and educational level (P=0.3) in the Table: 2 below.

Table 2: Association between Educational Levels and ART Adherence

Levels of education	Missed ART		P-value
	Yes	No	
Tertiary	13 (15.4%)	72 (84.6%)	0.3
Secondary	15 (17.1%)	70 (82%)	0.519
Primary	1 (1%)	84 (90%)	0.42
Never gone	2 (2%)	83 (80%)	0.98

4.1.8 Distribution of the respondents by their Occupation

Approximately two-thirds 58(68.5%) of the respondents were unemployed. This was followed by employed group which represented 12 (14.8%). A Further, 12 (14.8 %) of the respondents were involved in business while others were 2 (1.9%) of the respondents. The findings of this study is inconsistent with the report from MOH, (2008) which reported increased number of PLWHIV were involved in business.

Figure 6 below depicts Study respondents by their Occupation in percentage

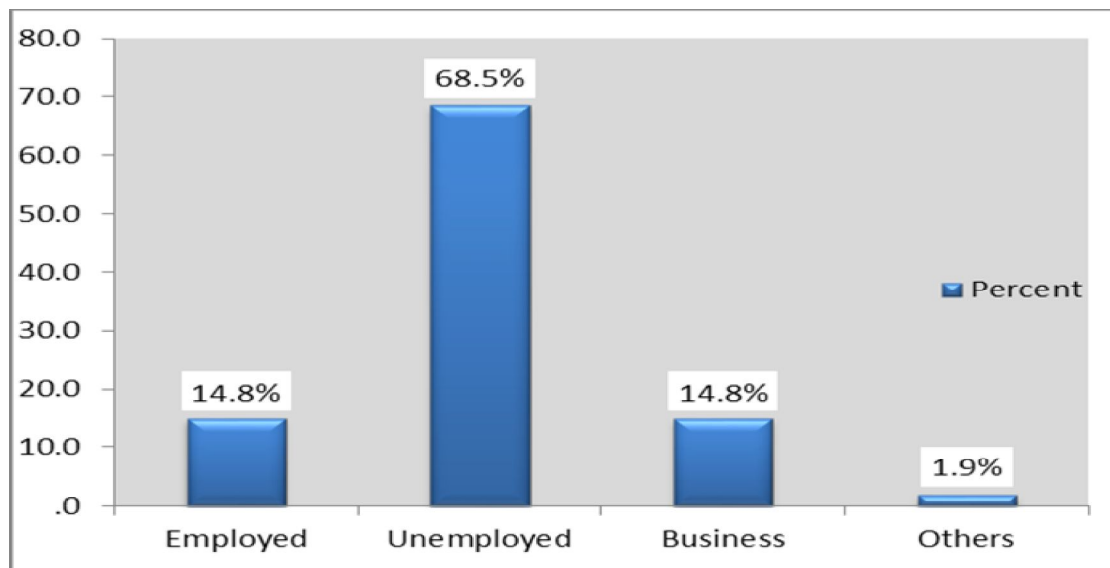


Figure 6 : Occupation of the respondents

4.2 ATTITUDE TOWARDS ANTIRETROVIRAL THERAPY.

4.2.1 Respondents Attitude towards Adherence to ART.

The results showed that high numbers of the respondents had positive attitude towards Antiretroviral Therapy. Out of the 85 respondents, 44 (50%) and 35 (40.74%) reported that “ARVs are good I always feel better whenever I take them” and “They are good I do not get many other illnesses whenever I take them” respectively. However, 5 (5.56%) reported that ‘Since the drugs do not cure the disease there’s no need of taking them’. Two 2 (1.85%) of the respondents opted to go for prayers and that they did not get any change whenever they took the ART respectively and therefore were regarded as having negative attitude towards ART.

Figure :7 below represents attitudes of the 85 respondents towards Antiretroviral Therapy intake.

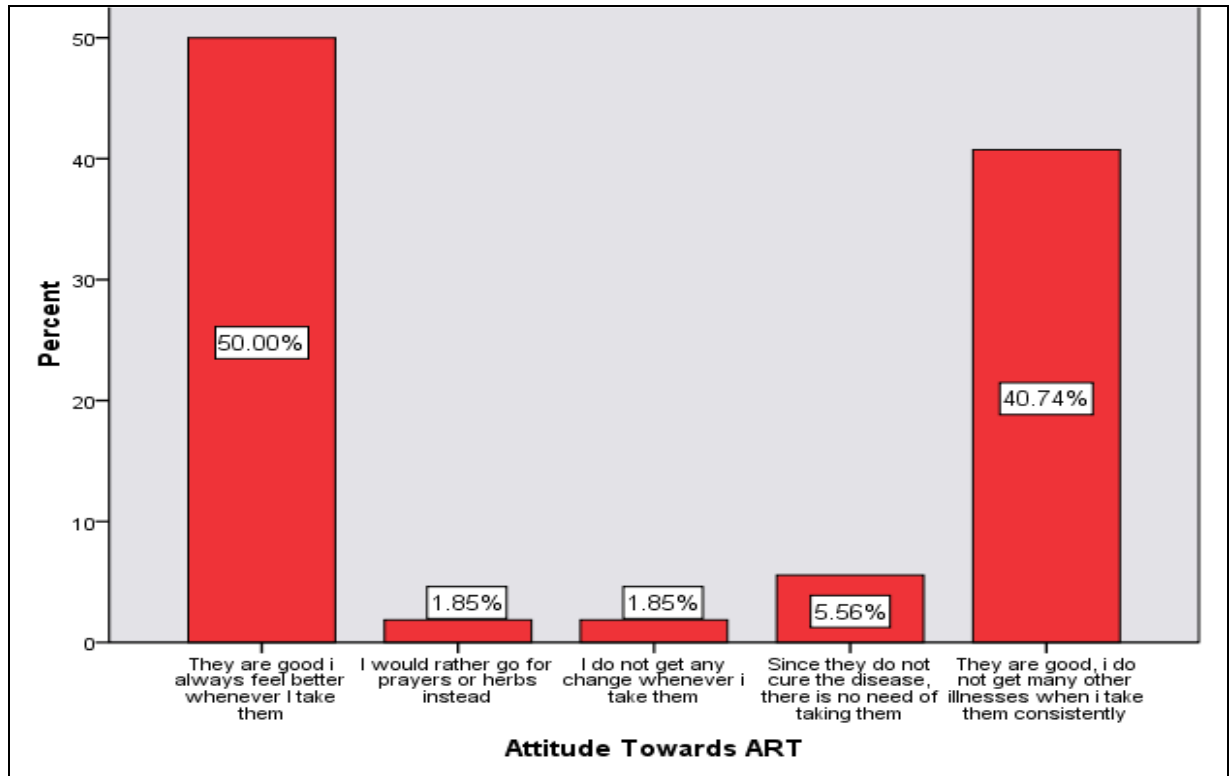


Figure 7: Attitude of the respondents towards ART intake.

4.3 DEFAULTING OF ANTIRETROVIRAL

4.3.1 Reasons for missing the prescribed doses of ART.

Out of the 85 respondents who participated in the study, only 13(14.8%) reported having missed the prescribed ART medication doses for the previous three days. Eighty-five per cent (85%) reported having not missed any of their ART doses for the previous three days. Seven (7) 50% of those who reported having missed gave forgetfulness as their reason for missing the ART. Five 5 (40%) missed the prescribed ART dosages because of bad side-effects. The findings are consistent with results from study done by Weldie et al(2009) which found out that commonest reasons for missing ART was forgetfulness (57%).

Figure 8 below shows a percentage representation of the respondents' reasons for missing the prescribed ART

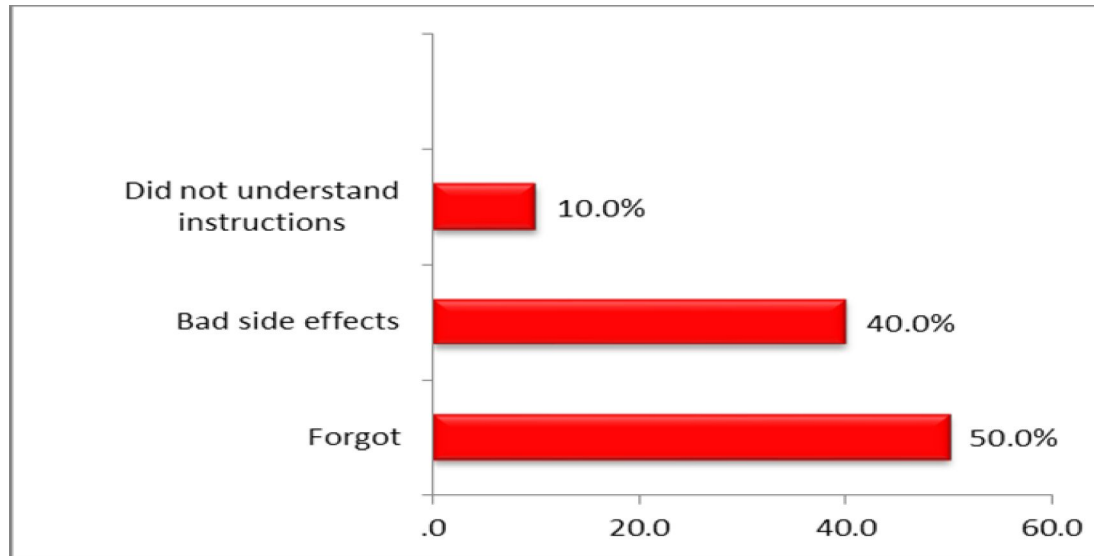


Figure 8: Respondents reasons for missing the prescribed ART.

4.3.2. Respondents response on Pills taken per day

Table 3 below indicates participants' response on number of ART pills taken per day. Out of 85 respondents who participated in the study, 74 (87%) reported below five pills per day, while 9 (11.1%) reported taking between 6-10 pills per day, however, 2 (1.9%) did not respond to the question.

Table 3: Respondents response on number of pills taken per day.

Pills taken per day	N= 85	percentage
Below 5 pills per day	74	87.0
Between 6-10 pills per day	9	11.1
No Response	2	1.9

4.3.3 Respondents report on reaction of family members/friends after they disclosed their HIV status.

Further, the investigator wanted to find out the response of the family members /friends) after the respondents disclosed their HIV status to them. The respondents were asked about how family/friends reacted after respondents disclosed their HIV status to them. forty-four 44 (51.9%) of the respondents did not report any negative reaction from friends/family members. However, 41 (46.3) percent of the respondents reported having received some forms of negative reaction, While 1 (1.8%) did not respond to the question Out of the forty-one respondents who reported having received negative reaction from family/friends because of disclosing their HIV status, 23 (56%) reported having been stigmatised,those who reported to have been discriminated were (10) (24%), isolated by family members were 5 (12%) while withdrawal of social support by family members accounted for 3 (8%) as shown in the figure 9 below.

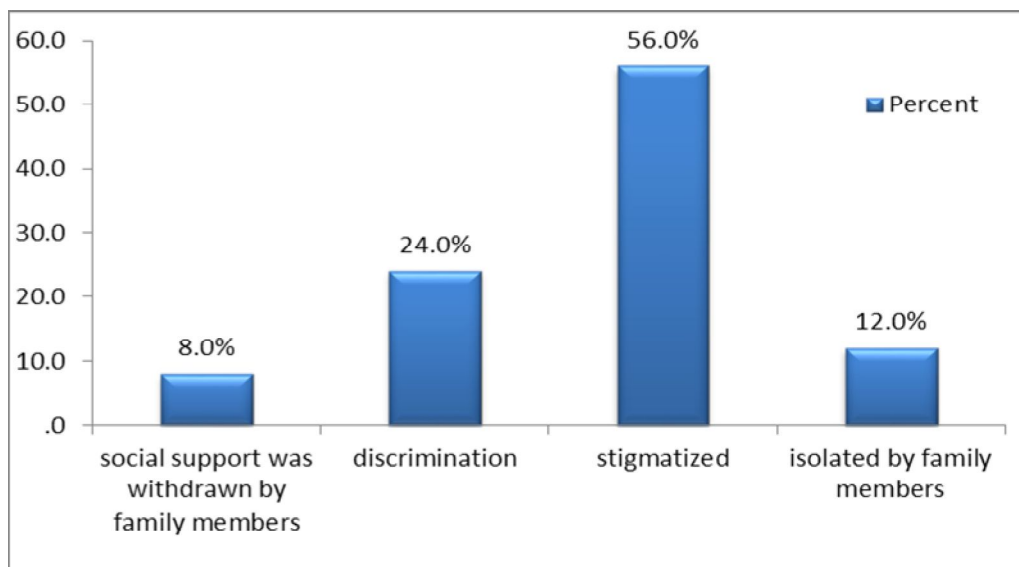


Figure 9: Ways in which family members/ friends reacted after respondents disclosed their HIV status to them

4.3.4 Association between HIV status disclosure and Defaulting of ART.

Statistical analysis was also done to show the association between HIV status disclosure and ART adherence. Thirty-two percent (32%) missed ART because of disclosing their

HIV status to family/friends. However, none of the respondents who did not disclose their HIV status missed the prescribed ART regimen. Statistical analysis showed a significant association between HIV status disclosure and ART adherence (p= 0.025).

Table 4: Shows association between respondents ART adherence and of disclosure of their HIV status.

Respondents disclosure of their HIV status	Missing of prescribed ART		p-value
	Yes	No	
Yes	32.0%	68.0%	0.025
No	.0%	100.0%	

4.4 ACCESSIBILITY OF THE ANTIRETROVIRAL THERAPY.

A Likert scale was used to assess the accessibility to ART in the clinic. Majority 76 (88.9%) of the respondents strongly agreed that the CCC was easily accessible, 47 (55.6%) strongly agreed that drugs were always available in the clinic. In addition 2 (1.9%) agreed they had been turned away from the clinic on account of lack of drugs at the pharmacy. This study showed consisted report from NACSOP, (2009) which indicated that ARVs were readily accessible and available to all health institutions in the country.

4.4.1 Respondents' report on accessibility of the prescribed ART

The table below shows participants' response on Accessibility of the prescribed ART expressed in percentage.

Table 5: The respondents’ response on Accessibility of ART.

Fifty-five (55.6%) strongly agreed that the ARVs were always available in the clinic with only (1%) disagreeing with it. However, none of the respondents has been turned away because of lack of drugs in the pharmacy.

Statements	Strongly agree	Agree	Disagree
Drugs are always available in the clinic	47(55.6%)	36(42.6%)	2(1.9%)
The comprehensive care clinic is easily accessible	76 (88.9)	9 (11.1%)	0 (0%)
I always experience financial problems while trying to access ARV drugs at the hospital	46(53.7%)	38 (44.4%)	2 (1.9%)
I have been turned away several times because of lack of drugs in pharmacy	0	2(1.9%)	83 (98.1%)

4.5 KNOWLEDGE REGARDING ANTIRETROVIRAL THERAPY

To assess the level of knowledge the respondents had on ART, the respondents were expected to respond to a number of statements about ART and HIV/AIDS in general. The results showed that majority 49 (57.4%) of the respondents had adequate knowledge about ART twenty-seven 24(27.7%) respondent that ART was treatment regimen for treating OI. However, 9 (10.6%) knew that the prescribed therapy was used to treat HIV/AIDS while 3 (4.3%) knew it was a treatment regimen for preventing HIV infection. These last two were referred to as possessing inadequate knowledge about HIV/AIDS.

Figure 12 below shows a graphical representation of the respondents' knowledge on ART regimen expressed in percentage.

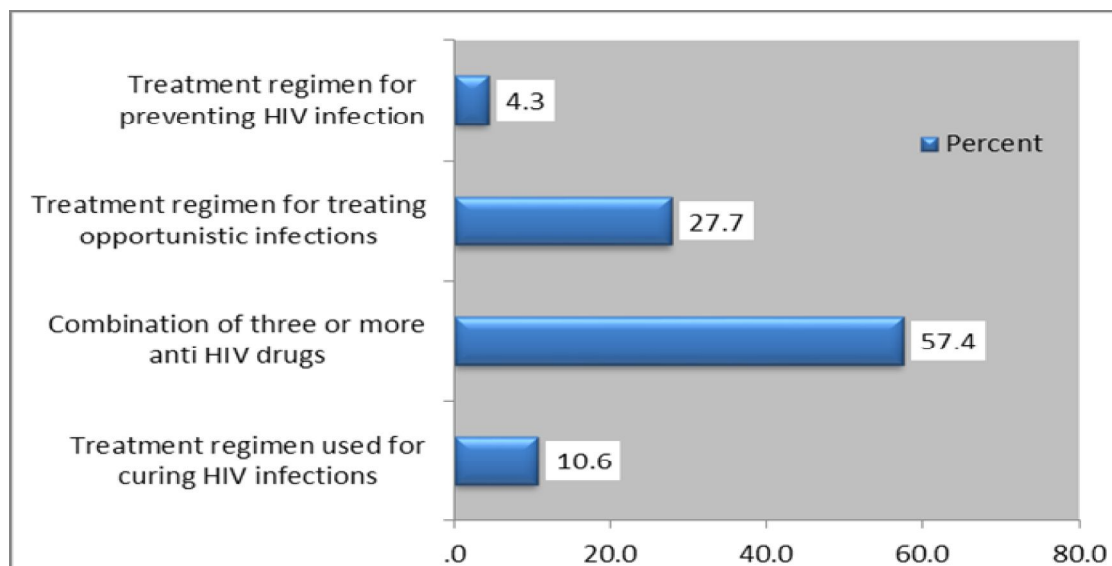


Figure 10 : Respondents knowledge on ART regimen

Statistical analysis also showed a significant correlation between knowledge and adherence of ART (P= 0.001) as shown in table 6 below.

Table 6 below depicts correlation between respondent's knowledge on ART and adherence of prescribed ART

Table 6: correlation between knowledge and ART adherence

Knowledge	Missed prescribed ART		P-Value
	Yes	No	
Treatment regimen for preventing HIV infection	11(13%)	74(87.0%)	0.64
Treatment regimen for treating opportunistic infection	6 (7%)	79(93%)	0.037
combination of three or more antiretroviral drugs	1 (1%)	84(99%)	0.001
Treatment regimen for curing HIC/AIDS	3 (4%)	82(96%)	0.011

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This study was carried out to establish factors influencing adherence to antiretroviral therapy among the SERO-positive clients attending Comprehensive Care Clinic in Mbagathi D. Hospital. According to WHO, ART (2010 Guideline), knowledge about HIV/AIDS, attitude towards the therapy, health provider client relationship, stigmatization and discrimination have got a major influence on the ways in which a client adheres to the prescribed ART.

5.1 Socio-demographic information

The study revealed that there were more women than men initiated on ART with the ratio of 3: 1. The findings of this study showed almost similar findings with that of The Kenya AIDS indicator survey (KAIS 2011) which revealed that, (59%) of PLWHIV are women with prevalence rate of 8% as compared to (4.3%) for men. The results further showed that greatest percentages of the Kenya population with HIV/AIDS infection are in the Child-bearing age (15-49) with highest (42.1%) number being from age groups 25-34 years. NASCOP (2010), reported an increase in number of orphans as a result of HIV infection in the age of 15 to 45 years of which 60% of new infections were in the age from 35 years.

5.2 Attitudes of the respondents towards antiretroviral therapy.

The findings of the study showed that, majority 77 (90.0%) of the participants had positive attitude towards Antiretroviral therapy. Those who reported having adhered well to the prescribed ART also reported positive attitude towards the therapy. The positive attitude portrayed by majority of the respondents may have resulted from benefits the clients were experiencing after ARVs use. The results of this study showed similar

findings with another one done by Bargnsberg et al, (2009) which indicated that a client who shows a positive attitude towards his medicine also shows effectiveness or visible sign that the drug is working.

5.3 Defaulting Antiretroviral Therapy

Majority 79 (92.9%) of the respondents showed high ART adherence levels of more than 95%. Only 6(7.1%) reported adherence levels of below 95%. This study is comparable with another adherence study done in rural Uganda where (97.4%) of the respondents reported adherence levels of more than 95% (Mills, 2008). Similar findings were also reported by meta-analysis studies between developed and developing countries which indicated that clients in the developing countries were able to reach adherence levels of greater than 95% just like developed countries. (WHO 2009).

The findings of the study further revealed that, pill burden and dosage regimen complexity ceased to be one of the problems clients on ART experience. Ninety-nine percent (99%) of the respondents reported taking their ART two times per day, with less than five pills to be swallowed. The study showed similar findings from WHO, ART (2010) guideline which reported triple therapy with twice per day regimen and few pills to be swallowed. Stigma and discrimination were found to be on increase despite increased awareness of HIV and AIDS in Kenya. Majority (41%) of the respondents faced stigmatization and discrimination as a result of disclosing their HIV status. Forgetfulness and bad side effects were found to be the main reasons for defaulting the therapy currently being faced by many clients.

5.4 Accessibility of the Antiretroviral therapy in the Health facilities

There is adequate accessibility and availability of ARVs in the country. Majority (94.4%) of the respondents strongly agreed that the antiretroviral drugs were always available and easily accessible in the CCC. Since 1990s, Kenya has seen a large expansion in access to antiretroviral drugs (NASCO, 2010). ARVs are distributed through out all Health facilities including Private and faith based organizations. The Ministry of Health has also been working in collaboration with several sectors including NGOs, Civil societies to ensure easy accessibility and availability of ARVs especially in remote areas (MOH, 2010). The accessibility has been simplified by the fact that the treatment is provided at no cost to all clients who are eligible for treatment and the services are taken close to where people reside.

5.5 Knowledge of the Respondents regarding antiretroviral therapy

The study found that Majority (86.5%) of the respondents possessed adequate knowledge about the ART and HIV/AIDS in general. The statistical analysis showed a significant relationship between the knowledge and adherence $P= 0.001$. According to Paterson, (2008), clients level of knowledge of the disease, believe that the medication is good and recognition that poor adherence may result to viral resistance impacted favorably upon clients ability to adhere to the prescribed therapy. However, a sizeable minority (5.2%) had misinformation that ART is can cure HIV/AIDS. The high level of knowledge found in this study could have been attributed by thorough Health education that is given to all clients at the clinics, in addition to this; each client receives an individualized counseling and group therapy.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Gender inequalities were found to be prominent in this study where more (72.2%) females were infected with HIV/AIDS as compared to 27.8% males. The prevalence of HIV infection in Kenya is highest among the young people between 15-49 years who are in the child-bearing - age. Despite adequate knowledge possessed by many individuals regarding ART in the country, stigmatization and discrimination upon disclosure of ones HIV status still remains high. There is adequate accessibility and availability of ART in the country. Over 80% of the eligible clients are able to receive the therapy.

6.2 Recommendations

- 1 .There is need for planners and implementers of ART to set up programs for HIV/AIDS stigma reduction where all SERO-positive clients meet and share experiences.
2. Extensive Health education about ART and HIV in general should be provided targeting not only the vulnerable groups such as women and youths but also includes individuals with high educational levels.
3. There is need to conduct a qualitative research to get in-depth analysis of the factors influencing ART adherence in the same study population. This should include a wider range of participants

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APPENDIX 1: CONSENT EXPLANATION

My name is Mary Musembi. I am a master's student from School of Nursing Sciences university of Nairobi. I am doing a study to determine factors influencing adherence to antiretroviral therapy among the SERO-positive clients at Mbagathi District Hospital.

PROCEDURE TO BE FOLLOWED

If you consent to participate in this study, you shall be required to fill in the study proforma which has been written in English version. The principal investigator will assist you in case you experience any difficulties.

BENEFITS

It is hoped that the outcome of this study will lead to creation of awareness within an individual, family and a community about importance of maintaining recommended ART adherence level. This will reduce the drug resistance levels among the SERO-positive clients on the therapy hence improve the quality and prolong their lives.

RISKS There are no anticipated risks in this study. However, if there will be any problem that may arise due to your participation, the principal investigator will assist you accordingly

ASSURANCE OF CONFIDENTIALITY

Records will be kept confidential. Your name will not be used in any resulting publications

.INFORMED CONSENT EXPLANATION

Informed consent will be read and questions answered in the language in which the client is fluent.

SUPERVISORS: The research will be carried out by me under supervision of Mrs. Eunice Odhiambo and Mrs. Margaret Muiva who are both lectures, school of Nursing Sciences, University of Nairobi. Permission is therefore requested from you to enroll in

this study. You should understand the following general principles which apply to all medical researches. Your agreement to enroll is entirely voluntary

- You may withdraw from the study at time as you wish.
- Refusal to participate will involve no penalty.

If you have any questions regarding the study or participation in this study, you can call the following:

1. Principal investigator: Mary Musembi, **Tel: 0722 465272**

2 .Supervisors: Mrs. Eunice Odhiambo, **Tel; 0722 358164**

Mrs. Margaret Muiva, **Tel: 0722 230680**

3. The Ethics and Research Secretariat, Tel:726300-9

Email:Uonknh-erc@uonbi.ac.ke.

APPENDIX 2: INFORMED CONSENT FORM

PARTICIPANT CONSENT FORM

I..... Of.....hereby consent to participate in the study entitled Factors influencing adherence to Antiretroviral Therapy among the SERO-positive clients at Mbagathi District Hospital. as explained to me by Mary Musembi. I confirm that the nature of the study has been explained to me.

I understand that my participation or declination will not in any way affect the course of my treatment at Mbagathi District Hospital. I have been assured that no detriment to my health or care will ensure during the course of my participation in the study.

I have also been assured that I have the right to decline participation or withdraw from the study at any point during the study without reprisal and or discrimination from the researcher or staff from Mbagathi Hospital.

I have been guaranteed the utmost confidentiality in the handling of the information and data about me. Any concerns about the study on my part have been adequately addressed. The researcher has also appealed to avail herself if and when any other concerns may arise from my part.

Signed.....Date.....

I confirm that I have fully explained to the participant the nature and scope of the study and the contents of this consent form in detail. I confirm that no coercion or remuneration, monetary or otherwise has been offered to the participant to participate in the study.

Principal investigator: Mary N.Musembi; Tel: **0722 465272**

APPENDIX 3: STUDY QUESTIONNAIRE

**FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY
AMONG THE SERO- POSITIVE CLIENTS AT MBAGATHI D HOSPITAL-
NAIROBI.**

Questionnaire no..... Serial no..... Date.....

INSTRUCTIONS: This questionnaire is to be carried out in an appropriate environment. The area should be private, safe to ensure confidentiality.

DATE:...../...../.....SERIAL No:

No.....

PART 1: SOCIO-DEMOGRAPHIC INFORMATION

- 1 . What is your gender? Female Male
2. What is your age in completed years? Tick where appropriate.
(A) 15-24 b) 25-34 (c) 35-44 d) 45-54 e) 55-64 years
3. What is your marital status?
a) Married b) single C) widowed
d) Divorced/ Separated
(e) Others (specify)
- 4 . What is your Religion? (a) Catholic (b) protestant (c) Muslim
(d) Hindu
(e)Others specify

5. What is your level of educational?

- a) Tertiary
- b) Secondary
- c) Primary.....
- d) Never gone to school

6. What is your occupation?

- a) Employed
- b) Unemployed
- c) Business
- d) Others (specify)

SECTION II: ADHERENCE TO ANTIRETROVIRAL THERAPY.

PART TWO: ATTITUDE OF THE CLIENTS TOWARDS ART

7. In your own opinion how do you see these drugs (ARVs) you are taking as compared to other drugs?

- a) They are good I always feel better whenever I take them.....
- b) I would rather go for prayers or herbs instead.....
- c) I do not get any change whenever I take them.....
- d) Since they do not cure the disease, there is no need of taking them.....
- e) They are good; I do not get many other illnesses when I take them consistently..

PART THREE: REASONS FOR DEFAULTING THE ART

8. How often do you take your drugs in a day?

a) Once per day.

B) Twice per day

c) Three times per day

d) Others (Specify.....

9. How many pills do you take in a day? (24hrs)

a) Below 5 pills per day.

b) Between 6-10 pills per day.

c) Between 11-15 pills per day.

d) Between 16-20 pills per day.

e) More than 20 pills per day.

10. Have you ever missed any of your prescribed medications for the last three days?

(a) Yes (b) No

If your answer is yes, what were the reason/reasons for missing? Put a tick where applicable.

a) Forgot

b) Bad side effects

c) Did not understand instructions

d) Felt better

e)The dosage schedule is too complex

f) Others Specify

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

a) Yes..... b) No.....

If your answer is yes, how?

- a) Social support was withdrawn by family members.....
- b) Discriminated.....
- c) Stigmatized.....
- d) Isolated by family members.....
- e) Others (Specify).....

PART FOUR: ACCESSIBILITY OF THE ARVs IN THE HEALTH FACILITIES.

For questions number 12, please select the most appropriate answer in the columns provided.

Item	Strongly agree	Agree	Disagree	Idon't know
Drugs are always available in the clinic				
The comprehensive care clinic is easily accessible				
I always experience financial problems while trying to access ARV drugs at the hospital				
I have been turned away several times because of lack of drugs in pharmacy.				

PART FIVE: KNOWLEDGE REGARDING ANTIRETROVIRAL THERAPY

In the Boxes provided, please select the correct answer and indicate by putting a tick.

13. Have you ever heard about the drugs which are used to treat HIV infection?

Yes No

If your answer is yes, in your own opinion, what are they used for?

- a) Treatment regimen used for curing HIV infections.....
- f) Combination of three or more anti HIV drugs.....
- g) Treatment regimen for treating opportunistic infections.....
- h) Treatment regimen for preventing HIV infection.....
- i) Others (specify).....

14. The question below will help us to determine the knowledge you have about the ARV drugs in relation to HIV infection. Kindly respond in the columns provided.

Item	Strongly Agree	Agree	Disagree	Don't know
HIV/AIDS is a curable disease				
Adhering to the prescribed ART is essential to my life				
I expect to be cured from HIV in future.				
Antiretroviral therapy can improve my life expectancy.				
Active drug or alcohol use does not impair the effectiveness of Antiretroviral drugs.				
Antiretroviral therapy have got no side effects				
ARVs prevents the opportunistic infections				

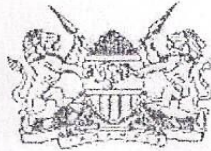
APPENDIX 4: AUTHORIZATION FROM MBAGATHI DISTRICT HOSPITAL

MINISTRY OF MEDICAL SERVICES

Tel: 2724712, 2725791, 0721 311 808

Email: mdhnaïrobi@yahoo.co.uk

Our Ref:medsup/rsc: 9/2-13



Mbagathi District Hospital

P.O. Box 20725- 00202

Nairobi

18th July 2013

Mary Nziva Musembi
School of Nursing Sciences
College of Health Sciences
University of Nairobi
P. O. Box 30197-00100
Nairobi

Dear Madam,

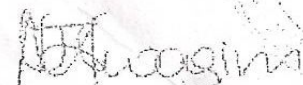
RE: APPLICATION FOR RESEARCH AUTHORIZATION

This is in reference to your application for authority to carry out research on "Factors influencing adherence to antiretroviral therapy among the sero-positive clients at Mbagathi District Hospital".

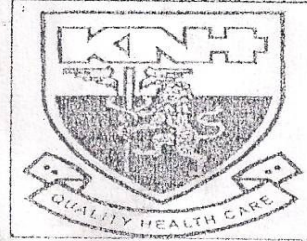
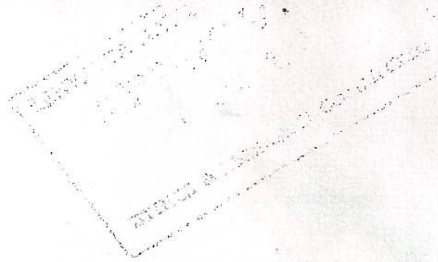
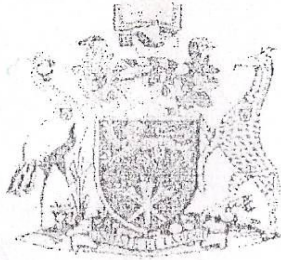
I am pleased to inform you that your request to undertake the research in the hospital has been granted.

And on completion of the research you are expected to submit one hard copy and one soft copy of the research report / thesis to this office.

18th July 2013


Hospital Research Committee
Mbagathi District Hospital

APPENDIX 5: APPROVAL BY ETHICS AND RESEARCH COMMITTEE



UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
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KNH/UON-ERC
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KENYATTA NATIONAL HOSPITAL
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Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/185

Link: www.uonbi.ac.ke/activities/KNHUoN

1st July, 2013

Mary Nziva Musembi
School of Nursing Sciences
College of Health Sciences
University of Nairobi.

Dear Mary

RESEARCH PROPOSAL: FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG THE SERO-POSITIVE CLIENTS AT MBAGATHI DISTRICT HOSPITAL (P151/4/2013)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and approved your above proposal. The approval periods are 1st July, 2013 to 30th June, 2014.

This approval is subject to compliance with the following requirements:

- a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
- c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
- e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (Attach a comprehensive progress report to support the renewal).
- f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
- g) Submission of an executive summary report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.