FACTORS CONTRIBUTING TO NON ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV CLIENTS ATTENDING UGANDA CARES SOROTI HEALTH CARE CENTER IN SOROTI REGIONAL REFERRAL HOSPITAL

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DECLARATION

I, Okwakol Sebio, do hereby declare that this work is my own original and has never been submitted to any other institution for a ward of any Degree or Diploma.

Signed: ……

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APPROVAL

This report Titled “factors contributing to non adherence to antiretroviral therapy among HIV clients attending Uganda cares Soroti health care center in Soroti regional referral hospital”, has been submitted for examination with approval of my Research Supervisor, and it’s now ready for presentation for the award of the degree of Bachelors of Science in Nursing of International Health Sciences University.

Signed: …… Date: ……

MS. APIO JUDITH ALLSAINTS

(Research Supervisor)

DEDICATION

I dedicate this research work to my dear loved mother Amede Rose and father Okwakol Eusebio for their tireless efforts in nurturing and making me the person I am today. May the Almighty God bless them abundantly?

ACKNOWLEDGEMENT

I would like to express my sincere appreciation to my supervisor Miss. Apio Judith whose patience, guidance and encouragement made me succeed in producing this work.

In particular, I am grateful to all the staff of International Health Sciences University (IHSU) especially those in the faculty of Nursing.

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Treatment
Cl	Confidential interval
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency
OR	Odds Ratio
PLWHAS	People living with HIV / AIDS
UNAIDS	United Nations programme on HIV/ AIDS
W.H.O	World Health Organization.
MEMS	Medication Event Monitoring System
PMAQ	Patient Medication Adherence Questionnaire

OPERATIONAL DEFINITIONS

Adherence A patient's ability to follow a treatment plan, take medications at prescribed times and frequencies, and follow restrictions regarding food and other medications

Highly Active Antiretroviral Therapy. Treatment with a cocktail of three (or more) antiretroviral medications

Non adherence A patient's inability to follow a treatment plan, take medications at prescribed times and frequencies, and follow restrictions regarding food and other medications.

Sanctuary sites: Sites in the body where drugs are unable to reach the virus.

ABSTRACT

Objective:

To establish factors contributing to non adherence to antiretroviral therapy (ART) among HIV infected clients attending care at Uganda cares Soroti health care center in Soroti regional referral hospital.

Method:

This was a descriptive cross sectional study design involving 133 HIV infected respondents on ART. Respondents were sampled via systematic random method after acquisition of verbal consent. Data was collected using a semi structured and pre-coded researcher administered questionnaire. Data was entered in Epi-data v3.1 and then exported to Epi-Info v3.3.1 for statistical analysis at 95% confidence level using chi-square tests, fisher's exact test and logistic regression analysis. Results were presented in a tabular and graphical form. Probability values less than 0.05 were considered statistically important

Results:

53.4% of the respondents were females, 52.6% were of the age group 40-59 years, 50.4% were married, and 37.6 % had attained primary level of education. Only 63% of the respondents' were adherent to the prescribed ARVs. The most commonly cited factors for non adherence to ART by the respondents were: long waiting hours in the clinic 14.3%, patient health worker relationship 9.1%, financial constrains, distance, & transport cost 8.3%, loosing appointment card 5.3%, 4.5% side effects of the drugs and patient health worker ratio. At bivariate level of analysis, tendency for respondents to forget medication swallowing ($p<0,001$), ARV related side effects ($p=0.002$), service provider attitude ($p=0.004$) and routine HIV counseling ($p=0.008$) were significantly correlated with adherence. However, via multiple logistic regression analysis, forgetting to take ARVs (adjusted OR=42, 95%CI: 5-348, $p<0.001$) and experience of ARV related side effects (adjusted OR=4, 95%CI: 1-12, $p=0.01$) were powerfully and significantly associated with non adherence to ART.

Conclusion:

ARV related toxicities/side effects and patient tendency to forget medication swallowing remarkably accounted for non adherence to ART among clients seeking comprehensive HIV care at Uganda Cares in Soroti Regional Referral Hospital.

Recommendation:

Early detection, diagnosis and appropriate management of patient related ART side effects in combination with new treatment reminder strategies are highly required for patient ART adherence.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

HIV / AIDS is one of the deadly epidemics the world has ever experienced. Worldwide, 34.0 million (31.4 million–35.9 million) people were living with HIV by the end of 2011. It was estimated that 0.8% of adults aged 15-49 years were living with HIV worldwide, although the burden of the epidemic varies between countries and regions. Sub-Saharan Africa is mostly affected, with almost 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living with HIV worldwide. Although the regional prevalence rate of HIV infection is about 25 times higher in sub-Saharan Africa than in Asia, About 5 million people are living with HIV in South, South-East and East Asia combined. After sub-Saharan Africa, the region's mostly affected are the Caribbean and Eastern Europe and Central Asia, where 1.0% of adults were living with HIV by 2011 (USAID report, 2012).

In Uganda, the current HIV prevalence rate is 7.3% and about 130,000 people get infected with HIV each year (Sunday vision, May 19, 2013), Uganda AIDS Indicator Survey (UAIS, (2011). There is no cure for HIV infection, however; people infected with HIV are being treated with "highly active" combinations of medications called Antiretroviral. These medications control HIV virus replication or multiplication and prolong life. ART requires good adherence of above 95 % to suppress the virus completely to undetectable levels and to prevent the emerging of drug resistance strains of HIV. However, non-adherence is common with people who take HAART. Due to lack of drugs that can cure HIV/AIDS, ART are the only dugs that have been tested and proved to provide prevention against HIV/AIDS-related morbidity and mortality, hence improving the quality of lives of people

living with AIDS (PLWHAS). However, good result of this treatment lies on continued and stringent adherence to the prescribed ART (Lewis et al, 2006).In order to achieve successful suppression of viral multiplication (replication), decrease in viral load, increases in CD-4 cell count, and improvement of the quality of life, Antiretroviral therapy (ART) needs high-level adherence(> 95%), (Nilsson et al, 2006).

(UNAIDS, (2008) stated that, the wellbeing and survival of most people on ART in poor rural setting has improved and this has brought hope to millions of people who are living with HIV/AIDS, their families and communities. However, in resource constrained settings where health care services are not well developed, poor adherence to treatment and defaulting from treatment are the two major challenges faced by ART programmes (Kebede et al. 2008).

According to Amico et al (2007,) many researchers have carried out research with the aims of identifying factors contributing to non adherence to antiretroviral treatment. These researchers found out that, non adherence to ART lies within the range of 50%-80% in different settings. While (Mills et al, 2006) pointed out that, Non-adherence to ART in the adult population has been shown to range from 33 to 88% depending on how adherence is defined and evaluated. Most of these researches were carried out in the well developed countries like in the North, while researches in under developed settings such as sub Saharan Africa (SSA) are few. Research has found out that non-adherence to ART is a big problem among people living with HIV/AIDS, for resistance, Rao et al (2007) found out that adherence to ART among the youth ranges from 27% to 41%. Whereas Chesney et al (2000) found out that 10% of the people living with HIV/AIDS and on ART reported to have missed at least a dose or more doses in a day, and 33% reported to have missed a number of doses in the

past three to six weeks. Therefore on average, non-adherence to ART is estimated to lie between 50-80% in different social and cultural settings (Remien et al 2007).

Patient-related factors such as transport, long distance, financial, fear of disclosure, forgetfulness, alcohol and substance use, patient beliefs (Mills et al. 2006,) medication related factors such as side effects of the drugs (Bartlett 2002; Rao et al 2007), pill burden and complication of some drugs (Bartlett 2002; WHO 2004), doctor-patient relationship (e.g. trusting relationship with health care provider, social isolation). (Nilsson et al 2006, Remien et al 2007) are thought to affect adherence.

As HIV/AIDS rates continue to rise in developing countries, it is becoming increasingly necessary to scale up access to highly active antiretroviral therapy (HAART), especially in Africa where 95% of all new HIV infections occur. In line with the current national policy to scale up ARV treatment, there is a need to investigate and understand the factors that favor non-adherence to ART. This study, therefore aims at investigating the factors contributing to non-adherence to ART in Uganda Cares Soroti health care center in Soroti regional referral hospital.

1.2. Statement of the problem.

According to Uganda cares Soroti health care centre annual report (2012,) approximately 4287 HIV/AIDS patients were registered for Antiretroviral Treatment out of which 728 (16.9 %) had defaulted treatment. This represents (16.9 %) non adherence to ART. Non adherence to medications is estimated to cause 125,000 deaths annually, results in an economic burden of $100 to $300 billion per year and accounts for 10% to 25% of hospital and nursing home admissions (Source-American College of Preventive Medicine, 2011). Non adherence to antiretroviral therapy, leads to the development of drug resistance virus and ultimately drug failure (Romano et al 2002). Hence leading to morbidity as well as mortality among HIV clients. Non-adherence can lead to inadequate suppression of viral replication, continued destruction of CD4 cells, progressive decline in immune function

and disease progression. It's also an important reason for the emergence of viral resistance to one or more antiretroviral medications. (USAID, 2004; Family Health International 2007).Lewis et al (2006) observed that, a patient who does not adhere to ART is 3.8 times more likely to die than one who adheres to his treatment.

In Uganda cares Soroti health care centre in Soroti regional hospital, non adherence to ART is major problem although patient and health worker related factors contributing to its development have not yet been described. Clients have reported to have missed a dose or more in a day, a number of doses in the past one to two months. This has resulted to morbidity and mortality of clients, many being hospitalized because of development of opportunistic infections, drug resistance to ART medications, treatment failure and higher costs to the individual and ARV program.

1.3. Main objective of the study

The major objective of the study was to establish factors contributing to non adherence to antiretroviral therapy (ART) among HIV clients attending Uganda cares soroti health care center in Soroti regional referral hospital.

1.3.1. The specific objectives of the study

I. To measure the level of adherence to ART among HIV clients attending Uganda cares Soroti health care centre in Soroti regional referral hospital
II. To identify patient related factors contributing to non adherence to antiretroviral therapy (ART) among HIV clients attending Uganda cares Soroti health care center in soroti regional referral hospital.
III. To identify health worker related factors contributing to non adherence to antiretroviral therapy (ART) among HIV clients attending Uganda cares Soroti health care center in soroti Regional referral hospital.

1.4. Research Questions

The following research questions guided the researcher during the exercise as per the objectives.

I. To what extent do clients attending Uganda care soroti health care centre in soroti regional referral hospital adhere to their antiretroviral regimens?

II. What patient related factors are contributing to non adherence to antiretroviral therapy (ART) among HIV clients attending Uganda cares soroti health care center in soroti regional referral hospital?

III. What health worker related factors are contributing to non adherence to antiretroviral therapy (ART) among HIV clients attending Uganda cares Soroti health care center in Soroti regional referral hospital?

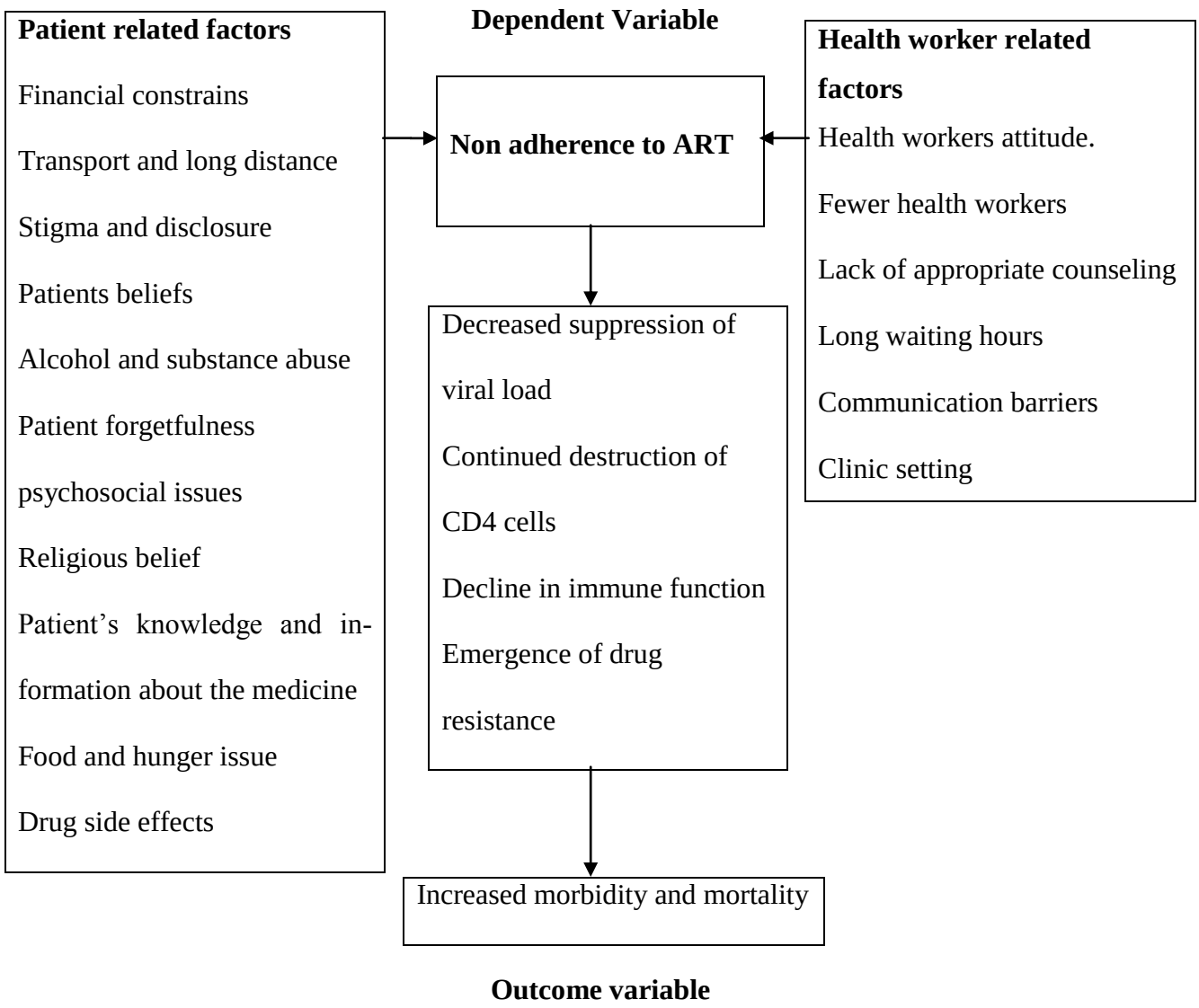
1.5 Significance of the Study

This study aimed to pose tremendous feedback to the health facility and the patients on ARV treatment. The research results will help policy makers and service providers in formulating ART guidelines, to improve the service delivery among support and care organizations.

Scholars/academicians HIV/AIDS is still one of the public health problems in Uganda as a whole, this research will equally complement on other undertaken studies in the field of ART Treatment and Adherence.

The study will help Stakeholders involved in HIV/AIDS Care and Treatment programs to learn best experiences, lesions and practices in providing ART treatment and nursing care to patients living with HIV/AIDS.

1.6. Conceptual framework for the factors contributing to Non-adherence to Antiretroviral therapy.



CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

AIDS is Acquired Immune Deficiency Syndrome and is caused by the HIV virus which is most commonly passed on by sexual contact; it attacks cells of the immune system. The immune system weakens so that the body cannot defend against various bacteria, viruses and other germs and cause AIDS. Antiretroviral therapy (ART) is a treatment for HIV that combines different types of antiretroviral medications, but it must be taken throughout a person's life without missing doses to be effective. When people do miss doses, the HIV virus has an opportunity to develop resistance to the medications, making them less effective in the future. However, early detection and management with antiretroviral drugs (therapy -ART) means that people living with HIV can live active and healthy lives, although they may experience side-effects from the drugs

Adherence is defined as the "extent to which a client's behavior coincides with the prescribed health care regimen as agreed through a shared decision-making process between the client and the health care provider" (Carter, 2004), it involves a mutual decision-making process between client/patient and health care provider. WHO, in 2001 defined adherence as the extent to which the patient follows medical instructions. (Patterson et al., 2000) found that adherence greater than 95% is needed to achieve virologic success. Adherence to treatment is critical to obtain full benefits of HAART; maximal and durable suppression of viral replication reduced destruction of CD4 cells, prevention of viral resistance, promotion of immune reconstitution and slowed disease progression, Good health and long-standing survival outcome for people living with HIV who maintain viral repression and reduces the possibility of transmitting HIV to a sexual partner when virus is suppressed.Adhrence occurs

when the patient takes medicines correctly: right dose, right frequency, and right time, is involved in deciding whether or not to take the medicines and doing what they have been told by the Doctor / pharmacist.

2.2. Measurement of adherence

Accurate assessment of adherence behavior is necessary for effective and efficient treatment planning, and for ensuring that changes in health outcomes can be attributed to the recommended regimen. In addition, decisions to change recommendations, medications, and/or communication style in order to promote patient participation depend on valid and reliable measurement of the adherence (WHO, 2003).

Adherence is measured using multiple approaches some of the currently used measures are client self report assessment, electronic monitoring devices, pill counts, Pharmacy records, provider estimation and measurement of viral load and medicine levels in the blood stream. Adherence is measured at the time the patients visit the clinic (USAID, 2004). The relative accuracy of adherence measures ranks from physician assessment and self-assessment being the least accurate, to pill counting being intermediate and electronic monitoring devices being the most accurate (Gill et al., 2005).

Self-report assessment

In this method of assessing patient's adherence to ART in PLWHAS, patients are asked to report their own adherence, through a series of questions where different periods of recall are used like, two days, four-days, one-week, two weeks and one-month or most-recent recall of missing a dose

(USAID, 2004). Although patients often tend to overestimate their adherence, studies have found out that the self-report correlates fairly well with actual medication intake when a trusting patient-provider relationship has been established.

Self-report assessment can be obtained at the time the patients come to the clinic, by asking the patients questions in a non judgmental manner. Its accuracy can be maximized by approaching the patient in a matter of fact and non-judgmental way, asking about the most recent days and doses missed and use of prompts to help the patients to recall. The self-report is presently the easiest tool used in a clinical setting especially in clinical trial research, is the Patient Medication Adherence Questionnaire (PMAQ) (Doung et al 2000; Garcia et al 2003).

Pill count assessment

In this method of assessing patient's adherence to ART, patients are asked to bring their drugs along with them during scheduled clinic visits as they come for refills and the tablets are counted by the health care workers (Poppa et al 2004). This method has many advantages such as, easy to conduct, not expensive, not time consuming and objective in assessment of adherence.

Electronic devices

Medication Events Monitoring System (MEMS) thi**s** method of assessing adherence to ART consists of an electronic chip which is embedded in the lid of the drug bottle. The chip records the opening and closing of the drug bottle. A computer set program then downloads the information from the lid and gives a written report (McNabb et al 2001).However, according to Poppa et al (2004) and Population Council et al (2004), The device records the date and time of each opening of the cap of the bottle and assumes that opening coincides with intake and allows many measures of adherence to be

recorded, timing of opening, intervals between doses etc. research has found out that, adherence measured using MEMS caps to correlate fairly well with drug intake.

Pharmacy refill tracking

Pharmacists play key role in supporting patient adherence to medication. They educate the patients about their medicine and carry out tablet counts. They also inform providers about lapses in refills or problems the patients may be experiencing with taking their medication. Pharmacy refill data has been used as an additional indicator of assessing adherence to ART. In this method of assessing patient's adherence to ART, patients collecting their drugs frequently on appointed dates are considered to be adhering to treatment (USAID, 2004).However; an effective record keeping system must be in place for pharmacy stock up data to be used for assessing adherence to ART.

Biological markers

The goal of HAART therapy is to lower the plasma viral load and monitoring of viral load can be used as means of measuring for effectiveness of treatment and drug intake by the patients. In this method, assessment of patient adherence to ART is done by monitoring the level of the viral load in the blood stream and low levels of viral load found in the patient is an indication of good adherence to ART (Wagner et al 2001).However, in this study adherence was measured using the patient self report method.

2.3. Factors contributing to non adherence to antiretroviral therapy

2.3.1. Patient related factors

A patient's behavior is the critical link between a prescribed regimen and treatment outcome. The most effective regimen will fail if the patient does not take the medication as prescribed or refuses to take it.

Patient's Knowledge and information about the disease and its treatment

According to Chesney et al, (2005), a patient is regarded as an equal player in ART adherence. The main responsibility of the patient is to understand the HIV/AIDS disease fully; then understand ART treatment including the importance of medication and adherence.

Kathleen (2004) stated that, "the patient is expected to appoint a treatment supporter who will support him/her psychosocially and emotionally to help cope with the positive living behaviors, support him/her psychologically, spiritually, emotional and in time represent the patient in his/her clinical appointments. On the other hand health care workers are supposed to provide a user friendly atmosphere for patients by demonstrating empathy and professionalism, (Chishimba et al, 2004). Health care workers must impart information through continuous counseling of patients, and must discuss treatment regimens with patients as well as educating them on side effects.

Ferradini et al (2006) stated that, "Patients' ability to contribute in their care and choice making depends largely on their understanding and literacy skills, and a number of authors have reported that patients' comprehension of medications is positively associated with adherence. One study involving 2,659 patients with limited literacy skills examined patients' ability to process numbers (numeracy) and other concepts related to medicine use. Overall, 42% of patients gave incorrect answers for "how to take a medication on an empty stomach," 33% for "how many pills of a prescription should

be taken," 23% for "how many times a prescription can be refilled," and 13% could not understand directions to take medication four times a day.

Having right information about HIV/AIDS and knowledge about the consequences of non-adherence are associated with good adherence (Fisher et al, 2006). Knowing the facts about HIV/AIDS such as what the CD-4 cells means can promote adherence to ART. People living with HIV/ AISDS and lack correct information about HIV/AIDS and its treatment are abound, to share drugs or not taking them correctly as anticipated hence leading to non adherence.

A patient's knowledge of his medication regimen and a patient's understanding of the relationship between non-adherence and build-up of resistance to medication also predict better adherence. A patient's belief and confidence in therapy and his/her self-efficacy (confidence in oneself to be able to adhere) also influence adherence to medication. (USAID, 2004)

Patient's beliefs

There is evidence showing that, patient's certainty about their illness and the effectiveness of the treatment can lead to non adherence behavior. There are values about the significance of medication in people's daily lives, which can demoralize adherence. Most people believe that, drugs are supposed to be taken only when one is not feeling well, sick and/or to cure sickness and must be taken for a short time and not for life: (Hardon et al. 2006).

A another patient related factor contributing to non adherence to ART is that , a number of people do not believe it's logical to take drugs for life or treat an illness until they die, they believe treatment should be for a short time and the disease is treated and they don't experience it again (Hardon et al 2006).

A patient's attitude about their illness and the efficacy of medicine are predictive of adherence. Having better understanding about HIV by the patient, a belief that ART is effective and prolong life, and appreciate that poor adherence may result in viral resistance and treatment failure (Wenger et al., 1999) all impact favorably upon a patient's ability to adhere. On the other hand, lack of interest in becoming well-informed about HIV and a conviction that ART may possibly in fact cause harm adversely affect adherence

Stigma and disclosure

HIV/AIDS creates a lot of disgrace from the public more than any other disease. Stigmatizing behaviors and actions include the following denial, divorce, avoidance, discrimination, harassment and sometimes forceful removal from homes (Rao et al 2007; UNAIDS 2005). In study by Rao et al (2007) about 50% of the respondents reported to have experienced stigma in one form or another.

The fear of stigmatization makes PLWAS to conceal their HIV status to their beloved ones. Example, Weiser et al (2003) found out that because of disgrace, 69% PLWAS kept their HIV status undisclosed from their families, close friends and relatives and a further 94% kept it undisclosed from the general public. There for stigma as a result of failure to disclose HIV/AIDS status may contribute to non adherence to ART in many ways, people fear to swallow their medicine as other people are seeing because they will be laughed at. Others hide their medicine in the latrines, or under the bed,

Financial constrains

A study carried by maskew et al (2007) at St. Helens hospital in Johannesburg South Africa found out that, patients with financial constrains are likely to non adhere to ART, because of lack of money for transport to the clinic to collect drugs and meet other costs.

An experience from Haiti shows that, administration of ARV to poor patients has been a challenge regardless of treatment being free, because of other associated cost (Fitzgerald and krain, 2005). Smart (2007) reported that, the need to take time off from work to travel great distances to clinics and wait for service all day long discouraged patients from continuing with antiretroviral treatment.

Treatment expenses include the money spent for buying some drugs especially drugs that are used for treating opportunistic infections and it was observed to be a barrier to adherence in studies conducted in Uganda and South Africa respectively (Byakika-Tusiime et al 2005).

Transport problems are more than just bus charge in this part of the world. Lack of funds for transport to too far away Health facilities is another dilemma that people have to compete with, no vehicles hence leading to non adherence ART. (Hardon et al 2007).

There is evidence from the studies that have been conducted on adherence to ART in resource- limited settings suggesting that medicine-related expenses is one of the major barriers contributing to non adherence to ART. For example, reports from ten studies that were conducted in poor countries by Ivers et al (2005) found out that, the expenses of treatment were a major problem to treatment. Studies conducted so far in sub-Saharan African show similar results.

A study done by Weiser et al (2003) in Botswana, found out that lack of money was a major problem. In this study 70% of the respondents reported the cost of ART to be a major problem and 44%

thought that the cost of the treatment like lack of money for transport to the health facilities to pick drugs would hinder their ability to adhere to ART.

In countries such as Botswana ART patients cited that they had to travel long distances (maximum 200 km.) to reach the nearest health facility. This is known to hamper patients in accessing treatment (WHO, 2006; Nakiyemba et al., 2002; Bongololo et al., 2005, Zuurmond, 2008).

Food and hunger issue

According to the existing literature, adequate nutrient food is needed by people who are on ARV therapy to assist the body to fight the virus. People with HIV, regardless of their health, need to eat well to give the immune system the energy it needs to fight the virus. Therefore lack of sufficient nutrient food is considered as a barrier to ARV adherence.Sankar et al., (2006).

Studies conducted have shown that, at the initial stages of the treatment with ART as the body re-gains strength; there is an increased demand for food, (Population Council et al 2004). The elevated demand for food may not be met by some people living with HIV / AIDS in resource poor setting due to lack of food. Hence contributing to non adherence to ART as some patients cannot afford to eat before taking the drugs as well as others cannot afford to take drugs on empty stomach. (Hardon et al 2007).

Patients forget fullness.

According to (Skhosana et al 2006), Patient forgetfulness is one of the factors that plays role in contributing to non adherence to ART, it's an issue of considerable debate. A number of People living with HIV/ AIDS fail to take their drugs as required as a result of being forgetful. A study done in Costa Rica, by Stout et al. (2004) found that, the most common reasons for non-adherence to ART

were forgetfulness, being busy with other things, falling asleep through dose time, being far from home and a change of daily routine.

Nakiyemba et al. (2002) stated that, as the disease progresses, the central nervous system and the patient's memory may be affected and AIDS related dementia (AIDS Dementia Complex) develops and is associated with abnormalities in cognitive and motor functions. The cognitive deficit has a negative impact on ART adherence because it affects the patient's memory. Patients find it difficult to remember things such as taking their medication and their next clinic follow up visit. Unfortunately this may result in patients running out of medication because they missed their appointment dates hence leading to non adherence to ART.

Alcohol and substance abuse

Drinking alcohol has been associated with non-adherence to ART, especially in resource-rich settings. Some of the patients who drink alcohol may end up forgetting to take their medication or omitting treatment as a result of the effects linked with alcohol consumption such as lack of appetite, alcohol hangovers, and forgetting eats and to take medicine, hence patients end up in non adherence to ART (Hardon et al 2006).

Deride et al, (2008) stated that excessive consumption of alcohol and abuse of other drugs like cocaine and cannabis have been also associated with non adherence to ART among HIV /AIDS patients. Sankar et al, AIDS & Behavior, (2007) stated that, the use of both alcohol together with medications can lead to adverse reactions which can interrupt ART and that 85% of "ART and alcohol do not mix."

Psychosocial issues

On the other hand, a number of psychosocial issue have been found to strongly contribute to non adherence to ART, example stress, depression, anxiety, having no social support, psychosis ,apathy and anger about disease these prevent patients from adhering to treatment. Whereas social support helps patients adhere better (Ickovics and Meade, 2002).

Anxiety and depression are both predictors of sub-optimal adherence (Hirschorn L et al., 1998). At some time in the course of their illness, most people with HIV, experience a psychiatric disorder (Buhrich and Judd, 1997). Depression and/or anxiety are reported in up to 70% of AIDS patients with symptomatic disease. Adherent patients demonstrate significantly less depression or other psychiatric disturbance (Catz et al., 1999).

As the disease progresses, HIV may have an impact on the central nervous system and affect memory. AIDS-related dementia (AIDS Dementia Complex) is a common finding in patients with advanced disease and is characterized by abnormalities in cognitive and motor functions. Although studies describing adherence and AIDS Dementia Complex were not found, cognitive deficits have a negative impact on adherence to ART (Meisler et al., 1993). Even when cognition is unimpaired, it is difficult to remember when to take medications.

Religious influence

Another patient related factor contributing to non adherence to ART is patient religious belief, many clients on ART stop medication with the of belief of being healed by GOD, upon being prayed for by pastors and perceived well being with disappearing / cessation symptoms (Skhosana et al, 2008).

Studies conducted by Malta, Petersen, Clair, Freitas and Bastos (2005) and McAllister (2006), found that spiritual beliefs are a key hindrance to treatment adherence. Patients often regard their spiritual beliefs as more important than their medication and may skip medication to perform spiritual rituals. It is noticeable that spiritual beliefs and values greatly influence individual's behavior particularly as it relates to adhering to complicated treatment regimens. Patients would rather opt to skip medication to attend to spiritual rituals or not take medication at all because of spiritual beliefs.

Lack of family support

Living alone and lack of family support has been linked with an increase in sub-optimal adherence (Williams and Friedland, 1997), and social isolation is predictive of sub-optimal adherence. According to Motashari et al., (1998), living with family members or a partner, peer interaction, and better physical interactions and relationships are characteristics of patients who achieve optimal adherence to ART

People's loneliness was also evident in studies by Sankar et al., (2006) and Nakiyemba et al., (2002), affirming that loneliness is a key factor that influence adherence to ART. People who are lonely found it difficult to adhere to treatment, because they lack support, motivation and encouragement to adhere to their treatment.

2.3.2. The health worker related factors

The patient–health care provider relationship plays an important role in promoting adherence to prescribed medications in the treatment of chronic disease. It is believed to be a motivating factor for adherence to HAART. Having trust and confidence in health care providers has been found to influence adherence to ART positively (Altice et al., 2001).

Patient health worker relationship

Although existing data is limited, aspects of the clinical setting may be associated with improved adherence. A non friendly, supportive and judgmental attitude of health care providers, non convenient appointment scheduling and luck of confidentiality contribute to non adherence (USIAD, 2004).The health worker attitude, the health worker burn outs and quality of care of the health care staff, like long waiting hours, communication barriers, had a negative influence on patients continuing with treatment in Tanzania (Hardon et al, 2006).

The patient–provider relationship plays an important role in improving adherence to prescribed medications in chronic disease. It is believed to be a motivating factor for adherence to HAART. Lack of trust and confidence in providers has been found to influence adherence negatively (Altice et al., 2001). Literature on health workers' attitudes confirms the participant's response.

According to a study conducted by McAllister (2006), negative attitudes of health workers were often experienced by patients. Negative attitudes refer to health workers being rude to patients, not being sympathetic and inconsiderate to patients. According to Frank and Miramontes (2007), the client-provider relationship is important in creating a therapeutic environment that encourages and support adherence to treatment. Trust within this relationship can enhance the likelihood that the client can optimally adhere to treatment. Failure to create such an environment may influence the adherence of patients negatively. Results from the study indicate that participants who experienced negative attitudes from health workers were reluctant to return for follow-up appointments. Failure to return for appointments may lead to possible defaulting and long term development of drug resistance.

Health care worker-patient ratio

The decentralization of ART treatment in sub-Saharan Africa is happening at a time when the number of qualified medical personnel are few, thereby increasing the already existing poor health care provider-patient ratio. This has resulted into a number of problems, such as health care providers being overworked and the workload on the hands of the health care providers may contribute to non adherence because they do not have enough time to prepare patients to be initiated on ART and continuous counseling (Hardon et al, 2006).A study by Fitzgerald & krain (2005), carried out in Haiti highlights that lack of trained health workers negatively impacted on patients continuation with antiretroviral treatment.

Public health facilities are always known to be usually overcrowded and slow in service delivery (WHO, 2006). Studies conducted in countries such as Tanzania, Botswana, and elsewhere cited long waiting times at health facilities as key barriers to adherence. The report states that patients often spend on average five hours, waiting for services at a health facility. Lengthy waiting times have a negative impact on both attendance at clinic and adherence. Patients complained that the health workers were overworked, and in some health facilities health services were delayed (Mahendra et al., 2002; WHO, 2006; Zuurmond, 2008; Nakiyemba et al., 2002).

Health worker - patient communication barriers

Most of the health education information that is provided to patients, both oral instructions and written information, is presented in a format that is too complex for the average person to understand. This communication mismatch is one of the causes of non-adherence. Approximately one-third of all patients and two-thirds of physicians know someone who has had health problems because they did not understand how to take a prescription medication correctly. (Miramontes et al, 2003)

According to Ogden (2000), the model aimed to enhance patients and providers understanding of communication process. The model also illustrates the shifting in terminology from "compliance" to "adherence". The endeavour is to depart from customary views where the physicians are regarded as an expert who gives advice to a compliant patient. In addition, the author explains communication is the most effective way to enhance patient knowledge and satisfaction to prescribed treatment regimen.

Inadequate understanding or misunderstanding of medication instructions and information includes not understanding how to properly administer the medication and not comprehending the importance of medication therapy. (Carrieri MP et al, 2003) Effective communication every time medications are dispensed can make a critical difference.

Although the effect of pharmacist–patient communication is not yet studied within the context of health literacy, research on physician–patient communication shows that physicians commonly overestimate patients' literacy levels and rarely consider limited literacy skills in their assessment of whether patients understand what action is needed. Individuals with low literacy skills are disadvantaged in their ability to obtain, process, and understand both written and verbal information. This makes communication about taking medications a critical factor in the pharmacist–patient interaction. Improved communication between pharmacists and patients has the potential to enhance patients' understanding of the prescribed medication regimen and what to expect from medication therapy and hence avoid medication non-adherence related to these issues. (Catz s et al 2004).

Patients with low health literacy skills rely heavily on oral communication and need help in remembering what they hear. They prefer to receive oral rather than written health information. Unfortu-

nately, in many cases, this is not what they get from their pharmacists. In a study of more than 300 pharmacies in eight states, most shoppers (89%) received written information, (Arsten J.H et al 2002)

The clinic set up

The effect of the clinic setting is very important in promoting patients adherences to ART, the aspects of the clinic setting that may influence patients adherence to ART include access to ongoing primary care, like accessibility of the clinic from the patients home or work place, pleasantness of the clinical environment, convenience in scheduling appointments, perceived confidentiality, and satisfaction with health care system of the clinic while dissatisfaction with clinic aspects like lack of services such as child care, clinic opening and closing times, privacy , long waiting times, confidentiality, and unsympathetic or inconsiderate staff has been associated with patients non adherence to ART.(Nemecheck and Tritle, 1998).

Difficulties with re-supply of medicines

Accessing treatment during a clinic visit is reported as a problem to adherence. In some developing countries, just over 50% of ARV users are given a treatment which last for three months, 40% receive a prescription for one month and 12% for two months (Burgos et al., 1998).

In addition, some dispensing pharmacies will only dispense one month's medicine at a time (often on a single designated clinic day) and not all pharmacies are able to dispense ARVs. As a result of such difficulty in prescription measures, some patients attend their local pharmacy for most prescription medicine and another separate pharmacy for their ARVs. This is obstacle to optimal adherence in that there is a problem in obtaining or taking medicines have to wait until the chosen clinic day, by which time patients may already be defaulting on their dose (Grierson et al., 2000)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes the methodology that was used to answer the research questions .It deals with description of the research design, study area, study population, sampling aspects which included the following; selection procedure and design, data gathering, and data analysis methods and data presentation.

3.2 Research Design

A cross-sectional and descriptive method was used to collect quantitative data for the study. This research design was used because it allows for gathering of information from individuals whose characteristics, behaviors and attitudes are relevant to the investigation and data was collected at one point in time.

3.3 Study Area

The study was carried out in Uganda cares Soroti health care centre, in Soroti regional referral hospital, in Soroti Municipality – Soroti district. This is a 276 bed capacity and offers specialist services in medicine, surgery, obstetrics, pediatrics and other medical specialties. The hospital is situated in the centre of Soroti municipality 360 kilometers north east of kampala.it is the only hospital in Soroti district and serves as nurses training hospital. It became a regional referral hospital in July 1997 and it is the highest referral centre for the districts of Kaberemaido, Amuria, Katakwi, and Kumi. The Uganda cares Soroti health care centre HIV clinic was established in 2004 as an ARV treatment centre, and has a total population of 8425 clients; conducts a clinic session daily **a**nd an average of 200 patients are served. It has a counseling unit, a laboratory unit as well as a treatment

unit. Patients receive formal pre-treatment adherence education/counseling sessions. They are also expected to visit the centre once a month for drug pick-up services. The area of study was chosen because the researcher knew the area and its people very well. Therefore accessing relevant data from respondents was deemed to be both convenient and economical.

3.4 Study population

The study population consisted of 133 HIV/AIDS clients on ART aged 18 years and above who are receiving treatment at the study site.

3.5. Selection criteria.

3.5.1. Inclusion criteria

- HIV clients over 18 years of age on antiretroviral therapy and who voluntarily consent to participate in the study.

3.5.2. Exclusion criteria

- Those who were too ill to participate
- Those who were enrolled in other studies

3.6. Sample size determination

A sample is a subset of the population that comprises some numbers selected from it (Sekaran 2003), a formula by Kish and Leslie was used to determine the sample size. A sample size was estimated to be 133 subjects and was calculated as follows:-

N = K/ (1+K / Popn)

Where N is the desired sample size for the study.

K is = $\frac{Z^2 \times P \times Q}{D^2}$

Z = 1.96 (the standard normal deviation at 95% confidential interval)

P **=10 %** (Prevalence of non adherence to ART Chesney et al, 2000).

Q =100-P

D =5% (Precision of estimate - the error being allowed)

Popn = population under study (4287)

K = (1.96 x1.96) x (10%) x (90%) / (5%) x (5%) =138

Therefore sample size N = 138/ 1+138/4287 =133

N =133 clients.

3.7. Sampling Procedure

The researcher used probability techniques where purposive sampling technique was applied. Participants were purposely selected because they had certain characteristics pertinent to the study. A sample size of 133 HIV clients on antiretroviral therapy was purposively selected from the client study population. These clients were given identification tags to avoid repeat recruitment and biasness.

3.8 Study variables

Dependent variable:-. Non adherence to ART

Independent variables.

The independent variables were Age, sex, marital status, religion, education occupation, patient related factors such as stigma, Alcohol consumption, patients belief, patients knowledge,etc.and health worker related factors such as poor communication, patient health worker relationship, clinic setting etc

3.9 Data collection techniques.

Data was collected through an interview. The researcher was introduced to the respondents by the medical officer in charge of the clinic. The respondents were informed about the purpose for conducting the study after which an informed consent was got. The researcher then went ahead to interview the respondents individually.

3.9.1 Primary source of data

Primary data was collected through interview schedules (open ended and face to face semi- structured) questionnaires from patients.

3.10 Data collection tool

An interviewer administered semi structured questionnaire to collect data from the respondents. This had both open and closed ended questions about adherence and factors that affect it. The questionnaire was administered to the respondents during a scheduled appointment or routine clinic visits. It was constructed using factors found to be associated with non adherence to ART. The key factors were patient related factors such stigma, Alcohol consumption, patient's belief etc. and health worker related factors such as provider-patient interaction, communication, clinic setting etc. The questionnaire also covered socio-demographic characteristics and adherence of the study respondents. The questionnaires written in English were translated and administered in Ateso, the most commonly spoken language in Soroti District that made it suitable for the study.

3.11. Plan for data analysis

The data was cleaned, stored and entered in Epidata v3.1 by the researcher and was subsequently analyzed using EPI-Info programme. After data entry in Epidata v3.2, it was exported to Epi-Info

v3.3.1 for statistical analysis at 95% confidence level. Associations between the dependent and the independent variables were established through Chi-Square tests if the cell count was greater than or equal to five and Fisher's exact test if the cell count was less than five. Results with $p< 0.05$ were regarded statistically significant and, were considered for multiple logistic regression analysis to establish the strengths of the association and to control for potential confounders using adjusted odds ratios with their subsequent 95% confidence intervals and the p-values.

Results were presented inform of frequency tables and the discussed consistently with the study objective, research questions and statement of the problem.

3.12. Quality Control measures

The questionnaire was pre tested to ensure reliability and consistency of the data. Ambiguous questions were later re-aligned with the study objectives. During data entry, data quality control through skipping, double entry and alerts were employed, the researcher was fluent in Ateso. The questionnaire was developed in English and translated to Ateso for easy administration to the local population.

3.13 Ethical consideration

- Permission was sought from International Health Sciences University, Soroti regional referral hospital administrator, patients and health workers.
- The researcher had to introduce himself to the respondents and gave explanation about the purposes of the study to all individual respondents and the relevancy of the information to the researcher.
- Prior conducting the interviews the researcher had to seek for consent from the respondents.

- All participants in the study and the information they provide was treated with confidentiality and anonymously as a condition for their participation in the research.
- Punctuality was observed in all stages of data collection, privacy and respect of the respodentents is ensured and no names of the respondententents in the questionnaires.

3.14 Plan for dissemination

The findings from the research were summarized into a report copies of which were submitted to the University Library and Soroti Health Care Centre, Soroti, regional Referral Hospital. Attempts will also be made to disseminate the research findings in form of poster presentations and through presentations at work shops and conferences.

3.15 Limitations of the study.

- Small sample size used and some respondents could have feared to give the right information because of confidentiality.
- The research exercise was quite costly in terms of time and monetary aspects. The research overcame this by carefully using the limited time and finances within the affordable cost

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS.

4.1. Introduction

This chapter presents the results of the research. It covers the following sections: demographic characteristics, measurement of patient's level of adherence to ARV, Patients and Health workers related factors that contribute to non-adherence to ARV and data is presented in tables and percentages are used for easy interpretation. A total of 133 patients participated in the study.

4.2. Demographic characteristics of respondents

Table 4.1: Distribution of respondents by their Socio-Demographic characteristics (N=133)

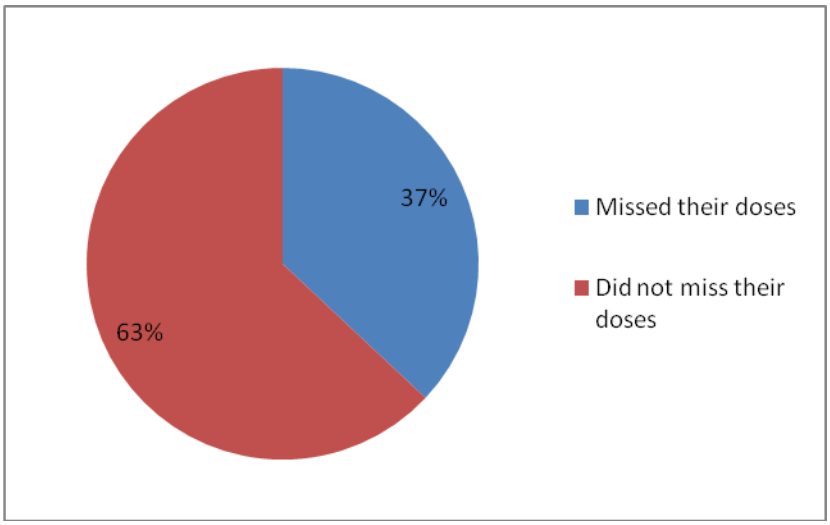
Sex	**Frequency (N=133)**	**Percentage (%)**
Male	62	46.6
Female	71	53.4
Age		
18-28	19	14.3
29-39	36	27.1
40-59	70	52.6
60 and above	08	6.0
Marital status		
Married	67	50.4
Cohabiting	08	6.0
Single	17	12.8
Widowed	19	14.3
Divorced	22	16.5
Religion		
Catholics	50	37.6
Protestants	55	41.4
Moslem	08	6.0
Born again	16	12.0
Others	04	3.0
Education		
Never attended school	15	11.3
Primary	50	37.6
Secondary	41	30.8
College	22	16.5
University level	05	3.8

Primary source of data

Majority of the respondents were female (53.4%), aged between 40-59 (52.6%), married (50.4%), protestant (41.4%) and had attained a primary level of education (37.6%).

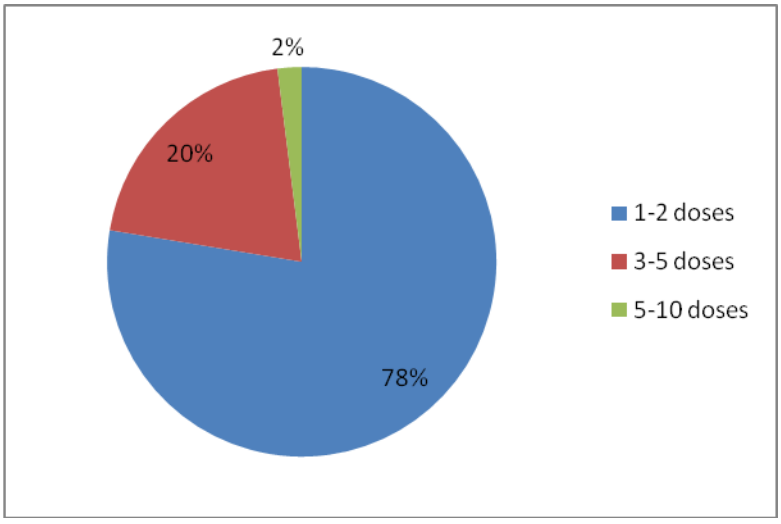
4.3 Measurement of adherence (research question one).

Figure 4.1: Showing level of adherence within the past 4 weeks (n=133).



The level of adherence as reported by the patients was 63% (84/133), 37% (49/133) of the respondents had missed their doses in the past 4 weeks

Figure4.2: Shows the number of doses missed by the respondents within the past 4 weeks [n=49(37%)]



Of the 49 respondents who had missed their doses in the past 4 weeks, majority (78%) of the respondents had missed 1-2 doses, while 20% had missed 3-5 doses and 2% had missed 5-10 doses.

4.4 Factors that contribute to non adherence to antiretroviral therapy

4.4.1 Patient related factors (research question two)

There was a statistically significant relationship between forgetfulness ($p<0.000$), side effects of drugs ($p=0.002$) and adherence. Distance, financial constraints, stigma and disclosure, feeling ill, being busy, many drugs to swallow, depression, treatment support and religion influence did not have a significant relationship with adherence

Table 4.2 Shows Patient related factors affecting patient's adherence on HIV treatment (N=133)

Variable	Adherent Frequency (percentage)	Non adherent Frequency (percentage)	Total Frequency (percentage)	statistics, p-value
Long distance				2.23^{a}, p=0.136
No	51 (38.35)	36 (37.07)	87 (65.41)	
Yes	33 (24.81)	13 (9.22)	46 (34.59)	
Total	84 (63.16)	49 (36.84)	133 (100.00)	
Financial constrains				
No	50(37.59)	35(26.32)	85 (63.9)	1.90^{a},p=0.168
Yes	34(25.56)	14(10.53)	48 (36.09)	
Total	84(63.16)	49(36.84)	133(100.00)	
Stigma and disclosure				
No	77(55.89)	46(34.59)	123(92.48)	0.22^{b},p=0.641
Yes	7(5.26)	3(2.26)	10(7.52)	
Total	84(63.16)	49(36.84)	133(100.00)	
Felt better or well being				
No	72(54.4)	44(33.08)	116(87.22)	0.4625^{a},p=0.496
Yes	12(9.02)	5(3.76)	17(12.78)	
Total	84(63.16)	49(36.84)	133(100.00)	
Simply forget				
No	83(62.41)	33(24.81)	116(87.22)	27.4795^{b},p=0.000**
Yes	1(0.75)	16(12.03)	17(12.78)	

Total	84(63.16)	49(36.84)	133(100.00)	
Failing ill or sick-ness				
No	76(57.14)	40(30.08)	116(87.22)	2.1711[a],p=0.141
Yes	8(6.02)	9(6.77)	17(12.78)	
Total	84(63.16)	49(36.84)	133(100.00)	
Being busy				
No	69(51.88)	35(26.32)	104(78.20)	2.0836[a],P=0.149
Yes	15(11.28)	14(10.53)	29 (21.80)	
Total	84(63.16)	49(36.84)	133(100.00)	
Had no food to eat				
No	69(51.88)	34(25.56)	103 (77.44)	2.8823[a],P=0.090
Yes	15(11.28)	15(11.28)	30 (22.56)	
Total	84(63.16)	30(22.56)	133(100.00)	
Drug side effects				
No	76(57.14)	34(25.56)	110(82.71)	9.6227[a],P=0.002**
Yes	8(6.02)	15(11.28)	23(17.29)	
Total	84(63.16)	49(36.84)	133(100.00)	
Many drugs to swallow				
No	80(60.15)	46(34.59)	126(94.74)	0.1149[b],P=0.735
Yes	4(3.01)	3(2.26)	7(5.26)	
Total	84(63.16)	49(36.84)	133(100.00)	
Depression				
No	65(48.87)	36(27.07)	101(75.94)	0.2592[a],P=0.611
Yes	19(14.29)	13(9.77)	32(24.06)	
Total	84(63.16)	49(36.84)	133(100.00)	
Alcohol				
No	82(61.65)	45(33.83)	127(95.49)	2.4020[b],p=0.121
Yes	2(1.50)	4(3.01)	6(4.51)	
Total	84(63.16)	49(36.84)	133(100.00)	
Treatment suppor-ter				
No	77(57.89)	40(30.08)	117(87.97)	2.9442[a],p=0.086
Yes	7(5.26)	9(6.77)	16(12.03)	
Total	84(63.16)	49(36.84)	133(100.00)	
Religion influence				
No	82(61.65)	46(34.59)	128(96.24)	1.1974[b],p=0.274
Yes	2(1.50)	3(2.26)	5(3.76)	
Total	84(63.16)	49(36.84)	133(100.00)	

*a= chi-square test, b=Fisher's exact test, **Significant finding*

4.4.2 Health worker related factors (research question three).

Heath workers attitude and Counseling had a statistically significant relationship with adherence (p=0.004 and p=0.008 respectively). The other health worker related factors did not have a statistically significant relationship with adherence to HIV treatment.

Table 4.3. Health worker related factors affecting patient's adherence on HIV treatment

Variable	Adherent Frequency (percentage)	Non adherent Frequency (percentage)	Total Frequency (percentage)	Statistics, p-value
Long waiting hours while in the clinic				
No	53(39.85)	34(25.56)	87(65.41)	0.5416[a],p=0.642
Yes	31(23.310	15(11.28)	46(34.59)	
Total	84(63.16)	49(36.84)	133(100.00)	
Losing appointment card				
No	74(55.64)	45(33.83)	119(89.47)	0.46[b], p=0.498
Yes	10(7.52)	4(3.01)	14(10.53)	
Total	84(63.16)	49(36.84)	133(100.00)	
Poor communication				
No	76(57.14)	41(30.83)	117(87.97)	1.3533,p=0.245
Yes	8(6.02)	8(6.02)	16(12.03)	
Total	84(63.16)	49(36.84)	133(100.00)	
Health worker attitudes				
No	81(60.90)	40(30.08)	121(90.98)	8.254[b],p=0.004**
Yes	3(2.26)	9(6.77)	12(9.02)	
Total	84(63.16)	49(36.84)	133(100.00)	
Counseling				
No	82(61.65)	42(31.58)	124(93.23)	6.95[b],p=0.008**
Yes	2(1.50)	7(5.26)	9(6.77)	
Total	84(63.16)	49(36.84)	133(100.00)	
Few health workers				
No	66(50.00)	38(28.79)	104(78.79)	0.0713[a],p=0.789
Yes	17(12.88)	11(8.33)	28(21.21)	
Total	83(62.88)	49(37.12)	132(100.00)	
Others i.e. luck of drugs for O.IS.				
No	74(60.16)	45(36.59)	119(96.75)	0.272[b],P=0.602
Yes	3(2.44)	1(0.81)	4(3.25)	
Total	77(62.60)	46(37.40)	123(100.00)	

*a= chi-square test, b=Fisher's exact test and ** significant finding*

Results of simple and multiple logistic regression analysis for all significant patient and health worker related factors

All significant patient and health worker factors were considered for simple and multiple logistic regression analysis in order to determine the strengths of association and to control for potential confounders. From the results of the logistic regression (Table 4.4), the most significant factors that reduced adherence to ART were medication forgetting, experience of medication related side effects, absence of counseling and negative health worker attitudes towards clients. In fact, medication forgetting was significantly associated with a 42 fold likelihood of non adherence (Adjusted OR=42, 95%CI: 5-348, p<0.001). Similarly, respondents that had medication related side effects were 4 times likely to be non adherent compared to those that did not develop any side effects (Adjusted OR=4, 95%CI: 1-12, p=0.01).

The table 4.4 showing results of simple and multiple logistic regression analysis

Variable	Crude OR [95%CI]	P-value	Adjusted OR [95%CI]	P- value
Simply forget	40 [5-316]	P<0.001**	42 [5-348]	P<0.001**
Presence of drug side effects	4 [2-11]	P=0.003**	4 [1-12]	P=0.01**
No counseling	7 [1-34]	P=0.002**	3 [0.47-24]	P=0.23
Negative health worker attitudes	6 [2-24]	P=0.009**	4[0.73-18.2]	P=0.117

*** Significant finding*

CHAPTER FIVE:

DISCUSSION OF RESULTS

5.1. Introduction

This chapter discus the research findings in relation to the study problem statement, specific objectives, study questions and it further explains obtained results.

The results are divided into three sections. The first section deals with biographic and background information of the respondents by looking at gender, age, marital status, religion and qualifications. The second section deals with the Analysis and discussion of research findings in relation to measurement of the level of adherence, and factors affecting patients' adherence to ART. The third section presents a summary of the results.

5.2 Demographic characteristics of the respondents

Of the 133 respondents interviewed 53.4% were females and 46.6% were male. This could be due to the tendency of women to seek treatment (health care services) more than men; it's easier for women to seek health care services than men since women are often responsible of taking their children to health care services when they are sick. Women are more familiar with the health clinic than men because they may go there for regular maternal health services such as family planning, screening for reproductive tract infections etc for men coming to the clinic means declaring to others that they have some health problem. Majority of the respondents were in age group between 40-59 years and aware of their status and was undergoing ART.

It is not clear why those aged over 40 years would adhere more to ARV drugs. It is possible that because they may be married, there will be support from their spouse to adhere to the drugs. Also they may have children and therefore have greater reason to stay alive. Some studies have found associations between adherence and older age, male gender and higher income (Gallant and Block 1998;

Wenger et al. 1999; Montessori et al. 2000; Patterson et al. 2000). By contrast, others have found no such associations. This implies that age influence adherence and the study findings are in line with, (Jones et al., 1999) findings that, age may influence adherence, with the exception of the most elderly, adherence increases with age. 50.4% of respondents were married, this indicates that, married people knew their HIV status and were undergoing ARV treatment hence shows significant relationship between marital status of respondent and adherence to ARV treatment. However, non- disclosure tendencies among couples has not been very supportive in promoting good adherence.

Furthermore the study found out that, 41.4% of the respondents were Protestants followed by Catholics at 37% and 3.0% were of other religions. This could be due to the fact that the two religions are dominant in the region and they abide to their local traditional and religious rituals, which can influence non adherence to ART. (37.6 %) of the respondents had attained primary level of education, and 11.3% have never been to school, the respondents who had attained higher level of education were 3.8 %, this findings are consistent with other studies which found no any link between non adherence to ART and education levels (Ammassari et al. 2002).

5.3 Measurement of the level of adherence.

(63%) of the respondents had complete adherence i.e. they had not missed any of their medications in the last four-weeks prior to interviews, while (37%) had missed .The adherence rate is much lower in this study than the value reported In Addis Ababa, Southern region & Oromia, for recently conducted research in Ethiopia also confirm that the levels of adherence >95% reported were 81.2% in three civil hospitals and 82.8% in defense hospitals of Addis Ababa. In the study done at two hospital of Oromia (Jimma & Adama) adherence level was found 83.0 % & in the study performed at southern region (Yirgalem hospital) the adherence rate was found 74.2%% (Nachega, data presented

at 16th Conference on Retroviruses and opportunistic Infections 2009). These results are much higher compared to the one of this study. "This study findings therefore demonstrates that non adherence to ART among HIV clients remains a significant problem for Uganda and should serve as a call for action".

These finding is therefore in line with WHO 2003 findings, in the treatment of HIV and AIDS, where adherence to antiretroviral agents varies between 37% and 83% and with Weiser et al (2003) finding's, were self reported and health care provider assessment of adherence in three private clinics in Botswana was found to be 54% and 56%, respectively. This implies that non adherence is still a problem among HIV / AIDS clients.

The study findings also indicate that, of 49 respondents who had not had complete adherence, 39 (29.4%) had missed 1-2 doses, 09 (6.8 %) had missed 3-5 doses and 01 (0.8%) had missed 5-10 dose in the past four-weeks prior to interview. This is in line with a study by Chesney et al in 2000, who found out that more than 10% of patients report missing one or more medication doses on any given day, and more than 33% report missing doses in the past two to four weeks and estimated that the average non-adherence to ARV therapy ranged from 50 to 70 percent among patients in the United State.

5.4. Factors that contribute to non adherence to antiretroviral therapy.

5.4.1. Patient related factors

In this section a number of factors that influence non adherence to ART where examined as shown in table 4.2 and 4.3 and discussed respectively.

Drug side effects

This study has found out that, 17.3% of the respondents had missed their doses because of drug side effects (p=0.002) as shown in table 4.2 and there is a significant association between non adherence to ART and medication related side effects. Simple and multiple logistic regression analysis in table 4.4 showed that respondents who experience drug side effects were 4 time more likely to be non adherent compared to those that did not develop any side effects (Adjusted OR=4, 95%CI: 1-12, p=0.01). The mentioned side effects were, nightmares, painful hands and feet, dizziness, headaches, black nails and darkened skin, nausea, exhaustion and, rash, vomiting and loss of appetite. The respondents said some of these side effects occur when someone is starting ARVs like nightmares, dizziness, headaches, nausea, exhaustion, rash, vomiting and loss of appetite. This finding is in agreement with Ammassari et al, (2001) who reported that when experiencing such negative reactions, patients would self prescribe 'drug holidays. Similarly, results from a study in Botswana also reported side effects as the fifth mentioned reason for non adherence to ART Hardon at el, (2007)

However, this finding is in disagreement with Cote and Godin (2005) findings that the presence of side effects does not predict adherence, but rather one's attitude toward ART and the ability to take it as prescribed. Side effects can be transient or longer lasting. Certain antiretroviral drugs cause metabolic changes and change the shape of the body (lip dystrophy) and in agreement with Hawkins (2006) findings that 36.2% of patients discontinued treatment due to lip dystrophic changes. The literature has indicated that optimal adherence occurs with medications that remove symptoms, whereas adherence is reduced by medication that causes side effects (Chesney et al., 2000). Hence drug side effects according to this study are a major factor contributing to non adherence to ART among HIV clients attending soroti health care centre in soroti regional referral hospital. Therefore there is need

to health educate clients about the drug side effects before they are started on drugs in order to promote adherence.

Forget fullness

In this study, forgetfulness predicted non-adherence to ART. 12.8 % of the respondent mentioned that forgetfulness makes them to miss taking their medication especially if they are occupied with daily work commitments and this is in line with the study finding in the table 4.2, ($p<0.001$) and table 4.4, medication forgetting was significantly associated with a 42 fold likelihood of non adherence (Adjusted OR=42, 95%CI: 5-348, $p<0.001$). This could be due to the fact that, most respondents who were interviewed could have had HIV / AIDS related dementia illness, as this impairs the memory ability, for example, a 60 year old male respondent stated: *"My memory is now very poor, may be because of these drugs. It is quite difficult for me to always remember to take my drugs on time, especially in the evening"*.

This study finding is in line with Nakiyemba et al. (2002) and Stout et al. (2004) findings that, as the disease progresses, the central nervous system and the patient's memory may be affected and AIDS related dementia (AIDS Dementia Complex) develops and is associated with abnormalities in cognitive and motor functions. The cognitive deficit has a negative effect on ART adherence because it affects the patient's memory. Patients find it difficult to remember things such as taking their medication and their next clinic follow up visit. Unfortunately this may result in patients running out of medication because they missed their appointment dates hence leading to non adherence to ART.

It is therefore clear that, the majority of the respondents who were interviewed could have been affected by the effects of HIV on the central nervous system. The respondent cited that, it's difficult to remember things such as their next follow up visit. Unfortunately this may result in patients running out of medication because they missed their appointment dates. Therefore according to these re-

search findings, forgetting is a major factor contributing to non adherence to ART among HIV /AIDS clients attending Soroti health care centre in Soroti regional referral hospital, these implies that, as HIV clients are started on ART, it's important to health educate and inform them the ways that can remind them to takes their drugs like use of watch alarms, radios etc.

Financial constraint, transport and long distances

The World Health Organization included free access to ART at the point of service delivery as a component of its public health approach for reaching universal access in low income countries (UNAIDS/WHO/UNICEF, 2010). Although coverage rates continue to increase, most rural residents still face a challenge of walking far distances to get ART services. Transport costs can pose an important barrier to clinic attendances and ultimately poor adherence to ART (Ware et al., 2009).

In this study, 36% of the respondents needed some form of transport to reach ART clinic. However majority of the respondents cited financial constraint (63.9%), transport and long distances (65.4%) as not being a problem to reach to the ART clinic as shown in table 4.2. There is no significant association between financial constraints, transport and long distance and non adherence to ART. This could be due to the fact that most of these respondents interviewed were from within the municipality, stay near the clinic or were of working class hence access to the clinic is not a problem to them as compared to 36% and 34.6% of the patients who cited the luck of money to pay for transport and long distance as a key problem in adhering to follow-up appointments. The result is that, these respondents are often forced to walk far distances to health facilities or postpone their appointments or opt to stay without medication.

This is in line with the study done in Botswana, Tanzania and Uganda (WHO, 2006) highlighting the burden of high transport costs to and from health facilities faced by patients. Patients often cited

Lack of funds to pay transport costs as a reason for missing physician appointments. This makes it difficult for them to come and pick drugs hence making them to miss their doses. This study finding is also in agreement with Byakika et al. (2003) findings, that scheduled clinic appointments need money for transport and this can increase the already existing budget and more than one-half of health care workers (56%) believed that financial problems often or always interfered with adherence to ART.

However, according to the study findings, financial constrains, long distance and lack of transport money coupled with other reasons had no significantly association with non adherence in this study.

Food and hunger

77.4% of the patients reported that food was not a problem to their adherence to ART as compared to 22.6% of the patients who said, they had missed ARV doses because they lacked food to eat before or after taking their medicine. They said ARVs increase the urge to eat and make you to feel hungry especially in the initial stage of treatment, they further stated that, the effects of ARVs are worse if you do not eat food, they skipped taking ARVs if there is no food, the demand for food can led the patients to default from treatment.

However, according to the findings of this study in table 4.2, there is no significant association been lack of food and non adherence to ART. The study finding are also much lower than Mukiibi N, et al. (2010) findings that, PLWA in urban areas in Uganda, 95% of families sometimes or often eat less preferred foods, 62% household members skip meals, and 22% do not eat for an entire day. Furthermore, according to a study conducted in Uganda, patients fear taking treatment on empty stomach. The result is that patients often opt to interrupt treatment rather continuously taking medication without food (Nakiyemba et al., 2002; Sankar et al., 2006; Bongololo et al., 2004). WHO

(2006) state that not having food may cause patients to skip medication and this may induce suboptimal adherence. Lack of food is there for barrier to Sustained Antiretroviral therapy although this study findings show no significant association between lack of food and adherence to ART.

Daily schedule and work commitments

78.2% of the respondents reported that being busy at work was not affecting their adherence to ART. This could be because the respondents interviewed could have disclosed their status at their work places, or work in offices that are not so busy and this makes easy for them to pick drugs. This is in agreement with Connelly & Rosen (2006) findings that, a research carried out on access to ART services in the South African private sector; found that two-thirds of the mining industries had provided ART to their employees, primarily through the employer-provided model, with 90% of employees accessing ART.

21.8% of the respondents cited being busy as a reason that led to failure to pick up drugs and attend scheduled clinic visits. This was reported mainly by clients who work in busy industries such as grinding mills and truck drivers. As their kind of work makes them too busy and they fail to come and pick drugs hence making them to miss their doses. Table 4.2 demonstrated no significant association between being busy and non adherence to ART. This is therefore in agreement with United Nations development Programme (2006) report that, with unforgiving economic environment, the interruption of work is not taken lightly, also with 34% of the population living on less than $2 a day, the most immediate concern for patients who miss work is loss of wages.

The study finding is also in line with the Nattrass (2006) finding that, with unemployment rates estimated between 28-42%, most south Africans hesitate to do anything that may cost them their jobs consistently missing days of work to attend appointments or refill prescription will doubtlessly strain an employer–employee relationship hence affecting patients adherence to ART.

Frank and Miramontes (2007), found out that, for individuals that are too busy or those with unstable living conditions, non-adherence may be unavoidable. It is obvious that participants in this study were not able to incorporate the treatment regimens into their daily schedules. This may happen especially at the beginning of the treatment as patients are not yet used to the new situation. Patients need considerable assistance from health workers, family members and friends to adjust their schedules and accommodate their treatment requirements. Hence being busy is a factor that can led to non adherence to ART among HIV clients although this study found out no significant association between being busy and non adherence to ART.

Falling ill or Sickness

According to the study findings, failing ill (sickness) had no significant association with non adherence to ART as the study findings show in table 4.2 (p=0.141). 87.2% of the respondents reported that falling ill did not affect their adherence to ART as compared to 12.8% who cited illness being serious problem, especially if someone is bed-ridden or too ill. This makes it difficult for them to come to the health facility on the appointment dates for refills hence leading to non adherence.

The study finding is in agreement with that of Worley in 2007 who reported that lack of ambulances or mobile clinics to reach patients in their neighborhoods and the fact that many households do not own cars thus requiring bed-ridden patients to travel long distances to fetch their antiretroviral drugs was one of the cause of non adherence to follows ups in the eastern cape, south Africa; but disagrees with Gao et al in their study carried out in 2000.

Gao and colleagues studied the close relationship between adherence to medication, disease severity, and health beliefs among HIV patients in three different stages of HIV/AIDS. Patients who experienced more complications perceived a stronger link between non-adherence and disease-related

complications and were more adherent to their treatment regime when as opposed to patients with no prior complications.

Hence falling ill or sick according to the study findings, is not a major factor that affects adherence to ART among HIV clients attending soroti health care centre in soroti regional referral hospital. Although is considered a barrier to adherence to ART by other researchers.

Felt well or good

This study found out that, there was no statically significant association between feeling better or good with non adherence to ART, as the results show in table 4.2,(p=0.496). 87.2% of respondents reported that feeling well or good after taking ARVs for a long period of time did not affect their adherence to ART. They cited that, AVRs do not cure HIV /AIDS, but they suppress the virus to undetectable level, increase the CD4 level and boost the body immunity as a result of this the person feels better and risk of opportunistic infections are reduced.

This is in agreement with Paterson et al., 2002 and Chesney, 2003, that long-term treatments with 95% adherence or more could suppress the augmentation of viral loads, improve immune system functioning and reduce HIV/AIDS–related mortality and morbidity. 12.8% of the respondents reported that, they missed taking their medicine because they felt better after taking ARVS for a long period of time; they stated that, they felt relatively well and therefore did not think that stopping treatment would be harmful. One of the female respondents 32 years stated that, "*after delivering I had a lot to do; I had to wake up every day at 4 am and I always forgot taking the morning dose. This happened when the child was about 8 months old. I stopped taking drugs for 10 months. I even stopped coming to the clinic because I felt, I was healed. I had gained weight and thought I was*

cured. I also traveled to southern Sudan for business purposes. But when I brought the child to the clinic one day. I was asked why I had gotten lost for so long and why I had stopped taking drugs."

A male respondent 45 years who also cited it was difficult to take the drugs when he was not feeling sick noted that it's difficult to adhere when his children asked "*Daddy why do you take drugs every day, what are you suffering from*." Hence according to the study findings there is no strong correlation between feeling well or good with non adherence to ART in Soroti health care centre in soroti regional referral hospital. However feeling well or good after taking ARVs for so long can also led to poor adherence to ART.

Stigma & disclosure

According to the study findings, stigma or disclosure statically had no significant association with non adherence to ART among the respondents .This is because most of the respondents interviewed cited that, they had disclosed their status to their children and close relatives who could help them in their treatment so stigma or disclosure was not a problem to them.

The study finding is therefore in agreement with Chanard, (2007) that serostatus disclosure to significant others is an indicator of PLH's efforts to seek social support, although the importance of such support may be in making patients feel safe and wanted in their social circle, rather than being related directly to the disease (Molassiotis et al., 2002). Ultimately, increasing social support and reducing depressive symptoms may result in increased ART adherence (Yun et al., 2005).

These findings therefore suggest that disclosure is very important for PLWH in order to adherence to ART. Though the study findings showed statically no significant relationship between stigma and adherence to ART, stigma makes people living with HIV/AIDS unwilling or fear to take their medicine in the presence of other people. None of the study participants reported to have experienced

stigma and social exclusion because of HIV-positive status. Other studies have highlighted stigma to be a barrier to adherence (Peltzer et al., 2010), the high burden of HIV-infection and decades of AIDS related deaths in the study population have created awareness and perception evolution that reduced the magnitude of stigma which was experienced in first decade of HIV-epidemic.

In this study, most of the respondents reported to have disclosed their HIV-positive status to few family members and close relatives. Disclosure was significantly related to adherence, and this can explain the perceived stigma in this study population. Fear of disclosure has been documented to be among the barriers to adherence in African settings (Mills et al., 2006).

Hence the study findings indicate that, stigma or disclosure is not a problem to non adherence to ART among HIV clients attending soroti health care centre in Soroti regional referral hospital.

Depression

Depression was not associated with non adherence to ART (table 4.2, p=0.611) in this study, most likely because of low proportion of cases that occasionally experienced depressive symptoms. In other settings depression has been an important predictor of poor adherence (Ammassari et al., 2002; Sanjobo et al., 2008; Dahab et al., 2008). The low proportion of patients without social support and those who experienced depressive symptoms can be explained by the common phenomenon and sometime is a requirement for ART patients in peripheral care and treatment clinics to have treatment assistants. A treatment assistant reminds the patient about drug intake times, collecting drugs from health facility and reporting side effects to the clinicians (Attaran, 2007).

24% of respondents cited that, they often experienced stress-related symptoms such as feelings of depression and confusion. These feelings discouraged them to take medication or go for follow-up visits. The stress and bad mood could have negatively influenced their medication taking behavior

and make them unable to follow the prescription instruction. This study findings is therefore in agreement with Zich et al (1990) that, those patients at risk of major depression were 4.56 times more likely to have missed at least 5% of their ART doses in the last month and Levine et al (2006) findings that, people with 'other power health locus of control' tended to have lower level of ART adherence.

Furthermore, this is supported by studies by Frank and Miramontes (2007) and Stewart, Padarath and Bamford (2004) that, as AIDS progresses, patients increasingly experience psychological disturbances such as depressed moods and confusion. These feelings may interfere with their attention span, recall, concentration, and motivation which contribute to poor adherence. Mental health problems such as depression and stress may often occur in individuals suffering from HIV. In the latter stages of the disease, these depressed moods and confusion may occur more frequently, and this may result in lapses in non adherence to treatments regimens.

Although the research findings show no strong correlation between depression and non adherence to ART, depression remains a major factor that can led to non adherence to ART

Absence of treatment supporter / lack of family support

Social support may enhance adherence through encouragement, reassurance, reinforcement, systematic cues, bolstering of competence, and motivation or by masking the effect of stress, anxiety and depression. In this study social support had no significant association with non adherence to ART. This is in disagreement with other studies where lack of support was related to sub optimal adherence to ART. Sanjobo et al. (2008); Dahab et al. (2008). The proportion of cases without social support in this study population was very low which possibly overshadowed the effect of lack of social support. The low proportion of patients without social support can be explained by the common

phenomenon and sometime is a requirement for ART patients in peripheral care and treatment clinics to have treatment assistants. A treatment assistant reminds the patient about drug intake times, collecting drugs from health facility and reporting side effects to the clinicians (Attaran, 2007).

12 % of the respondents had missed their treatment doses because they had no one to remind them to take the drugs. They said poor support from family members. It is quite difficult for them, if they forget to take their pills or oversleep; no-one will remind them. They don't know what to do; they try to remember to take the pills by themselves. Poor support from family cited by the respondents also included rejection, ignorance and negative reactions.

These concerns may increase the difficulty of patients' taking medications. "One of the female respondent 35 years said, "*I stay with my parents, but they don't care about me at all. Even if I forget to swallow my drugs, they do not remind me. They are too busy with their work, and they don't know anything about my medication. When I was hospitalized, they did not take care of me at all; instead it was my friend who took care of me".*

Most of the respondents expressed the need to have someone who plays the role of care-givers, reminding them about taking the medication on time. Respondents that live on their own or with children complained of loneliness. They stated that, they found it extremely difficult to take medication, because there is no one to support them in taking their medication. This finding is in line with Sankar et al., (2006) and Nakiyemba et al., (2002) that, loneliness is a key factor that influence non adherence to ART. Patients who are lonely found it difficult to adhere to treatment, because they lack support, motivation and encouragement to adhere to their treatment

The study findings is in line with UNAIDS, (2004) findings, where results revealed a correlation of poor adherence and lack of family support in the studies conducted in Botswana, South-Africa and

Uganda. The absence of family support caused respondents to become de-motivated to stay on medication resulting in missed doses which leads to poor adherence.

Alcohol intake

Alcohol consumption is one of the known barriers to ART adherence in both rural and urban settings (Sanjobo et al., 2008; Dahab et al., 2008; Pelter et al., 2010). In some communities alcohol use is believed to temporarily alleviate HIV related psychological problems (Mostashari et al., 1998). Alcohol use can result into forgetfulness of the dose timing and dietary instructions that accompany some antiretroviral medications. Excessive alcohol use can cause liver damage, increase liver enzymes which lead to short drug's half life than expected. Besides, alcohol exacerbates antiretroviral drug side effects. In disagreement with these studies alcohol use showed no significant association with non adherence to ART in this study.

This could be because of the small size sample that was used and the fewer patients who drink were interviewed. 4.5% of the respondents cited missing their doses because of drinking and this makes them to forget the time of taking the drugs, they reported that Alcohol interferes with adherence to ART by causing Intoxication, impaired memory, over sleeping and Hangovers.

The study finding is therefore in agreement with Sankar et al., AIDS & Behavior, (2007) findings that, the use of both alcohols together with drugs can lead to adverse reactions which can interrupt ART and that 85% of "ART and alcohol do not mix."

Therefore according to this study findings, alcohol had no significant association with non adherence to ART, although its considered by other study findings to be a factor contributing to non adherence to ART, it's not a significant factor contributing to non adherence among HIV/ AIDS clients attending soroti health care centre in soroti regional referral hospital.

Religious influence.

This study found out that, religious beliefs had statically no significant association with non adherence to ART. 3.8% of the respondents who had defaulted cited religious belief as the reason, they reported missing their doses because they spent most of their time in churches fasting, praying and believing God to heal them. One of the female respondent 35 years cited, "*I used to have dry fasting for three to seven days and I could not take ARVs. My pastor told me that antiretroviral therapy does not cure HIV/AIDS; it is only Jesus and God who can heal HIV /AIDS".*

This is in line with studies conducted by Malta, Petersen, Clair, Freitas and Bastos (2005) and McAllister (2006) that, spiritual beliefs are a key hindrance to treatment adherence. Patients often regard their spiritual beliefs as more important than their medication and may skip medication to perform spiritual rituals. It is noticeable that spiritual beliefs and values greatly influence individual's behavior particularly as it relates to adhering to complicated treatment regimens. Patients would rather opt to skip medication to attend to spiritual rituals or not take medication at all because of spiritual beliefs. It is therefore, important for health care providers to consider clients' beliefs and values in developing adherence strategies with clients.

Furthermore, the study findings are in agreement with (Karf, 2007 and Sharon, 2006) findings that, religious beliefs may play also a negative role in treatment programmes due to the stigma attached to HIV disease, particularly in geographical areas and in population subgroups where religious practices are strong. These study findings therefore indicate that although religion is an obstacle to non adherence to ART, It had no significant association with non adherence to ART.

5.4.2. Health worker related factors.

Patient/health care provider relationship

Good patient-provider relationship and patients' satisfaction with health care services have shown positive correlation with adherence to ART in some settings (Mostashari et al., 1998; Watt et al., 2010). In this study findings, health workers' attitude, table 4.3 (Fisher's exact test=8.25, p=0.004) was statically associated with non adherence to ART. 9% of the respondents cited health worker attitudes being a problem in the clinic, they cited some nurses being rude, not giving them the right instructions on how to take the medication, One male respondent 30 years interviewed cited that, "*when you come to the clinic, you have to be booked for the next appointment, but the health workers are too rigid, they cannot book you on the appointment date you want. Even when you request drugs for two or three months, you're not given and when you miss your appointment date and you come the following day they give you drugs for two weeks only. They tell you that today is not your appointment day and they do not have time to listen to your problems".*

The study findings have demonstrated that, poor patient/ health worker relationship plays role of contributing to non adherence among PLWHAS which agrees with a study by Nachegha et al (2004) that the nature of the relationship between patients and health workers can impact negatively or positively on how patients stick to agreed treatment plans. Simple and multiple logistic regression analysis in table 4.4, to determine the strengths of association with non adherence to ART, showed that negative health workers' attitude was significantly associated with a 4 fold likelihood of non adherence to ART (Adjusted OR=4, 95%CI: 0.73-18.2, P=0.117).

A study done in Tanzania showed that patients would like to visit the facility if they believed that they will be treated humanely and in a friendly manner, treating patients negatively will affect pa-

tients trust in service-providers and ultimately cause patients to drop the treatment Hardon et al, (2006)

According to a study conducted by McAllister (2006), negative attitudes of health workers were often experienced by patients. Negative attitudes refer to health workers being rude to patients, not being sympathetic and inconsiderate to patients. According to Frank and Miramontes (2007), the client-provider relationship is important in creating a therapeutic environment that encourages and supports adherence to treatment. Trust within this relationship can enhance the likelihood that the client can optimally adhere to treatment. Failure to create such an environment may influence the adherence of patients negatively.

Results from the study indicate that participants who experienced negative attitudes from health workers were reluctant to return for follow-up appointments. Failure to return for appointments may lead to possible defaulting and long term development of drug resistance. Therefore, health worker attitude is a major factor contributing to non adherence to ART among HIV/AIDS clients in soroti health care centre in regional referral hospital.

No proper counseling

Findings of this study in (table 4.3, Fisher's exact test=6.95, p=0.008,) demonstrate that there is statically a significant association between no proper counseling and non adherence, 6.8% of the respondents said they had never had proper counseling about adherence on ART and according the simple and multiple logistic regression analysis in table 4.4, patients who do not receive proper counseling were 3 times likely to be non adherent. Poor or infrequent counseling may also have adverse affects on ART adherence because the patients are not given the right information about the

drugs they take. Scale-up of ART with limited personnel makes it difficult for healthcare workers to cope with the large number of patients on clinic days.

Regular contact with either counselors or long time spend with providers were associated with non adherence to ART. But, patients who felt not satisfied with the time they spend with providers were non adherent to treatment. Such patients probably were unable to express their concerns about medications. In this setting continued patients counseling tailored to individual needs would improve adherence, hence poor counseling can led to non adherence to ART.

Long waiting hours in the clinic.

34.6% of respondents reported to have ever abandoned treatment because of long wait hours in the clinic when they come for refills, and among the issues cited were clinic operating hours, difficulty in booking appointments, too many patients in the clinic and delay in dispensing drugs after the doctor or clinician has prescribed it. As this makes them to stay in the clinic for more than four to five hours yet they have a lot of responsibilities. This led to dissatisfaction with the clinic services and caused them to stop coming to the clinic to pick up their medications.

However, according to the study findings, in table 4.3, there is no statically significant relationship between long waiting hours and non adherence to ART. This could be due to the fact that, most of the respondents who were interviewed could have not experienced the habit of long waiting hours while in the clinic. This is in contrary with hardon at el, (2007) that, long waiting times may discourage patients from going to clinics. almost half (42%) of health workers interviewed in Tanzania identified long waiting times as a problem, and in Botswana, 57% of respondents reported that they spend four or more hours at the clinic, with the longest wait being 12 hours.

This study has therefore demonstrated that long waiting hours in the clinic is not far the most important health related factor contributing to non adherence to ART among PLWHAS in Soroti health care centre in Soroti regional referral hospital

Patient health workers ratio

The study findings demonstrated that, there is no strong relationship between patients –health worker ratio with non adherence to ART. This could be because the respondents, interviewed could have not had any serious opportunistic infections or any complication that desires to see the doctor, or respondents who have been on ART for a long period and are stable. As compared to 21% of the respondents who reported that, there few health workers in the clinic and this make them not to be served immediately.

They stated experiencing problems pertaining doctor-patient ratio, they cited that every time they come to the clinic, they are seen by the nurses because when they want to see the doctor they have to wait for so long before they see him because the clinic has only one doctor serving many clients. They reported facing problems right from enrollment and ART initiation stage when they had to make frequent visits for various tests for ART initiation till they were stable on ART, faced problems for CD4 count tests. They were called several times. It was difficult to manage because they could neither afford the cost of repeat visits this caused them to default from treatment for some time.

Health services depend on having the right people, with the right skills, in the right place. Yet, the world is experiencing a chronic shortage of well-trained health workers, a crisis felt most acutely in those countries that are experiencing the greatest public health threats. The reasons for shortage of health care workers could be due to low wages, poor working conditions, and few trained and well

qualified health workers and yet the problem is complex in those countries that are mostly affected by HIV/ AIDS WHO (2004).

However, the study has shown no strong association between patients –health worker ratio with non adherence ART hence is not an important factor contributing to non adherence to ART in soroti health care centre.

Loosing appointment card

The study has established that, losing appointment cards had no significant relationship with non adherence to ART. This could be because most of the respondents had never lost their appointment cards or due to a small sample size that was used in the study. 10.5% of the respondents who cited to have lost their appointment cards, one male respondent said that: *"I lost my appointment card and I feared to come to the clinic. It is not easy at the triage, when you have no appointment card the health workers take long to attend to you, sometimes you're the last to be served .This discouraged me a lot and I had to stop taking my drugs for a period of about three to four months".*

Frank and Miramontes (2007) emphasize that treatment plans must be tailored to the individuals needs and should fit in the patient's life rather than fitting the patient's life around the regimens. This also required that health care providers should spend more time with the patients as they develop the plans. Lack of involvement of patients in the treatment planning and decision making process by health care providers may encumber adherence to ART. It is therefore fundamental that patients be included in the planning and implementation of treatment plans. Hence study findings, show that loosing appointment card is not important factor that contribute to non adherence to ART.

The study findings also indicated that, there is no significant relationship between others i.e. clinic setting, lack of drugs for treating opportunistic infections and non adherence to ART this could be because most of the respondents who were interviewed could have not experienced serious opportunistic infections or they appreciate the kind of clinic setting. 3.3% of the respondents stated that, clinic setting, lack of drugs for treating opportunistic infections opportunistic infection like fluconazole, sometimes they tell us there are no drugs and they send us to the hospital or they tell us go and buy yet these drugs are very expensive. Although, existing data is limited; aspects of the clinical setting may be associated with improved adherence. A friendly, supportive and non- Judgmental attitude of health care providers, convenient appointment scheduling and confidentiality contribute to better adherence

Prior opportunistic infections (OI) contribute to increased adherence. This study finding is therefore in contrary with (Singh et al., 1996). That, patients who have had serious opportunistic infections may perceive their illness to be severe and adhere better to their treatment

In conclusion, the chapter discussed the results of the study and the implications of the results. Factors such as, drug side effects, forgetfulness, negative health worker attitudes and improper counseling were identified as key factors that negatively influenced non adherence to ART among PLWHAS in Soroti health care centre in Soroti regional referral hospital.

These findings explain that adherence is an active practice that varies depending on region or cohort specific adherence factors. Adherence improvement strategies need to take into consideration site specific adherence determinants, patient experiences and concerns.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions.

Adherence is a complex issue and multi-dimensional approaches are required to address the barriers to adherence. The study findings have shown that, the level of adherence among HIV/AIDS clients attending Soroti health care centre is 63%, lesser than expected level of adherence >95%.and indicates clearly that adherence to ART is still challenge among people living with HIV/AIDS. The study identified critical barriers to adherence classified under the following themes: individual and health worker service provider factors. The key factors that remarkably accounted for non adherence to ART among clients seeking comprehensive HIV care at Uganda Cares in Soroti Regional Referral Hospital where, ARVs related toxicities/side effects, patient forgetfulness, negative health worker attitudes and improper counseling of the patients.

6.2. Recommendations

Efforts to improve the level of adherence require a comprehensive approach involving the patient, family, community, health care providers and policy makers, and focusing on addressing patient, environmental and structural constraints.

In order to promote good ART adherence among HIV/ AIDS clients, the study recommends Uganda Cares--Soroti health care centre, Ministry of Health and other stakeholders to carry out the following strategies.

Health care providers

- Since the health providers are the most important support system, they must strive to create and maintain an empathetic, respectful and non-judgmental clinical environment which can

enhance the patient-provider relationship that is supporting the patient's treatment goal.

- Health care providers must consider patients beliefs and values when developing adherence strategies. Confounding factors that influence behavior, such as psychological disturbances, Substance use and other emotional problems must be identified, assessed and addressed Within the context of comprehensive HIV clinical care
- Early detection, diagnosis, linkage and appropriate management of patient related ART side effects in combination with new treatment reminder strategies are highly required for patient ART adherence.
- Interventions to reduce non-adherence should address health provider-patient interaction and patients on first-line regimens and patients should be started on ART in the presence of treatment supporter.

Counseling

- Counseling services is a key requirement for successful adherence to ART. Therefore, counseling services should be strengthened, with emphasis on proper assessment of patient's readiness to take up ART. Recruitment of additional community counselors that are eloquent in the local languages, train and provide increased refresher courses.
- Strict regular supervision should be provided to community counselors when conducting Adherence counseling to ensure quality of services provided

Community Education

- Develop culturally appropriate information education communication (IEC) material and culturally acceptable patient questionnaire for assessing and monitoring adherence.

- Involvement of patients in planning and decision making process is crucial to ensure that Patients are able to adhere to the follow-up appointments.

Provision of Social Grants

- Due to the existing poverty in the country the government should provide financial assistance for example loans or grant for PLWHA to support them to initiate Income generating activities (IGA) so as to improve on their socio-economic well being, such that they are able to manage transport related costs and meeting other medical treatment bills.
- Costs to access ART need to be reduced using a set of strategies such as providing patients with drugs for longer periods of time, having mobile HIV pharmacies, and mobile laboratory services among other

Monitoring and Evaluation System

- Strengthen the existing system for tracing ART defaulters to carefully monitor and treat defaulter to prevent possible drug resistance.
- Reporting and monitoring of patients on ART and adherence should be done through Integration of a recording and reporting-system into existing health information systems

REFERNCES

Amico, K. R., Toro-Alfonso. J. & J. D. Fisher (2005) "An empirical test of the Information, Motivation and Behavioral Skills model of antiretroviral therapy adherence, AIDS Care.

Arsten J.H., Demas P.A., Farzadegan H., Grant R.W., Gonvevitch M.N., Howard A.A., (2001). Antiretroviral therapy adherence and viral suppression in HIV infected drug users: comparison of self-report and electronic monitoring. Clinical Infectious Diseases

Bartlett, J.A. (2002) "Addressing the challenges of adherence" Journal of Acquired Immune Deficiency Syndrome

Byakika-Tusiime J., Oyugi, J.H., Turnwikirize, W.A., Katabira, E.T., Mugyennyi, P.N. & D.R. Bangsberg, (2005) Adherence to HIV antiretroviral therapy in Ugandan HIV-positive patients purchasing therapy.

Burgos M., Revsin N.S, Vilas A., and Fontain L. (1998). Obstacles in treatment adherence; patient reasons.12th World AIDS Conference, Geneva, Abstract 32400

Carrieri MP et al. (2003). Impact of early versus late adherence to highly active antiretroviral therapy on immuno-virological response: a 3-year follow-up study. Antiviral Therapy

Chanard C. The impact of stigma on the self-care behaviors of HIV-positive gay men striving for normalcy. J Assoc Nurses AIDS Care. 2007.

Chesney MA, Ickovics JR, Chambers DB, et al, (2000). "Self-reported adherence to antiretroviral medications among participants in HIV clinical trials: The AACTG adherence instruments patient care committee & adherence working group of the outcomes committee of the adult AIDS clinical trials group". AIDS Care.

Family Health International (2007) "Adherence support worker training: Facilitators guide". Nairobi: Kenya

Frank, L. & Miramontes, H. (2007). Adherence Issues: AIDS education and Training Centre Adherence Curriculum. Centre for HIV Information: University of California

Ferradini L et al. (2006). Scaling up of highly active antiretroviral therapy in a rural district of Malawi: an effectiveness assessment. Lancet

Ferguson, T. F., Stewart K. E; Funkhouser E. Tolson. J. Westfall A. O. Saag M. S (2002) "Patient-perceived barriers to antiretroviral adherence: associations with race" AIDS Care.

Friedland GH, Williams A. Attaining higher goals in HIV treatment: the central importance of adherence. AIDS 1999

Fisher, J, Fishe, W., Amoco, R.K, & J.F Hamann (2006) "An Information- Motivation- Behavioral Skills Model of adherence to Antiretroviral Therapy, Health Psychology.

Hardon, A., et al. (2006) "From access to adherence: The challenges of antiretroviral

Gao, X., Nau, D.P., Rosenbluth, S.A., Scott, V. & Woodward, C. (2000). The relationship of disease severity, health beliefs and medication adherence among patients. AIDS Care

Gill CJ et al. (2005). No room for complacency about adherence to antiretroviral therapy in sub-Saharan Africa. AIDS

Treatment. Studies from Botswana, Tanzania and Uganda". Geneva, Switzerland: World Health Organization.

Hardon, A., et al. (2007) "Hunger, waiting time and transport costs: Time to confront challenges to ART adherence in Africa" AIDS Care.

Holstad MK, Pace JC, De AK, and Ura DR. Factors associated with adherence to antiretroviral therapy. Journal of the Association of Nurses in AIDS Care. 2006

Ickovics JR, Meade CS, Adherence to antiretroviral therapy among patients with HIV: a critical link between behavioral and biomedical sciences. Journal of Acquired Immune Deficiency Syndrome 2002.

Ivers, L.C., Kendrick, D., & K. Doucette (2005) "Efficacy of antiretroviral therapy programmes in resource-poor settings: A meta-analysis of the published literature Clinical Infectious Diseases".

Kagee A, Le Roux M, Dick J. Treatment adherence among primary care patients in a historically disadvantaged community in South Africa: a qualitative study. Journal of Health Psychology. 2007.

Kebede D, Fikre H, Sibhatu B, Alemayehu A, Kebede BB. Defaulters from antiretroviral treatment in Jimma University Specialized Hospital, Southwest Ethiopia. Tropical Medicine and International Health 2008.

Kennedy, C.; O'reilly, K., Medley A., & M. Sweat (2007) "The impact of HIV treatment on risk behavior in developing countries: A systematic review" AIDS Care.

Lewis M. P., Colbert .A. Erlen J.; & M. Meyers (2006) "A qualitative study of persons who are 100% adherent to antiretroviral therapy" AIDS Care

Maskew M, MacPhail P, Menezes C, and Rubel D. Lost to follow up: contributing factors and challenges in South African patients on antiretroviral therapy. South African Medical Journal 2007.

Mills, et al. (2006) "Adherence to antiretroviral therapy in sub-Saharan Africa and in North America: A meta-analysis" Journal of the American Medical Association.

Mills, et al. (2006) "Adherence to ART: a systematic review of developed and developing nation patient-reported barriers and facilitators".

Molassiotis A, Nahas-Lopez V, Chung WY, Lam SW, Li CK, Lau TF. Factors associated with adherence to antiretroviral medication in HIV-infected patients. Int J STD AIDS. 2002

Nakiyemba A., Kwaza, R. & Akurut, D.(2002). Barriers to Anti Retroviral adherence for Patients living with HIV infections and AIDS. Busago University: Uganda.

Nilsson-Schönnesson L. Diamond; P. M, Ross M. W, Williams M. & G. Bratt (2006) "Baseline predictors of three types of antiretroviral therapy (ART) adherence: A 2-year follow-up" AIDS Care.

Paterson, D.L. Swindells, S, Mohr, J and M. Brester. (2000) "Adherence to protease inhibitor therapy and outcomes in patients with HIV infection". Annals of internal medicine.

Peltzer, K., Friend-du Preez, N., Ramlagan, S. & Anderson, J. (2010) antiretroviral treatment adherence among HIV patients in KwaZulu-Natal, South Africa.

Sanjobo, N., Frich, J.C. & Fretheim, A. (2008) Barriers and facilitators to patients' adherence to antiretroviral treatment in Zambia

Skhosana, NL Struthers, H, Grauy, E.G, and McIntyre (2006) "HIV disclosure and other factors that impact on adherence to antiretroviral therapy: the case of Soweto, South Africa" African Journal of AIDS Research.

Smart. (2007), A follow-up shifting to a community based response to improve retention in care.

Stout BD, Maria PL, Niccolai LM. (2004), Non adherence to antiretroviral therapy in HIV-positive patients in Costa Rica. AIDS Patient Care and STDs.

Rao D., Kekwaletswe T. C, Hosek S., Martinez J., & F. Rodriguez (2007) "Stigma and social barriers to medication adherence with urban youth living with HIV" AIDS Care.

Remien.et al. (2007), Adherence to antiretroviral therapy in a context of universal access, in Rio de Janeiro, Brazil, AIDS Care.

The new vision (Uganda), Sunday, May 19, 2013.

USAID, (2012), Report on the global AIDS epidemic Geneva, Switzerland: United Nations Joint Programme on AIDS.

UNAIDS/WHO/ UNICEF (2010) Epidemiological fact sheets on HIV and AIDS.

UNAIDS (2008), Report on the global AIDS epidemic Geneva, Switzerland: United Nations Joint Programme on AIDS

USAID, (2004), Population Council, International Centre for Reproductive Health and Coast Province General hospital, Mombasa Kenya. Adherence to Antiretroviral Therapy in Adults: A guide for trainers Nairobi: Population Council.

Ware, N.C., Idoko, J., Kaaya, S., Biraro, I.A., Wyatt, M.A., Agbaji, O., Challamilla, G.,Bangsberg, D.R. (2009) Explaining adherence success in sub-Saharan Africa

Weiser, S. Wolfe, W. and D. Bangsberg. (2003). "Barriers to Antiretroviral Adherence to patients living with HIV infection and AIDS in Botswana" Journal for Acquired Immune Deficiency Syndrome.

WHO, (2003) Adherence to Long-term Therapies: Evidence for Action. Washington, D.C., World Health Organization (WHO).

WHO, (2004) Adherence to HIV treatment. Geneva, Switzerland: World Health Organization.

APPENDICES

Appendix A: Research Questionnaire

QUESTIONNAIRE TO STUDY FACTORS CONTRIBUTING TO NON ADHERENCE TO ANTIRETROVIRALTREATMENT AMONG HIV CLIENTS ATTENDING UGANDA CARES SOROTI HEALTH CARE CENTER IN SOROTI REGIONAL REFERRAL HOSPITAL, UGANDA.

Dear Respondent.

As part of the requirement for the award of the Bachelors Degree in Nursing of International Health Sciences University, The researcher is carrying out a study on the above topic and is therefore seeking for your permission and consent to participate in the study by answering questions below. This research is intended for academic purposes only and All the information you provide will be treated with respect and utmost confidentiality. Kindly tick the appropriate box or fill the space provided that would best represent your feelings.

Please sign in below ……..date……

Section A: Demographic Data

	Questions	**Responses**	**Tick the right choice**
1	Age	18-28	
		29-39	
		40-59	
		60 and above	
2	Gender/Sex	Female	
		Male	
3	Marital status?	Married	
		Cohabiting	
		Never married	
		Widowed	
		Divorced	
4	Religion?	Protestant	
		Catholic	
		Moslem	
		Born again	

		Others specify	
5	Level of Education?	Never attended school	
		Primary	
		Secondary	
		College	
		University level	

SECTION B: MEASURING THE LEVEL OF ADHERENCE TO ART.

6. During the past 4 weeks have you missed one or more doses of any of your pills?

A. Yes

B. No

If no to question 6 above skip questions 7.

7. during the past 4 weeks, how many doses have you missed?

A. 1-2doses

B. 3-5 doses

C. 5-10 doses

D. More than 10

SECTION C: PATIENT RELATED FACTORS

Now, I would like to ask you a question as to why you may sometimes miss to take your drugs

Please tick the most appropriate box with a reason as to why you miss taking your drugs

Question 8	**What are some of the factors affecting your treatment as an individual?**	**Tick the right choice**
	long distances to the hospital to pick drugs	
	No money for transport	
	Fearing to take the drugs in the presence other people or home people	
	Feeling good / Better after starting treatment	
	Falling sick / ill	
	Lacking knowledge and information about HIV and its medication	
	Being too busy at work	

	Having no food to eat before or after taking drugs	
	Side effects of the medicine	
	Too many medicines to swallow	
	Depression	
	Drinking alcohol	
	Have no one to remind me to take drugs	
	Religious influence	

SECTION D: HEALTH CARE RELATED FACTORS

Now, I would like to ask you a question how the health workers, who provide care to you in the clinic, contribute to your failure to adhere to your treatment as an individual.

Please tick the most appropriate box with a reason on how health workers contribute to your failure to adhere to your treatment.

Question 9	**How are health care providers a challenge to your treatment as an individual?**	**Tick the right choice**
	Long waiting hours while in the clinic	
	Miss playing your file or loosing appointment card	
	Poor communication	
	Health worker attitudes	
	Do not provide appropriate counseling about ,HIV/ AIDS and ARVS	
	Fewer health workers in the clinic	
	Others specify	

Thank you for your time and cooperation.

Appendix B: Introduction letter.

IHSU INTERNATIONAL HEALTH SCIENCES UNIVERSITY
PART OF INTERNATIONAL MEDICAL GROUP

Office of the Dean, School of Nursing

Monday 2nd S...

TO WHOM IT MAY CONCERN

Received 10/9/2013

Re: Assistance for Research

Greetings from International Health Sciences University.

This is to introduce to you **Mr. Okwakol Sebio** Reg. No. **2010-BNS-TU-039,** who is a student of this University. As part of the requirements for the award of a Bachelor of Nursing Sciences of this University, the student is required to carry out field research for the submission of a Research Project.

Mr. Okwakol would like to carry out research on issues related to: **Factors contributing to non adherence to anti-retroviral treatment among HIV clients attending Uganda Cares, Soroti Health Center in Soroti Regional Referral Hospital, Soroti District**

I therefore request you to render him such assistance as may be necessary for his research.

I, and indeed the entire University are thanking you in anticipation for the assistance you will render to him.

Sincerely Yours,

P.O. Box 7782,

Fr MRS. WAPULA ELIZABETH
DEAN

Appendix C: Acceptance letter

Uganda Cares- Soroti Healthcare centre

Soroti Regional Referral Hospital

P.o. Box. 298. Soroti. (U).

10th /09/2013

The Dean

International Health Sciences University,

Kampala. (U)

Dear Madam,

Re.Okwakol Sebio

The above named person has been granted permission to carry out his research work in this organization. We shall accord him all the necessary assistance that he may require in the course of carrying out his research work

Wishing him all the best

Thank you, yours sincerely,

Dr Sangadi Gilbert Elijah
Medical officer in charge
Uganda cares-Soroti Healthcare centre
Soroti Regional Referral Hospital.