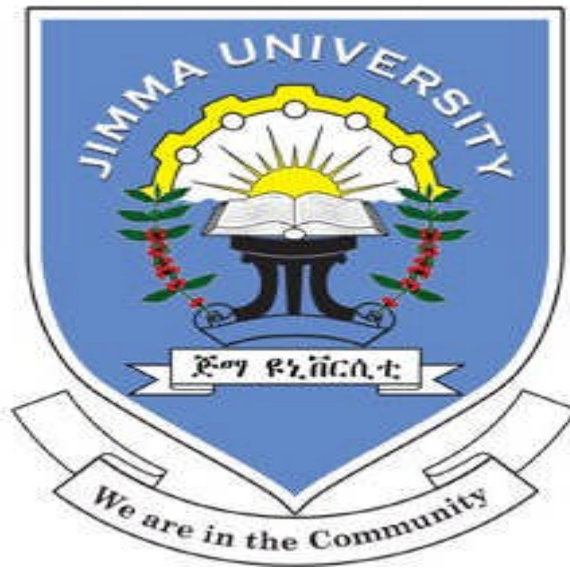


**PREDICTORS OF LOSS TO FOLLOW UP AMONG CLIENTS  
ATTENDING ART CLINIC OF JIMMA UNIVERSITY  
SPECIALIZED HOSPITAL, SOUTH WEST ETHIOPIA,  
AUGUST 2013**



**BY: MARTHA GIRMA**

**A THESIS SUBMITTED TO THE DEPARTMENT OF NURSING, COLLEGE OF  
PUBLIC HEALTH AND MEDICAL SCIENCES, JIMMA UNIVERSITY IN PARTIAL  
FULFILLMENT FOR THE REQUIREMENT FOR DEGREE OF MASTERS OF  
SCIENCE IN ADULT HEALTH NURSING**

**SEPTEMBER, 2013**

**JIMMA, ETHIOPIA**

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**BY: MARTHA GIRMA**

**ADVISORS:**

**Dr. FISSEHAYE ALEMSEGED (MD, MPHE, ASSOCIATE PROFESSOR)**

**Mr. FIKADU BALCHA (BScN, MScN)**

**SEPTEMBER, 2013**

**JIMMA, ETHIOPIA**

## **Abstract**

**Background:** *In spite of the well proven benefits of antiretroviral therapy in prolonging the life expectancy and improving the quality of life of people living with HIV/AIDS, loss to ART follow-up are a problem to the success of ART programs in resource limited countries. In Ethiopia, even though ART and related medical services have been given free of charge since 2005 as part of the global ART scale-up initiatives, loss to ART follow-up has become one of the challenges facing the program.*

**Objective:** *The objective of this study was to assess the prevalence and predictors for lost to follow up from antiretroviral treatment (ART) among client attending ART clinic in Jimma university specialized hospital, Ethiopia*

**Methods:** *A retrospective cohort study was conducted among PLWHA started ART from January 2008 to December 2012 in Jimma university specialized hospital with in the period of Apr10 to may 10/2013 . Survival analysis was performed to determined, loss to follow-up. Two nurses and case managers of the chronic care clinic collected the data. A checklist which was developed using the standardized ART entry and follow up form adopted from Ministry of Health was used as instrument. The data were coded and entered to Epi data version 3.1 then it was exported to SPSS version 16.0 for descriptive and analytic data analysis. For descriptive statistics such as median, mean and SDs were used to investigate the characteristics of the cohort. For analytic statistic Cox regression and Kaplan-Meier analyses were performed to investigate factors that influence time to lost follow up.*

**Result:** *A total of 2182 PLWHA were involved in this cohort. The prevalence of lost to follow up among PLWHA in jimma university specialize hospital was 15.4%. The mean age of the participants was  $31.94 \pm 8.46$  years. Those who have concern about their HIV status disclosure accounted for 58.9%. Significant predictors identified for lost to follow up were being protestant (HR 0.607 CI 0.386-0.95), past TB test negative(HR 0.443, 95%CI 0.312-0.630), discloser concern (HR, 2.22 95%CI 1.72-2.87), absence of stigma (HR 0.61, 95%ci 0.479-0.78), WHO clinical stage II (HR 1.39, 95%ci 1.01- 1.92), WHO clinical stage III (HR 1.62, 95% CI 1.2-2.18) and CD4 blow 200(HR 1.41, 95% CI 1.01- 1.84)*

**Conclusion and recommendation:** *The prevalence of lost to follow up was 15.4 %. Religion, past TB test, ART adherence barriers, WHO clinical stage, residence and CD4 blow 200, are significant predictors of lost to follow up. In addition to the routine care health care providers should give special emphasis for those PLWHA coming from rural area*

**Key words:** *Antiretroviral treatment, adherence and loss to follow up and Adult*

## **ACKNOWLEDGMENT**

First and foremost my heartily felt thanks go to the Almighty God for his kind blessings in giving me the energy, and health to carry out the thesis. My especial gratitude and appreciation goes to my advisors Dr. Fissehaye Alemseged and Mr. Fikadu Balcha for their unreserved encouragements and provision of constructive comments and guidance.

I would also like to extend my thanks to Jimma University, Department of nursing for providing me the opportunity to carry out this research proposal My special gratitude also goes to staffs of jimma university specialized hospital and Data Collectors for their valuable support and assistance during data collection.

I would like to thank my family members for their continuous emotional support. The last but not the least, I express my sincere appreciation to my classmates for their interest in sharing their knowledge and skill in every aspects during the process of the study.

# Table of Contents

Abstract.....	i
ACKNOWLEDGMENT.....	ii
Table of Contents.....	iii
LIST OF TABLES.....	v
LIST OF FIGURS.....	vi
ACRONYMS AND ABBREVIATIONS .....	vii
CHAPTER ONE : INTRODUCTION.....	1
1.1 BACKGROUND .....	1
1.2 STATEMENT OF PROBLEM.....	3
CHAPTER TWO .....	5
2.1. LITERATURE REVIEW .....	5
2.2. CONCEPTUAL FRAME WORK .....	9
2.3. SIGNIFICANCE OF THE STUDY.....	10
CHAPTER THREE: OBJECTIVE .....	11
3.1. General objective .....	11
3.2. Specific objectives .....	11
CHAPTER FOUR: - METHODS AND MATERIALS.....	12
4.1. STUDY AREA AND STUDY PERIOD.....	12
4.2. STUDY DESIGN.....	12
4.3. POPULATION .....	12
4.3.1. SOURCE POPULATION.....	12
4.3.2. STUDY POPULATION .....	13
4.4. Selection criteria .....	13
4.4.1. Inclusion criteria .....	13

4.4.2. Exclusion criteria .....	13
4.5 sample size determination and sampling technique .....	13
4.6. <i>Data collection procedures</i> ( Instrument, personnel, data quality control) .....	13
4.6.1 Data collection Instrument .....	13
4.6.2 Data collection personnel .....	14
4.6.3 Data collection quality control .....	14
4.7 Data Processing and analysis plan .....	14
4.8. Operational definitions and definition of terms .....	15
4.9. Study variables.....	16
4.9.1. Dependent variable .....	16
4.10. Ethical consideration.....	17
4.11. Dissemination of findings .....	17
CHAPTER FIVE: - RESULT .....	18
5.2 Baseline WHO clinical staging .....	21
CHAPTER SIX.....	33
6.1 Discussion.....	33
CHAPTER SEVEN .....	36
CONCLUSION AND RECOMMENDATION .....	36
7.1 Conclusion .....	36
7.2 Recommendation .....	36
REFERENCE .....	38
ANNEXES .....	41
ANNEX I: -QUESTIONNAIRE .....	41

## LIST OF TABLES

Table 1: Baseline Socio-demographic characteristics of PLWHA attending ART Clinic of JUSH from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia. ....	19
Table2: Baseline risky behavior of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012, Jimma, south west Ethiopia.....	22
Table 3: General conserving issues of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012 Jimma, south west Ethiopia. ....	23
Table 4: Adherence issues of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012 Jimma, south west Ethiopia. ....	24
Table 5: HIV/AIDS patients' eligibility to start ART follow up clinic of JUSH from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.....	25
Table 6: Time to Lost to follow up among PLWHA in JUSH ART clinic from Jan 2008 to Dec 201 Jimma, Southwest Ethiopia Table 6: .....	26
Table 7: Predictors of lost to follow up among HIV/AIDS patients following JUSH ART clinic .....	31

## LIST OF FIGURS

Fig.1. Conceptual frame work showing possible predictors of lost to follow up among PLWHA at JUSH. ....	9
Fig.2 Distribution of HIV/AIDS patients following jimma university specialized hospital ART clinic by their WHO clinical stage classification, jimma, south west Ethiopia. ....	21
Fig 3. Kaplan–Meier curve showing survival probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to their functional status, jimma, south west Ethiopia.....	27
Fig 4. Kaplan–Meier curve showing survival probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to dietary problem, jimma, south west Ethiopia.....	28
Fig 5. Kaplan–Meier curve showing survival probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to WHO clinical stage, jimma, south west Ethiopia.....	28



## **ACRONYMS AND ABBREVIATIONS**

AIDS	Acquired Immune Deficiency Syndrome
ARV	Antiretroviral
ART-LINC	Antiretroviral Therapy in Lower-Income Countries
CART	Combined Antiretroviral Therapy
CPT	Cotrimoxazole Prophylactic Treatment
EPHA	Ethiopian Public Health Association
FS	Functional Status
HIV	Human Immunodeficiency Virus
HI	Health Institutions
HAART	Highly Active Antiretroviral Therapy
IEDEA	International Epidemiological Databases to Evaluate AIDS
LTFU	Lost to Follow up
MDG	Millennium Development Goal
MOH	Ministry of Health
NNRTI	None-Nucleoside Reverse Transcriptase Inhibitor
PLWHA	People Living With HIV/AIDS
PEPFAR	President's Emergency Plan Fund for AIDS Relief
SPSS	Statistical Packages for Social Science
UNAIDS	United Nations Program on HIV/AIDS

# **CHAPTER ONE : INTRODUCTION**

## **1.1 BACKGROUND**

Globally, 34.0 million [31.4 million–35.9 million] people were living with Human Immunodeficiency Virus at the end of 2011. An estimated 0.8% of adults aged 15-49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. Sub-Saharan Africa remains most severely affected, with nearly 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 of HIV infection is nearly 25 times higher in sub-Saharan Africa than in Asia (1) .It remains the leading cause of mortality worldwide and the primary cause of death in sub-Saharan Africa (2). The first case of HIV in Ethiopia was reported in 1984. Since then, HIV/AIDS has become a major public health concern, leading the Government of Ethiopia to declare a public health emergency in 2002. In 2011, adult HIV/AIDS prevalence in Ethiopia was estimated at 1.5 percent (3). Approximately 1.2 million Ethiopians were living with HIV/AIDS in 2010(3). Percentage of HIV- infected adults receiving antiretroviral therapy 86% (2011) and percentage of HIV-infected children receiving antiretroviral therapy (4) 20% in late 2011, 247,805 people were on antiretroviral therapy (ART), with women accounting for nearly 58 percent of ART clients.

Antiretroviral treatment is the main type of treatment for HIV / AIDS. It is not a cure, but it can stop people from becoming ill for many years. The treatment consists of drugs that have to be taken every day for the rest of someone's life. ART for HIV infection consists of drugs, which work against the virus by slowing down the replication of HIV in the body. For antiretroviral treatment to be effective for a long time, from different category should be taken more than one antiretroviral drug. This is what known as Combination Therapy. Alternatively, modern HIV treatment also called HAART (5). Taking two or more antiretroviral drugs at the same time vastly reduces the rate at which resistance develop to the drug. It prolonged and improved the lives of hundreds of thousands people in the world. Its benefits are now finally starting to extend to resource constrained settings where 90% of people with HIV/AIDS are living (6).

“It has been almost greater than 15 years since HIV changed from deadly disease to chronic manageable disease”.(5) The discovery of antiretroviral therapy has been one of the” greatest successes” in the history of medicine. Combination antiretroviral therapy (ART), or highly active antiretroviral therapy (HAART), is the cornerstone of management of patients with HIV infection. (5) The primary goals of antiretroviral therapy are preventing HIV-related morbidity and improving quality of life, reducing mortality and improving survival, restore and preserve

Immunologic function, maximally suppress viral load, and ultimately preventing mother to child transmission. (6)

Development of highly active antiretroviral treatment (ART) in the mid-1990s revolutionized the care of HIV-infected patients and led to marked reductions in HIV-associated morbidity and mortality in many industrialized countries (7). ART has clearly shown to be effective in reducing mortality among those who remain in treatment and adhere to therapy. In recent years in developing countries with a high burden of AIDS, ART has become more widely available. According to estimation by the World Health Organization (WHO), about 6650 000 patients were receiving ART in low and middle income countries by the end of 2010, which is a huge improvement from the levels in 2003 (8)

The definition for loss to follow up might be different at different countries. As ART programs scales up attrition of patients from the program creates great challenge for developing countries like Ethiopia

In Ethiopia, there were more than 222,000 patients on antiretroviral treatment at the end of 2010 [8]. ART has improved the survival and improved the quality of people with HIV/AIDS [9].

## ***1.2 STATEMENT OF PROBLEM***

HIV / AIDS is part of the daily life of vast numbers of people around the globe. Today there are 34 million people living with HIV and AIDS (1) compared to 26.2 million more than a decade ago in 1999. The global incidence of HIV infection has stabilized and begun to decline in many countries with generalized epidemics. The number of people accessing treatment increased by 63 percent from 2009 to 2011; however 7 million people eligible for treatment is not getting it. Of even more concern is the fact that 72 percent of children worldwide who are eligible for treatments are not accessing it (1). A major barrier to the success of ART programs in Africa may be low rates of long-term retention in care. A systematic review of ART programs in sub-Saharan Africa found that on average only 64% of patients who initiated ART remain in care after 3 years [10]. A recent analysis of 44 177 patients attending public sector ART services in South Africa found that 71% of patients remained in care after 24 months and 59.6% after 48 months with the proportion of these being loss to follow-up (LTFU) increasing over that time (11). LTFU is the commonest cause of attrition, followed by death, which is often underestimated [14]. As ART programs scales up attrition of patients from the treatment creates a great challenge for developing countries such as Ethiopia. Different factors might affect ART treatment follow up.

According to a systematic review of patient retention in ART programs in sub-Saharan Africa by (12), they reviewed 32 publications that reported on 33 patient cohorts from 13 countries. The weighted average follow-up period for all studies was 9.9 months. About 78% of the patients were retained on ART and 23% were not retained. Loss to follow-up accounted for 56% of attrition i.e. 13 of the cohort were lost to follow-up (12).

In Ethiopia routine data supplied to the HIV/AIDS prevention and control office (HAPCO) indicate that many patients have dropped out of ART chronic care. By the end of June 2008, there were only 110,611 patients (75%) who were alive and on ART out of the 150,136 patients who had been started on ART since 2003. Even though mortality also accounts for this huge proportion of disappearance from chronic care, loss to follow up while alive remains a major

issue. According to a cross-sectional study conducted at a national level in Ethiopia by (13), out of 58,405 patients who were ever started on ART in December 2006, only 46,045 (79%) were adhering to treatment during that month, making the ART loss to follow-up rate 21%. This indicates the need for an intervention to reduce the drop-out rate due loss to follow-up. For such interventions to be successful different issues have to be addressed, one of the most important issue being to know the risk factors associated with (the predictors of) loss to ART follow-up specific to the area. This gives us the opportunity to act on modifiable risk factors that are identified

Lost to follow up is a difficult issue to study and to address, because the patients involved have opted out of care, either voluntarily or involuntarily and thus cannot readily be reached. Providers typically do not know whether a lost patient has died, transferred to a new treatment site, been unable to remain in care due to economic, social or psychological barriers or simply chosen to discontinue follow up. One intervention that has been tried by a number of treatment sites is to try to contact lost patients by cell phone and home visits for the purpose of either determining their status or more ambitiously of helping them to return to care. Hence it was worth gaining more insight into the magnitude and reasons why clients disappear from ART treatment follow up program and to suggest actionable interventions to improve retention and initiation of ART. Access to ART has dramatically increased in Ethiopia over the last three years; this has been accompanied by an equally dramatic increase in the number of people tested for HIV, which has in turn enhanced access to care and treatment services. However, the number of patients dropping out of care is a concern that needs to be addressed with strategic interventions, including the chronic care model that links health care delivery with community- and home-based interventions (12).

A number of reasons for defaulting from treatment programs have been identified or hypothesized (13). These include cost, transport and waiting time, stigma, family pressures, religious beliefs, illness Sociodemographic factor, clinical factor, risk behavior, social factor and so on. This study is aimed to determine the prevalence of lost to follow up from antiretroviral treatment and its predictors among a cohort of HIV infected patients on antiretroviral treatment retrospectively followed for five years. The finding of this study might help to design strategies to decrease defaulter from ART program, and also it use for educators.

## **CHAPTER TWO**

### ***2.1. LITERATURE REVIEW***

#### **Prevalence of lost to follow up**

Introduction to HIV/AIDS Treatment Antiretroviral treatment is the main type of treatment for HIV or AIDS. The treatment consists of drugs that have to be taken every day for the rest of someone's life.

Patients who are retained on the treatment reached 132,865(74%) that means 26% of the ART patients were not on treatment and categorized as loss to follow-ups at the same period (18) .In Addis Ababa 42,928 patients had ever started the treatment at public ART sites and 32,253 were on treatment as of January 2009, which makes the treatment retention rate 75% and lost to follow up rate 25% (19). A major barrier to the success of ART programmers' in Africa may be low rates of long-term retention in care. A systematic review of ART programmers' in sub-Saharan Africa found that on average only 64% of patients who initiated ART remain in care after 3 years[12].

Recent analysis of 44 177 patients attending public sector ART services in South Africa found that 71% of patients remained in care after 24 months and 59.6% after 48 months with the proportion of these being loss to follow-up (LTFU) increasing over that time [13].

LTFU is the commonest cause of attrition, followed by death, which is often under-estimated. Despite the increasing allocation of resources to expand access to ART in sub-Saharan Africa, little is known about how best to deliver treatment services and in particular how to improve rates of long-term retention in care.

The IEDEA ART-LINC database conducted a study by including 7651 patients who started ART in 15 treatment programs in Africa, Asia and South America. Of these, 5491 were included in the study eleven sites actively followed patients using telephone calls, letters or home visits and 11 provided free accesses to treatment. The number of patients included in the analysis ranged from 36 in Thailand to 1219 in Malawi. It is found that only 3% of patients were known to have died by 6 months, but on average 21% of patients had been lost to programs by that time, including about 4% who had not been seen since receiving their first ART prescription. Sites with larger

numbers of patients were less likely to actively, trace patients who did not return to the clinic, and these sites had higher percentages of patients lost to follow-up (14).

In another study on evaluation of the HIV Drug Access Initiative of the Ministry of Health of Uganda and UNAIDS, in which patients paid reduced prices for their medications, found that 114 (24%) of 476 patients were lost to follow-up in the first year (15).

A study from Latin America and the Caribbean which included 5152 patients who initiated antiretroviral treatment between March 1996 and April 2007, the Loss to follow-up rates differed even more widely between the countries: from a low of 0.6% in Honduras, to 3.1% in Peru, 3.7% in Chile, 3.8% in Haiti, 5.2% in Brazil, and 17% in Argentina (16) .

### **Predictors of patients lost to follow-up**

A recent study from Kenya that was presented at the XVII International AIDS Conference in Mexico City in August 2008 discussed that men are at much higher risk becoming lost from HIV care programs. Men had a higher loss to follow-up rate (21.2 in men, 16.8 in women). At enrolment, men were older, more likely to be attending an urban clinic, to have disclosed their HIV status, to have lower CD4 counts and advanced HIV disease (WHO Stage III/IV). There was no significant difference between how far they were from the clinic, previous antiretroviral treatment or the year of enrolment (17).

Even though there is scarce information about lost to follow patient in Ethiopia a recent study from Arbaminch demonstrated that around 13% defaulter rate among 1270 Patients initiated ART between 2005 and 2007. Reasons for defaulting were unclear but in most cases Reasons given were loss of hope in medication, lack of food, mental illness, holy water, no money for transport, and other illnesses. Tracing was not successful because of incorrect address on the register in 61.6% of the cases. Taking hard drugs, excessive alcohol consumption, being bedridden, living outside Arbaminch and having an HIV negative or unknown HIV status partner were associated with defaulting (18).

A similar study that was conducted in 2006 in Amahara region in Baherdar Feleg Hiwot Hospital and Gonder Referral Hospital showed that the lost to follow up rate is 18% and 19% respectively

and the majority of the patients who were traced retrospectively were found to be dead (18). Almost all studies showed that half of the patients receiving ART in different SSA countries who were subsequently lost to follow-up were dead, with a large proportion dying soon after they failed to attend the clinic (19). The reasons for death were not, ascertained. About one-quarter of patients were alive, some having transferred to another facility and some deciding to stop therapy. An important reason for stopping therapy was the cost of transport from homes to clinics. The remaining patients could not, be traced, with an incorrect address in the register being the most common reason attributed. Whether patients gave a wrong address or whether the details obtained by clinic staff were insufficient is unclear. These overall outcomes are similar in many respects to those found several years ago in Malawi in a study in patients registered as defaulters with regard to treatment for tuberculosis (16).

Men, youth, and non-working PLHIV are more likely to discontinue ART, and those accessing treatment at health centers are 80 percent more likely to discontinue ART. Common reasons for discontinuation included lack of resources, such as food and money for transport and medical costs; and situational factors including stigma, addiction, incarceration, and stopping treatment during fasting seasons. Also, PLHIV often make discontinuation decisions based on self-assessment. For example, an individual may stop treatment when (13) it does not seem to be working or improves the individual's health so much that he/she believes he/she is cured and does not need treatment; (19) the individual cannot handle side effects; or he/she experiences treatment fatigue and lack of commitment to continue treatment for life.

Study from public Hospitals, South Nations Nationalities and Peoples Region,

Ethiopia The effect of discontinuation of follow up rate due to death or dropout were found to be 75.7% (942/1,245), 13.7% (170/1,245), 8.4% (105/1,245) and 2.3%(28/1,245) in the first 6 months, six to one year, one to two years, after second year of follow up, respectively. A follow up failure rate ratio of patients with baseline functional status, ambulatory and bedridden, compared to working were 1.535 (CI: 1.327, 1.776) and 2.999 (CI: 2.465, 3.648), respectively. In addition, patients with CD4 cell count of less than 50 cells/ml and between 50 to 199 cells/ml, relative to the ones whose CD4 cell count was above or equal to 200 cells/ml, were found to be 1.940 (CI: 1.604, 2.345) and 1.324 (CI: 1.129, 1.553), respectively



Baseline functional status, sex, CD4 cell count, and Nevirapine as a combined baseline regimen at start of ART initiation were strong predictors of permanent discontinuation of ART follow up. Mean CD4 cell count and body weight change patterns differ significantly across time. There were significance difference of mean CD4 cell count at baseline, month 6, 12 and 24, with an increasing pattern. The mean (SD) CD4 cell count result for 172 patients were 149.8 (80.8), 278.7 (124.1), 302.2 (124.6) and 330.5 (137.4) at baseline, month 6, 12 and 24 respectively. The estimated marginal mean (SD) of body weight for 1,221 patients were 50.7(8.7), 55.5(8.7), 56.7(8.8) and 56.0(8.7) at baseline, month 6, month 12 and month 24 respectively. There were significant differences of mean body weight at baseline, month 6, month 12 and month 24. However, weight gain decreased at month 24 (20).

The proportion of all-cause adult patient attrition from Antiretroviral therapy (ART) programmed in service delivery Settings in Sub-Saharan Africa through 36 months on Treatment and found that loss to follow-up was the most common cause of attrition (59%), followed by death (41%). Median attrition at 12 months was 22.6% (range 7 - 45%) (Fox & Rosen, 2010). Stigma and social problems were also repeatedly mentioned. Fear of disclosure, social isolation or the exposure to a discouraging social network have being identified as barriers to treatment adherence in studies conducted in high and low-income settings (21). In a study conducted in Botswana, Tanzania and Uganda, patients reported difficulties in taking their drugs when they were among employers, co-workers or friends to whom they had not disclosed their HIV status. Factors associated with all-cause loss to follow-up from the ART Program include transfer out financial Reasons, improving or deteriorating Health such as lower baseline CD4 cell count, higher initial HIV RNA load, and loss of weight on ART, stigma and social problems, Adverse effects of antiretroviral drugs, socio-demographic factors Such as age at ART initiation men, being employed alcohol and drug abuse(22).

## 2.2. CONCEPTUAL FRAME WORK

This conceptual frame work was developed after revision of various literatures. Broken arrows mean there may be association between those variables but which is not the interest of the principal investigator.

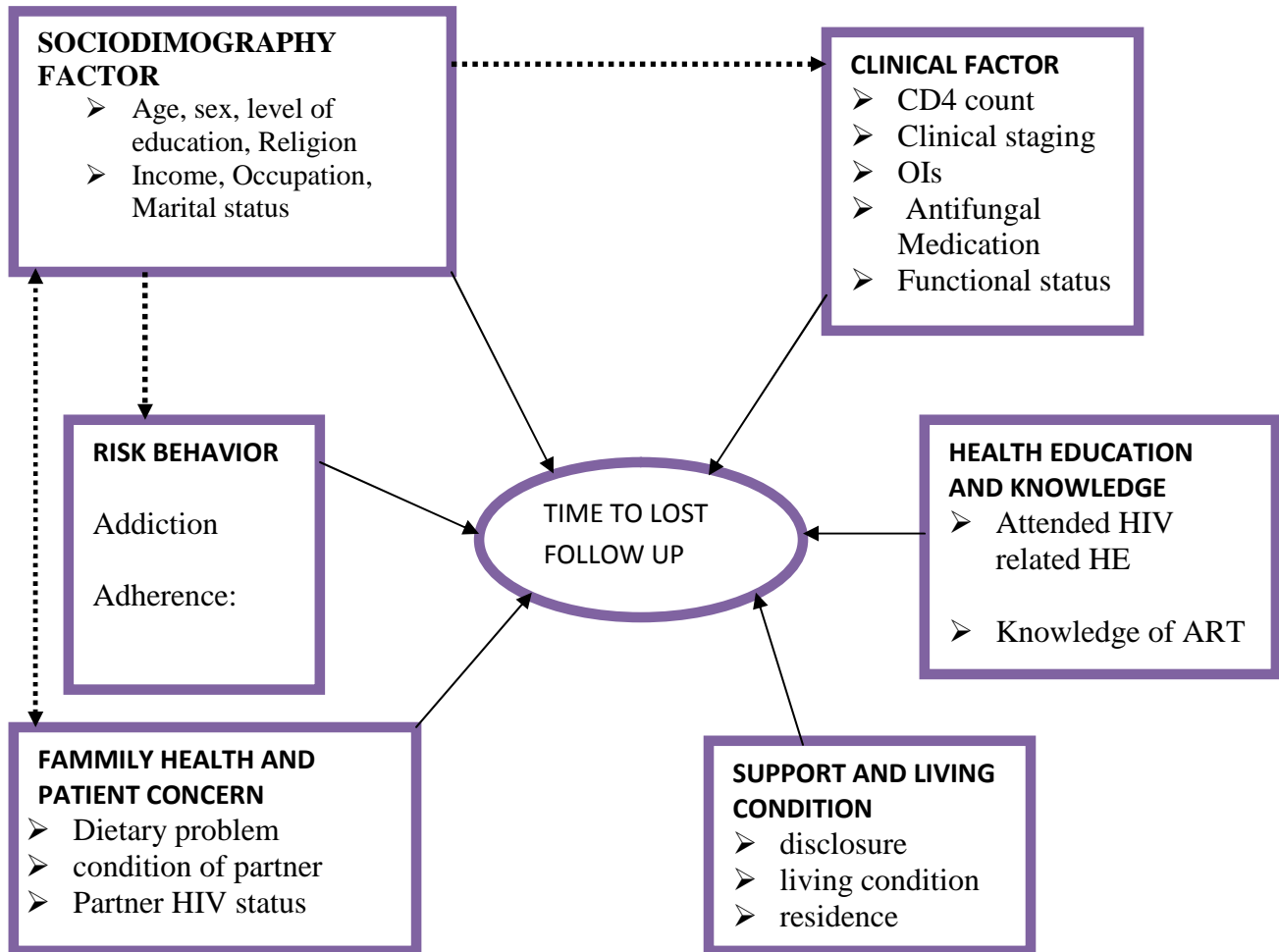


Fig.1 conceptual frame work showing possible predictors lost follow up among PLWHA in JUSH.

### **2.3. SIGNIFICANCE OF THE STUDY**

It is a well established fact that ART reduces mortality from HIV/AIDS related causes. However, even though treatment of HIV infection with ART saves lives, long-term adherence to it is critical to its success in stopping the disease progression. Sustained use has been consistently shown to be one of the major predictors of long-term effectiveness of ART. However, in many resource-poor countries that have become effective in scaling up ART, 5–25% of patients are reported as “lost to follow-up” (22).

Large numbers of individuals who initiate ART treatment do not receive long-term follow-up care. These patients are generally sicker and have a worse long-term outcome than those who receive follow-up care. Loss to follow up (LTFU) is a significant problem that can undermine the benefits of expanding HIV/AIDS services. Strategies to improve follow up concentrate on bringing lost patients back into the health care system, but such patients often die before they can be contacted. One of the most important issue being to know the risk factors associated with (the predictors of) loss to ART follow-up specific to the area. This gives us the opportunity to act on modifiable risk factors that are identified. However, as far as the knowledge of the researcher, the availability of information on such issues is minimal in Ethiopia. So this study is helpful in identification of predictors to loss to follow up.

Furthermore identification of predictors to loss to follow up helps in better to determine the reasons why patients default from antiretroviral treatment (ART) and help ART care givers and programmers to design interventions that improve treatment retention ultimately patient outcomes.

## **CHAPTER THREE: OBJECTIVE**

### ***3.1. General objective***

- To assess the prevalence and predictors of lost to follow up from antiretroviral treatment (ART) in Jimma university specialized hospital, Ethiopia from January 2008 up to December 2012.

### ***3.2. Specific objectives***

- To determine the prevalence of lost to follow up from antiretroviral treatment (ART) in JUSH
- To estimate time to lost to follow of clients
- To identify predictors of lost to follow up from antiretroviral treatment (ART) in JUSH

## **CHAPTER FOUR: - METHODS AND MATERIALS**

### ***4.1. STUDY AREA AND STUDY PERIOD***

This study was conducted on ART users at Jimma University Specialized Hospital (JUSH) in Jimma town, which is found 365 km southwest of Addis Ababa, Ethiopia. The hospital serves as a teaching and referral centre for the population of Jimma and adjacent zones and regions in Southwest Ethiopia. Summary of medical records of the hospital showed that as of March 2013, about 9,519 patients were enrolled at the AIDS care clinic, out of which 3, 846 adult clients started ART in the clinic. As part of the government program, the clinic provides care and support to people living with HIV free of charge using the national and WHO guidelines. The ART clinic has begun using electronic database since 2005 to monitor the performance of ART program. This database has been used to provide aggregate data on key indicators. After ART initiation, patients were given monthly review appointments.

### ***4.2. STUDY DESIGN***

A retrospective cohort study with record review was conducted among all PLWHA who started ART treatment at Jimma university specialized hospital from January 2008 and December 2012.

### ***4.3. POPULATION***

#### ***4.3.1. SOURCE POPULATION***

- All PLWHA ever started ART treatment at Jimma university specialized hospital ART follow up clinic

### **4.3.2. STUDY POPULATION**

- All PLWHA who initiated ART between the periods of January 2008 and December 2012.

## **4.4. Selection criteria**

### **4.4.1. Inclusion criteria**

- All adults  $\geq 15$  years who were registered and started combined ART between January 2008 and December, 2012.

### **4.4.2. Exclusion criteria**

- All patients who started on ART but were transferred out to other health facility
- All patients where by ART initiation or termination date was missing, and/or if dates were wrongly recorded such as, ART initiation date after ART termination date

## **4.5 sample size determination and sampling technique**

Based on the existing secondary data all clients started ART treatment between January 2008 and December, 2012 who fulfill inclusion criteria were included in this study by using convenience sampling techniques.

## **4.6. Data collection procedures ( Instrument, personnel, data quality control)**

### **4.6.1 Data collection Instrument**

A checklist was used for recording information extracted from patients' cards. This form was developed using the standardized ART entry and follow up form employed by the ART clinic. The first section of the checklist was for assessment of socio demographic characteristics of the patient followed by items for assessment of clinical characteristics of ART clients at the time of treatment started disclosure status and issues concern. It also included past medical status, substance use and concerns for adherence, knowledge on HIV and knowledge on ART.

#### **4.6.2 Data collection personnel**

The data collectors for this study were two nurses, case managers of the chronic care clinic. They were trained for one day on how to retrieve different information from patient intake forms, and electronic registers.

#### **4.6.3 Data collection quality control**

The following measures were taken to assure quality of the data:

- Training was provided for data collectors and the importance of data quality was addressed during the training.
- The available secondary data were reviewed with health professionals working in the unit from the hospital to correct if any easily manageable entity present
- Supervisions were conducted during data collection

After data collection data has been checked for consistency, cleared, coded and Was entered in to computer software to run frequencies and check again for consistencies.

#### ***4.7 Data Processing and analysis plan***

The data were entered, cleaned and explored before analysis. Descriptive statistics such as median, mean, SDs and tables were used to investigate the characteristics of the cohort. Person years of follow up were calculated by assessing the date of enrollment for ART and lost follow up or censoring. Survival analysis and the Kaplan-Meier test were used to determine time to loss to follow up. All factors with  $P < 0.25$  of the bivariate analysis were considered as candidates for the multivariate model. Hazard ratios (HR), as well as 95% confidence intervals were used as effect measures. A p-value of 0.05 was used to identify the association between the outcome and independent variables. Descriptive statistics and analytic statistic were conducted using SPSS version 16

Outcome measures were LTF. Length of follow up varied because of different enrollment time. Observation was censored at the date of the end of the study period. LTF overtime were evaluated by declaring data at each calendar year, considering time of entry and exit to determine the contribution of time spent in the cohort. Every year entry and exit observations were used to

calculated person-time, event counts, and incidence rates at each calendar times. The overall rate was calculated in the same fashion at the end of the follow-up time. Then lost to follow-up rates were calculated by dividing LTF by person-year at each calendar time to get incidence rates per 100 person-years of observation.

#### ***4.8. Operational definitions and definition of terms***

- **Defaulters** - when patients missed any clinical or drug pick-up appointment
- **Lost to follow up**- If patients failed to return to the clinic after 90 days from their expected clinic appointment date and a tracking team had made efforts to contact patients but failed
- **Transferred out** -If patient moved to another health facility with confirmed written documentation of transfer out.
- **Tracing mechanisms**- outreach workers identify clients lost to follow up and then trace these clients by phone (when possible) or home visit and in person contact or social networks to ask them about their reasons for defaulting and to encourage them to return to care
- **Clinical staging** - referring WHO staging system for HIV infected patients
- **hard drugs** - (cocaine, morphine, IV, drugs etc)
- **soft drugs** – chat, shisha etc
- **Attrition** – defined as discontinuation of ART for any reason. It includes death, loss to follow-up, stopping ARV medications while remaining in care
- **Working/ functional** - An individual able to perform usual work in and out of the house, harvest, go to school for children, normal activities or playing
- **Ambulatory** - An individual able to perform activities for daily living.
- **Bedridden** - An individual unable to perform activities for daily living.



- **Opportunistic infection:** the term is applied to infections with bacteria, viruses, fungi or protozoa to which individuals with a normal immune system usually not susceptible these organisms take advantage of the opportunity provided by immunodeficiency.

## **4.9. Study variables**

### **4.9.1. Dependent variable**

- Time to Lost to ART follow up

### **4.9.2. Independent variables**

#### **Socio demographic factors**

- Age
- Sex
- Level of education
- Occopation
- Religion
- Marital status

#### **Support and living condition**

- Disclosure
- living condition ,residence
- community support

#### **Clinical factors**

- CD4 count
- Clinical staging
- OIs and medications ,WHO stage

#### **family health and patient concern**

- Financial
- dietary problem
- partner status
- Attended HIV related HE session in past

#### **Health education and knowledge**

- Attended HIV counseling session in past
- knowledge about duration of ART

- understanding of ART medication was adherence
- understanding of HIV disease
- understanding of HIV transmission
- Addiction
- Adherence: concerns/barrier to ART

### **Risk behavior**

#### ***4.10. Ethical consideration***

After presenting the proposal, ethical clearance was obtained from JU College of Public Health and Medical sciences. Ethical review board to the hospital managers the chronic care clinic staffs at the hospital were communicated and asked for consent in allowing and getting access to secondary data available in the unit. All information collected from patients cards was kept strictly confidential and names were not included in the abstract data.

#### ***4.11. Dissemination of findings***

The final report will be presented to the Jimma University Department of nursing and the report will be submitted to Jimma University Department of Nursing, Jimma University College of Public health and medical sciences graduate study and research coordinating office, Jimma University Graduate School and Jimma University Specialized hospital ART clinic. Finally an effort will be made to publish in using local or international journals

## CHAPTER FIVE: - RESULT

### 5.1 Base line socio demographic characteristics

A total of 2357 HIV positive patients' records were screened from Jimma University specialized hospital ART clinic. Then 2182 client diagnosed, registered and started combined ART between January 2008 and December, 2012 was selected. A total of 175 clients were dropped according to the exclusion criteria: I ) All patients who were started on ART but were transferred out to other health facility, II) All patients where by ART initiation or termination date was missing, and/or if dates were wrongly recorded such as, ART initiation date after ART termination date.

Sociodemographic characteristics of the 2182 HIV/AIDS patients who were on ART are presented on Tables 1. The mean age was  $31.94 \pm 8.46$  years. Regarding sex 1317(60.4%) of study subjects were females. More than half of the study populations were orthodox 1118(51.2%) followed by Muslim 723(33.1%). Nearly 40.1% of the patients had at least primary school education and 417(19.1%) of patients have no formal educations. Forty-eight point five percent of patients were married, 27.3% single, 10.8% divorced, and 13.4% were widows. Concerning occupation 410(18.8 %) of the study participants were daily-laborer, 22.2% house-wife , 18.7% Employed ,12.7% farmer ,12.3% merchant ,12.3% unemployed and 1.8%56.4% were student ( **Table 1**).

**Table 1: Baseline Socio-demographic characteristics of PLWHA attending ART Clinic of JUSH from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.**

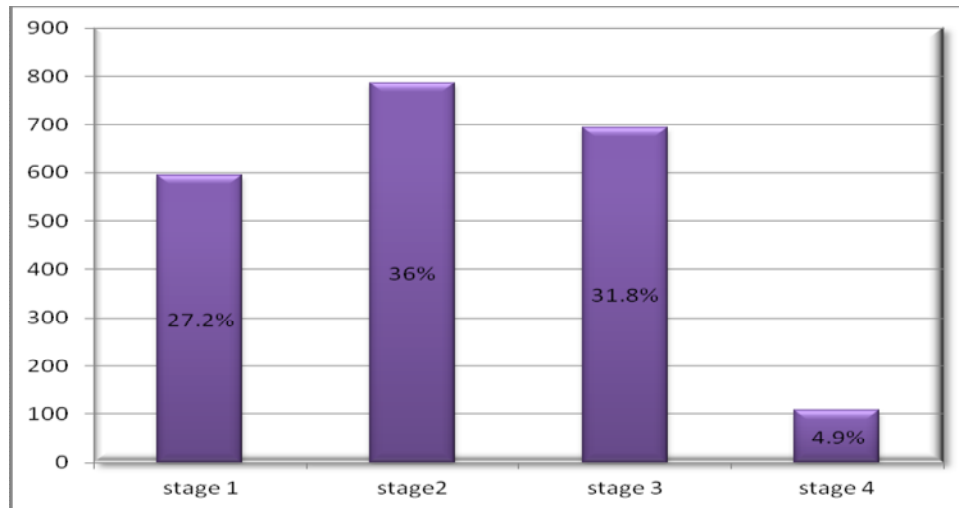
Variables		Number	Percent
Sex	Male	865	39.6
	Female	1317	60.4
Age in years	<18	55	2.5
	18-27	673	30.8
	28-37	989	45.3
	38-47	369	16.9
	48-57	62	2.8
	58-67	22	1.0
	>=68	12	0.5
Marital status	Single	595	27.3
	Married	1059	48.5
	Widowed	293	13.4
	Divorced	235	10.8
Religion	Muslim	723	33.1
	Orthodox	1118	51.2
	Protestant	325	14.9
	Catholic	13	0.6
	Others	3	0.1
Educational	No education	417	19.1

status	Primary education	875	40.1
	2 <sup>ndry</sup> education	636	29.1
	Above 2 <sup>ndry</sup> education	254	11.6
Occupation	Government Employee*	408	18.7
	Farmer	278	12.7
	Merchant	268	12.3
	house-wife	485	22.2
	daily-laborer	410	18.8
	Student	39	1.8
	Unemployed	269	12.3
	Others	25	1.1

\*Employee includes governmental, non-governmental and private

## 5.2 Baseline WHO clinical staging

Regarding to WHO clinical staging of all 2182 clients, 593(27.2%) of PLWHA were stage I, 786 (36%) were stage II, 31.8% were stage III and Those who were on stage IV were 108(4.9%) (Fig.2)



**Fig. 2 Base line WHO clinical stage of PLWHA attending Jimma University specialized hospital ART follow up from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.**

## 5.3 Base line risky behaviors

Base on the presence of risky behaviors at the start of ART initiation, only 36(1.6%) used tobacco most of their time. Concerning alcohol use, 1591(72.9%) never drink alcohol. Nearly 3% of the study participants use hard drugs (cocaine, morphine, IV, drugs etc) (Table 2).

**Table2: Baseline risky behavior of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012, Jimma, south west Ethiopia.**

Substance Use		Number	Percent
Tobacco	Never used	1718	78.7
	Some times	428	19.6
	Most of the time	36	1.6
Alcohol	Never used	1591	72.9
	Some times	537	24.6
	Most of the time	54	2.5
Soft drugs	Never used	1036	47.5
	Some times	972	44.5
	Most of the time	174	8.0
Hard drugs	Never used	1774	81.3
	Some times	349	16.0
	Most of the time	59	2.7



## 5.4 Baseline general concerning issues

Regarding general concerning issues on the initiation of ART, 577(26.4%) had concern about their financial status. Those who had concern about their HIV status disclosure accounts 58.9%, those who did not have any concerning issue were 23%. Those who had concern about their family relationship accounts 201(9.2%). **Table (3)**

**Table 3: General concerning issues of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012 Jimma, south west Ethiopia.**

Concerning issues		Number	Percent
Financial	Yes	577	26.4
	No	1605	73.6
Children	Yes	350	16.0
	No	1832	84.0
Status disclosure	Yes	1285	58.9
	No	897	41.1
Marital relation	Yes	454	20.8
	No	1728	79.2
Doubt on ART effectiveness	Yes	897	41.1
	No	1285	58.9
Family relation ship	Yes	201	9.2
	No	1981	90.8
Dietary problem	Yes	225	10.3
	No	1957	89.7

## 5.5 Base Line Adherence Barriers

Among the study population 675(30.9%) have stigma during Art initiation. Nearly four percent of cohort has doubt about the effectiveness of retroviral drugs. Almost 30% of cohort has depression on the start of Art initiation. Nearly four percent of the study population have chronically ill partner. More than three quarter of the study population do not know their partner HIV status. (Table 4)

**Table 4: Adherence issues of PLWHA attending Jimma university specialized hospital ART clinic from Jan 2008 to Dec 2012 Jimma, south west Ethiopia.**

Adherence concerns		Number	Percent
Stigma	Yes	675	30.9
	No	1507	69.1
Afraid of medication side effect	Yes	153	7.0
	No	2029	93.0
Medication will not work	Yes	81	3.7
	No	2101	96.3
Depressed	Yes	651	29.8
	No	1531	70.2
Forget to take drugs	Yes	121	5.5
	No	2061	94.5
Live near ART clinic	Yes	1635	74.9
	No	547	25.1
Condition of partner	Healthy	674	30.9
	Chronically ill	81	3.7

	Dead	263	12.1
	Unknown	1164	53.3
Partner HIV status	Positive	323	14.8
	Negative	217	9.9
	Unknown	1642	75.3
	No answer	799	36.6

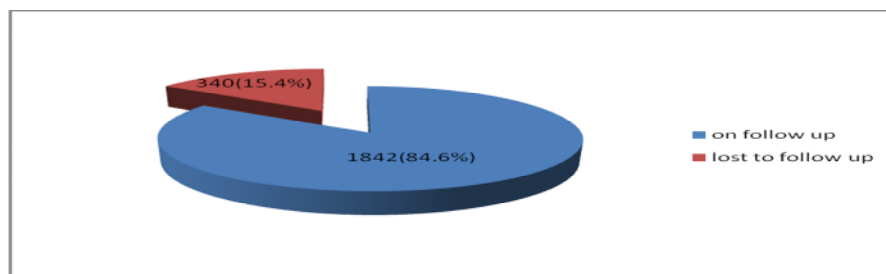
Regarding eligibility to start ART during their first visit nearly 80% of HIV /AIDS patients have CD4 cell below 200. Table below shows the detail about ART eligibility.

**Table 5: HIV/AIDS patients' eligibility to start ART follow up clinic of JUSH from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.**

ARV eligibility criterion		Number	Percent
CD4 below 200	Yes	1734	79.5
	No	448	20.5
WHO stage II and III with TLC less than 1200	Yes	164	7.5
	No	2018	92.5
WHO stage 4	Yes	108	6.7
	No	2074	93.3

## Prevalence of lost to follow up

The prevalence of lost to follow up was 15.5 %.



## 5.6 Time to lose to follow up

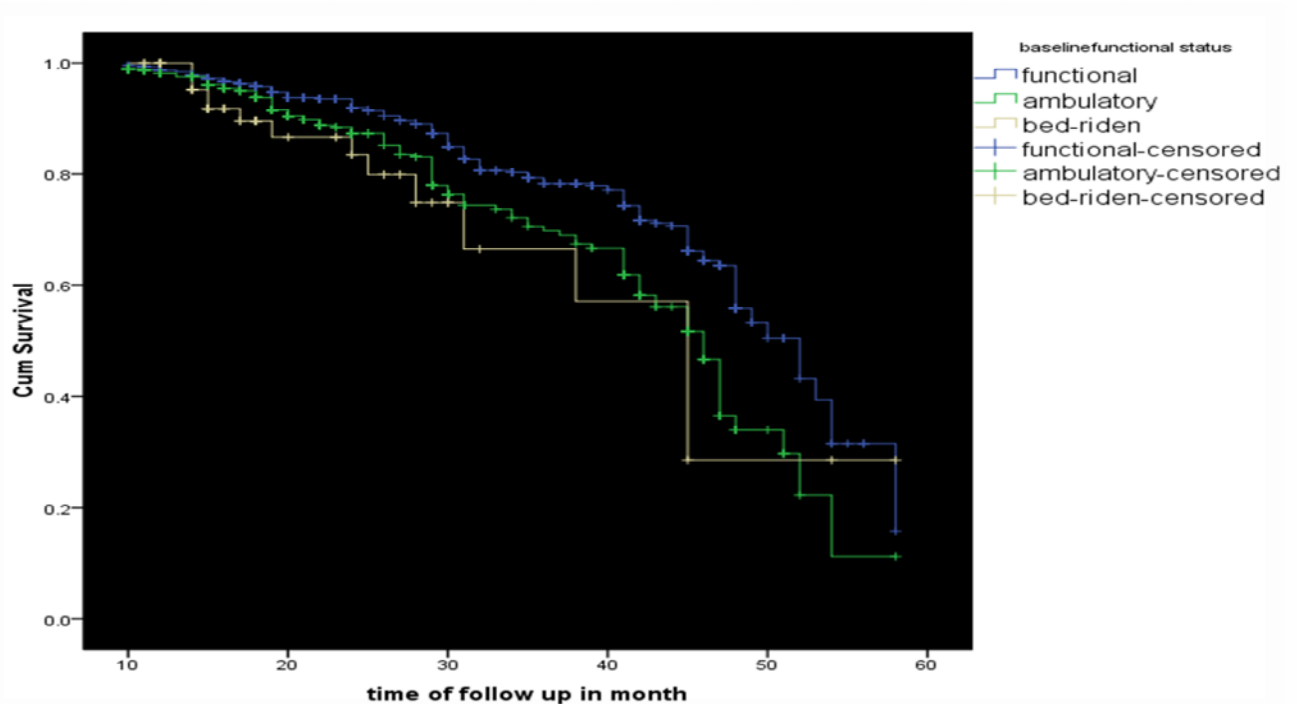
A total of 340 PLWHA who started their ART follow up in JUSH antiretroviral treatment clinic were lost to follow up. Making the overall prevalence of lost to follow up 15.58%. Lost to follow up was highest in the second 6 months (41.5%). The second highest percentage of lost to follow up was observed in the first 6 month. The least duration of follow up was observed in the third six month of follow up I.e. 7.5%. Table (6) shows the trend of lost to follow up in six month interval of the study period.

**Table 6: Time to Lost to follow up among PLWHA in JUSH ART clinic from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia**

Duration of follow up	On follow up	%	Lost to follow up	%
< 6 month	53	70.7%	22	29.3
7-12 month	24	58.5%	17	41.5
13-18 month	442	92.5%	36	7.5
19-24 month	458	88.2%	61	11.8
25-30 month	257	83.4%	51	16.6
31-36 month	349	84.7%	63	15.3
37-42 month	45	72.6%	17	27.4
43-48 month	140	74.5%	48	25.5
49- 54 month	62	74.7%	21	26.3
55- 60 month	12	75.0%	4	25.0

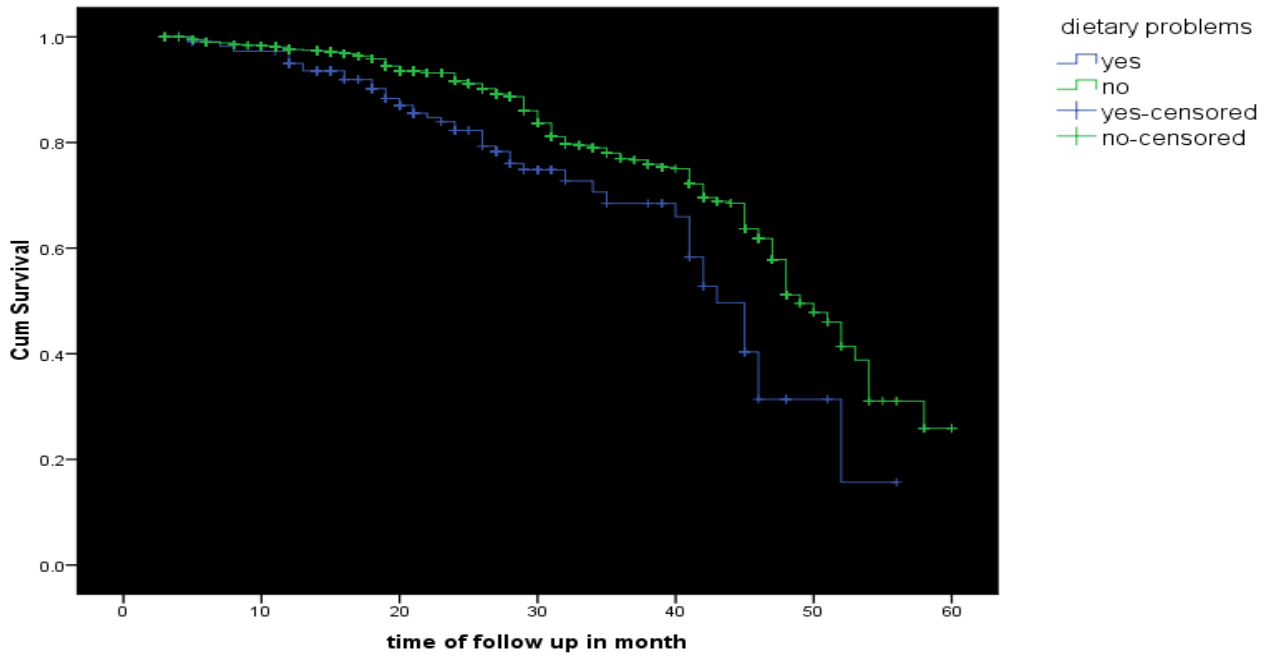
## 5.7 Predictors of lost to follow up

Baseline functional status of clients, 1548 (70.9%) were functional, 564(25.8%) were ambulatory the rest 70(3.2%) were bed-ridden. The mean follow up time in month for ambulatory patients was 46.695(95%CI; 45.34, 48.05).Bed ridden clients have mean follow up time of 40.31 month (95% CI: 34.688, 46.85) See **fig 3** below.

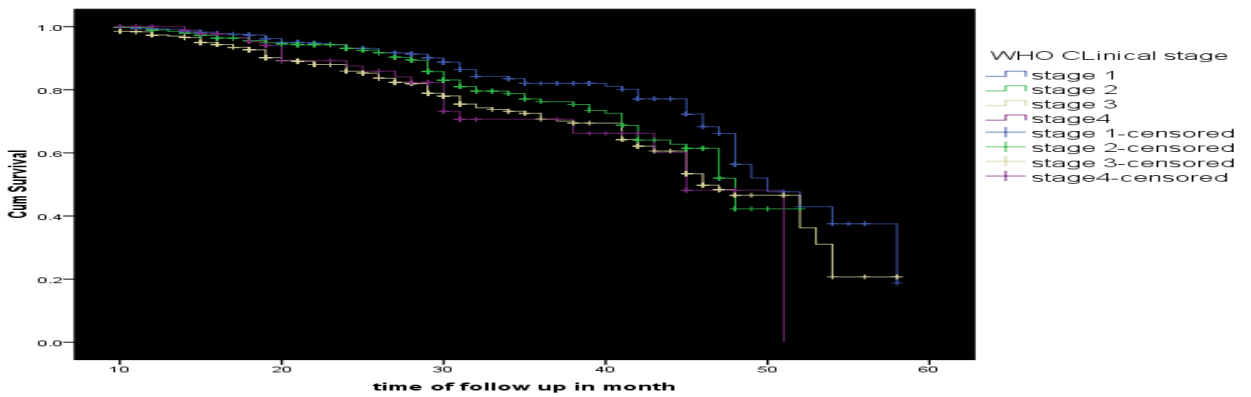


**Fig 3.** KM curve showing survival probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to their functional status, from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.

According to Kaplan-Meier survival estimate HIV patients without concern about dietary problem have longer follow up time as compared to those with concern about dietary problem at the start of their follow up. The mean duration of follow up in HIV/AIDS patients without concern to dietary problem (46.4 month) was higher than those with concern about dietary problem (40.13 month)(Log rank 18.58 P value 0.001). (**Fig 4**)



**Fig. 4** KM curve showing survival probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to dietary problem, from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.



**Fig. 5** KM curve showing probability of lost to follow up of HIV/AIDS patients attending JUSH ART clinic according to WHO clinical stage, from Jan 2008 to Dec 2012 Jimma, Southwest Ethiopia.

The bivariate analysis result shows the basic Sociodemographic variables, religion, residence and educational status, clinical factors such as past Tb test, functional status, WHO clinical stage, CD4 count, concerning issues like status disclosure, ART adherence, dietary problem attendance of health education and counseling, ART adherence factors like stigma and dispersion were statically associated with lost to follow up. Those significant variables and variables with P-value less than 0.25 (marital status, occupation and past OI) were again interred in to multivariable Cox-regression model to control for confounding. Those variables with p-value >0.25 were excluded from the multivariable cox-regresion model.

Those variables with p-value <0.05 in the multivariable Cox –regression model were considered as statistically significant and the rest were rejected. Variables with significant predictive level of lost to follow up include: religion, past TB test, WHO clinical stage, CD4 count, general concern issues such as: concern related to dietary problem, adherence and status disclosure, and adherence barriers.

Based on the multivariable analysis being protestant was a significant predictor of lost to follow up (HR 0.607, 95% CI 0.386 – 0.954). Patients who have negative result to past TB test were 55.7% less likely for lost to follow up as compared to those who were not tested for TB in the past (HR: 0.443, 95% CI 0.312- 0.630). Having no concern for treatment adherence and dietary problem decreases the risk for lost to follow up (HR 0.433, 95%CI 0.334- 0.560 and HR 0.61 95%CI 0.442- 0.831 respectively). Those who did not attend HIV counseling were 1.55 times more likely for lost to follow up (HR 1.55, 95% CI 1.171-2.066). In the bivariate analysis WHO clinical stage IV HIV/AIDS patients were 1.7 times more likely for lost to follow up as compared to WHO stage one patients (HR, 1.714; 95%CI 1.06-2.78) but this relationship has no significant association in the multivariate analysis. When adjusted for other variables patients in WHO stage II were 1.4 times more likely for lost to follow up as compared to stage I patients (HR ,1.41; 95%CI 1.01-1.92). After adjustment for other variables HIV/AIDS patients without depression were 35 % less likely for lost to follow us as compared to those with depression (HR; 0.65; 95%CI 0.511-0.85). Patients who faces stigma were 39% times less likely for lost to follow up as compared to those who face stigma

**Table 6: Predictors of lost to follow up among HIV/AIDS patients following JUSH ART clinic**

Characteristics		Mean $\pm$ SD LTFU	Bivariate analysis	Multivariable analysis
			CHR (95% CI)	AHR (95%CI)
Religion	Muslim	25 $\pm$ 11.1	1	
	Orthodox	24.15 $\pm$ 11	1.125(0.895,1.412)	
	Protestant	28.85 $\pm$ 13.8	0.535(0.348, 0.824)*	0.607(0.386,0.954)**
	Catholic	23.75 $\pm$ 10.69	0.305(0.043,2.182)	
	Others	30 $\pm$ 0.00	0.00(0.00, 14.41)	
Educational status	No education	23.95 $\pm$ 1.27	1	
	Primary EDU.	24.02 $\pm$ 10.6	0.605(0.454, 0.807)*	
	2ry	24.89 $\pm$ 11.39	0.722(0.541, 0.965)*	
	Above 2 <sup>ry</sup> EDU	25.3 $\pm$ 10.95	0.914(0.643, 1.297)	
Past TB test	Undetermine d	24.03 $\pm$ 10.92	1	
	Negative	25.62 $\pm$ 11.14	0.954(0.690, 1.318)*	0.443(0.3120.630)**
	Positive	24.57 $\pm$ 11.64	0.409(0.265, 0.631)	
Past OI Rx	Yes	21.62 $\pm$ 10.54	1	
	No	24.62 $\pm$ 11.06	1.255(0.748,2.107)	
Baseline functional status	Functional	24.71 $\pm$ 10.84	1	
	Ambulatory	23.89 $\pm$ 11.55	1.601(1.276, 2.009)*	
	Bed ridden	22.01 $\pm$ 11.02	1.878(1.108,3.181)*	
Resident of catchment	Yes	24.24 $\pm$ 10.9	1	



area		No	24.91 $\pm$ 11.46	1.388(1.107,1.739)*		
General concern	Disclosure concern	Yes	24.76 $\pm$ 11.2	1		
		No	23.93 $\pm$ 10.82	1.576(1.273,1.951)*	2.223(1.72,2.874)**	
	Adherence concern	Yes	24.91 $\pm$ 11.46	1		
		No	24.53 $\pm$ 10.95	0.622(0.499, 0.775)*	0.433(0.334,.56)**	
	Dietary concern	Yes	23.56 $\pm$ 10.54	1		
		No	24.51 $\pm$ 11.0	0.440(0.325, 0.595)*	0.606(0.442, 0.831)**	
Attended HE		Yes	24.45 $\pm$ 11.1	1		
		No	24.37 $\pm$ 11.04	1.093(0.838,1.426)		
Attended counseling		Yes	25.11 $\pm$ 10.99	1		
		No	23.97 $\pm$ 11.06	1.555(1.171, 2.066)*	1.56(1.22, 2.001)**	
ART adherence barriers	Stigma	Yes	23.13 $\pm$ 11.36	1		
		No	24.98 $\pm$ 10.86	0.569(0.452,0.717)*	0.61(0.479,0.777)**	
	Afraid of drugs	Yes	23.94 $\pm$ 12.27	1		
		No	24.44 $\pm$ 10.95	0.770(0.543,1.092)		
	Doubt on drug	Yes	23.94 $\pm$ 13.64	1		
		No	24.44 $\pm$ 10.94	1.399(0.283,0.563)*	0.483(0.334,0.699)**	
	Depression	Yes	24.09 $\pm$ 11.12	1		
		No	24.54 $\pm$ 11.01	0.644(0.511,0.813)*	0.659(0.511,0.850)**	
	Forget drugs	Yes	23.80 $\pm$ 11.7	1		
		No	24.45 $\pm$ 11.2	0.634(0.441,0.912)*	0.645(0.443,0.941)**	
	ART eligibility criteria	CD4 blow 200	Yes	24.51 $\pm$ 11.03	1	
			No	24.02 $\pm$ 11.18	1.292(1.007,1.658)*	1.414(1.01,1.835)**
stage II & III $\leq$ TLC1200		Yes	24.09 $\pm$ 11.12	1		
		No	24.54 $\pm$ 11.35	0.552(0.408,0.748)*		
WHO clinical	Stage 1		24.46 $\pm$ 11.19	1		
	Stage 2		23.88 $\pm$ 10.13	1.340(0.989,1.814)	1.391(1.01, 1.916)**	

stage	Stage 3	24.14 ± 11.78	1.714(1.286,2.284)*	1.62(1.20,2.182)**
	Stage 4	24.23 ± 11.38	1.722(1.060,2.796)*	

- \* mean that variable is significant predictor of lost to follow up in bivariate analysis
- \*\* mean the variable is significant predictor of lost to follow up in multivariate analysis

## CHAPTER SIX

### 6.1 Discussion

Patient retention is a vital measure of the effectiveness of ART services [26]. Retention in long-term care is complex, especially in low- and middle-income countries [8, 25, and 27].

Loss to ART follow-up poses a serious challenge in the success of ART programs in resource poor settings (9). Lost to follow up patients may be dead or alive. The live patients may have self-transferred themselves to another ART clinic; or may not be on any ART treatment anywhere. In any case such patients end up in increased risk of clinical progression which leads to early death of the individual; lead to emergence of ART drug resistant strains of HIV; and result in over reporting of “ever ART started cases” if self-transferred to another ART facility.

In Ethiopia in spite of ART scale up activities loss to follow-up is a common problem. In this study the overall prevalence of loss to follow-up was 15.4% which is in the range of 5-25% that was reported for many resource-poor countries that are scaling up ART (7). The prevalence of lost to follow up in JUSH antiretroviral treatment follow up clinic has slight variation with study conducted in 2006 in Amahara region in Baherdar Feleg Hiwot Hospital and Gonder Referral Hospital that showed lost to follow up rate is 18% and 19% respectively. This variation may be due to socio-cultural variation, time and socio-economical variation of study population (22). Even though the prevalence of lost to follow up (15.4%) in JUSH is lower than that of Gonder referral hospital there is needed to do lot concerning counseling and health education to retain patients on ART follows up.

According to study conducted in Gondor the highest rate of lost to follow up was observed in the first two three months of ART initiation which is in consistent with this study in which the highest prevalence was observed in the second six months of ART initiation. The possible reason behind may be side effect associated with ARV drugs besides this adaptation to the drug with in short time is very difficult (9,22). This implies a need for great job regarding health education and counseling to aware clients about the side effect of ART.

Baseline functional status was found to be one of the factors that have an effect on lost to follow up. The finding of this study is consistent with the study conducted in Oromia region (9). In both studies bed ridden patients were more likely than ambulatory and functional patients for lost to follow up. The possible explanation to this might be due to the fact that bed ridden patients were dependent on other peoples for their every day activity.

According to study done in South Africa major reasons for lost to follow up were psychosocial factors unrelated to the treatment regimen (21). This study also found that depression as one of influential factor for lost to follow up. This might be due to the nature of depression meaning depression makes people to loss interest in any activities besides depression makes people to be alone and anhedonic.

The World Health Organization insists treatment of AIDS patients should be near their residence so that high level of adherence and equitable distribution of the service are achieved (11). In our study the distance of patient`s living area from the ART clinic was a significant factor in getting lost to ART follow-up: patients who came from outside the catchment area of the ART clinic had much higher risk of getting lost to follow-up (HR1.4; 95% CI: 1.1-1.74) when other variables were held constant. This could be the consequence of inequitable distribution of ART services. The remedy for this should be more decentralization of ART clinics so that patients will get the service in their nearby /catchment/ areas. And another work needed to be done is preventing the stigma and discrimination associated with the disease so that AIDS patients will get their treatment in their nearby area in their society by health professionals who may know them and who may be socially related with them in their day to day living.

### **Strength and weaknesses of the study**

Though this is the first study to identify the prevalence of lost to follow up, time of lost to follow up and predictors of lost to follow up using retrospective cohort study design it has certain limitations. The finding of this study should be interpreted with caution and has got a number of limitations. To start with, patients' card was the main source of information because of the nature of secondary data some of the data lack accuracy and completeness. This may underestimate or overestimate the outcome of interest. Therefore, health care facilities must ensure the quality of patients' records. Second, there were a high number of patients who were LTF or transferred to another ART site following the country-wide roll-out of ART. Though we assumed that those transferred out were retained in another health facility, this assumption may not hold true as these patients might not be in care. Besides this study is unable to identify the exact reason for lost to follow up since the source of information was secondary record.

# CHAPTER SEVEN

## CONCLUSION AND RECOMMENDATION

### 7.1 Conclusion

Significant proportion of PLWHA attending jimma university specialized hospital were lost to follow up (15%) which is in the range of 5-25% that was reported for many resource-poor countries. The highest percentage of lost to follow up was observed in the second six month of ART clinic follow up. This cohort study confirm that lost to follow up among HIV/AIDS patients result from multiple influential factors. Significant predictors identified are religion I.e. being protestant reduces the risk of lost to follow up, past TB test result negative also decreases the risk of lost to follow up. Presence of ART adherence barriers like stigma and depression increases the risk of lost to follow up. WHO clinical stage II and III increases the chance of lost to follow up, residence mean living near the ART clinic reduces the risk of lost to follow up. Finally CD4 greater than 200 is beneficiary.

### 7.2 Recommendation

Based on the study finding the following recommendations were drawn to reduce the prevalence of lost to follow up and it's associated unwelcomed effects

- In addition to the routine care especial emphasis should be given by health care providers working in jimma university specialized hospital ART follow up clinic for those patients coming from rural area
- Health care providers working in JUSH ART clinic should give greater attention for data recording since data is crucial in patient monitoring.
- Health care providers working in the ART clinic of the hospital should emphasize on health education and counseling during clients first visit since they are important predictors of lost to follow up.

- Health care providers working in the Hospitals ART clinic should work in collaboration with the university pharmacy department in monitoring and in enhancing awareness of clients about drug side effect.
- Health care providers working in the Hospitals ART clinic should work in collaboration with the patient to enhance adherence towards ART because adherence barriers are significant in predicting lost to follow up

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# ANNEXES

## ANNEX I: -QUESTIONNAIRE

### Items for socio-demographic identification

101. Age \_\_\_\_\_

102. ART Unique ID No.: \_\_\_\_\_

103. Sex

a. Male

b. Female

104. marital status

a. single

c. widowed

b. married

d. divorced

105. Religion

a. Muslim

c. Protestant e. other

b. Orthodox

d. catholic

106. educational status

a. no education

c. secondary education

b. primary education

d. college and above

107. Occupation

1) Governmental worker

5) Daily laborer

2) Farmer

6) Student

3) Merchant

7) Unemployed

4) House wife

8) Other (specify \_\_\_\_\_)

### Items related to clinical factors

108. past tuberculoses tests

a. Not Determined

c. Positive

b. Negative

109. tuberculosis treatment

- a. Yes
- b. no

110. Completed Treatment

- a. Yes
- b. No

111. Took Past OI treatment

- a. Yes
- b. No

112. CD4+

- a. Yes
- b. no

113. if yes : result \_\_\_\_\_/mm<sup>3</sup>

### **MEDICATION**

114. Cotrimoxazole

- a. Yes
- b. no

115. Fluconazole

- a. Yes
- b. no

116. INH

- a. Yes
- b. no

117. Other Medication/s (Specify): \_\_\_\_\_

## **WHO STAGING**

118. WHO Stage 1 condition?

- a. Clinically Asymptomatic patient
- b. Persistent Generalized Lymphadenopathy (PGL)

119. WHO Stage 2 Conditions?

- a. Minor Mucocutaneous Manifestations
- b. Weight Loss <10% of Body weight
- c. Recurrent Upper Respiratory Tract Infections
- d. Herpes Zoster

120. WHO Stage 3 Conditions?

- a. Yes
- b. no

121. WHO Stage 4 conditions?

- a. Yes
- b. no

122. Baseline functional status

- a. Functional
- b. Ambulatory
- c. Bed ridden

## **FAMILY HEALTH AND DISCLOSURE**

123. condition of partner

- a. healthy
- b. chronic ill
- c. dead
- d. Unknown

124. Partner HIV status

- a. HIV positive
- b. HIV negative
- c. Unknown

125. Does anyone else know about your HIV status family or relatives?

- a. Yes
- b. No

126. Residence of catchment area

- a. Yes
- b. No

## **ISSUES/ CONCERNS IDENTIFIED**

127. **General concern**

- a. Concerns about financial issue within the family
- b. Concerns about the children
- c. HIV status disclosure concerns
- d. Concerns regarding marital relationship
- e. Adherence to treatment concerns

- f. Concerns regarding family relations
- g. Dietary problems

**HEALTH EDUCATION & KNOWLEDGE**

128. Attended HIV related health education session(s) in the past

- a. Yes
- b. no

129. Attend HIV related counseling session(s) in the past

- a. Yes
- b. no

130. Understanding of HIV transmission

- a. NA                      c. +                      e. +++  
b. -                      d. ++

131. Understanding of HIV transmission

- a. NA                      c. +                      e. +++  
b. -                      d. ++

132. Understanding of prophylaxis and treatment of OI

- a. NA                      c. +                      e. +++  
b. -                      d. ++

133. Understanding of ART medication adherence

- a. NA                      c. +                      e. +++  
b. -                      d. ++

**RUSK-BEHAVIOR**

**Addictions:**

134. Tobacco

- a. Never
- b. sometime
- c. Most of the time

135. Alcohol

- a. Never
- b. Sometime
- c. Most of the time

136. Soft Drugs (khat, shisha, pills, etc)

- a. Never
- b. sometime
- c. Most of the time

137. Hard Drugs (cocaine, morphine, iv, drugs etc)

- a. Never
- b. sometime
- c. Most of the time

**138. Adherence: Concerns/barriers to ART**

**135.1. Stigma (family and friends will find out)**

- a. Yes
- b. no

**135.2. Afraid of medications (side effects; “poison”)**

- a. Yes
- b. No

**135.3. Doubt that medications will work**

- a. Yes
- b. No

**135.4. Depressed/anxious**



- a. Yes
- b. No

135.5. Will forget to take medications

- a. Yes
- b. No

135.6. Other \_\_\_\_\_

**ARV ELIGIBILITY CRITERIA**

139. CD4 below 200

- a. Yes
- b. no

140. WHO stage IV

- a. Yes
- b. no

141. WHO stage II and III with TLC < 1200

- a. Yes
- b. no