

INFLUENCE OF FOOD INSECURITY ON ADHERENCE TO ANTI-RETROVIRAL THERAPY (ART) AMONG PEOPLE RECEIVING HIGHLY ACTIVE ANTIRETROVIRAL DRUGS AT AMBO GENERAL HOSPITAL, OROMIA REGION, CENTRAL ETHIOPIA, 2017: A CROSS- SECTIONAL STUDY



BY: DANIEL DESTA (BSc.)

A RESEARCH THESIS TO BE SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF HEALTH SCIENCE, COLLEGE OF PUBLIC HEALTH, DEPARTMENT OF EPIDEMIOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF PUBLIC HEALTH

JUNE, 2017

JIMMA, ETHIOPIA

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## ABSTRACT

**Background:** Food insecurity is both cause and consequence of deleterious clinical outcome among PLHIV associating with CD4 decline, lowered BMI, viral RNA suppression, increased opportunistic infections, hospitalization and reduced quality of life. Non adherence to ART is predictor of progression to AIDS and death. Little is known as food insecurity is predictor of non adherence and their relations was not studied well yet.

**Objectives:** To assess the prevalence of ARV adherence and associated factors with peculiarity of household food insecurity among HIV infected individuals, receiving highly active antiretroviral therapy in Ambo General Hospital, Oromia, Western Ethiopia, 2017

**Methods:** Facility based cross-sectional study employing both quantitative and qualitative methods was conducted from January 20 to April 21<sup>st</sup>/2017. A sample of 383 was randomly selected based on inclusion criteria. 20 PLHIV for FGD and 6 for IDI were purposively recruited from different key informants. Data were checked for its completeness and double entered to Epidata version 3.1 after crosscheck, transported to SPSS version 21.0 for analysis. To identify factors associated, logistic regressions were used at  $p < 0.05$  for both candidate and multivariable regression. Finding was presented using tables, narratives and descriptive numerical summaries and qualitative triangulated with quantitative result.

**Results:** The response rate was 97.9%. The prevalence of food insecurity was 78.4%. The level of adherence to ART was 80.2% (in self report) and 82.4% (in pill counts). Factors positively associated with non adherence were food insecurity (AOR: 3.1; CI: 1.8, 8.3), depression (AOR: 2.2; CI: 1, 4), unmarried (AOR: 0.08; CI: 0.03, 0.18), alcohol (AOR: 2.19; CI: 1.16, 4.54), unsatisfaction (AOR: 2.14; CI: 1.1, 4), TB (AOR: 2.2; CI: 1.1, 4), over one month dose refill schedule (AOR: 2.5; CI: 1.5, 8), drugs side effects (AOR: 1.9; CI: 1, 3.7) and belief of drugs disrupted my life so worry to be dependent of drugs (AOR: 2.1; CI: 1.1, 4).

**Conclusion and Recommendation:** The level of adherence to medication was sub-optimal and more serious among food insecure, unsatisfied with service, TB patients, fear of side effects, being single, depressed, bad belief on drugs, alcohol and more than month refills. Others Social, clinical, personal factors were not associated with non adherence. Individual patients, policy makers and managers, professionals, adherence supporters with case manager and researchers were recommended

**Key words:** *PLHIV, ARV, Food insecurity, Treatment Adherence*

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## Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti Retroviral Therapy
AOR	Adjusted odd ratio
ASO	Aids Service Organization
BMI	Body Mass Index
CD4	White Blood Cells target receiver of HIV virus
CI	Confidence interval
COR	Crude odd ratio
DD	Dietary Diversity
EDHS	Ethiopian Demographic Health Survey
EDT	Electronic dispensary tool
FA	Food Assistance
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
F I	Food insecurity
HAART	Highly Active Anti-Retroviral Treatment
HFIAS	Food Insecurity Access Scale
HFIAP	Household food insecurity access prevalence
Hgb.	Hemoglobin
HH	House Hold
HIV	Human Immunodeficiency Virus
ICT	Information communication technology
IDI	In Depth Interview
K.G	Kilogram
MEMS	Medication Event Monitoring Systems Caps
OI	Opportunistic Infections
PEPFAR	President's Emergency Plan for AIDS Relief of USA
PLHVA	People Living With HIV /AIDS
PMAQ	Patient Medication Adherence Questionnaire
PRRF	Patient Registration Record File
SPSS	Statistical Package for Social Science
TB	Tuberculosis
UNAIDS	United Nations AIDS Agency

USA	United States of America
VCT	Voluntary HIV Counseling and Testing
WHO	World Health Organizations
WFP	World Food Program

## CHAPTER ONE

### Background

#### 1.1 .Introduction

HIV, the virus that causes AIDS, “Acquired Immunodeficiency Syndrome,” and HIV is transmitted through unprotected sexual intercourse (anal or vaginal), transfusion of contaminated blood, sharing of contaminated needles, and between a mother and her infant during pregnancy, childbirth and breastfeeding has become one of the world’s most serious health and development challenges, since the first cases were reported in 1981(1). HIV/AIDS is a truly global epidemic (2-4). Around 1.1 million people died of AIDS to date; of which 1.0million were adults(5).

ART non-adherence is the most consistent predictor of incomplete viral load suppression, development of drug resistance, and progression to AIDS and death(3).Because antiretroviral adherence is the second strongest predictor of progression to AIDS and death, after CD4 count(2, 4).There is a positive biological and social interaction in which one exacerbates the negative health effects of the other between food insecurity and HIV/AIDS. Anti retro viral treatment (ARVs) or Highly Active Antiretroviral Therapy (HAART) was introduced in 1996 and promulgated as improving the quality of life, reducing early HIV/AIDS mortality and morbidity since the causative virus of AIDS, has become one of the world’s most serious health and development challenges and the first cases were reported in 1981(6).

Early the 21st century, only 3 million people in low and middle-income countries with ARVs access by 2005.WHO set target for universal access to HIV treatment prevention and care by 2010; recommending at (CD4 cells counts less than 350 mm<sup>3</sup>)(7). Number of people receiving antiretroviral treatment over the world showed increasing from 2000 years 770,000; by 2010 7.5million; at mid-2016 18.2million and estimated to be ~30million by 2020 and 33 million by 2030 respectively(5).

Sub-Saharan Africa alone accounted for an estimated 69 percent of all people living with HIV (8)and 70 percent of all AIDS deaths in 2011. The number of AIDS-related deaths in Sub-Saharan Africa in 2011 was 33 percent less than the number in 2005 and the number of new HIV infections in Sub-Saharan Africa in 2011 was 25 percent less than the number in 2001(9); Whereas it was 1.9 million newly infections by 2015, showing reduction in 4% in adults with slowed alarming in recent years (10).

Global coverage of antiretroviral therapy reached 17 million in 2014, and 46% (43–50%) at the end of 2015. Gains were greatest in the world’s most affected region,

eastern and southern Africa. Coverage increased from 24% (22–26%) in 2010 to 54% (50–58%) in 2015, reaching a regional total of 10.3 million people. The gains in treatment are largely responsible for a 26% decline in AIDS-related deaths globally since 2010, from an estimated 1.5 million (1.3 million–1.7 million, 0 in 2010 to 1.1 million (940 000 –1.3 million) in 2015. The reduction in deaths since 2010 has been greater among adult women (33% decrease) compared with adult men (15% decrease), reflecting higher treatment coverage among women than men, 52% (48–57%])and 41% (33–49%), respectively(10).

The first case of HIV in Ethiopia was reported in 1984. However, Ethiopia was among the first few African countries to introduce ART in 2003 by developing National Guideline and; initiated a free ART program in 2004 in three government hospitals in Addis Ababa Consequently; Ethiopia is among the few sub-Saharan countries showing a decline of more than 25% in new HIV infections(11).One study carried out comparatively at Yirgalem, Ethiopia showed prevalence of ART adherence was 74.2%(12).Variations were also observed among administrative regions. According to the Ethiopian Demographic and Health Surveys HIV prevalence ranges from 1% in SNNP and 1.3% in Oromiya region to 6% in Addis Ababa and 7.9% in Gambella region(13).

## **1.2. Statement of the problem**

Food insecurity (FI) is defined as having uncertain or limited availability of nutritionally adequate or safe food or the inability to procure food in socially acceptable ways;or uncertain availability of nutritionally adequate and innocuous foods or the limited or uncertain capacity for acquiring adequate foods by socially acceptable means(2).Food security is the situation in which “all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life(14).Malnutrition is the condition of having inadequate vitamins, minerals and nutrients to maintain healthy tissue and organ function, when individuals experience a reduction in food quality, variety, or desirability, and at times a reduction in food intake (15).

Globally estimated that people living with HIV in 2015 were 36.7 million; of this figure 31.8 million expressed adults, out of which 16million were women while 3.2millions were <15 years children. By the same manner 2.1 million were newly infected with HIV only by 2015 of which 1.9 million were adults(5).The HIV/AIDS epidemic in Africa has further undermined food security by creating additional pressures on food production and distribution systems.HIV/AIDS has negatively affected

individuals' and communities' ability to produce and harvest food(16); is an important public policy issue in many settings in sub-Saharan Africa, and is a leading cause of morbidity and mortality.

Adherence is defined as “the extent to which the patient follows medical instructions’ hence a helpful starting point(4). In addition, food insecurity and malnutrition can increase the risk of HIV infection following exposure, and accelerate progression to AIDS and death among those infected. Approximately 70 percent live in Africa where food insecure and under nutrition are endemic problems(1). In Ethiopia 10.2 million people are food insecure according to the Government and humanitarian agencies data, more people will need food assistance in 2016 than at any other time in the past decade. The Humanitarian Requirements Document (HRD) has targeted this population with life- and livelihood-saving support in 2016 (17).

Food insecurity both heightens vulnerability to HIV infection and at the same time exacerbates poor clinical outcomes among PLHIV (3); associating with incomplete HIV RNA suppression (18, 19); CD4 decline over time(15); lower body mass index (20); reduced quality of life (21); increased opportunistic infections(15);increased hospitalizations and HIV-related mortality (15) and perpetuating a devastating cycle in which food insecurity is both a cause and consequence of deleterious health outcomes (20). Studies have shown that food insecurity is associated with worse HIV health outcomes and ART non-adherence (14, 15, 21, 22)Adherence <95% permits HIV to resume rapid replication producing drug-resistant strains that worsen patient health and complicate treatment (23).

Studies from resource poor settings; South America and sub-Saharan Africa described; among Ugandan individuals initiating ART found that lack of access to food was a key contributor to non adherence and a barrier to ART initiation (24); South African health care providers(25) and PLHIV in South Africa(26) and Kenya (27) also reported food insecurity as one of the most important barriers to ART adherence. In Peru, respondents noted difficulties posed by nutritional requirements and being able to find enough food as barriers to ART adherence (28).Food insecurity has strong contributor to ART non-adherence (24).

Study conducted on 71 patients in Rwanda, showed 76 % participants indicated that “having too much appetite and not enough to eat” reduced adherence. By the same manner in rural Uganda, HIV-infected participants described defaulting from treatment when food was scarce because they could not tolerate the increased hunger they experienced on ART (24).Adverse side effects of ART taken without food, such as nausea, vomiting and stomach pain, are a second mechanistic link to poor adherence

(29). In qualitative studies in sub-Saharan Africa, PLHIV have complained that taking pills on an empty stomach led to headaches, stomach pain, dizziness, shivers or tremors, loss of energy, fainting, sweating, and rapid heartbeat (24, 26).

Non-adherence to antiretroviral (ARV) Therapy is one of the important predictors of incomplete HIV RNA suppression, immunologic decline, progression to AIDS and death. Non-adherence may lead to development of drug-resistant strains of HIV. International investment for the AIDS response reached US\$ 12.7 billion. Low-income countries mobilize at least on average 12% of country resource needs, lower-middle-income mobilize 45% and upper middle-income countries mobilize 95% from domestic sources (30). Approximately half of HIV-infected urban poor individuals are food insecure in 2014(31).

Food insecurity associated with lower CD4 cell counts, incomplete HIV RNA suppression in San Francisco (18); and mortality among HIV-infected individuals in both resource poor and rich settings. Food insecurity is emerging as an important barrier to ART adherence in resource poor settings(32). From study conducted in Zambia food supplementation found to improve ART adherence(33). In a national cross-sectional survey in France, food privation in the household was significantly associated with increased odds of self-reported ART non-adherence among 613 HIV-infected heterosexual men, but not among heterosexual women ( $n = 408$ ) after adjustment for the financial situation of the household and other covariates (30).

Evidence showed undernourished PLWHA when they start ART are 2–6 times more likely to die in the first 6 months of ART compared to those who have a normal body mass index (BMI) (3, 34). But there is convincing evidence on greater energy need of HIV infected adults than uninfected adults; extra 10% in asymptomatic HIV infected and 20- 30% in adults with more advanced diseases (35). In a cross-sectional study among 2,353 HIV-infected US veterans, the proportion of those experiencing food insecurity (assessed using the validated Household Food Insecurity Access Scale) increased as adherence, measured by the proportion of time off of ART, decreased(19). Among a cross-sectional sample of 457 HIV-infected individuals receiving highly active antiretroviral therapy (HAART) in British Columbia and Canada, 71 % were food insecure and in unadjusted analyses there was an association between food insecurity and self-reported sub-optimal ART adherence, lower CD4 cell counts, and higher HIV viral loads (36). Previously estimated that adherence rates lower than 95% are associated with the development of viral resistance to antiretroviral medications(32). Missing to manage ARV-food interactions causes non-adherence(37).

As far as the researcher investigated there is no any study conducted in Ambo town and little was known in our country regarding food insecurity and ART non adherence relationships. This study assessed both level of adherence and the prevalence of food insecurity with its influence on ART drug adherence among PLWHA and it can provide in formations for policy makers and planners for further interventions. It benefits managers and health professionals to know their patients status on treatment progress. This might particularly benefit individuals on ART through creating awareness and enabling scientific communities to share information for further researches.

### 1.3. Significance of the study

Fewer quantitative studies have examined the relationship between food insecurity and adherence to ART in resource-poor countries as food insecurity recently been identified as a key structural barrier to ARV adherence; and as a contributor to ARV treatment interruptions. Even though, different studies explained non adherence to ART, the HHFI status, as predictor of non adherence and the vicious cycle and intricate relationship with ART non adherence is not well addressed and documented. Its contribution to non adherence also should conspicuously be explained especially in resource poor sub Saharan countries. In Ethiopia little is known about the bi-directional relationship between food insecurity and ART non adherence where Food insecurity and HIV epidemic are major problems.

This study definitely can serve a significant contribution to put the baseline information for further investigation, help to support the consistency of research findings; especially where there is no such study conducted before like in our study area and similar studies are selcouths. Of course; this study can answer such questions in view of scientific assumptions accompanied by understanding to further extent, for policymakers, health officials, community health care providers in addition to serving the way to interventions such as mobilizing resources to integrate other programs like food supply for PLWHA and creating income generating activities (IGA).



## CHAPTER TWO

### Literature Review

#### 2.1. Theoretical Framework of food insecurity

From early beginning of 1940, the concept as well as definition of food and nutrition security started at the time of War II. In the 1970s, the definition of food security was developed from the perspective of food-supply as food insecurity is not only by scarcity, but also by institutional failures that led to suboptimal food distribution(38). Food insecurity can either acute (transitory which means temporary decline or shortage due to fluctuation in price or low income) and chronic which occurs when there is persistence in food declines(39)

#### 2.2. Imaginations of food insecurity: concepts and perspectives

No single universal concept of food security to date. Around thirty definitions were found Between 1975 and 1991(40). Various concepts have emerged to describe food insecurity. Instance for the concept of hunger, covers a spectrum from the short term physical experience of discomfort to chronic food shortage, while concept of malnutrition indicates inadequate intakes of macro- and micronutrients and insufficient intake of nutrients to meet biological requirements. Especially, the prefix *mal* actually refers to both over- and under intake, but the typical one here is to imply the under nutrition (41). The current terminology in use, as adopted from the 1996 World Food Summit, emphasizes the multidimensionality of food security(42).

#### 2.3. Food insecurity Dimensions

The definition has widely established the four pillars of food security: availability, accessibility, utilization and stability(43). These all dimensions of food security – availability (achieved if adequate food is ready to have; access (is insured when all HH and individuals within those house hold, have sufficient resources) Utilization( use of food ) and stability (the sustainability) are affected where the prevalence of HIV/AIDS is high(44).

#### 2.4. Measuring HH food insecurity

##### 2.4.1. HFIAS

Household food insecurity access scale (HFIAS), which was designed according to FAO and USAID's Food and Nutrition Technical Assistance (FANTA) project suggestions was encouraged since it is simple, quick and best method to measure HHFI. To evaluate the validity and applicability of this tool in developing countries, many studies have been carried out and the findings have been encouraging (45). The household

food insecurity access prevalence (HFIAP) indicator categorizes households into four levels of household food insecurity (access): food secure, mild, moderately and severely food insecure (46).

#### **2.4.2. Dietary diversity as measure of household food security**

Dietary diversity is defined as the number of individual food items or food groups consumed over a given period of time (47) and measured by counting the number of food groups rather than food items consumed. The dietary diversity questionnaire is a tool providing a more rapid, user-friendly and cost-effective approach to measure changes in dietary quality at the household and individual level. The reference period can vary, but is most often the previous day or week (48). Many studies indicated DD has great role in increasing hemoglobin, reducing risks of non-communicable diseases, mortality and morbidity (49). One study showed that there is strong association between DD and energy availability (7).

#### **2.4.3 Meal Frequency in measuring Household Food Security**

The number of daily eating occasions is a proxy indicator for gauging the adequacy of household macronutrients or calories and protein intake. An advantage in selecting this as an indicator of household food security is that data are relatively easy and inexpensive to collect. Data on size and composition of meals are not required to calculate the indicator values (40, 50). At the micro level HH measurement to measure food insecurity the most known indicator is meal frequency; food frequency employment (51).

### **2.5. Food insecurity and viral progression to AIDS**

#### **2.5.1. Food insecurity and HIV virological and immunological outcomes**

In a recent study among individuals on HAART in San Francisco, food insecurity was found to be associated with incomplete HIV RNA suppression; odds of viral suppression were 70% lower among participants who reported severe food insecurity, compared with those who were food secure, damaging the body's immune cells (CD4 cells) (52). In British Columbia, individuals reporting food insecurity had significantly lower CD4 counts at ART initiation, compared with food-secure individuals (15, 52, 53). Once you have started HIV treatment your viral load should go down to undetectable levels; less than 50 within 3 months and you should start to see your CD4 count increase.

It often takes longer for CD4 counts to increase; especially if they are starting off low in food insecure. In British Columbia, individuals who were food insecure had over two times the odds of being less than 95% adherent to treatment, compared with

individuals who were food secure (36). In San Francisco, food insecurity and ART non adherence were associated in a nonlinear manner. Participants with severe food insecurity scored less than 80% adherence rates lower than 95% are associated with the development of viral resistance to antiretroviral medications. Failure to effectively manage ARV-food interactions leads to non adherence (18, 19, 32, 36, 54,61 )

*Low Dietary Diversity:* Poor appetite and unable to afford balanced meals were associated with non-adherence to ART in the bivariate analysis (24). Nearly half of HIV positive individuals with low food diversity and meal frequency receiving drug treatment in British Columbia, Canada were food insecure, a rate that is five times greater than the Canadian population (55). *Low meal frequency:* qualitative study from Uganda indicates the consumption pattern which is less than three regular meals per day of last 24 hours was significantly associated with non-adherence to ART(24, 49).

## **2.6. HHFI is an indicator for poor nutritional status**

Different studies showed that Food insecurity in people living with HIV Prevalence estimates of all forms of food insecurity and low nutrients. Previously PLHIV in sub-Saharan Africa, SSA were 63 % in Ethiopia (57) 75 % in Uganda(59), 57 % in the Democratic Republic of Congo (60), these countries are affected by food insecurity as well. Many researchers have demonstrated that ART improves BMI, once ART has begun, the nutritional quality of the diet is very critical.

Weight loss due to diarrhea and vomiting (32) compromising immunity (61) and malabsorption of fats and carbohydrates(32). So, lack of sufficient food intake and/or malabsorption leads to weight loss,(which is a significant, independent risk factor for AIDS-related mortality(61), and HIV-associated wasting often persists even with use of ART (61, 63). Studies have also found that PLHIV are more likely to be deficient in vitamin A, vitamin B12, vitamin C, vitamin D, selenium, zinc, and iron. These micronutrient deficiencies, particularly vitamin B12, zinc, and selenium, have been function and a higher risk of disease progression in PLHIV (64).

### **2.6.1. Adult Nutritional Assessment (of PLWHA); Anthropometric Indices**

The most commonly used indicator to measure nutritional status in adults and adolescents is calculating BMI in form of  $[BMI = \text{weight (in kg)} \div \text{height (in m)}^2]$ ; and it is good indicator of protein and fat reserves. Cut-offs for underweight status based on current WHO-standards for HIV-positive individuals, so as less than 18.5 kg/m<sup>2</sup> (underweight) vs. 18.5 kg/m<sup>2</sup> or not underweight(65).

## 2.7. Measuring ART Adherence

Measuring adherence is a problematic since there is no gold standard method to measure. Even if different common methods such as pill counts, pharmacy records, smart pill bottles with computer chips recording each opening (i.e. Medication Event Monitoring systems or "MEMS Caps"), and other devices are known to measure adherence; as some studies mentioned clinician and patient estimates of the degree of adherence have been found to exceed measures based on MEMS Caps which its technology is best used as an adjunct to adherence research. But due to its complexity and cost, it is not useful in most clinical settings and also its expensiveness(66). Self-reported adherence is well correlated with viral load suppression and is particularly suitable for resource-limited settings because of its low cost and best if aided by other method, that is composite methods (67).

Self-report include a short-term assessment of each dose that was taken over the recent past (the past 1 day, the past 3 days and the past 7 days), shorter periods are insufficient to determine whether adherence of >95% is likely(68). A structured questionnaire the Patient Medication Adherence Questionnaire (PMAQ), has been devised to measure adherence to ART of PLWHA in developing countries(68).The Morisky Medication Adherence Scale (MMAS-8) remains one of the most widely used mechanisms to assess patient adherence. (MMAS) is an 8-item scale having a form of yes /no type. It asks frequency to remember to take drug, reason for cutting back or stop(69).(Annex one) shows comparing feasibility of adherence measuring techniques.

### 2.7.1. Sociodemographic Vulnerability of PLWHA to Non adherence

*Gender:* With regard to gender ;even if males were more likely to complain of factors like busy schedule, fear of partner disclosure, long waiting period, ignorance of consequences, long term regimen, side effects of drugs managing and stigma than females,some studies reported better adherence for women (70), while others reported the opposite. Among men who had sex with men lower adherence was reported(71).*Age:*The most recent systematic review of over thousands of articles reported age by 20 articles to be a determinant for adherence, with better adherence seen in older patients (>35 years) compared with younger patients. *Education:*Lower levels of education corresponded with non-adherence, and higher adherence was observed among patients with formal education(72).

*Religion:* was reported as both a barrier to and a promoter of adherence(73, 74). Belief and faith that God provided the knowledge to make ART acts was observed to promote adherence(73),whereas studies reporting belief in religious cures for HIV over

conventional medical approaches observed increased non-adherence(73, 74). *Marital status*: In addition, Bello identified non adherence to ART with high pill burden, and travel costs, being female, single(unmarried)(75).*Occupational status*: Employed respondents were more likely to miss their drugs when compared with the unemployed groups(76) and distance to clinic associated with non adherence (93).

### **2.7.2. PLWHA Related and some clinical Factors That Influence ART Adherence**

*Pill burden*It has been assumed that reducing dosing frequency will increase adherence as good adherence was associated with dosing twice a day or less even (77).

*Substance use*: Substance use is highly prevalent among people living with HIV/AIDS, is often co morbid with other mental health problems, related to poor HIV medical outcomes and is associated with poor medication and treatment adherence(78) that medication adherence could be compromised by alcohol and other drug use(79).

*Belief and knowledge*:Patients negative perceptions as rumors(80), *poor knowledge* and beliefs of Patients on Medication Adherence showed significant association with non adherence.Study from three countries in Zambia; the belief that antiretroviral must be taken with food has led individuals to skip doses in the absence of available or accessible food (61). Another cohort Study conducted in Ethiopia; Akaki and Wonji to asses KAP of ART patients concerning adherence was found reasonable in adhering PLWHIV(81). *Patient treatment satisfaction*: treatment facility availability and Reliable ART availability (82) was associated with increased adherence, whereas pharmacy stock-out was associated with non-adherence (83).

*Duration of treatment*: was observed to be associated with non-adherenc(60). Studies reporting better adherence over time suggested that long-term experience with ART results in better knowledge and strategies to incorporate ART use in daily life.Psychosocial factors such as (psychological distress e.g. fears of food run out affects drug adherence. *Depression* was found to be a predictor for non-adherence, and included reasons such as ‘ready to die’ and ‘loss of hope of ever getting better(84). A number of studies have shown that food insecurity and its link depression has bidirectional associations with drug non adherence(85).

*Fear of discrimination and/or experiencing stigma*: were determinants of non-adherence. This included being laughed at, exclusion from activities, being fired and alienation(86). Adherence was associated with good *social support*(87) non-disclosure to others (86) and no discrimination (88). *Opportunistic infections*: Adherence to ART could be decreased when a patient needs to cope with multiple ailments including mainly TB and others such as severe diarrhea, malaria, diabetes and high blood pressure

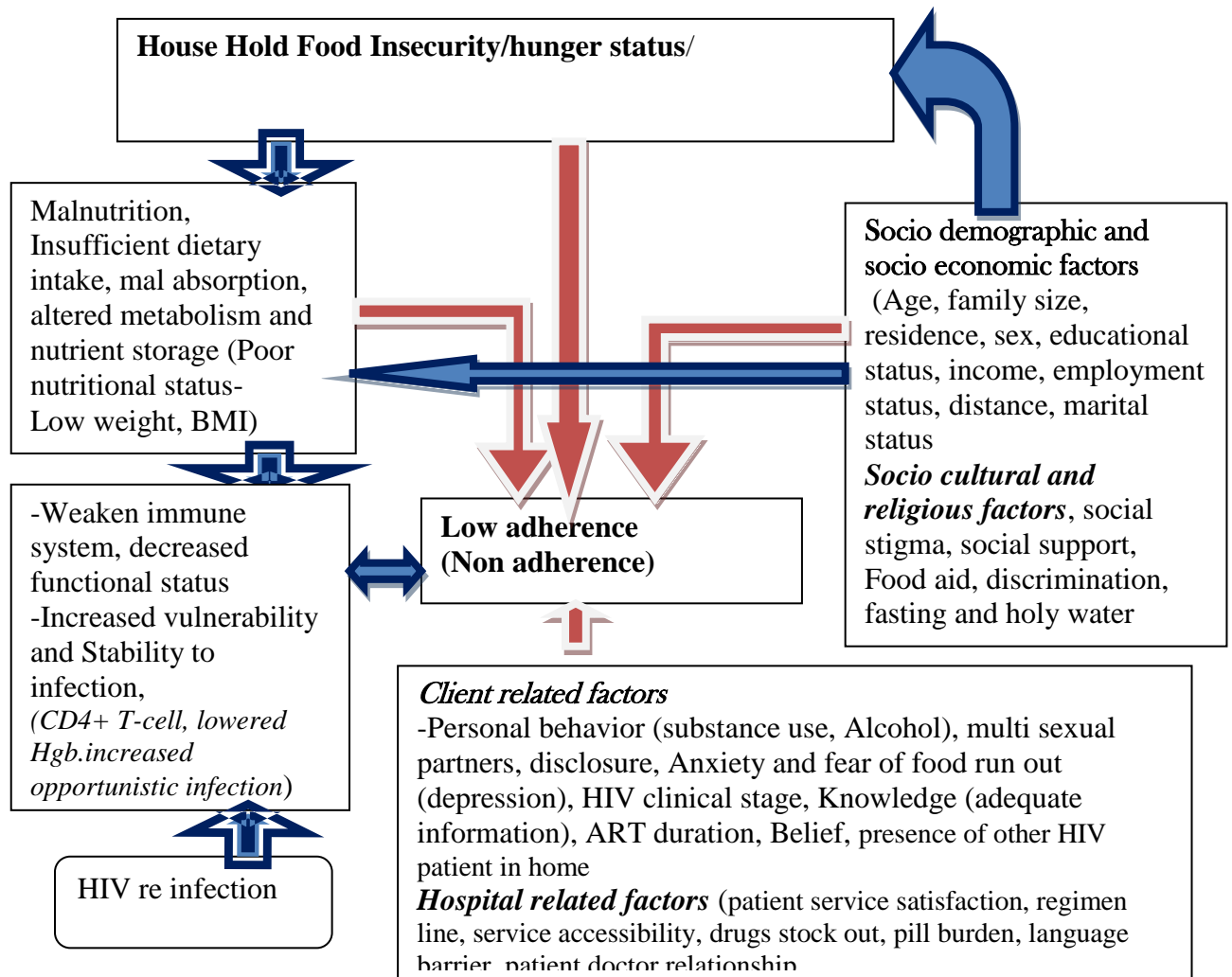
especially when asymptomatic for HIV(10). *CD4 count*: was predictive for nonadherence in the meta-analysis  $CD4 \leq 200$  cells/mm<sup>3</sup> (89). and Factors such as *disclosure of HIV status, WHO clinical stage, BMI, viral load and side effects* are significantly associated with adherence similarly *language barriers, having many sexual partners* (10, 90).

## 2.8. HIV/AIDS, Productivity through Functionality and Food Insecurity

HIV/AIDS is a major significant factor to Africa's food crisis, by increasing morbidity and mortality the prime-age productive adult population(15, 24), many family members are drawn away from production and income generating activities to care for sick relatives and valuable resources, savings and income are diverted to treatment and funerals (91). A study conducted in three main urban areas of Malawi showed AIDS affects food security through its negative effects on human capital, financial capital and social capital starting from since functionality becomes under control, so functional status has great role in contributing to both food insecurity and ART non adherence(92).

Millions of HIV infected people live in countries with high levels of poverty and food insecurity. Food insecurity has a negative impact on the overall nutritional and health (93).Clinical providers also reported that not having food to take with medication is one of the most common reasons why patients discontinue ART(61). Studies have also shown that non adherence is influenced by both Sociodemographic and socioeconomic factors as well as patient behavior related factors (76, 80, 83, 89, 94)

## 2.12. Conceptual Frame work.



**Figure1** Conceptual Frame work shows the interrelationship between Food Insecurity and Treatment adherence through its related factors. (Developed after literatures have been reviewed; based on concept of FANTA 2003)(28, 58, 60, 61, 70, 86, 90, 95-97) ]

## **CHAPTER THREE**

### **Objectives**

#### **3.1. General Objective:**

To determine the prevalence of ART dose adherence and associated factors (with particular focus on influence of household food insecurity) on adherence to ART among HIV infected individuals receiving highly active antiretroviral therapy (PLWHA) from January 20, to April 21<sup>st</sup>/2017, in Ambo General Hospital.

#### **3.2. Specific objective**

1. To show whether the household food insecurity affects adherence to ART treatment
2. To assess food insecurity status of households with adult PLWHA on ART
3. To assess the level of ART adherence status of patients on ART

#### **3.3. Hypothesis**

H0: Food insecurity has no any relation with drug adherence to ARV treatment among HIV-infected individuals on treatment at Ambo General Hospital.

HA: There is increased risk association between food security and drug adherence to ARV treatment.



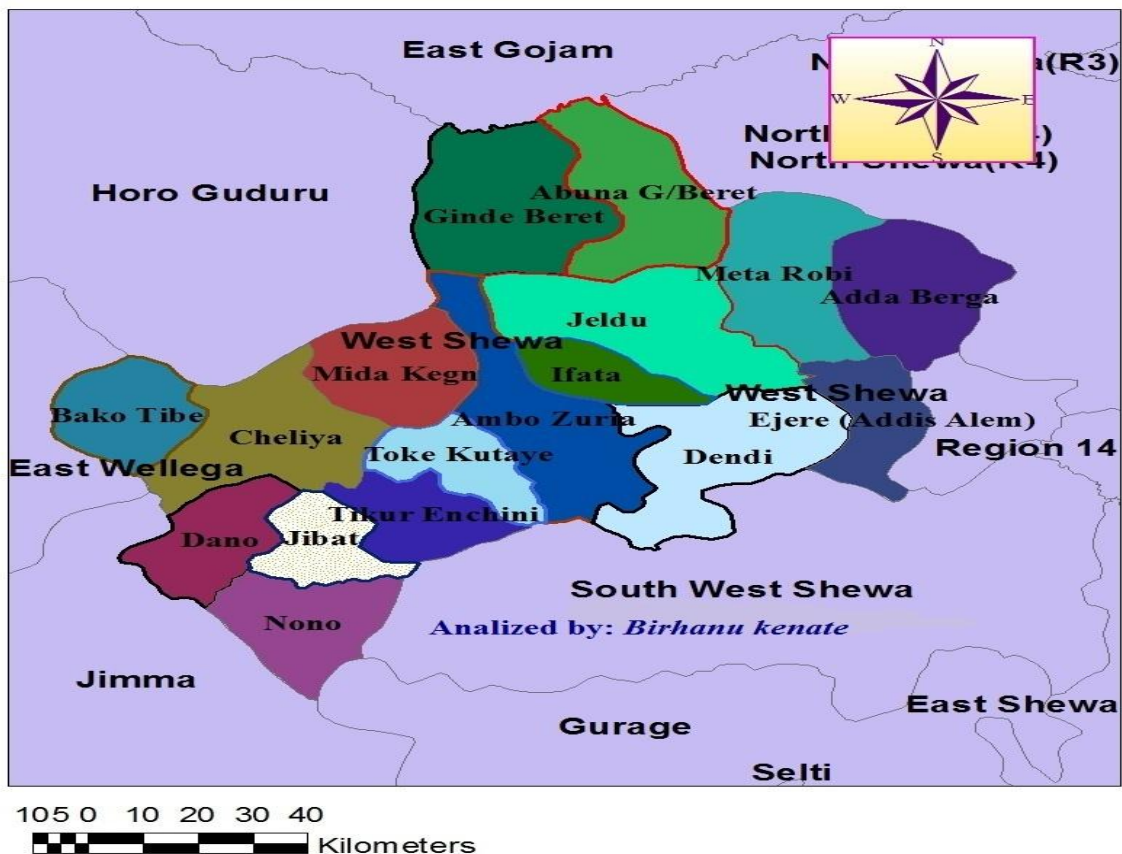
## CHAPTER FOUR Methodology

### 4.1. Study area and period

West Shewa Zone which is one of the twenty oromia regional state is located at the centre of Ethiopia, covering an area of around 14,921 square kilometers. It has a population of 2,517,109. The Zone has 6 public hospitals, 94 health centers, 168 clinics and 504 health posts. Ambo zonal hospital is one of the 6 public hospitals, in west shewa zone. It provides ART service for 65% of population and more than 65 health centers transfer blood for CD4 cell count to the hospital.

Ambo town covers 164km<sup>2</sup> with a medium temperature of fresh air having a total population of 81,352. The town has 02 health centers, 01 hospital, in which the study is going to be conducted; 01 NGO clinic, 20 private, 07 lower and 01 specialized higher clinic while it owns 20 drug vendors and 05 pharmacy. The hospital gives service for more than five thousand patients during our observation (98).

**Map of W/ Shewa Zone 2016**



**Figure 2 Map of West Shewa Zone**

## **4.2. Study Design and period**

A Facility based cross-sectional study design with both quantitative and qualitative data collection methods was conducted from January 20 to April 21<sup>st</sup>/ 2017 among adult PLWHA on HAART, (who fulfill inclusion criteria at Ambo General Hospital.)

## **4.3. Population.**

### **4.3.1. Source Population**

The source populations were all adult PLWHA in catchment area (Ambo town and neighboring area or come for ART service)  $\geq 18$  years of age that are enrolled in highly active anti-retro viral therapy at ART clinics of Ambo General Hospital.

### **4.3.2. Study population**

A selected adult person ( $\geq 18$  years) on antiretroviral therapy at ART unit in Ambo General Hospital during the study period and that fulfils the inclusion criteria.

#### **4.3.2.1. Sampling Frame**

All Enrolled  $\geq 18$  yrs PLWHAs' on the ART register, at the ART unit and attending the unit for ARV purpose during investigation could be identified through individuals ART number .{ART no.00001 to05593} Ambo General Hospital

### **4.3.3. Eligibility criteria**

*Inclusion:* Eligible PLWHAs on ART 18 years and above who have been treated with ART for at least 3 months, are not in a moribund state and free of neurocognitive impairments

*Exclusion Criteria:* They would exclude from participation in the study if they were taking treatment temporarily, pregnant and lactating mothers cannot speak or hear and patients with diabetes mellitus.

### **4.3.4 Study unit**

Randomly selected above 18 years PLWHA who fulfilled the inclusion criteria

## **4.4. Sample size and sampling technique**

### **4.4.1 Sample size determination**

**Table 1** Matrix for sampling, PLHIV, January 20-21<sup>st</sup>/2017, Ambo, Ethiopia

Qualitative technique	subjects	Ambo General Hospital
<u>Total</u>		
3	ART patients/male or female/	1 men adherent,
	Adherent vs. non adherent (Religious, behavioral factors considered)	2 (1men&1woman) not
2	-Health care providers	1 ART service provider
		1 drug dispensary
1	-Adherence supporter	1 case manager
3FGD	Patients (8 for ART adherence, 6 for DD)	
3	And 6 adherence supporters for adherence	

Sample size for quantitative part					
Ever started patients	Number of Patients on ART	number of eligible	expected sample size contacted	number of PLWHIV	number of interviewed
5593	3858	2855	383	378	375

The required sample size was desired for objective one, to show the association between food insecurity and ART adherence as two population proportion formula. By this assumption (proportion of non adherent people on ART considered as food insecure) and for objective three to show level of adherence among food insecure patients; proportion of adherent people among food insecure (99, 100) were used. However the sample size found was small and not enough to show influence of food insecurity by controlling factors confounding. So, final sample size was determined using single population proportion formula, with 50% population proportion using WHO sample size calculation for health researches formula. (101), considering the following assumptions.  $Z_{\alpha/2}$  is the value of the standard normal distribution corresponding to a significant level of alpha ( $\alpha$ ) of 0.05, which is 1.96 and desired degree of precision (d) of 5%,

$$n = \frac{(z \frac{\alpha}{2})^2 * p (1 - p)}{d^2}$$

Assumptions: P=suggested proportion of non adherent PLHIV

d=Marginal error or degree of precision, 5%; 0.05

α= Value for certainty, 1.96 at 95% CI.

Z=Reliability coefficient

n=Sample size estimation for single population proportion

The computed sample size was 384. Since the total number of patients currently on treatment at Ambo General Hospital is 2855, Some authors as Israel G.D recommends correction formula(102)and rul of statistics certify for;  $n/N > 5\%$  ;  $384/2855=13.4$

**Hence**  $n_f = \frac{no}{1 + \frac{no}{N}}$   $384/1+384/3651=348$

By adding 10% non response rate, the total sample size found was 383.

#### 4.4.2. Sampling technique and procedure

Fore going the data collection, a list of eligible ART clients was identified from ART data base (ART registration book). According to the total number of ART clients in the unit, for the quantitative part,375 study participants were selected by simple random sampling technique using random number computer generation method based on their unique ART number.Because computer guar ants equal chance to be included for the individuals in addition to saving time and simplifying burden.

Participants were selected through purposive sampling for the qualitative part to reflect the diverse Sociodemographic and Socioeconomic status characteristics of the population of PLWHA receiving combination ARV treatment. By this imagination we sampled 6 and 20 adult PLWHA for IDI and FGD respectively. PLHIV, case manager, adherence follow up team, health service providers and Hospital manager were included. Both sex got chance and recruited to share burdens among the both sex; females got more considerations since they were more related to household food security status(103).

### 4.10. Study Variable

#### 4.10.1. Dependent variable

Level of adherence among PLHIV on ART

#### 4.10.2. Independent variables

*The house hold Food Insecurity* measured through the indicators like availability of enough food: dietary diversity, meal frequency; *socio demographic* (like age, sex,

marital status, education, family size, religion, distance to clinic, and disclosure status) and *socio economic factors* (like money to buy one (income, occupation, food aid status, IGA); *Behavioral and client related factors* such as substance use, number of sexual partners *Hospital related factors* (pill burden, language barriers between patient and his/her doctors, drugs availability in stock, dose refilling schedules).

*Other Covariates:* Internalized AIDS stigma, depression, belief on ART, patient knowledge, treatment satisfaction of patient (availability through accessibility), patient perception on ART, social support, food aid, adherence aid.

*Confounding variables:* CD4, ART duration, BMI, hemoglobin, working status, opportunistic infections, regimen line, regimen type and WHO clinical stages.

#### **4.11. Data collection instrument and procedures**

A pre-tested structured interviewer administered questionnaire prepared through literature review in comparisons to similar studies was used for the quantitative part and semi structured one and open ended for qualitative study. The patient registration and pharmacy registration records were reviewed by additional instrument, checklists to capture opportunistic infections and drugs prescribed for individuals. Guidelines for qualitative study were prepared based on WHO FGD guidelines for ART. The questionnaires were initially prepared in English and translated to Afan Oromo and Amharic and back to English by language experts and researchers to keep the consistency of the questionnaires. A reason for missing dosing was added from literatures and from concept of local context in comparisons tools from similar studies, in developing countries.

*The tool consists of 148 items. Sociodemographic characteristics 12 +one for ART duration, 13 items; food insecurity 27 items; meal frequency 7 items; dietary diversity 12 items; social support and food aid 2 items; depression 10 items; belief (BMAQ) 11 items; internalized social stigma 6 items; patient perception 12 items; patient ART service satisfaction 7 items; WHO substance use 8 items; patient knowledge 6 items; medication adherence (PMAQ) 8 items and patient clinical ART situation 12 items reasons for missing doses 7 items.*

##### **4.11.1. Measurements of the Variables.**

**Food insecurity:** was assessed by using a short version of the Household Food Insecurity Access Scale (HFAS) developed by the Food and Nutrition Technical Assistance (FANTA) project which was adapted to individual level and can be used for both developing and developed countries. Nine occurrence questions relate to three different domains of food insecurity was used. 1) Anxiety and uncertainty about the

household food supply. 2) Insufficient quality (includes variety and preferences of the type of food). 3) Insufficient food intake and its physical consequences. Each of the questions was asked with a recall period of four weeks (30 days).

The respondent was asked first an occurrence question that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answered “yes” to an occurrence question, nine frequency-of-occurrence question would be asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks. The respondent was preferably the spouse in charge of food provisioning and cooking in the household or the head of the household. Finally, computed and dichotomized into two categories; either food secure or in secure(104).

Households were classified into 4 levels of FI according to the following scheme, which closely parallels the categorization scheme outlined in the published HFIAS protocol guide: 1) food secure (respondent answered “yes” to none of the items); 2) mild FI (respondent answered “yes” to item 1, 2, 3, or 4, but not items 5–9); 3) moderate FI (respondent answered “yes” to item 5 or 6, but not items 7–9); and 4) severe FI (respondent answered “yes” to item 7, 8, or 9). This scheme allows the reporting of household FI (access) prevalence for each level of FI as food insecure if participants answered two or less and food secure if more than two affirmative answers(46).

***Dietary Diversity Score (DDS)***, a record of the 24 hour recall of all food groups eaten by the respondents (Cereals, Spicy foods, Oils/Fats, Honey/Sugar, Legumes, Root/Tubers, Fruits, Vegetables, Meat, Milk/Milk products, Eggs, Fish/Sea foods that are commonly consumed in the study area were taken and classified into the 12 food groups using the food and agriculture organization categories; Nutrition and Consumer Protection Division recommended questionnaires. Participants received 1 point if they consumed at least once during the last 24 hours of the foods within each subgroup and 0 points if they never consumed the food. It was computed and dichotomized into two categories; which is low dietary diversity score (less than four) and high (greater than or equal to four) dietary diversity score(105).

***Meal frequency:*** daily eating occasions over the 24-hour period was asked and recorded. It was computed and dichotomized into two categories; which is low (less than four) and high (greater than or equal to four) meal frequency score. Any food occasion taken outside of the home was excluded(106).

***Depression:*** was being evaluated using the ten-item questionnaire of the Center for Epidemiologic Studies Depression (CES-D) scale. This scale has been extensively

applied in different settings, including in patients with HIV/AIDS (107). It tests the appetite loss, distress, and unwell conditions that affects food intake asking frequency at what patient skip his dose being depressed as consequences of non secured food. Scoring based on number of occasions as for questions 5 & 8; Rarely (if none of the time-less than one day score 3), some (if 1-2 days score 2), moderate (if 3-4 days score 1) and all of the time (if 5-7 days score 0). And for questions 1-4, 6-7, 9-10 Rarely (if none of the time-less than one day score 0), some (if 1-2 days score 1), moderate (if 3-4 days score 2) all of the time (if 5-7 days score 3). The total score is calculated by finding the sum of 10 items and did not score the form if more than 2 items were missing; any score equal to or above 10 is considered depressed (Miller 2008). (Internal consistency **Table 3**)

**Belief Questionnaire:** The Belief about Medication Questionnaire (BMQ) was being used to measure patients' beliefs and perceptions about ART. The BMQ consists of two five-item scales probing patients' beliefs about the necessity of the given medication and their concerns about possible ADRs (108). Did food insecurity affect their drug adherence? Did ART drugs consume their food intake for normal and regular body functions? Or they perceived as an important to give response to high appetite occurs due to ART drugs rather than throwing the drugs away assuming it as their food consumer. Finally categorized as above mean and below mean.

*Instrument Reliability (Table 3)*

**Perceptions about ART drugs/Adherence and food intake,** was measured using 12 item already prepared patient perception assessing scale (questionnaire). The first four questions ask about socio cultural/religious beliefs, the next three about food and questions 8, 9 about ART drugs and the last three were about adherence. Scores < 5 indicate an element of doubts with doubt. Increasing as the scores get lower (so dichotomized as 1, 2, 3 poor (perception) and 4, 5 to good. (Reliability Table 3)

**Patient ART adherence knowledge Assessment:** The knowledge and attitude assessment was based on previously available questionnaire from Morisky Medication Adherence Scale (8-item questionnaires). The knowledge questions were answered as Yes/No, (never, once in meanwhile, sometimes, usually and very often; as 0, 1, 2, 3, 4 respectively) and then dichotomized as good or adequate vs. poor (69, 109) (Internal consistency **Table 3**)

**Internalized social stigma assessment:** The Internalized AIDS-Related Stigma Scale was used to assess the internalized social stigma. The items were administered on a 5-point Likert-scale ranging from strongly disagree to strongly agree. Strongly disagree, disagree, and neutral were converted to 0 and agree and

strongly agree to 1. Scale score ranged 0–6 then dichotomized as yes/no outcome (110)*internal consistency of the scale in our sample.*(*Internal consistency Table 3*)

**Patient treatment satisfaction assessment:** we used a standardized 7 item scale measure of patient satisfaction assessing tools the scoring was as follows(WHO SATIS-satisfaction on AIDS treatment scale which has 7items; the response options included a band score of (0–7) where 0 and 7 indicate a complete un satisfaction and a complete satisfaction respectively. The score was as sum of (very dissatisfied, unsatisfied, neither satisfied nor dissatisfied satisfied and very satisfied). *Finally summed up over 28 scores then categorized above 19 as satisfied and below 19 as unsatisfied(60, 111).* (*Internal consistency Table 3*)

**Substance uses:** was measured using WHO –ASSIST (The Alcohol, Smoking and Substance Involvement Screening Test ASSIST, 8 item scale. It asked over last 3 months (ASSIST questions 2 to 5) score was as follows; Never: not used in the last 3 months; Once or twice: 1 to 2 times in the last3 months; Monthly: average of 1 to 3 times per month over the last 3 months; Weekly: 1 to 4 times per week; Daily or almost daily: 5 to 7 days per week (117).( *Internal consistency Table 3*)

**Measure of Adherence:**Method 1 Patient Medication Adherence Questionnaire (PMAQ) of Morisky medication adherence scale, developed and tested as well, widely used to assess the adherence to ART of PLWHA in developing and developed countries was used for self report (69). Method 2 Pill count was calculated for individuals as follows and conducted in ART clinic in isolated room

Percentage of dose taken =  $\frac{\text{Prescribed doses} - \text{missed doses}}{\text{Prescribed doses}} \times 100$

Prescribed doses

Finally the percentage of missed doses was found by subtracting percentage of dose taken from 100. This formula changes its denominator depending on dose refill schedule. The denominator was multiplied by 1, 2, 3 for patient that was appointed for one month two and three month respectively. This was accomplished through serious refill schedule checking from pharmacy refill (since well documented data were not found at ART unit additionally aided by EDT even if still it showed incompleteness) and supported by patient interview and patient history folder.

Rate of adherence was calculated through two steps; first by categorizing total patients scored optimal, above 95% and then calculate the percentage of all patients with optimal score



**Table 2 a)** Internal consistency and within agreement of scale variables in measurements

No	Variables (scales)	Chronbach alpha	General agreement within items			No. Items	Valid cases (%)
			ICC	Variance	p-value		
1	Satisfaction	0.897	0.5	0.4	0.00	7	98.4%
			5				
2	Internalized stigma	0.983	0.9	0.00	0.000	6	98.4%
3	Depression	0.941	0.6	0.2	0.000	10	98.4%
4	Perception	0.977		0.01	0.00	12	
			0.7				98.4%
5	Knowledge*	0.68	0.3	0.68	0.00	6	98.4%
6	Belief	0.80	0.7	0.03	0.00	11	98.4%

**Note** \*One item from knowledge “do you know that ART drugs a combination drugs “with variance within item 7 and ICC: 0.005; excluded; but “do you use adherence aids’ was tolerated at last stage of co linearity at 0.025 tolerance point”

**b) Test retest reliability of outcome variable and important categorical independent variables(n=19)**

Variable	Response	Prevalence in morning (%)	Prev. at the Afternoon (%)	P-value	Agreement (%)	kappa(CI)
Self report (7 days)	Not adherent	42.1	47.9	0.11	92.10	0.58(0.27-1)
Dose refill schedule	Monthly	31.5	31.5	0.46	100	1
	2 month	36.8	36.8	0.46	100	
	3 month	31.52	31.52	0.46	100	
Food insecurity	Food insecure	52.6	68.4	0.023	68.00	0.58(0.28,.90)
Dietary Diversity	Low dietary Diversity	31.6	47.4	0.12	88.44	0.174(-0.2,1)
TB	Yes	47.4	52.6	0.91	90.42	0.57(0.14,1)
Side effects	Yes	42.1	47.3	0.84	90.12	0.35(0.12,1)
Alcohol use	Yes	63.2	57.9	0.12	78.40	0.59(0.29,0.8)
ART duration	<24month	48.9	52.1	0.15	88.40	0.3(-0.1,0.6)

*Note: Measurement was taken place twice and correlation between the two was calculated; agreement showed. Chronbach alpha for variables like opportunistic infections; oral trash, pneumonia, herpes, diarrhea was less than 0.23 and they were excluded.*

#### **4.11.2. Data collectors and supervisors**

Five data collectors were recruited for quantitative interviewer administered questionnaires. Data collectors were Bsc.clinical nurses and health officer 3 of them have experience of data collecting; one had been trained in community based nutrition. They were fluent in Afan Oromo, Amharic and English language. Two MPH holders' supervisors with the previous experience of data collection and supervision of data collectors were recruited. The in depth interview was conducted by two BSc. holders one health education profession and the other was public nurse.

The screening was done by principal investigator in the help of triage diploma level ICT profession and data review was made by principal investigator with research assistant BSc. clinical nurse. Training was given for data collectors for two days. Practiced over half day after the first day training and the second day training continued for all because some of them showed skill gap and fitness was confirmed at the last day by all. The overall check up and control was made by principal investigator.

#### **4.11.3. Data collection Technique**

Using the total population for assessment is the best to figure out the adherence status and treatment outcomes of PLWHA on ART. However, we preferred facility for logistic and time factors to trace the study participants and interview them from within the general population since we were framed by time.

##### ***4.11.3.1. Pre-test process prior to actual data collection***

Questionnaire was pretested after the initial draft was revised in response to expert's suggestions. The questionnaire was then assessed by a focus group discussion of 19 HIV patients (9 males and 10 females) to make sure the items are relevant and understandable, to check whether tools were phrased in culturally acceptable, contained locally identifiable problems, especially for food diversity, weather items that should be rejected or choice of alternatives. These participants were excluded from the main survey conducted later to avoid biases since pretest was conducted at Guder Hospital 8km from the study area. The total time taken was recorded.

The respondents took note on issues that were not understandable for them. Next principal investigator revised the whole questions following their answers; identified ways of simplifying difficult questions with its explanation. Finally the response was transcribed by research assistant based on their discussion. Any important and new idea was incorporated in the questionnaire. Accordingly, a total of 20 participants participated in two FGD for Adherence, consisted 6 and 8 participants and one FGD for dietary

diversity, and consisted 6 participants. Based on the rule of thumb in focus groups discussions for groups to be 3-5 with 5-10 and held for 30-40 minutes and only for one session(112).

All interviews were audio recorded and transcribed. Time for the interview preferably selected in the morning, in a place where the interviewee feels free and can express his/her feelings without any vacillation; the interview conducted alone with the respondents in isolated room. Participants were carefully selected through making groups from different indicator to be inculcated and came together for discussion; first group those who were adherent without any jump, on ART during study time (these were identified by ART focal person with the help of ART reg. file; second group were (PLWHA, not taking continuously, non adherent and some of those who have additional personal behaviors such as alcohol taking, chat chewing, smoking).

Especially, those who jumped the follow up due to religious purposes ('tsom, tsebel' and have frequently opportunistic infections were included. The last group women got prior attention due to some literatures indicated for their vulnerability and route for the rest family regarding food insecurity(103). Similarly for dietary diversity, individuals having experiences of feeding different type of food groups gave information on their feeding status. Women got prior attention to fit the assumption of dietary diversity. We used IDI to gather hidden and sensitive information like, number of sexual partners, patient satisfaction to service. Two health care providers (ART focal person and drug dispensary), Hospital manager and 3 PLWHAs' were selected.

All ART eligible adult PLHWA referred to the research team from ART triage room. The service providers recruited the study subjects especially for qualitative study, those who jumps their appointment as non adherent group. The principal investigator checked for exclusion criteria and sent them before they took their drugs or any service unless the case was sudden or they were void of feeling. The clinical nurses; data collectors provide information regarding the study and again evaluated the eligibility of participants for the study.

Eligible participants who gave written consent to participate in the study were soon underwent interviews. Open ended focus group discussion and in-depth interview guides were prepared based on WHO guidelines for qualitative studies on PLHIV to probe discussions and interviews. Rough notes were taken during the discussions and in-depth interviews. All sessions of the discussions and IDI were tape-recorded. Information were collected from only 5 to seven study subjects per a day, and collected for over a ninety days due to Orthodox Christians fasting scheduled and 2 and 3 months dosing refilled patients in case to match the appointment date with our collection period. We left

advance of 3 days before and after Easter of Orthodox Christians, since everybody eats meats and eggs during Easter to minimize report bias might face in HFIAS.

The pill count method was applied through enabling patients to avail their drugs. The promotion and advocacy to come with pills was started in December, a month prior to actual data collection; by ART service providers and especially druggist in dispensary to minimize bias due to 2 months and three months refilled patients disappointment from data collection period and to match their visit date with data collection period, those who have experienced 2 and 3 months appointment were appointed to month. Similarly all patients informed to come with their pills salvaged to, over jumped and forgotten during past one, two or three months.

## 4.12. OPERATIONAL DEFINITIONS

**House Hold Food insecurity**- exists whenever there is “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.”(Transitory-temporarily and chronic-long Measured through HFIAS and categorized as food secure, mildly food insecure, moderately food insecure and severely food insecure. Its main indicators were meal frequency and dietary diversity.

**Household Food Insecurity Access Scale (HFIAS)** - continuous measure of the degree of food insecurity which means access in the household in the previous month. Food insecurity considered when the individual (PLWHIV) answered >2 to affirmative questions of food insecurity scale that resulting from financial resource constraint.

**Food secure:** is enough nutritious and safe food being available and accessible for a healthy and active life by all people at all times. In this paper Food security considered when the individual (PLHIV) give answers (0-2) to affirmative questions;

**Hungre:** “the uneasy or painful sensation caused by a lack of food”.

**Severe food insecure:-** implies stay the whole day or going to bed without food; this study the severely food insecure was experienced with the affirmative answers; yes to the #7,#8 or 9 of HFIAS questions.

**Mild food insecure:-**HH worries about or unable to eat preferred foods (and eat more a monotonous than desired and some foods considered undesirable, but rarely. In this study the affirmative answers to #1, #2, #3,or #4 of HFIAS questions.

**Moderate food insecure:-**HH scarifies quality more frequently, by eating a monotonous diet to undesirable foods sometimes or often. In our study the moderate food insecurity experienced affirmative answers to #5or #6 of HFIAS questions.

**Adherence**– ART clients are considered adherent when they stick to or take medication prescribed (ART drugs) for greater than 95% of the time which corresponds to missing no more than 1 dose in a 10-day period (in a 2 times a day dosing regimen) or 1 dose in a 7 days (in a 3 times a day dosing regimen) and full adherence is Sticking to 100% of the prescribed ART drugs.

**Optimal –Adherene:-**proportion of patients who took their medication (>95%) of the time&who did not take (<95%) are sub optimal

**Meal frequency** –The number of reported daily eating occasions by household members; did not include food eaten by HH members outside home.

**AIDS:** Defines the acquired immune deficiency syndrome and used to describe the various clinical syndromes, specific opportunistic infections or malignancies that occur with HIV infection and signals those in whom advanced HIV infection has occurred.

**Dietary diversity** –Is the number of reported different foods and food groups consumed in a household over a 24-hour period. This does not include food group consumed by the household members outside home.

**CD4:** Refers to an antigen maker of helper/inducer T cell that recognizes antigens bound in proteins.

**Resistance:** - Reduction in a pathogen's sensitivity to a particular drug.

**Highly active antiretroviral therapy (HAART):**-Treatment regimens meant to aggressively suppress viral replication and progress of HIV disease. The usual HAART regimen combines three or more different drugs. HAART, when the CD4 T cell count is 0.200 to 0.350 x10(9) cells/Leann.

**Adverse effect:** - an unwanted effect caused by the administration of drug.

**Self report adherence:**-percentage of PLHIV on ART who self- report full adherence over the last seven days.

**Viral load:**-levels of virus found in the blood per 10 milliliters.

**Undetectable viral load:**-when virus is not detected in the blood after a laboratory test

**Internalized social stigma (ISS):** - The coping behavior of affected person resulted deuto influenced by social because he/she is HIV positive. This perceived or ISS by the discredited person is equally destructive whether or not actual discrimination occurs.

**Perception:** - Immediate or intuitive recognition or appreciation, or the ability of PLHIV to become aware of the importance of ART dosing.

**Depression:** - low mood lingers day after day,in PLHIV, assumed to be caused deu to fear of death coming to them,anxiety;fear of food run out,fear of not to disclose their statusa and so on. Major depression is an episode of sadness or apathy along with other symptoms that lasts at least two consecutive weeks and is severe enough to interrupt daily activities, affect dosing, meal frequency and cause unrest.

**Satisfaction:** - the pleasure derived from the service PLHIV should get in ART unit; other treatment activities or contentment

**Dose refill schedule:**-The appointment schedule for ART patients to pick their drugs; monthly, per two month and per three month.

**ART duration:**-The time from ART initiation to the time of interview.

**Opportunistic infections:** Opportunistic infections (OIs) are infections that occur more often or are more severe among PLHIV, mainly TB as an indicator in our study. And are caused by a variety of germs (viruses, bacteria, fungi, and parasites).

**Ambulatory:** -A situation of working, moving but not actively working.

**Belief:** a feeling of being sure that ARV drugs can prolong life; Confidence in the drugs rather than being susceptible to rigorous proof; especially continuing drugs at ambulatory.

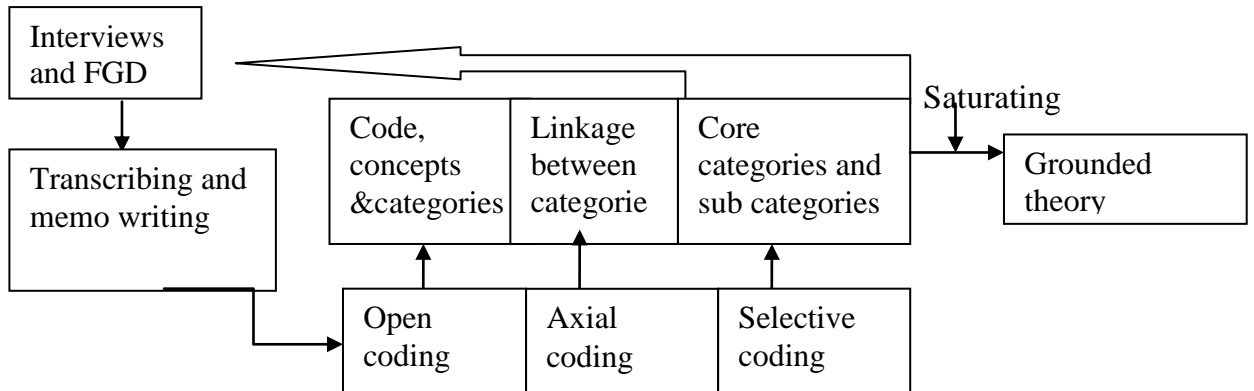
**Treatment stage:** PLHIV on treatment >6 months of ART initiation, but not between 3-6 months.

**WHO clinical stage:** stage at which Patient is classified based on his level and severity of infections, using like sign and symptoms.eg. If no OPIs most patients could be grouped as stage one.

## 4.13. Data analysis procedures

### 4.13.1. Data analysis for qualitative part.

At completion of each FGD and IDI, complete transcript was produced in Amharic. The transcribed data were reviewed compared to the original audio-records for accuracy. Were established from the transcripts through coding (open coding, categorizing and axial coding, (linking to its meaning) then selectively coded with its category of meaning.



**Figure 2** Data analysis of qualitative study so as to generate grounded theory

Concepts and categories were translated into English and coding of data was taken place. Coding refers to data reduction either by a system of symbols or by numbers(113) to store information describing the attributes of an interviewee, for example (gender, age, ethnicity etc). Accordingly, ideas gathered from PLWHA who have similar family background, skill, income, educational background and age were put together depending on their responses. The interview was transcribed verbatim after examined line by line using hand highlighters for each. Broader concepts were developed from each reviewed datum then going to be refined into major themes. Transcribed data were coded and analyzed to identify common descriptive themes manually. At the end was presented in triangulation with quantitative output.

### 4.13.2. Analysis for Quantitative study

Data which was collected by structured self-administered questionnaire was audited, coded and sorted. After its completeness was confirmed double entered through prepared templates to Epi Data version 3.1. (Epi data Association, Odense, Denmark), and analyzed with SPSS version 21.0. Associations with the outcome variable were made using chi-square. Factors predicting non adherence among PLWHIV were identified by bivariate logistic regression analysis at a significance level of p-value < 0.05 for all candidate variables at 95% confidence interval, to adjust values of the dependent



variables for the influence of the likelihood of the confounding or intervening variables. The univariate analysis was conducted to obtain descriptive statistics of all variables. The test for variables of being predictive was accomplished in Hosmer and Lemeshow goodness of fit statistics at 0.45 and at 95% regression coefficient of CI for multivariate. Chronbach alpha for reliability checks was applied and taken as  $>0.7$  as good. The interclass correlations and variance for scales, within items of the same variables was checked and variance of all was below one except knowledge in which one item was excluded due to multicollinearity with VIF of 9 and variance 36. (Aided by standard error for categorical)

Self reported adherence to all antiretroviral agents was summarized as the ratio of the average daily number of antiretroviral medications adhered to correctly according to the standard instructions over the total sample and pill counted was summarized as the proportion of patients adhered to medication ( $>95\%$ ) to proportion of patients not adhered (got less than  $95\%$ ), the antiretroviral medication prescribed previously for each patient dose missed subtracted from dose prescribed divided by dose prescribed. The results were then expressed as a percentage for both methods. Of course, patients were categorized as adherent (took  $> 95\%$  antiretroviral correctly) and non adherent (took  $<95\%$ ). Finally every patient non adherent to at least one of the two methods (pill count & self report) was considered as non adherent.

Simple frequencies were computed for all variables. Finally, all explanatory variables that results ( $P < 0.05$ ) with the outcome variable were entered in to multivariable logistic regression model to identify the increased influence of food insecurity on drug adherence. The magnitude of the association between the different variables in relation to the adherence to treatment was measured through Odds ratios (OR) and their 95% confidence interval (CI). P-values below 0.05 were considered statistically significant.

#### **4.14. Data quality management**

To ensure data quality, a pre-tested standard questionnaire and standardized height and weight measuring instruments were used. Training was given for the data collectors and supervisor on data collection tools, data collection procedures and ethical considerations and on spot checking of the data collection procedure was made; faced and encountered problems were raised and discussed. The data were checked on daily bases by investigator and supervisors before collection to data room, which was found through written permission letter to the Hospital manager, for tool, instruments and data storing purpose.

The supervisor reconsidered data collectors only about the completeness of data, but not about data collection to avoid bias in retraining, before beginning their duties to ensure the completeness or the quality of information during data collection. The principal investigator and supervisor made a thorough check ups before receiving the filled questionnaires from each data collectors on daily bases. As a result, solutions were worked out from experiences punctually. Pre-tested Questionnaire were translated from first prepared language, English into Amharic and local language (Afan Oromo) and translated back to English to keep the consistency by language experts aided by medical dictionaries and with one MPH level epidemiologist thorough check.

Measurement instruments were also tested for their clear cut threshold and standardization and all measurements taken to the nearest 0.5. CD4 at initiation was taken due to inconsistency of data, since they got their results at different times and data. CD4 was measured using BDFACScout™(Lab. Id. no.AHL-FC-01); service engineer name; BD Company) height and weight, measured using common scales and height measurers and measure tape respectively.Hgb was measured using instrument cell-DYN 1800 (AHL-HA-01) service engineer name; EPHI measurements instruments). The completeness of the questionnaire was checked again before data entry and cross checks after entered.

Data capturing format with highly controlled skipping pattern (for structured questionnaire) and missing values (for all type) adjustment program was prepared through during template preparation; and data cleaning was also made after data were entered into the computer to minimize unnecessary duplication, and over jumps; data were double entered to Epidata version 3.1(Denmark). At the end data Verification was done by checking error report after entry to Epidata through the case coded, Sample was splitted to check validation and to detect outliers( continues factors) by sex .

#### 4.15. Ethical consideration

The study was approved by the JU, Institute of Health Sciences ethics review board, and Permission was obtained from West Shewa Zone administration and respected Hospital. Anonymity of the participants was kept by informing them not to write their name and subjects information was not be disclosed to other person or party; verbal and written informed consent was obtained from each study subjects after informing them about the purpose, methods and anticipated benefits of the study. Confidentiality of the information was assured and privacy of the respondent was maintained. Since adults person's over the age of 18 years are considered capable of deciding for themselves as far as it was informed being voluntariness endorse.The instruments and procedure did not

cause any harm to the study subject; weight and height measurement results was told them for those who wanted to know and kept gentle for those did not asked or showed unwillingness. Recorded interviews were destroyed and isolated room was used for interview as mentioned above to keep confidentiality. Pictures for qualitative parts were taken in the positive assent of FGD participants. Patients right not to participate in the study at all; gave up information provision even at the midpoint or denial to datum possession by data collectors at the end of interview was respected.

#### **4.16. Plan for dissemination of findings**

The findings of this study will be presented to JU scientific community to defend. Having approved by the Epidemiology department; with the amiability, it will be presented to scientific community health review meetings, relevant national, international conferences. It will also be preserved at JU library and epidemiology department. With the necessarianism will be communicated to the Oromia regional health Bureau, local health planners and other relevant stakeholders. At the end manuscript will be submitted for publications to reputable national or international journal, with peer reviewed.

## CHAPTER FIVE RESULTS

### 5.1 Quantitative Results

#### 5.1.1. Result of Sociodemographic characteristics

A total number of 375 PLHIV on treatment (97 % response rate; male 198(52.8% and 177(47.2%) were included in this study. The age of participants included in this study was  $\geq 18$  years, the median and mode found between 28-32 years age category. Adherence was high among ages 28-32 151(40.2%); out of these the majority adhered group were 138(36.8%) were males. 172 (45.8%) participants were Orthodox and 110(29.3%) were Muslims respectively. A large proportion 230 (61.3%) were Oromo. Out of the total respondents 194(51.7%) were unmarried and 60(16%) were married. In more than three-fourth 281(74.9 %) the head of family were fathers and 54 (14.4%) mothers. The median for family size 3 persons and the majority of them live with above five family members.

The large proportion 182(48.5) of participants educational status was read and write, whereas only 32(8.5%) grade 9 and above. The median for average monthly income for participants was between (500-1000) Ethiopian birr and most of them 185(49.3%) gained <500 monthly. More than half 206(54.9%) live out of Ambo town and 224(59.8) found at distance of >10km as they traveled more than two hours. While 24(6.4%) have no their own or stable home and sleep wherever they found by chance. The median treatment duration of participants was (>36 months and almost more than three-fourth 282(75.2%) had been waiting on treatment for the years greater than three.

**Table 3** Sociodemographic Characteristics of the PLHIV (n=375), January20-April 21/2017, Ambo, Ethiopia

Variables	Categories	Adherence		Total
		Yes, No. (%)	No, No. (%)	No. (%)
Age in years	18-22	25(6.6)	11(2.9)	36(9.6%)
	23-27	57(15.2)	16(4.2)	73(19.4)
	28-32	151(40.2)	8(2.2)	159(42.4)
	33-37	62(16.5)	24	86(22.9)
	≥38	8(2.1)	13(3.4)	21(5.6)
	Sex	Male	180(48)	18(4.8)
Female		123(32.8)	54(14.4)	177(47.2)
Religion	Orthodox	144(38.4)	28(7.4)	172(45.8)
	Muslims	89(23.7)	21(5.6)	110(29.3)
	Protestant	50(13.3)	19(5)	69(18.4)
	Catholic	14(3.7)	2(0.5)	16(4.2)
	Others	6(1.6)	2(0.5)	8(2.1)
Ethnicity	Oromo	214(57)	16(4.2)	230(61.3)
	Amhara	62(16.5)	44(11.7)	106(28.2)
	Gurage	18(4.8)	6(1.6)	24(6.4)
	Tigre	7(1.86)	4(1.06)	11(2.9)
	Others	2(0.5)	2(0.5)	4(1.06)
Marital Status	Unmarried	181(48.2)	13(3.4)	194(51.7)
	Married	47(12.5)	13(3.4)	60(16)
	Divorced	13(3.46)	7(1.86)	20(5.3)
	Widowed	62(16.5)	39(10.4)	101(26.9)
Educational status	Illiterate	49(13)	28(7.56)	77(20.5)
	Read And Write	172(45.8)	10(2.66)	182(48.5)
	Elementary	56(14.9)	28(7.56)	84(22.4)
	Grade 9+	26(6.9)	6(1.6)	32(8.5)
Monthly income	<500	172(45.8)	13(3.4)	185(49.3)
	500-1000	101(26.9)	49(13)	150(40)
	1001-1500	18(4.8)	5(1.33)	23(6.1))
	>1500	12(3.2)	5(1.33)	17(4.5)
Occupational status	Unemployed	144(38.4)	12(3.2)	156(41.6)
	Employed	62(16.5)	10(2.66)	72(19.2)
	daily labor	71(18.9)	26(6.9)	97(25.8)
	Student	7(1.86)	10(2.66)	17(4.5)
	Others@	19(5.06)	14(3.73)	33(8.8)

Head of family	Father	226(60.2)	55(14.66)	281(74.9)
	Mother	43(11.4)	11(2.9)	54(14.4)
	Other Male	28(7.4)	5(1.33)	33(8.8)
	Other Female	6(1.6)	1(0.26)	7(1.86)
ART duration	3-23months	43(11.4)	8(2.1)	51(13.6)
	24-36 months	35(9.3)	7(1.86)	42(11.2)
	36months	225(60)	57(15.2)	282(75.2)
Residence	Ambo	113(30.1)	56(14.9)	169(45.1)
	out of Ambo	190(50.66)	16(4.2)	206(54.9)
Family size	Two	35(9.33)	9(2.4)	44(11.7)
	Three-five	91(24.2)	48(12.8)	139(37)
	>five	177(47.2)	15(0.04)	192(51.2)
Distance to Hospital	<10km	116(30.9)	35(9.33)	151(40.2)
	≥10km	187(49.8)	37(9.86)	224(59.8)
House *	Own	286(76.2)	65(17.33)	351(93.6)
	Homeless	17(4.5)	7(1.86)	24(6.4)

NB: @=others include merchant 5(1.3), tired 6(1.6), imprisoned 2(0.6) sexual workers 11 (2.9)

*Note*\*rented, live in groups, added to relatives as their own can be considered as home; but living depressed by default ,sleep everywhere by chance not.

#### 5.1.2. House hold Food insecurity, Dietary Diversity and Meal frequency situation of PLHIV (n=375), January 20 to April/21st/2017, Ambo, Ethiopia

198(52.8%) participants grouped under high dietary diversity and got food groups such as cereals, oils and fat foods, legumes, vegetables, roots, tubers and others while 194(51.7%) were grouped as low dietary diversity with 2 median food food groups and the mode of food groups was cereals

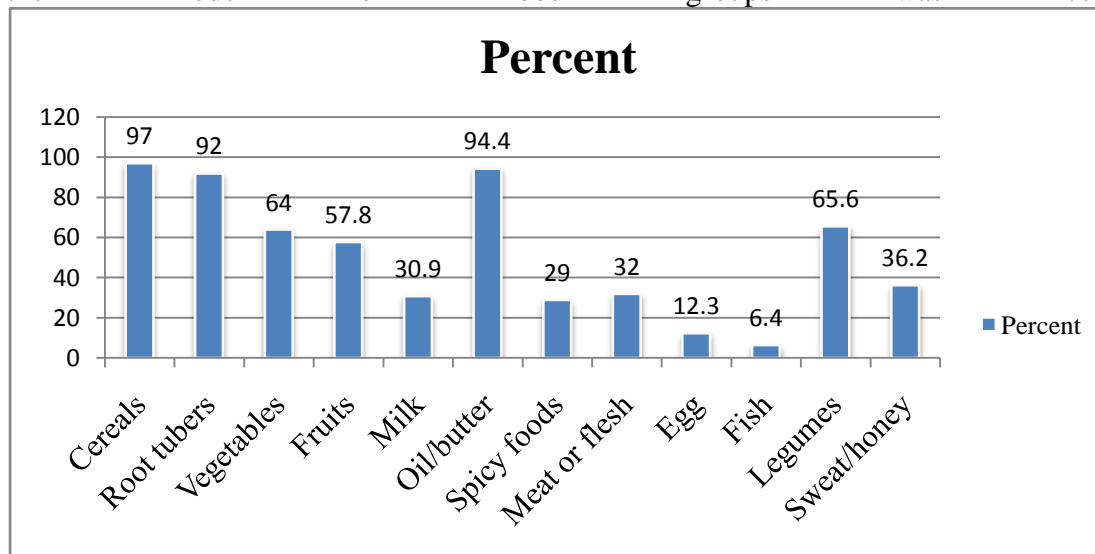
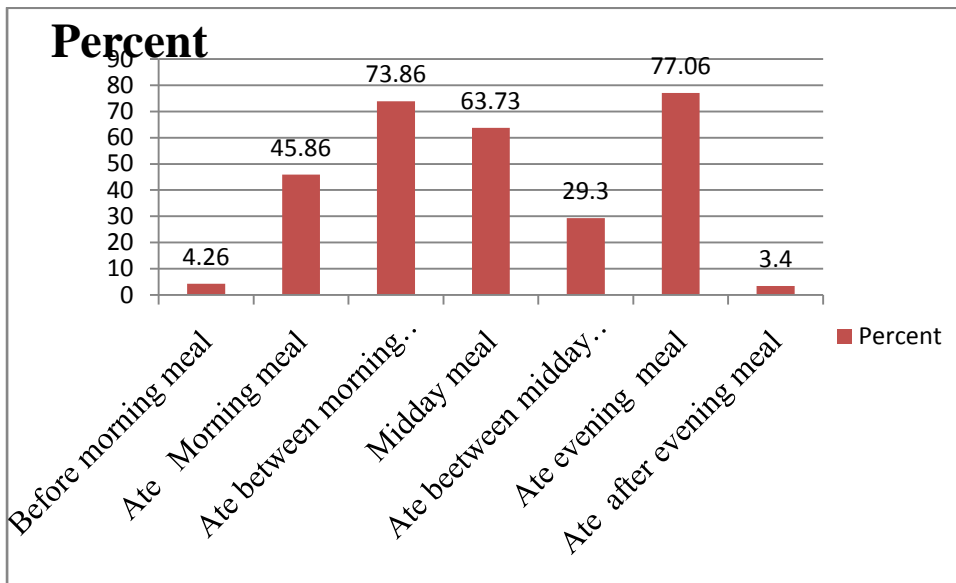


Figure 4 Dietary Diversity status of PLHIV at Ambo Hospital on ART

In this survey the meal frequency status of PLHIV based on the previous twenty four hours possessed the median consumed food 3 times a day 146(38.9%) of respondents got high meal frequency and 229(61.06%) of respondents got low meal frequency; The meal frequency among participants indicated disparities in their feeding status, (73.86%) fed between morning and midday and the most frequently reported one was dinner or meal at the evening (77.06%).

The feeding style varies among the group, some food groups were consumed frequently while others were not consumed by the majority of respondents. Among twelve food groups which were asked over the previous twenty four hours cereals 367 (97.1%), oils (butter) and fat groups 357(94.4%), roots (tubers) 348(92.1%), were among food groups that were consumed by majority of the respondents. Some food groups were also consumed moderately when compared to the least consumed food groups. Vegetables 243(64.3%), legumes, beans 249(65.9), fruits 220(58.2%) were consumed by some patients over the last twenty four hours while 27(7.1%) and 49(13%) fish and eggs respectively were among consumed food groups by the minority proportion of participants. (Annex one)



**Figure 5** The meal frequency distribution of participants over past 24 hours

The majority of the study participants 185(49.33%) consumed 3 times, 146(38.9%) consumed more than 4 times and only 44 (11.73%) patients consumed either once or twice in past 24 hours, meaning the patients fed either only dinner and midday meal or none of the two.

**Table 4 .** The Food insecurity, Meal frequency and Dietary Diversity associations with Household Food Insecurity situation of PLHIV, January 20-April21<sup>st</sup>/ 2017, Ambo, Ethiopia

Food insecurity indicators (n=375)		Level of adherence		$\chi^2$ -test
		Good	Low	P- value
<b>Food insecurity</b>	Food Secure	66(17.6%)	6(1.6%)	0.032
	Food insecure	230(61.4%)	64(17%)	
<b>Meal Frequency</b>	Low	176(46.9%)	53(14.1%)	0.045
	High	127(33.8%)	19(5.0%)	
<b>Dietary Diversity</b>	Low	105(28%)	72(19.2%)	0.03
	High	198(52.8%)	0	
<b>Total</b>		<b>303(80.8%)</b>	<b>72(19.2%)</b>	

### 5.1.3. The Sociodemographic associations with Household food insecurity

Food Insecurity and Sociodemographic characters also have showed close relationships. The large number of food insecurity was found ages between 28-32 years; 126(33.6) and the list number of food secure found between ages 18-22 which was 6(1.6). Regarding occupation daily labor showed increased number with food insecurity 82(21.8%) while only 15(4%) were food secure.

There was also a close relationship between house hold food security and average monthly income. As the average monthly income increases above thousands the house hold food security also became stable within the households; There are 216(57.6%) of patients earned >1001 were food secure and 18(4.8%) patients earned <1000 monthly income were food secured. (157(41.8%) males and 146(38.9%) females were food insecure whereas 41(10.9%) and 31(8.2%) males and females were food secure respectively. Most participants, 179(47.3) came from distance >10km were food insecure whereas only 459(12) were food secure coming from the same distance. (Annex two)

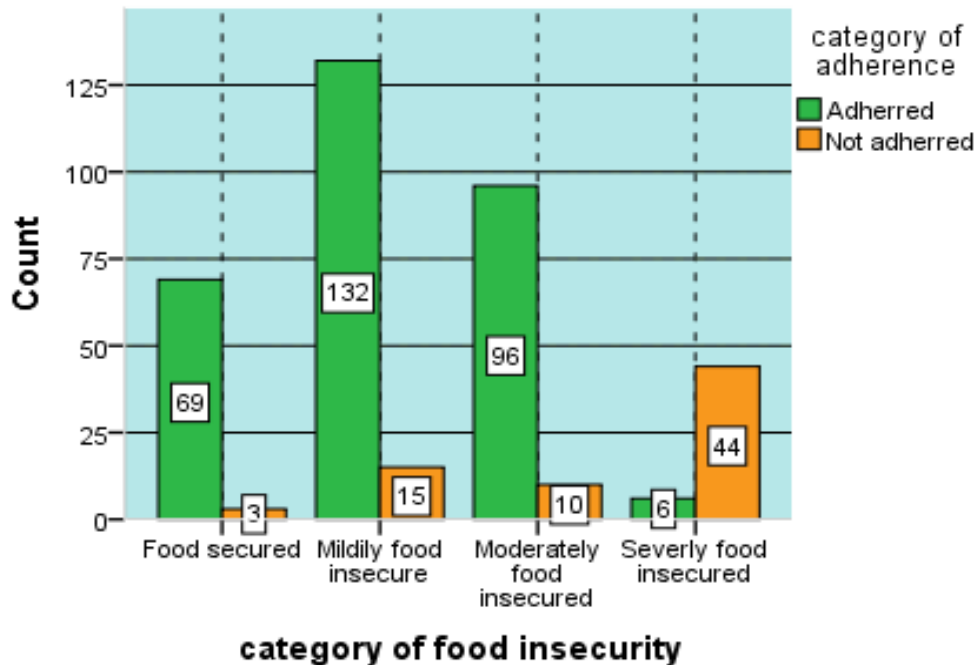
The BMI of patients showed dependence on food insecurity. The majority of patients 177(47.2%), who got low BMI, were food insecure; whereas only 33(8.8%) patients found having poor nutritional status (low BMI), were food secure.

#### 5.1.3.1. Sociodemographic associations with patients nutritional status (BMI)

Both extreme low and high BMI was scored between ages of; 28-32 years, 102(27.2) respondents. 114(30.4%) males and 96 (25.6%) females had BMI of below 18.5kg/m<sup>2</sup>. Among marital status, 115(30.6%) of unmarried had low BMI, that was less than 18.5kg/m<sup>2</sup>. The least BMI was found among diploma and above educational status, while the highest score of BMI was found among read and 111(29.6%). Daily labors



57(15.2%) and unemployed 94(25%) had poor nutritional status; BMI of below normal range. The nutritional status went decreasingly as number of family size increases. For 2, 3 to 5; and above five numbers of family, the BMI was 21(5.6%); 72(19.2%) and 117(31.2%) of participants had low BMI respectively.

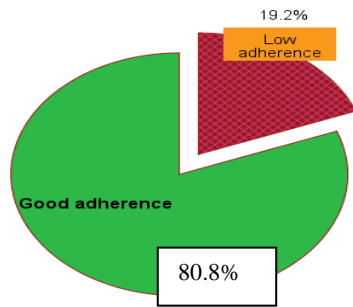


**Figure 6** Food insecurity categories with respect to non adherence prevalence PLHIV, Ambo Hospital

House hold food insecurity showed that house hold food insecurity among PLHIV was 294 (78.4%) food insecure; 147(39.2%) mildly food insecure, 106(28.2%) moderately food insecure and finally the 50 participants (13.1%) were severely food insecure. Almost all 69(18.4%) food secure patients were adhered whereas only 3(0.8%) not being food secured; 44(11.7%) severely food insecure patients did not adhere and only 6(1.6%) of them adhered being food insecure. The prevalence of ART non adherence was extremely high in food insecure group. Similarly, adherence was high in mild food insecure 132(35.2%) compared to moderate food insecure 96(25.6%) and 6(1.6%) severely food insecure.

#### 5.1.4. The ART therapy adherence situation of PLHIV, January 20 to April 21<sup>st</sup>/ 2017 Ambo, Ethiopia (n=375)

The self reported adherence level was 80.8%; this implies the non adherence rate of PLHIV in Ambo town at ART clinic was 19.2 %. This adherence rate was behaved with different Sociodemographic characteristics and in its category lowest 19.2%, moderate 56.6%, highest 24.2%. The pill count adherence level was 82.4% and 17.6% was non adherent



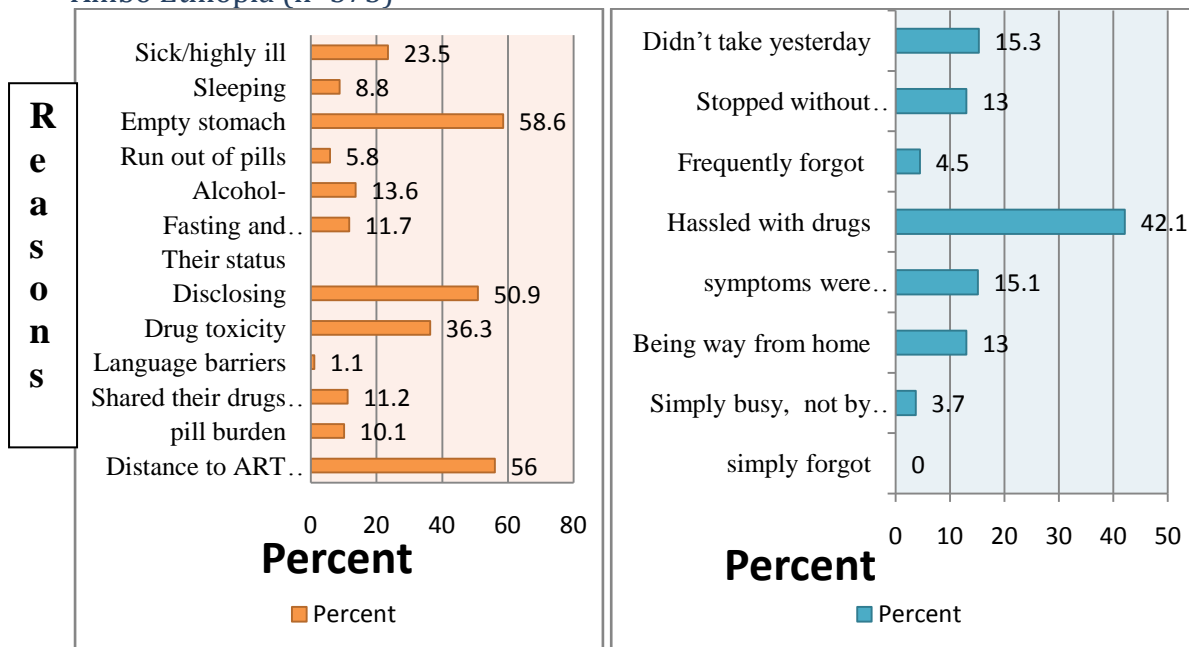
**Figure 7** Level of ART Adherence of PLHIV at Ambo Hospital on ART treatment

**Table 5** Agreement between two methods of measures of Adherence, the Pill count and patients self report

(n=375)		<i>Self Report Adherence</i>		<b>Total</b> <b>(P<sup>@</sup>&lt;0.05)</b>
		Good	Low adherence	
<b>Pill counts</b>	Adhered	271(72.3%)	38(10.1%)	309(82.4)
	Not adhered	32(8.5%)	34(9.0%)	66(17.6%)
Total		303(80.8%)	72(19.2%)	375(100%)

@ Measure of Agreement kappa (0.30) P=0.00

5.1.5. Reasons for skipping doses reported by PLHIV, January 20 to April 21/2017 Ambo Ethiopia (n=375)



a) Reasons for missing doses from literatures

b) Reasons in Morisky

**Figure 8** Reasons for missing doses among PLHIV in comparisons, to local with Morisky scale, Ambo Hospital

Reasons reported were distance 210(56%), not disclosing their status or never wanted others to remind them 191(50.9%) being sick/ill 164(43.7%) even un able to swallow, and drug toxicity or avoiding side effects 136(36.3%). The sleeping, run out of pills, fasting shared drugs and pill burdens are the less frequently reported while language barrier the least problem reported. Food insecurity reported through empty stomach was 58.6%. Hassled conditions or inconvenience 158(42.1%) and simply forgot to take their drugs 116(30.7%) were among frequently reported in Morisky scale.

#### 5.1.6. Social and Family characteristics of PLHIV

The social and family characteristics of PLHIV are presented with their association with ART non adherence. 151(40.2%) patients got service of hlp from their families' wherea 182(48.5%) OLHIV did not get social support for their needs and live alone. 91(24.2%) of them got plumpynut and 212 (56.5%) received teff and RUTF.

**Table 6** Bivariate analysis of Social and family characteristics of PLHIV January 20 to 21<sup>st</sup>/2017 Ambo, Ethiopia (n=375)

Social and family characteristics of PLHIV(n=375)		ART Adherence		No (%)	COR(95%CI)
		Adhered	Not Adhered		
Social support	From family	114(30.4)	37(9.9)	151(40.2)	1
	From friends	13(3.5)	6(1.6)	19(5)	0.29(0.08-1.06)
	Alone	167(44.5)	15(4)	182(48.5)	0.05(0.02-0.1)*
	Others	9(2.4)	14(3.7)	23(6.1)	0.2(0.5-4)
Food aid (Type of food frequently provided)	RUTF/plumpy nut	71(18.9)	20(5.3)	91(24.2)	1
	Teff and RUTF	161(42.9)	51(13.6)	212(56.5)	1.1(0.6-2)
	Others	71(18.9)	0	71(18.9)	0.28(0.3-1.1)
	Not aided at all	10(2.6)	66(17.6)	76(20.2)	0.5(0.2-0.9)*
No. of sexual partners currently reported	Only one	38(10.1)	30(8)	68(18)	1
	Two	89(23.7)	52(13.9)	141(37.6)	1.85(0.8-3.8)
	Three& above	144(38.4)	8(2.1)	152(44.2)	0.26(0.05-0.37)*
	999			14(3.7)	
IGA	Yes	197(27.3)	13(3.5)	165(44)	1
	No	106(28.3)	59(15.7)	210(56)	8.4(4.4-16)*
Internalized social Stigma	Yes	20(5.3)	30(8)	50(69)	10.1(0.05-1.19)
	No	283(75.5)	42(11.2)	325(86.6)	1

999=unwilling to respond;\* significant

Majority of patients 182(48.5%) live alone and 151(40.2%) got support from family, 91(42%) were supported by receiving RUTF, 212(56.5%) got both RUTF and teff, 165(44%) patients were incorporated in IGA and 210(56%) were not.

### 5.1.7. Clinical characteristics of PLHIV (n=375)

Clinical characters of PLHIV is presented with its associations to ART non adherence

**Table 7** Bivariate and Multivariate analysis of Clinical situation of ART patients; January 20 to April 21<sup>st</sup>/2017, Ambo, Ethiopia (n=375)

Variables		ART adherence		No.(%)	COR (95% CI)	AOR (95%CI)
		Adhered	Not			
CD4 base line	<200 cells/Ml	266(70.9)	55(14.6)	321 (85.5)	0.43(0.22-0.83)*	
	>200 cells/Ml	36(9.6)	17(4.5)	53 (14.1)	1	
	999 <sup>u</sup>			1 (0.26)		
WHO Clinical Stage	Treatment stage 1	121(32.2)	19(5)	140 (36.7)	1	
	Treatment stage 2	135	30	165 (43.3)	1.4(0.75-2.64)	
	Treatment stage 3	25	11	36 (9.4)	2.8(0.18-6.6)	
	Treatment stage 4	22	12	34 (8.9)	3.47(1.47-8.15)*	
Drugs Type	1e=TDF+3TC+EFV	97(25.9)	16(4.3)	113 (30.0)	1	
	1d=AZT+3TC+EFV	51(13.6)	1(0.3)	52 (13.8)	0.11(0.11-0.55)*	
	TDF+3TC+atazanavir	18(4.8)	16(4.3)	34 (9)	5.3(0.05-1.14)	
	1c=AZT+3TC+NVP	58(15.4)	6(1.6)	64 (17)	0.62(0.05-1.63)	
	AZT+3TC+LPV/r	5(1.3)	7(1.9)	12 (3.2)	8.4(1.18-9.41)*	
	AZT+3TC+atazanavir	6(1.6)	8(2.1)	14 (3.7)	7(0.66-10.56)	
	TDF+3TC+LPV/r	18(4.8)	16(4.3)	34(9)	5.3(0.49-9.04)	
	1f=TDF+3TC+NVP	11(2.9)	0	11(2.9)		
	ABC+3TC+atazanavir	24(6.4)	3(0.8)	27 (7.2)	0.75(0.1-2.64)	
	ABC+3TC+LPV/r	8(2.1)	6(1.6)	14 (3.7)	4.5(1.27-50)*	
Regimen Line	1 <sup>st</sup> line	216(57.6)	36(9.6)	252 (67.2)	1	
	2 <sup>nd</sup> line	87(23.2)	36(9.6)	123(32.8)	2.48(1.4-4)*	
Refill Schedule	Monthly	82(21.8)	8(2.1)	90 (24 )	1	
	>Monthly	221(58.9)	64(17)	285 (76)	2.96(1.2-5.46)*	2.7(1.1-6)**
BMI <sup>BZ</sup> (Kg/m <sup>2</sup> )	<18.5	139(37.2)	23(6.1)	163 (43.2)	0.55(0.3-1.01)	
	≥ 18.5	163(43.6)	49(13.1)	212 (56.1)	1	
ART duration	3-23months	43(11.5%)	8(2.1%)	51(13.6)	0.7(0.3-1.6)	
	24-36months	35(9.3%)	7(1.9%)	42 (11.2)	0.7(0.3-1.8)	
	>36months	225(60%)	57(15.2%)	282 (83.2)	1	
Side effects	Yes	120(32)	27(7.2)	147 (39.2)	0.91(0.1-0.95)*	0.4(0.2-.9)**
	Never	183(48.8)	45(12)	228 (60.8)	1	
Current working Status	Actively working	180(48)	37(9.9)	217 (57.0)	1	
	Ambulatory	112(29.9)	32(8.5)	144 (37.8)	1.39(0.81-2.35)	
Opportunistic infections	Yes	191(50.9)	56(14.9)	247 (65.8)	1.99(1-3.65)*	2.6(1.2-5)**
	No	109(29)	16(4.2)	125 (33.3)	1	

*Table 7 Bivariate and Multivariate analysis of Clinical*

Hemoglobin <sup>β</sup>	<12	156(41.6)	41(10.9)	197 (52.5)	1.24(0.74-2)	
	≥12	147(39.2)	31(8.3)	178 (47.5)	1	
Adherence aid	yes <sup>Z</sup>	147(39.2)	37(9.9)	184 (49.0)	1	
	No	156(41.6)	35(9.3)	191(50.9)	0.89(0.5-1.49)	

\*significant in bivariate; \*\* significant in multivariate; Hosmer and Lameshow 0.46

999\* couldn't define themselves as sick or not, saying "I am not healthy I am not sick' for TB;

999" data couldn't found for CD4, \*=significant; β (BMI &Hgb. here classified as category of

WHO); Ẑ=adherence aids such as TV, mobile phone, pillbox, alarm clock **Notice:** AZT=Zidovudine,

3TC=lamivudine, EFV=Efeverenz, NVP=nevirapine, LPV/r=chaetra; @=TB currently on

treatment 37; last in history 99; never in history=239; Z= BMI showed significance when

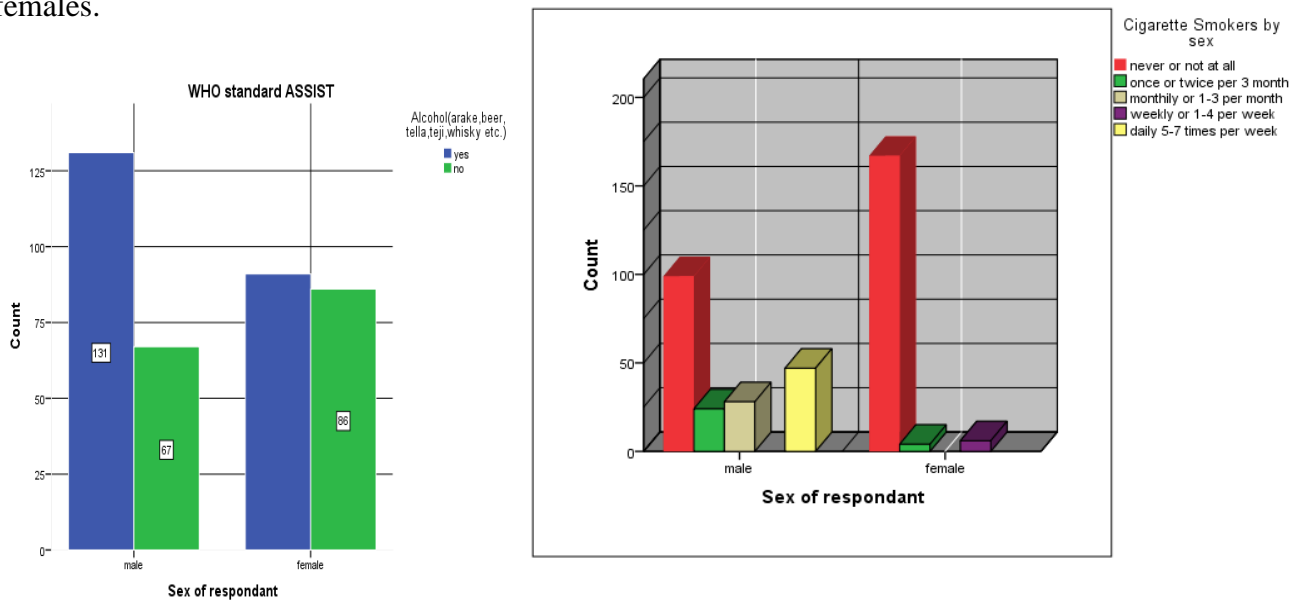
continuous

Most of patients were found in treatment stage two 165(43.3) and stage one 140(36.7). 321(85.5) of patients has <200 cells/μL CD4 cell counts at the initiation and the median CD4 cell count was found below 200 cells/μL; IQR: 25, 75). The most widely used drug types were 1e (lamivudine with its combinations) 113(30%), 1c (Zidovudine with its combination lamivudine and nevirapine) 82(21.8%). Lamivudine with Abacavir and its combination atazanavir 27(7.2%). The large proportion 252(67.2%) of patients were on treatment line one. The dosing refill schedule trend 90(24%) monthly and 285(76%) greater than monthly.

The median for ART treatment duration was 36 months. The majority of them 282 (74.2%) had waited on treatment for more than three years. Most patients 217(57%) were found on actively working status, 144(37.8%) ambulatory and 14(3.7) bed ridden. The patients Tuberculosis treatment history was 37(9.8%) patients are on treatment currently, 99(26.4%) had history of TB treatment in the past, whereas 239(63.7%) had no history of memorizing tuberculosis treatment. The median for hemoglobin was, 11.5g/dl and 197(52.5%) of the participants scored below 12g/dl.

### 5.1.8. Characteristics of Substance Use of PLHIV and its relations with food insecurity

More than half participants reported having history of alcohol use. The practice of alcohol use was more frequent in males than females; 111(29.6) and 72(19.2) in males and females respectively. The behavior of smoking was shown as 28(7.46) having practice of smoking once or twice per 3 month and per month, 6(1.6) weekly and 47(12.5) were having history of smoking daily; while 294(78.4) of participants have no history of cigarette smoking at all. 81 (21.6%) have ever used illicit drugs in their life history, while 294(78%) participants reported having never history of illicit drugs. Some stratification was done to identify drug use practice by sex. 59 (15.7%) of drug users were males and 22(5.8%) were females.



a) Alcohol use by sex

b) cigarette smoking

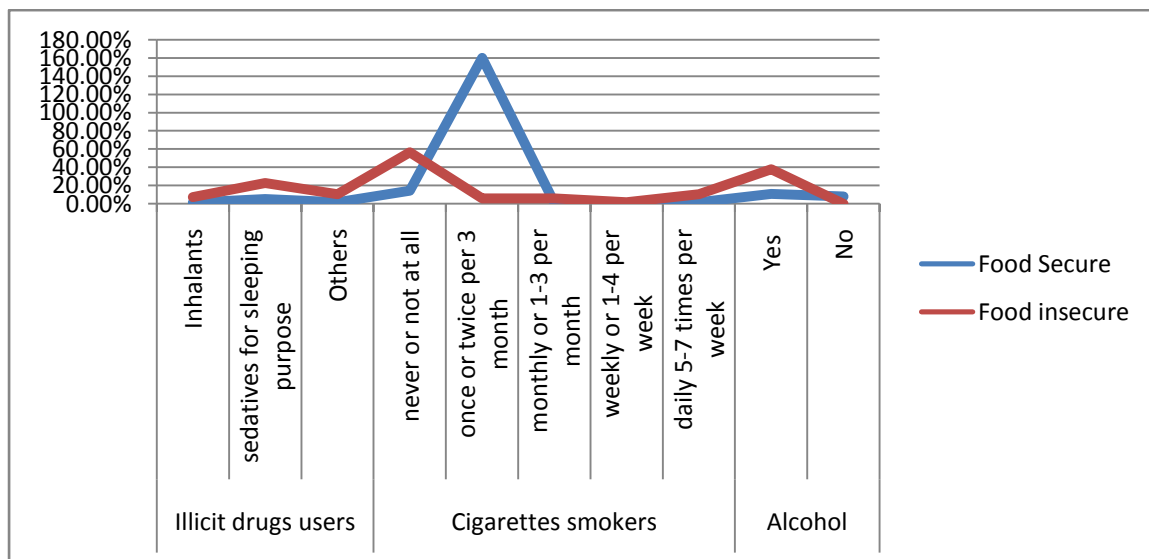


Figure 9 (a,b, c) Substance use characters of PLHIV (Tested using WHO-ASSIST)

Food insecurity is high among drug users, alcohol takers and smokers daily and weekly.

**Table 8** Bivariate and Multivariate analysis of substance use among PLHIV, January 20-21<sup>st</sup>/2017 Ambo, Ethiopia (n=375)

Substance category		Level of adherence		No. (%)	COR(95%CI) P<0.05	AOR(95%CI) P<0.05
		Adhered	Not			
Cigarette smokers	Yes	131(34.9)	43(11.5)	174(46.4)	1.94(1.1-3.2)*	
	No	172(45.9)	29(7.7)	201(53.6)	1	
Alcohol	Yes	141(37.6)	42(11.2)	183(48.8)	1.91(1.13-3.24)*	2.19(1.1-4.1)**
	No	162(43.2)	27(7.2)	189(50.4)	1	
Illicit drugs users	Inhalants	3	41	44(11.7)		
	sedatives @	9	19	28(7.4)		
	Others	0	9	9(2.4)		
	Total(used)	12(3.2)	69(18.4)	81(21.6)	4.5(0.6-1.9)	
Not used		130(57.1)	164(13.1)	294(78.4)	1	

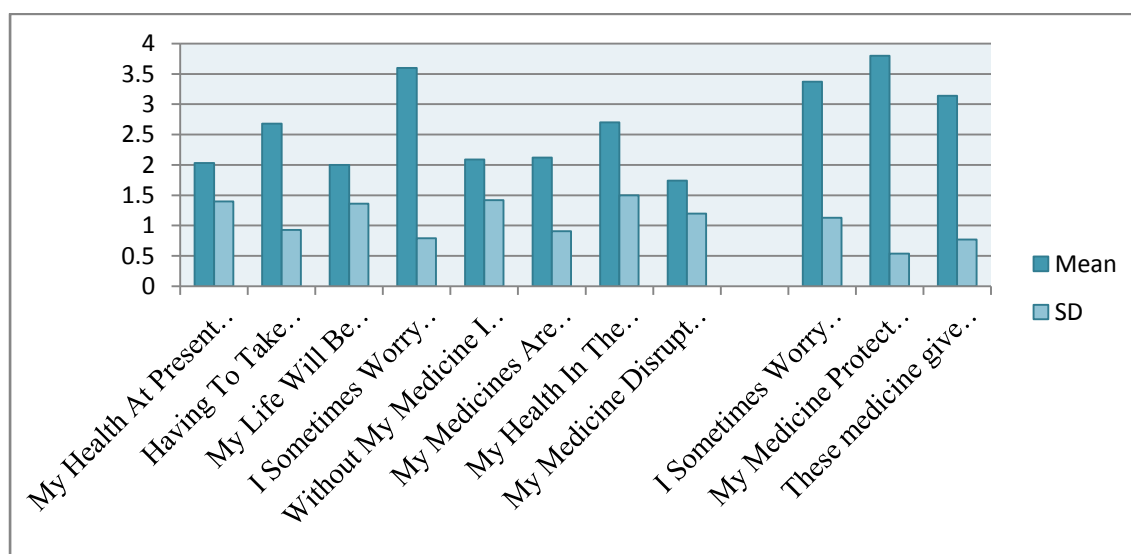
@=*sedatives, taken for sleeping purpose*; \* *significant in bivariate*; \*\* *significant in multivariate*; Hosmer and Lane show 0.46

Most illicit drug users did not adhere to ART drugs 69(18.4). Out of total alcohol users 183(48.8), 141(37.6) adhered while 42(11.2) did not. There were 174(46.4) cigarette smokers and of these, only 131(34.9) were adhered.

#### 5.1.9. Univariate analysis of Patient Belief on ART medication Adherence

The majority of patients 252 (67.2) scored above the mean average; they were grouped as having positive belief on ART medication adherence.

The Average mean =30.2; (SD=8.8)



**Figure 10** patient beliefs on ART adherence distributed among their means



### 5.1.10 Patient knowledge about ART Adherence and practice of Adherence aid, January 20 to April 21st/2017 Ambo, Ethiopia (n=375)

Knowledge of PLHIV has shown developed characters like use of adherence aids among some patients; which could be estimated their awareness to improved level

**Table 9** Patient knowledge status on Medication adherence and practice of adherence aids among PLHIV January 20 to April 21<sup>st</sup>/ 2017, Ambo, Ethiopia (n=375)

Adherence knowledge items	Yes	No
Knowledge on prescribed drugs	363(95.3)	12(3.1)
Ability to identify drugs from other types ,color, shape	354(92.9)	21(5.5)
Ability to identify whether it is combination treatment or not	337(88.5)	37(9.7)
Ability to tell number of tablets to be taken and when to take	336(88.2)	38(10.0)
Developed method to remember drugs time	221(58.9)	154(41.0)
<i>Patients having practice of adherence aid were displayed as follows</i>		
Adherence aid practice of PLHIV	Frequency	Percent
alarming clock	68	18.1
Mobile phone alarm and message	101	26.9
TV/Radio	21	5.6
Pill box	19	5.06
family/friends	12	3
Not aided at all	154	41.0

The knowledge status of participants was grouped as good vs. poor or inadequate. The large proportion of participants 313(83.5%) had good knowledge on at least three and more of the listed items.

#### 5.1.10.1 Adherence Aid practice of PLHIV

In our study 221(58.9%) patients helped themselves by using mobile phone 101(26.9%) alarming clock and 68 (18.1%) used TV/Radio 21(5.6%) to reconsider the medication dosing habit. Some patients reported that they used pill box 19(5.0%) (Either by hanging their pill box in front of their home exit or putting it on the feeding table at any time to establish their dosing habit. Some of them also helped themselves through family or intimate reconsideration or by other methods while 154(41%) participants did not report any mechanism of adherence aid. More than half patients 207(54.8) satisfied with the service at the ART clinic, which means they got the score of satisfaction above 19; while the rest 167(44.2%) got score below 19, that are either very dissatisfied or dissatisfied.

### 5.1.11 Bivariate and Multivariate analysis of Food insecurity and its links of client related factors

Factors like depression assumed to have a link with food insecurity and also non adherence.

**Table 10** Bivariate and Multivariate analysis of food insecurity, and others client related factors among study participants, January 20 to April 21/2017, Ambo (n=375)

Variables	Categories	Adherence		COR(CI)	AOR(CI)
		Adhered	Not		
Perception	Good	143(38.1)	23(6.1)	1	
	Poor	160(42.7)	49(13.1)	1.9(0.9-3.28)	
Belief	Good	167(44.5)	29(7.7)	1	
	Bad	136(36.2)	43(11.4)	1.82(1.08-3)*	2.2(1-4)**
Depression	Depressed	144(38.4)	45(12)	1.84(1.3-1.9)*	2.2(1.1-4.1)**
	Not	159(42.4)	27(7.2)	1	
Food Insecurity	Secure	66(17.6)	5(1.3)	1	
	Insecure	237(63.2)	66(17.6)	3.67(1-7.8)*	3(1-7.8)**
Meal frequency	Low	176(46.9)	53(14.1)	2(1.1-3.5)*	
	High	127(33.9)	19(5)	1	
Knowledge	Adequate	127(33.9)	47(12.5)	1	
	Inadequate	176(46.7)	25(6.7)	0.38(0.2-0.6)	
ART service satisfaction	Unsatisfied	152(40.5)	52(13.8)	2.58(1.47-4.53)*	2(1-4.1)**
	Satisfied	151(40.2)	20(5.3)	1	

\* Significant in bivariate; \*\* significant in multivariate Hosmer and Lameshow 0.46

### 5.1.12 Univariate Analysis of Sociodemographic factors associated with ART non adherence

Respondent's basic informations were listed below to show weather it predicts non adherence to ART or not. To avoid redundancy the frequency distribution was explained with univariate analysis. (**Table 11**)

**Table 11** Bivariate and Multivariate Analysis of Sociodemographic Factors Associated with ART non adherence, January 20-April 21<sup>st</sup>/2017, Ambo, Ethiopia (n=375)

Variables		Adherence		COR(95%CI)	AOR(CI)
		Yes, No(%); n1=303	No, No(%); n2=72		
Age in years	18-22	25(6.7%)	11(2.9%)	0.27(0.08-0.83)*	
	23-27	57(15.2%)	16(4.3%)	0.17(0.06-0.48)*	
	28-32	151(40.3%)	8(2.1%)	0.03(0.01-0.10)*	
	33-37	62(16.5%)	24(6.4%)	0.23(0.06-0.64)*	
	≥38years	8(2.1%)	13(3.5%)	1	
Sex	Male	180(48%)	18(4.8%)	0.5(0.12-0.40)	
	Female	123(32.8%)	54(14.4%)	1	
Marital status	Un Married	181(48.3%)	10(2.6%)	0.08(0.03-0.17)*	0.05(0.02-0.1)**
	Married	47(12.5)	13(3.5)	0.4(0.19-0.84)	
	Divorced	13(3.5%)	7(1.9%)	0.79(0.29-2.15)	
	Widowed	62(16.5%)	42(11.2%)	1	
Education	Illiterate	49(13.1%)	28(7.5%)	2.47(0.51-12.74)	
	Read and write	172(45.9%)	10(2.7%)	0.25(0.05-1.37)	
	Elementary	56(14.9%)	29(7.7%)	2.24(0.47-11.5)	
	Grade 9 <sup>+</sup>	26(6.9)	6(1.6)	1	
Monthly income	<500	172(46.1%)	13(3.4%)	0.1(0.04-0.5)*	
	501-1000	101(27.1%)	51(13.7%)	1.01(0.3-2.9)	
	1001-1500	18(4.8%)	5(1.3%)	0.55(0.12-2.38)	
	>1501	10(2.7%)	5(1.3%)	1	
Occupatio	Employed	62(16.5)	17(4.5%)	1	
	Unemploy	144(38.4%)	14(3.7%)	0.35(0.1-0.7)*	
	Student	7(1.8%)	4(1.06%)	2.0(0.5-7.9)	
	Daily labor	71(18.9%)	26(6.9%)	1.3(0.6-2.6)	

<i>Table 11 Bivariate and Multivariate Analysis of Sociodemographic factors continued</i>					
	Others	19	14	2.68(0.55-2.1)	
Residence	Ambo town	113(30.1%)	56(14.9%)	1	
	Out of Ambo	190(50.7%)	16(4.3%)	0.69(0.09-0.3)	
Family size	Two	35(9.3%)	9(2.4%)	1	
	Three-five	91(24.3%)	48(12.8%)	2.05(0.9-4.6)	
	>Five	177(47.2%)	15(4%)	0.33(0.13-0.81)*	
Distance	≥10km	116(30.9)	35(9.3)	1.5(0.3-1.1)	
	<10km	187(49.8)	37(9.8)	1	

\*significant in bivariate \*\*significant in multivariate Hosmer and lameshow 0.46

### 5.1.13. Bivariate Analysis of Reasons for missing Doses

Many reasons were reported by PLHIV during interview.

**Table 12** Bivariate analysis of Reasons for missing doses and PLHIV related factors, January 20 to Aril 21<sup>st</sup>/2017, Ambo, Ethiopia

Reasons for missing Dose		Adhered	Not Adhered	COR,95%CI
Pill burden	Yes	78(20.8)	40(10.6)	3.6(2.1-6.1)*
	No	225(60)	32(8.5)	1
Pill run out <sup>@</sup>	Yes	134(35.7)	48(12.8)	2.5(1.4-4.3)*
	No	169(45.1)	24(6.4)	1
Drug shared	Yes	86(0.22)	47(12.5)	0.11(0.05-1.24)
	No	17(4.5)	25(6.7)	1
Drug sold	No	303(80.8)	49(13.1)	1
	Yes	10(2.7)	13(3.4)	8(0.16-30)*
Language barrier	No	301(80.2)	71(18.9)	1
	Yes	1(0.3)	2(0.5)	8.4(0.2-68.5)
Fasting and holy water	Yes	300(80)	20(5.3)	0.0038(0-0.1)*
	No	3(0.8)	52(13.9)	1
Disclosure	Yes	167(44.5)	47(12.5)	0.81(0.43-1.22)
	No	136(36.3)	47(12.5)	1

\*significant; @ =pill run out here consider only situations such as drugs dumped, errors of provider on counting, or if fall down

## 5.2. Qualitative Findings

This section presents the results from the exploratory qualitative study, based on which the survey hypotheses and instruments were developed basically to show how

food insecurity was exacerbating non adherence status, and barriers of their adherent behaviors and tried to gain deep understanding on the ART adherence from point of views of PLHIV, their service providers and adherence supporters.

### **5.2.1. Socio-demographic Characteristics of the Respondents**

At the time the HIV/AIDS patients participated in the interviews or FGDs, their ages ranged from 18 to 60 years old, More patients who participated in the FGDs were female than males (12femalesvs.8males), almost all of the patients,85% had not completed high school.About 65% of HIV/AIDS patients reported thatthey were jobless and did not receive any monthly income or social welfare while few only 3% of them, were supported by “Hunde Jirenya” (endemic NGO), so they relied mostly on their family support, Some of them had some small unstable income received from short-term casual work (e.g. daily labor income generated from Ambo university constructions).

Only 4 had permanent jobs, the rest worked as farmers, small traders, and barberies with very low monthly income, ranging from 500 to 2000.The majority of this group, 75% were un married, less than one quarter reported they had previously been married but were divorced, separated, or widowed at the time of interview; out of those married participants the majority, 15% lived with their children and respected family while the rest had no children, three fourth of patients had been on ART for more than twenty four months. The newest patients entered the ART program three months prior to the interview, and the oldest one had been on ART for more than seven years.

Three focus group discussions were conducted 14 PLWHIV and 6 adherence supporters. Two patients care givers were involved in FGD.ART clinic related factors like (quality of service provided the and service satisfaction, individual factors like (substance use, knowledge, belief, perception depression and reasons for skipping doses like empty stomach, alcohol, distance and forgetting were among the factors raised in discussion.

#### *Food Insufficiency on Adherence*

Food insecurity was raised as a barrier to adherence through stacking adherence aids, increasing rate of side effects, a reason for gastritis and depression a reason for forgetfulness.

*A 47 years-man who was on ART described his personality and the side effects:*

*"Since I have taken the ARVs drugs my memory was not good; to speak the reality; I don't remember even what you tell me in very recent minutes. I think*

*drugs have made me dizzy because I took it with empty stomach.”*

One mother (old age) mentioned she used TV programs to remind her to take her pills and 52 years old male also mentioned that he asked for help from others in specific cases such as when going out to take food with him because, he was afraid of taking drugs when empty stomach

*“Most of the times, especially when I took my drugs adherently, it increased my appetite and I tried to find any things to be eaten, But you know it is not easy to eat these days since I was jobless. So I felt headache, got angry and depressed finally I threw out my drugs and went to my bed, a few minutes later when I wake up the time of regular medication passed and I take the doses of disappointed with the present appointment date, by the result I would get vomit and many drug*

*side effects, frankly speaking I jumped when the rash covered my face and especially the yellow one (Efaverenz) causes sleeping any time I took it.*

Side effects that ranges from mild to severe such as itches, rashes, vomiting, allergy, dizziness, fatigue, sleeplessness, nightmares, headaches, irritability, diarrhea, stomach-ache, feeling sick, myasthenia, heart arrhythmia were frequently reported. Gradually, side-effects appeared at the early stage of the treatment period, and then they decreased

Male person said (31 years old): He expressed the effect of food insecurity and side effects at the same time.

*"I don't jump my drugs; but, in cases when drugs are run out of bottle I borrowed from my wife after we counted by agreement because it is better to borrow; when Hunde Jiregna provide food especially teff. However recently they stopped helping us (providing food) and I am in complex with my drugs I drink 'tella', with little money instead of food. The difficulty condition for me is I don't like to see my drugs when I am hunger; it is appalling and horror for me.*

A male patient in the FGD from prison mentioned how he coped with, when he is empty stomach:

*"I chewed the pills so they would be adsorbed quicker and easily, because drugs are burn for me when I took at empty stomach. It is difficult for me to match eating schedule of prison with my drugs dosing and we got **meat only twice in week**, the food is not comfortable for me”*

A divorced user explained in her in-depth interview:

*"I need to follow the doctor's prescriptions and take pills on time. My doctor said*

*the more strictly you follow the regimen, the less likely drug resistance would occur the medications would be more effective, prolong my life. However, I skip the dose very rarely for e.g. when I drink coffee with empty stomach the drug makes me dizzy and my gastric stops its function; so I never add drugs on my burn.*

Lacking food aid rose as reasons for non adherence. One active FGD participant said:

*"One of my friends, who enrolled in the ART program supported by "Hunde Jirenya" (endemic) Ngo, he did not skip when he was getting food aid; food aid would prolong his life, improve his health status.*

Dietary diversity and meal frequency took majority of place in this discussion reports

*I ate once in a day mostly; that is also as the will of God, sometimes I pass the whole day as a minute by only a palm of cereals and many glass of water, my generic food is 'shirowat' ,I never remember in recent period when ever I ate meat or I drank milk of cows. Nobody remember me, I live lonely; I have no relatives, my families are at the rural, send me very few potatoes very rarely, I live on Corn. My life is under question; for me this is not the time to speak about adherence, since the drugs I chew cannot be a food for me.*

Poor knowledge and bad belief of negative perceptions was raised as factors of non adherence: 31 –years old woman participant said:

*"I know that HIV is incurable disease, by no any means HIV can be cured. So these drugs have its own mission either to shorten my life span or other purpose; otherwise treatment for incurable disease is nothing, how could one believe this.*

Good belief helped ARV users cope with ART treatment and its potential side-effects:

A 21 years old high school level girl described:

*"Previously I was as thin as a roof edge; you know I couldn't walk, just stayed in bed the whole day. Since taking these medications, my CD4 increased from 190 to more than 280 now. To date I have gained 11 kg, feel much better I am sure the drugs works to back life."*

Dose refill schedule and distance are causes for drug resistance; the examples of drug resistance were also described by the ART provider BSc. nurse

*"ART adherence is very critical one patient came 4 years ago. During that time his CD4 was at undetectable level. We did every recommendable help for him; he*

*waited for long time in our hospital even if I don't remember the exact time of his stay. At the time of his exit his CD4 was about 150. Consequently; he continued taking his drugs, I remember that I heard from his respected wife that he started learning at Addis Ababa University for his postgraduate and now he is at good health status.*

*But his wife stopped from fitting strictly to her appointment and sometimes she jumps her schedule by the result she got sick seriously; now she came again for treatment and her CD4 at the moment is back to less at undetectable level from 220 before she got ill. Might be, it is because of drug resistance; we prescribed her to the second-line drugs. She said "it was difficult to come on my appointment date"*

#### TB (Opportunistic infections)

Most patients did not explain any drugs complexity because majority of them were taking first line drugs. But, still hard for a few patients who have to take additional medications for their tuberculosis TB (the serious opportunistic infection).

*"I eat very little, my doctor gave me so many bottles of drugs unusually, when took part of them I felt headache, vomiting etc."*

#### Marital status & multi sexual partners

28 years male explained in his IDI:

*"I have three sexual partners, the first one separated after a month and went to Addis Ababa, the second one also went to other area for searching job, now I have another third one. But, the two before separated from me also live with me; visit me when they come here. I don't like such life; but I couldn't marry since I am poor."*

Adherence supporters also play great role in encouraging people to cope up, the case manager mentioned about substance users; alcohol, the frontier one.

*"I advised him not to drink alcohol at all. But, he could not give up the alcohol and forget taking his drugs. You know he comes per two month or at three weeks rarely. He does not know how much drugs salvaged and how many of it lost. When he is asked, the reason for skipping doses and coming disappointedly he says I drank at the evening and forgot, because I waited late at bars."*

A man (45 years old) expressed how the family support helped him, since he wants to live for the sake of his one son developmental milestones,



*"My wife died of AIDS already, I got infected "My life became meaningless, but just let me live thinking about my son" I believe If I take medications would help me live longer to raise my son until he is grown up enough a little bit to feed himself my wife sister lives with me; she support me; even when I was outside, when my mobile phone alarm vibrates, she gets pills at one of her hand and gets water for me at the other of her hand It is quite difficult for those whom people abandoned them to live by themselves without any caregiver.*

## Chapter six

### Discussion

The present study highlights pertinent insights from different PLHIV, healthcare providers and adherence followers as well as manager on factors that hindering cleave to ART adherence in patients with HIV/AIDS. The overall prevalence of ART adherence in this study was 80.2%. Which means the level of non adherence at Ambo General Hospital during the time of our study was 19.8%, which is sub optimal to adherence. Based on the Morisky categories of adherence 56.5% were moderate and 19.2% were grouped as lowest adherence while only 24.7% of study participants grouped as highly adherent ,those who did not miss their doses for at least once.

Adherence was more likely among 28-32 years of age group; 143(38%) were males and 16(4.2%) were females in the same age group. Adherence was high among males than females 180(48%) and 123(32.8%) respectively. Adherence in our findings was high comparing with many developing countries report since adherence rates ranges from 50% to 70% in resource poor settings(114). 54% Kenya(115), 82% Adis Ababa(116), but less than 96% Dire Dawa (106). This plausible figures are similar to that of 77% of Mills and colleagues found for African patients in the meta-analysis (117).

The reasons for missing doses were common like in many studies reports. As mentioned in study conducted locally in Yirgalem (99) reasons of non-adherence cited by the patients were; being busy or simply forgetting (51%), change in daily routine (9.4%), and being away from home (8.3%). While study from Uganda contradicts by giving significant numbers for those who had missed their doses as the most common reasons, travel (48%) and forgetfulness (28%)(118).

Another study from Ethiopia on adherence level reported forgetting to take pills(36.7%)and running out of pills(20.0%)(106). This finding of course different from the study done in Addis Ababa that found being too busy or simply forget (33.9%)and being away from home(27.5%)(116) as major barriers to adherence.

Unlike the above reports the most frequently cited reasons in present study were distance (56%), not disclosing their status or never wanted others to remind them (50.9%) being sick/ill(unable to swallow) (43.7%), and drug toxicity or avoiding side effects (36.3%). Simply forgot (30.7%) was some less problem compared to report from Dire Dawa whilst almost similar to report from Addis Ababa. We faced other reasons like; pill burden among TB patents *“I eat very little, my doctor gave me so many bottles of drugs unusually, when took part of them I felt headache, vomiting etc.”*

Reason for stopping dosing since symptoms were controlled in this study could be compared with change in daily routine (9.4%), in Yirgalem Ethiopia and being away from home in this study was 13% whereas it was (8.3%) in Yirgalem Hospital. The study in Costa Rica conducted by 320 group teams, on the other hand found difficulty in finding transportation (54%) as major reason to non-adherence (119); so one can reconsider this study with the distance problem frequently reported; even if transportation is not significant in our study. The pills running out (in case of our study sold (2.6%), shared (11.2%) is similar to study in Nepal (62%); the only difference is the magnitude (70). Jumping dosing when stomach is empty (58.6%) is the major problem in our study similar to the report from Dire Dawa (61.7%), Lack of food to take with the drugs as a major cause for non-adherence was unforgiving report of many studies the same to current study result (97, 106), (120), (76), (46).

Similarly food insecurity was also raised as a major reason for missing doses in our FGD

*“...the difficulty condition for me is; I don't like to see my drugs when I am hungry; it is appalling and horror for me.”*

The study conducted in Uganda mentioned there were five mechanisms through which food insecurity impacted ARV adherence: increased hunger with ARVs, worse ARV side effects in the absence of food, counseling on the need to take ARVs with food, competing demands between food costs and health care expenses, and forgetting or being unable to take ARV doses while working for or searching for food. Several of these mechanisms have been reported in other studies from sub-Saharan Africa (121, 122), (97). The meal frequency and the items to feed were among major factors that exacerbated the risk of food insecurity in current study.

The prevalence of food insecurity in this study was 294 (78.4%) of study participants were food insecure at study period. And 181 (48.3 %) participants grouped under high dietary diversity while 194 (51.7%) were low. Similarly the meal frequency within previous twenty four hours 146 (38.9%) of respondents got high meal frequency which means able to eat at least four times in a day. Only 72 (19.2%) food secure; 50 (13.3%) severely food insecure, patients were either those who were being enforced to go to bed to sleep without eating dinner or faced food lack at their home to eat when they needed.

*I ate once in a day mostly; that is also as the will of God, sometimes I pass the whole day as a minute by only a palm of cereals and many glass of water, my generic food is 'shirowat', I never remember in recent period when ever I ate meat or I drank*

*milk of cows. Nobody remember me, I live lonely; I have no relatives, my families are at the rural, send me very few potatoes very rarely, I live on Corn. My life is under question; for me this is not the time to speak about adherence, since the drugs I chew cannot be a food for me*

The meal frequency status also indicated less than half proportion of the study participants 185(49.33%) consumed 3 times, 146(38.9%) consumed more than 4 times and only 44 (11.73%) patients consumed either once or twice in past 24 hours. The eating balanced diet (dietary diversity) was poor even in adhered patients. The large proportion of food group was cereals; which was a mode in the group and tubers or root foods. The adherence status instance for cereals food group was (79.9%) of patients who ate cereals only 299(79.9%) were adhered to their treatment while 65(17.3%) were not. In contrast meat was rarely eaten food group with its friendly milk. Out of patients who ate meat 123(32.5%) only (13.2%) were none adhered whereas 20% were adhered to their ART treatment.

By the same manner out of 119(31.5%) who ate milk group and 49(13%) those who ate egg, only 67(18%) and 0% were none adhered while 101(26.9%) and 13(3.5%) adhered with milk groups and egg respectively. This indicated the increased risk of food insecurity was related with eating less diversified foods and diminished meal frequency. Our qualitative study explained the influence of food insecurity in paramount not to obscure the extended pressure of food insecurity on ART treatment adherence. The finding is very similar to finding offocusgroupdiscussionconducted in Nairobi, Kenya(123) expressing that food insufficiency is the major factor to non adherence.

Many qualitative studies reported food insufficiency is highly associated with ART treatment non adherence(124, 125). The most common reason for missed doses was food insufficiency (n = 20, 51.3% in Zambia(88), 61.5% in Dire Dawa(106) and in our finding also 58.6% which is higher of all indicated reasons, next to distance and simply forgetting. Study in Zambia expressed food insufficiency in the previous 30 days (AOR:5;CI:1.8,13.8), five times exposure was increased in food insecure groups than the secure ones(88). These value exceeds current findings, the reason might sociodemography, AIDS prevalence and economic status. But our qualitative also mentioned as food insecurity was the problem:

*“...Most of the times, especially when I took my drugs adherently, it increased my appetite and I tried to find any things to be eaten, ....., I got angry and depressed finally I threw out my drugs and went to my bed, a few minutes later when I wake up the time of regular medication passed and I take the doses of disappointed with the present appointment date, ..... I would get vomit and many drug*

*side effects,frankly speaking.”*

Current study showed the associations of food insecurity with non adherence were (AOR: 3; CI: 1-7.8). The risk of non adherence among PLHIV on ART at Ambo General Hospital was increased in food insecure patients by 3 times, than those who were food secured in the same area and period. This value showed, the same value with one study finding, 3 times greater in (120). The similarity might be both Ethiopia and Kuwazulu are found Sub Saharan Africa bearing their differences. Additionally studies conducted in south Africa and Uganda explained food insecurity was highly associated with non adherence (AOR:1.95; CI:1.65, 2.29)(122),(97) which is smaller than our finding.

The reason might be due to patients were seriously followed especially for individuals during their fasting. We stopped data collection 3 days before and after the Christians Easter. Finally the extended effect of food insecurity on ART patients was shown by study conducted recently in Uganda expressed food insecurity was associated with higher odds of ART none adherence (AOR 1.56; CI:1.10–2.2) incomplete viral suppression (AOR 1.52; CI: 1.18–1.96), and CD4 T-cell count less than 350 (AOR: 1.47;CI:1.24–1.74)(97).These finding implies most Sub Saharn African countries had similar odd of non adherence with respect to food insecurity.The current finding also implied the food insecurity among PLHIV was a risk for non adherence and the report of PLHIV showed the poor dietary diversity rather than food lack in many participants.

Depression has great link with food insecurity than most factors of ART adherence. Study from south Africa and Durban explained depression prevalence as 35% and 60% respectively among PLHIV participants(126).The Cross-sectional South African studies have reported an 11–60% prevalence of depression when screening patients after their HIV diagnosis and it has significant negative effect on ART adherence. Participants with depressive symptoms were less likely than those without depressive symptoms to obtain a CD4 count (70% vs. 78%). The median CD4 count was lower in those with depressive symptoms (137 cells/IL; IQR57–273)(127). Study conducted in Ethiopia manifested that patients who did experience depression (AOR: 0.36; CI: 0.21, 0.61) were less likely adherent than their counter parts. Experiencing hopelessness and demoralization which can expose them skipping or forgetting their regular treatment(128).

The prevalence of depression in current study was 189(50.4%) with (AOR: 2; CI: 1, 4) The proportion of being non adherent with ART treatment among PLHIV was 2 times increased in depressed among PLHIV than those who were not depressed. This

finding has a strong implication that there is a need to design to screen patients on regular bases to seek provision for counseling.

Most studies about medication adherence concluded that negative beliefs about medications is a powerful barrier to successful adherence(129).Participants endorsed the belief that their medications are necessary for their current health but they were concerned about becoming too much dependent on their medications. Fifty one percent of the participants who endorsed belief that medications are harmful were non-adherent. Belief and faith that God provided the knowledge to make ART acts was observed to promote adherence, whereas studies reporting belief in religious cures for HIV over conventional medical approaches observed increased non-adherence(130); whilst the use of prayer predicted higher adherence in a Zambian study (131) showed good adherence; the use of prayer was not associated with levels of adherence in the present study and was therefore excluded in multivariate analysis even if fasting was frequently reported as reason for missed dosing.

The ‘spirituality/ religion/personal beliefs’ domain items to show about others blaming them for their illness, if they worry posterity life or still worrying about death is coming to them. *“I know that HIV is incurable disease, by no any means HIV can be cured. So these drugs have its own mission either to shorten my life span or other purpose; otherwise treatment for incurable disease is nothing, how could one believe this* The belief status of current study 196(52.2%) had bad belief about ART adherence, (AOR:2.2;CI:1,4) beliefs of my medicine disrupt my life (AOR:1.5,95% CI:1.2,1.8) sometimes worry about becoming too dependent on my medicine(AOR 1.8;CI:1.5,8) are items of BMAQ associated with non adherence.

The indication of the finding shows the chance of being non adherent to treatment was increased by 2 times in PLHIV having bad beliefs about ART, than those who had good belief through any developed attitude. This meant by, as more positive attitudes about life and spirituality developed God can cure showed positive association with adherence, and the lower hesitation, so no worries of dying were unforgiving associated with lower adherence.

Some study expressed overall patient satisfaction (of 489 patients) with care is positively related to retention in HIV care and adherence to HAART, which in turn serve as key determinants of HIV suppression. This finding suggests that patient-centered interventions designed to improve the care experience could serve as an innovative method for optimizing HIV outcomes(132).The patient satisfaction was explained relating social support with ART treatment from local study in Ethiopia; (OR 1.87; 1.03, 3.40) (99); the current study showed AOR of 2.1;CI:1-4) which means ART non

adherence was very high by 2 times in unsatisfied patients with the service given at the ART clinic excluding other ART related service out the clinic.

Similar to our qualitative study, qualitative study from Uganda reported side effects included headaches, stomach pain, dizziness, shivers or tremors, loss of energy, fainting, sweating, and rapid heartbeat. “*When you are on ARVs, when you take it on an empty stomach, you don’t feel well and health feelings were, more complicated.*” source(122). Showing side effects and toxicity-related treatment discontinuation may be more frequent for d4T compared to ZDV-containing ART (133). Comparatively d4T+3TC and ZDV+ddI with non-nucleoside reverse transcriptase inhibitor (NNRTI) in previous studies.

TDF-containing regimens have been shown to be better tolerated and have fewer side effects than d4T-containing ART but comparably effective(134). Around 411 (79.2%) patients included Lamivudine (3TC), Stavudine (d4T) + Efavirenz (Stocrin) and for 108 (20.8%) as not available for patients on this programme during the time of the study(120). In present study all patients included Lamivudine in their combination while 165(44%) included Efavirenz. Study in Nepal reported wanting to avoid side-effects (58%); (AOR: 6.04)(70) has potential to be cause of non adherence by six times.

The current study finding (AOR: 0.4; CI: 0.2-0.9) was less comparing to the study from South Africa with odd of risk, 2.20; CI: 1.58, 3.07). Current study indicated the odd of side effects among ART adherent groups was 60% less likely compared to the odds of side effects among the non adherent patients; which means this odds was 2.5 more likely in non adherent than in adherent groups for PLHIV on ART. Our qualitative also (... *I jumped when the rash covered my face and; especially the yellow one (Efavirenz) causes sleeping any time I took it.*

The disparity showed might be due to the life style and South Africa is among the first three sub-saharan countries more than Eth multivariate iopia in HIV prevalence. This implied side effects were problem in Ambo Hospital and ART non adherence would be increase unless solved, either service providers, or drugs quality and stay period in stock might created problem. The implication of current study was either drugs stay in stock, or drugs might be replaced due to in active availing drugs in stock or insufficient prescription information and patient misbehaved drugs such as alcohol use and others.

Dose refill schedule was indicator found levels of adherence amongst PLHIV reported in several researches. The doses, schedule indicator found adherence to be 3.3 times greater in patients groups with a CD4 count above 200 cells/L, 4.6 times greater among patients with the 3TC, d4T Nevirapine regimen and higher overall quality of life.

While lower dose, schedule adherence was found for patients on 3TC, d4T + Efavirenz regimen(120).

In current study only 15.3% did not take their drugs yesterday (the day before interview) and 13% of the study participants stopped their medications without telling to their doctor. One study expressed that women were more likely than men to forget to refill medications and do not know how to take the medications correctly; 97% of the patients had not missed their doses in the last week while 93% had not missed their appointments in the last three months. For those who had missed their doses, the current study also revealed that 10.6% of women and 13.3% of men were scheduled in previous month whereas 36.5% and 39.4% of women and men were scheduled per two month. In contrast to previous study only 180(48%) of males were adherent to schedule whereas 32.8% of women adhered to schedule.

Reasons of dosing schedule as mentioned in our in depth interview result were two reasons. The first one was newly coming and treatment initiated patients had a responsibility of coming per month for the sake until they experience their drugs even if they were from many kilometers. The second reason mentioned was to save from transport and other economic and social support challenges; it was recommendable to take their drugs for two months and even for more when the patient's reason is valid. Study conducted in Ethiopia locally showed schedule fitting to daily routine was (AOR: 3.94;CI:1.03,15.07)(99). In our qualitative part:

*“...But his wife stopped from fitting strictly to her appointment and sometimes she jumps her schedule by the result she got sick seriously; now she came again for treatment and her CD4 at the moment is back to less at undetectable level from 220 before she got ill.Might be, it is because of drug resistance; we prescribed her to the second-line drugs. She said “it was difficult to come on my appointment date”*

The dose schedule in current study was (AOR: 2.7; CI:1.1, 6). That is the patients that missed their regular (monthly) dosing were exposed to non adherence by almost 3 times than those patients who did not missed their appointments. The most common reasons were distance (56%) to clinic, and forgetfulness (30.7%). This implies most patients come from distance or the experience of the Hospital in service was greater than a month. As mentioned by study from Uganda, alcohol has indirect influence on adherence by confounding dose schedule. Its negative effect was significant at with missing appointment and missed doses(118). Similar to this study it was so objector in



present study for non adherence through interrupting refill schedule since 183(48%) patients used alcohol in current study.

Study finding from Uganda showed patients on ART who used alcohol were more likely to miss a dose during the course of their treatment compared to those who did not use alcohol with (AOR:2.5;CI:2.40,27.83)(118).Another study from Jimma Ethiopia explained the effect of alcohol Patients with CD4 count of lower than 200 cells/mm<sup>3</sup> had 80% lower odds of AUDs(COR 0.20, CI:0.08,0.48)(96). By the same manner the strong association of ART non adherence with alcohol was explained from Southwest Ethiopia(135).The alcohol association with ART non adherence.Health professional service provider(Bsc.nurse) mentioned in IDI abot her patient:

*“...he could not give up the alcohol and forget taking his drugs. You know he comes per two month or at three weeks rarely. He does not know how much drugs salvaged and how many of it lost. When he is asked, the reason for skipping doses and coming disappontedly he says I drank at the evening and forgot, because I waited late at bars.”*

In our quantitative study was also (AOR:2.1;CI:1.1-4),which meant the odd of non adherent among alcohol users PLHIV was by 2 times more than in non alcohol users PLHIV. This value is less than the previous studies the reason is the tool we used in this study was SATIS WHO standard which asks all substances in one tool each type per time. So the value was shared for each type.This implied that the experience of alcohol intake among PLHIV was high and further awareness creation is needed.

Opportunistic infections had history of being strong predictor for ART non adherence in many studies. Study from Eastern Ethiopia patients with history of opportunistic infection (AOR:2.81;CI:1.47,5.36) (128). Similarly our finding having, (AOR:2.6;CI:1.2,5) which showed the odd of being ART non adherent is greater by more than two in patients having history of opportunistic infections, mainly TB, over the last two weeks. Currently 34(9%) patients were taking Anti-TB drugs with ART drugs and 99(26.4%) having history of being TB smear positive in past, while 239(63.7%) patients never had the history of disease. Findings implied the TB suspicion was high.

Unlike many studies marital status had a great association with non adherence among unmarried than any other category of marital status, or those who had history of divorce, widowed or married; in our sample (AOR: 0.05; CI: 0.02, 0.1) showed the odd of being unmarried was 95% less likely to adhere compared to being married, divorced or widowed when compared to dhered patients.

## 6.2. Strength and Limitations of the study

### 6.2.1. Strengths of the Study

It applied the composite method to measure adherence. One the common self report of poor settings and the other one pill counts which was recommended by many developed and developing countries. As evidence the five adherence study conducted in Ethiopia previously and used as a reference in current study used only self report and recommended to use composite methods. The current study came up with the composite method overwhelming through many challenges by excluding incomplete methods of ART measurements like EDT, except taken as additional indicator. Measurements took place using standardized and tools tested in developing countries. Important variables indicating reasons for missing dosing were added after literatures reviewed especially those which are not included in the standardized Dr. Morisky medication adherence scale.

The study used mixed design and also aided by records review so, explored many factors associated with ART non adherence, in addition to food insecurity. Unlike many studies in this case influence of food insecurity was seen after many confounding variables were controlled relatively in software. In this study additional adherence indicating situations were taken comparatively for instance the cohort chart on the wall in ART service room, EDT (electronic dispensing tool-computerized) in drug dispensary room. Especial techniques were used to minimize non response rate below 2%, through matching dose appointment date and study period in pill count and during Orthodox religious followers and others duration with data collection period; consequently, the response rate for this study was 97.9%.

### 6.2.2. Limitation

This study has several limitations. We did not assume causality of the statistically significant associations since it was from nature of cross sectional study design. The PLHIV under 18 years, pregnant mothers and loss to follow up were excluded from the study and might the association would be more manifest able especially for PLHIV under eighteen years. Assessment of treatment adherence based on a self-report may be subject to recall bias and pill count subject to social desirability bias, by dumping pills since they bring the missed doses to health care providers. Thus, an overestimation of adherence is possible. However, there is evidence that a simple self-report adherence questionnaire provides a reliable. It is also an inexpensive and quick method to use in a field research and resource poor settings (66-68) and sensitive measure of adherence to predict non adherence. All opportunistic infections cannot be inculcated since they are not achievable and difficult to ask participants in corporating with the tool. Drugs for

prophylaxes such as cotrimoxazole were not included in pill counts; since they might be considered as pill burden in some patients.

## 6.3 Conclusion and Recommendation

### 6.3.1 Conclusion

The level of adherence to medication and clinic appointments for patients on ART in the study population was sub optimal (<95%); 82.4% of pill count and 80.8% in self report. So the adherence level was 80.8%; and the food insecurity prevalence is 78.4%. Food insecurity was associated significantly with ART non adherence. Factors like social stigma, multi sexual partners, food aid, social support, patient perception, knowledge, Sociodemographic characteristics except marital status, distance, adherence aid; substance use except alcohol, social stigma, and clinical situations mentioned in this study; except dose refill schedule and side effects were not associated with ART non adherence.

### 6.3.2. Recommendations

Based on the revealed study findings the following bodies are vigorously recommended

1) Health managers in West Shewa zone at every level starting from Zonal health department

- ✚ Health managers at all levels should work to increase the level of ART adherence applying necessary measures
- ✚ It is possible to suggest that health professionals could change their patients' attitude more, through providing them increased information about the techniques to be supported by; not to skip dosing. So, health managers should work more in integration with every ART care providers at both facility and community levels (peer educators) to assist patients that are likely to miss their doses or appointments, to increase patient satisfaction in service (accessibility and availability)
- ✚ Food aid has good performance in enabling patients to adhere to their drugs; so, NGOs and other stakeholders should give concern to food aid for PLHIV.
- ✚ ART treatment requires the right treatment act; to save PLHIV from drug resistance. Since the treatment drugs are combination the skill and fitness of professionals is compulsory; so updated guidelines, refreshment training and review meetings are issues should never be given up to improve service providers skill on treatment and enabling them to provide

exact treatment, by avoiding errors encounter in treatment to avoid side effects and minimize non adherence.

## 2) For ART patients who are on ART treatment

- ✚ it is serious not to skip at least a single pill of ART treatment drugs; since it creates resistance to drugs through viral suppression of immunity, increases your hospitalization and disturb your life through devastating all your opinions, hope to life and self esteem.
- ✚ Since you can lead health and productive life through sticking fast to your drugs combination, by no any means you feel fear of death, hopelessness, demoralization not to develop depression, which may complex your life; since depression showed great significance with non adherence
- ✚ Eat balanced and diversified foods every day frequently; avoid alcohol intake and substance use at all. Belief of good in ART treatment could change your adherence and attitude. So, belief that ART drugs can enable you to fight against AIDS, and prolong your life by minimizing chance of opportunistic infections you may face if you take correctly. So convince yourself to go with your drugs since it saves life back.
- ✚ Avoid jumping doses when your stomach is empty, develop characters like adherence aids use by avoiding factors expose you to drugs side effects, such as alcohol, and the best way to inform your doctor for every challenges you may face that influence your drugs adherence, or enforces you to jump your dose either legally or illegally or any symptoms of side effects since fear of side effects showed significance with non adherence.
- ✚ By no any means you should be disappointed from your ART clinic and be aware of taking your drugs monthly increase your responsibility and helps you not to forget, since dose refilling at greater than month showed significance with non adherence.
- ✚ You should also avoid having multiple sexual partners; because being unmarried was significant with non adherence; so fix yourself to one and one sexual partner.

## 3) Policy makers and planners

- ✚ The Oromia regional health Bureau, West Shewa Zone health department and each woreda health offices in the zone are recommended to strictly follow PLHIV at improved level, should recruit

NGO, for food aids to minimize fear of food run out which may cause depression and focus on activities like IGA by allocating budget; fulfilling equipments and provision for training preprofessionals, and working to combat un satisfaction in service.

4) Health care facilities:

- ✚ All primary health facilities should work to increase level of adherence, Especially on factors mentioned above. Especially if good management was given there, at health centers level the patient start to develop good belief to send his CD4 to hospital. Similarly if no good belief, hopelessness and fear of death start there and depression would be developed.

5) At community level

- ✚ Community conversation (CC) should be strengthened, awareness should be increased on like HIV re infection which is consequence of multisex, not to disclose their status that may cause them to isolate them selves from social interaction and face depression.

6) Health professionals in Zone

- ✚ Every health professionals should never ignore this chronic disease to save PLHIV, who are undermined by double burden of factors like behavioral, food insecurity forgetfulness, depression and work to increase patient satisfaction in service just they provide them. Convince patients on monthly dose refill schedule, since refilling at more than month was associated with non adherence. Should work also to increase their awareness and behavior of adhering to medication, should never forget to ask their problems in adhering to medication.

7) Adherence supporters and case manager

- ✚ The adherence supporters should act strictly and strengthen their follow up techniques
- ✚ Should discuss well on factors showed significance in this study
- ✚ Case manager should discuss with these factors and report to ART service providers

8) Researchers:

- ✚ Further researches should conspicuously reveal the influence of household food insecurity on ART adherence and its intricate relationships.

- ✚ Investigating to reveal the cycle relationship between food insecurity and ART non adherence, to the right level minimizing bias through applying composite methods to measure ART adherence.

## ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Faculty of Public Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: \_\_\_\_\_

Date. \_\_\_\_\_

Signature \_\_\_\_\_

## APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: \_\_\_\_\_

Date. \_\_\_\_\_

Signature \_\_\_\_\_

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**AnnexOne**

**Table1.Comparing ARV adherence measuring techniques**

Methods	Advantages	Disadvantages
<i>Direct methods</i>		
Directly observed methods	Most accurate	Impractical for routine use Patient can hide the pills in the mouth and discard them
Measuring level of medicine or Metabolic in the blood	Objective	Variations in metabolism and white coat adherence can give false result; expensive
Measuring biological marker in the blood	Objective	Expensive
<i>Indirect Methods</i>		
Patient questionnaires, patient Self report	Subjective, simple, inexpensive, The most useful method in clinical settings	Susceptible to error within increase in time between visits Overestimation
Pill counts	Objective, easy to perform	Data easily altered by patient e.g. pill dumping
Electronic medication monitors	Precise, pattern zing Medication	Expensive, requires data downloading from medication vials,

Source: (Menamo E.D 2014) Composite method is best than single method since there is no gold standard to measure adherence both in developed and developing countries.

**Annex Two Sociodemographic and food insecurity relation ships**

**Table 5** Food Insecurity and Sociodemographic relationships (N=375)

Sociodemographic characters		Food insecurity Status		Sociodemographic characters		Food insecurity status	
		Food secured	Food insecure			Food secured	Food insecure
Monthly	>1001	216	54	Age of	18-22	6	30

Income	<1000	18	87	respondents	23-27	12	61	
Total		81	61		28-33	33	126	
Residence	Ambo	32	137		34-38	16	70	
	lives out of Ambo	40	166		>38years	5	16	
ART Duration	3-36months	23	70		Sex	Male	41	157
	>36months	49	233			Female	31	146
Distance	<10km	27	124		Marital status	Unmarried	42	149
	≥10 km	45	179			Married	10	50
Occupational Status	Unemployed	32	124			Divorced	3	17
	Employed	16	56			Widowed	17	87
	Merchant	1	4	Had Support	Had	53	217	
	Daily Labour	15	82		Had No Any Support	19	86	
	Student	3	14	Food Aid	Yes	52	160	
	Tired	2	4		No	20	143	
	Imprisoned	2	6					
	Sexual Workers	0	11					
	Others	1	2					
	Educational Status	Illiterate	15	62				
Read And Write		38	144					
	Elementary	13	72					

	>12 And Levels	4	16	
	Diploma And Above	2	9	

**Table 5** Dietary Diversity relations to adherence of PLHIV, January 20-April21/ 2017, Ambo, Ethiopia (n=375)

Types of Dietary Diversity ( over past 24 hours) @		Associations of ART adherence with Dietary diversity		P-value (Chi-square, test)
		Good	Low	
Cereals	Yes	299(79.9%)	65(17.3%)	0.00
	No	4(1.1%)	7(1.9%)	
Root/tubers	Yes	282(79.7%)	46(12.2%)	0.00
	No	4(1.1%)	26(6.9%)	
Fruits	Yes	200(53.3%)	18(4.8%)	0.007
	No	102(27.33)	54(14.4%)	
Vegetables	Yes	224(59.7%)	18(4.8%)	0.00
	No	79(21.1%)	54(14.4%)	
Meat or flesh	Yes	74(19.9%)	49(13.2%)	0.00
	No	226(60.2%)	23(6.1%)	
Egg	Yes	13(3.5%)	0	0.07
	No	290(77.3%)	72(19.2%)	
Fish	Yes	28(7.5%)	0	0.007
	No	275(73.3%)	72(19.2%)	
Legumes	Yes	229(61.4%)	18(4.8%)	0.00
	No	72(19.3%)	54(14.5)	
Milk	Yes	101(26.9%)	18(4.8%)	0.1
	No	202(53.9%)	54(0.14%)	
Oil/butter	Yes	299(79.9%)	55(14.6%)	0.00
	No	4(1.0%)	17(4.5%)	
Sweet foods/honey	Yes	120(32%)	18(4.8%)	0.02
	No	183(48.8%)	54(14.4%)	
Spicy foods	Yes	93(24.8%)	18(6.67%)	0.3

	No	210(56%)	54(12.5%)	
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*@ Multiple answer input was enabled either for local food types, or item doesn't  
concord*

**Annex Three** Photographs

a) Pill counting at Ambo Hospital



FGD on Dietary Diversity supported by food dietary materials in Discussions





**ANNEX 4** English version

**Information sheet, Consent form and Instructions**

**Jimma University**  
**Institute of health science**  
**Department of Epidemiology**

**An interviewer guided questionnaire prepared to assess the influence of household food insecurity on ART adherence at Ambo General Hospital, Oromia, Central Ethiopia, from January 20 to April 21<sup>st</sup>/2017**

**Title: Influence of household food insecurity on ART adherence among PLHIV, at Ambo General Hospital, 2017**

**Name of the investigator: Daniel Desta**

**Email: Danijiru@yahoo.com or Danieldesta94@gmail.com**

**Research Advisors: Lelisa Sena (PHD, Associate professor)**

**Teshome Kebata (BSc.MPH,Biostat.)**

**CONSENT INFORMATION SHEET**

Good morning/good afternoon. My name is ----- I am working for an investigator doing his thesis for the partial fulfillment of master's degree in public health. I would like to ask you few questions about your household food security situation, antiretroviral treatments and related factors affecting its adherence.

This will help us to identify some of the barriers to good adherence to antiretroviral drugs based on your answer to our questions. We will also take some measurements including weight and height from you. If you are interested we can tell you your weight and height measurements. You have full right to refuse, withdraw or completely reject part or all of your participation in the study

But we encourage your full participation as the answers you give on this form and your participation in taking your measurements are very important to this study and to plan ways to help other people who must take pills on difficult situation. We need also to take some information from your files and records archived in the ART unit of Ambo

Hospital.

We would like to assure you that all of your responses to our questions will be kept confidential throughout the study process. Any of your information you provide will be used only by the research team and will, by no means, be revealed to a third party. We will ask you questions and take measurements in a place where other people or conditions couldn't interfere. We would like to assure you that your participation on this research will not affect any of your treatment and other benefit that you get from this &any organization.

I would be thankful if you spend sometime with us answering questions related to the issues described above and cooperating in taking some measurements from you. The questions and measurements will take 40-50 minutes. May I get your permission to continue my interview?

Yes  1

No  2 → Stop

If yes, Study participant's Unique ARTID No. \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_ Datacolle

Name \_\_\_\_\_

Signature \_\_\_\_\_

Name \_\_\_\_\_

Signature \_\_\_\_\_

**Part 1 Socio demographic characteristics**

<i>No</i>	<i>QUESTIONS AND FILTERS</i>	<i>CODING CATEGORIES</i>	<i>CODE</i>
Q101	Age of the study participant	<i>18—24 years...1</i> <i>25-30 years....2</i> <i>31-37 years.....3</i> <i>38-43 years....4</i> <i>44-50 years....5</i> <i>&gt;50 years.....6</i>	<input type="text"/>
Q102	What is your role in HH	1.Father 2.Mother 3. Male other than father 4. Female other than mother	<input type="text"/>
Q103	Sex of study participant	1 ----- If Male 2-----If Female	<input type="text"/>
Q104	House hold leader	1.if husband 2.if wife if 3.else(write sex)--	<input type="text"/> For no.3(sex-- -----)
Q105	Religion	ORTHODOKS.....1 Muslim.....2 Protestant.....3 Catholic..... 4 Others.....	<input type="text"/>
Q106	Ethnicity	Oromo .....1 Amhara .....2 Gurage.....3 Tigre .....4 other ..... 5	<input type="text"/>

Q107	Marital status	Married 1 Unmarried 2	<input type="text"/>
Q108	<i>Educational status</i>	Illiterate 1 Read & write 2 Elementary 3 High school 4 Diploma+ 5	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Q109	Monthly income (Birr)	<500 1 500-100 2 1000 -1500 3 >1500 4	
Q110	Occupational status	1 Employed 2 jobless 3 Merchant 4 Daily labor 5 Student 6 Farmer 7 Tired 8 Prisoner 9 Other	<input type="text"/>
Q111 <i>(social support)</i>	Whom do you live with?	Alone 1 My family 2 My friends 3 Others (specify)_____	<input type="text"/>
Q112	Treatment duration (months)	1 =if three to six- month 2 =if 6-12 month 3=if 12-24 month 4=if >24 month	<input type="text"/>
Q113	Number of family (family size)	1=if two 2=if three to five 3=if >five	<input type="text"/>
Q114 <i>(Disclosure)</i>	Does anyone else know about your HIV status?	Yes 1 No 2 Don't Know 99	<input type="text"/>
Q115	If yes who?	Wife/husband 1	

		Own child (ren) 2 Parents 3 Brothers/sisters 4 Relatives 5 Friends 6 Others (Specify)_____	
Q116	Are you receiving any food ration from any organization?	Yes 1 No 2 Don't Know 99	<input type="text"/>
Q117	If Yes, From Where? (The organization That aids YOU)	----- --	<input type="text"/>
Q118	If yes, what is the type of food you are Receiving?	1.RUTF 2.oil and flour 3. other -----	<input type="text"/> 3(other=
Q119	IGA	Yes 1 No 2 Don't know 3	<input type="text"/>
Q120	What distance you go to take your drug(time to reach hospital	If<1hour 1 If 1-2hour 2 If >=2hours 3	<input type="text"/>

Part 2. HFIAS –(Table 4). Household Food Insecurity Access Scale (HFIAS)

**Measurement**

No	Question	Response options	Code
1	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1=Yes	.... <input type="text"/>

1.a	How often did this happen?	<p>1 = Rarely (once or twice in the past four weeks)</p> <p>2=sometimes three to ten in the past four weeks</p> <p>3=often (more than ten times in the past four weeks)</p>	.... _
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	<p>0 = No (skip to Q3)</p> <p>1=Yes</p>	..../...../
2.a	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	<p>1 = Rarely (once or twice in the past four weeks)</p> <p>2=sometimes three to ten in the past four weeks</p> <p>3=often (more than ten times in the past four weeks)</p>	..../...../
3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	<p>0 = No (skip to Q4)</p> <p>1 = Yes</p>	..../...../
3.a	How often did this happen?	<p>1 = Rarely (once or twice in the past four weeks)</p> <p>2=sometimes three to ten in the past four weeks</p> <p>3=often (more than ten times in the past four weeks)</p>	
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of foods	<p>0 = No (skip to Q5)</p> <p>1 = Yes</p>	
4.a	How often did this happen?	<p>1 = Rarely (once or twice in the past four weeks)</p> <p>2=sometimes three to ten in the past four weeks</p>	

		3=often (more than ten times in the past four weeks)
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes
5.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2=sometimes three to ten in the past four weeks 3=often (more than ten times in the past four weeks)
6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes
6.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2=sometimes three to ten in the past four weeks 3=often (more than ten times in the past four weeks)
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes
7.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2=sometimes three to ten in the past four weeks 3=often (more than ten times in the past four weeks)
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough	0 = No (skip to Q9) 1 = Yes



	food?	
8.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2=sometimes three to ten in the past four weeks 3=often (more than ten times in the past four weeks)
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (question is finished) 1 = Yes
9.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2=sometimes three to ten in the past four weeks 3=often (more than ten times in the past four weeks)

**Source:** Coates, Jennifer, Anne Swindale and Paula Bilinsky. 2007. *Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access: Indicator Guide (v. 3)*. Washington, D.C.: FHI 360/FANTA.

### FOR Dietary Diversity and Meal frequency

<i>No</i>	<i>QUESTIONS AND FILTERS</i>	<i>CODING CATEGORIES</i>	<i>CODE</i>
<i>Q201</i>	<i>During the previous 24-hours period(yesterday day and night),did you or anyone in your household consume?</i>		
201A	Any bread, rice noodles, biscuits, or any other foods made from millet, sorghum, maize, rice, wheat, enset or[INSERT ANY OTHER LOCALLY	Yes 1 No 2 Don'tKnow 99	<input type="text"/>
201B	Any potatoes, yams, manioc, cassavaorany other foods made from roots or tubers?	Yes 1 No 2 Don'tKnow 99	<input type="text"/>
201C	Any vegetables?	Yes 1 No 2 Don'tKnow 99	<input type="text"/>

201D	Any fruits?	Yes	1	<input type="text"/>
		No	2	
		Don't Know	99	
201E	Any beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats?	Yes	1	<input type="text"/>
		No	2	
		Don't Know	99	
201F	Any eggs?	Yes	1	<input type="text"/>
		No	2	
		Don't Know	99	
201G	Any fresh or dried fish or shellfish?	Yes	1	<input type="text"/>
		No	2	
		Don't Know	99	
201H	Any foods made from beans, peas, lentil, or nuts?	Yes	1	<input type="text"/>
		No	2	
		Don't Know		
201I	Any cheese, yogurt, milk or other milk products?	Yes	1	<input type="text"/>
		No	2	
		Don't Know	99	

201J	Any foods made with oil, fat, or butter?	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
201K	Any sugar or honey?	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
201L	Any other foods, such as condiments, coffee, or Tea?	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
<i>Q202</i>	<i>During the previous 24-hours period (yesterday day and night), did you or anyone in your household consume</i>			
202A	Any food before a morning meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202B	A morning meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202C	Any food between morning and midday meals	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202D	A midday meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202E	Any food between midday and evening meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202F	Any evening meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	
202G	Any food after the evening meal	Yes	1	<input type="text"/>
		No	2	
		Don't know	99	

**REASONS FOR SKIPPING THE DOSES**

<b>NO</b>	<b>QUESTIONS AND FILTERS</b>	<b>CODING CAT.</b>	<b>CODE</b>
Q501	What caused you to miss dosage of ARV medications?		<input type="text"/>

Q501	Had no food to take with medication?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q502	Were away from home?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q503	Were busy with other things?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q504	It increases appetite and I have no more to consume again	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q505	Had too many pills to take? (pill burden)	1. If 1-4 2. $\geq 5$		<input type="text"/>
Q506	Wanted to avoid side effects?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q507	Did not want others to notice you taking medication?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q508	Had a change in daily routine? Or felt good	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	

Q509	Felt like the drug was toxic / harmful?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q510	Fell asleep /sleptthrough dosetime?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q511	Felt tired	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q512	Felt depressed /overwhelmed?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q513	Had problems taking pills at specified times(with Meals, on empty stomach, etc.)?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q514	Ran out of pills?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
		Often	4	
Q515	I simply forgot?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
Q516	Had alcohol at specified times?	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
Q517	Enforced by someone to share drugs	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	
Q518	Sold drugs deu to unspecified miserable economic condition	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	

Q519	Deu to language barrier among me and my physsician	Never	1	<input type="text"/>
		Rarely	2	
		Sometimes	3	

**Depression Assessing Standardized Cut-Off Point Scale**

**Center for Epidemiologic Studies Short Depression Scale (CES-D-R 10)** (This scale is a self-report

	<b>Rarely or none of the time</b> (less than 1 day)	<b>Some or a little of the time</b> (1-2 days)	<b>Occasionally or a moderate amount of time</b> (3-4 days)	<b>All of the time</b> (5-7 days)
601	I was bothered by things that usually don't bother me.			
602	I had trouble keeping my mind on what I was doing.			
603	I felt depressed.			
604	I felt that everything I did was an effort.			
605	I felthopefulabout the future.			
606	I felt fearful.			
607	My sleep was restless.			
608	I was happy.			
609	I felt lonely.			
610	I could not get well			

**Internalized Social Stigma Questionnaire**

s/no	Feelings	Their Expressions				
		Strongly agree	agree	neutral	disagree	Strongly disagree
701	Difficult to tell people about my HIV infection					
702	Being HIV +ve makes me					

	feel dirty					
703	I feel guilty that I am HIV positive					
704	I am ashamed that I am HIV positive					
705	I sometimes feel worthless b/c I am HIV positive					
706	I hide HIV status from others					

Annex **Patient Belief About Medicine Questionnaire (BMQ)-ART drugs and foods**(There are no right and wrong answers; we are interested in your personal views)

	Views about medicine prescribed for you	Strongly agree	Agree	uncertain	disagree	Strongly disagree
801	My health at present depends on my medicine					
802	Having to take medicine worries me					
803	My life will be impossible without my medicine					
804	I sometimes worry about long term effects of my medicine					
805	Without my medicine I will be very ill					
806	My medicines are mystery to me					
807	My health in the future will depend on my medicine					
808	My medicine disrupt my life					
809	I sometimes worry about becoming too dependent on my medicine					
810	My medicine protect me from becoming worse					
811	These medicine give me					

	unpleasant side effects					
--	-------------------------	--	--	--	--	--

**Patient Perceptions about ARTD rugs/Adherence and food intake assessing scales**

		Agree(1)	Disagree (2)
901	God /prayer/ can cure HIV so I prefer fasting rather than eating to take drug and avoiding drug during fasting at monastery		
902	ART drugs work better when combined with prayer		
903	Traditional healers can cure HIV so why do I complex my life by starving		
904	Taking drugs with fasting is forbidden so, I continue after fasting		
905	ART drugs are food consumers		
906	ART is not effective without food		
907	Better if I use substance(chat, smoke cigarette) to tolerate my starvation during lunch time b/c ART drugs increased my appetite		
908	ART drug is good/effective enable body to fight against infections		
909	ART drug is harmful		
910	Short treatment interruption is not harmful to a lifelong treatment so, no problem to jump even when food is not ready at home		
911	Skipping few or part of drugs can worsen life		
912	Skipping ART drugs when the abdomen is empty can worsen the diseases		

PATIENT KNOWLEDGE and ATTITUDE ABOUT ART ADHERENCE (The Morisky 8-item medication adherence measuring scale)

101	Do you sometimes forget to take your ART medicine	Yes=1	No=2
102	Peoples sometimes miss taking their medicines For reasons other than forgetting .over the past 2 weeks, where there any days when did not take your ART medicine ?		
103	Have you ever cutback or stopped taking your medicine without telling your doctor because you felt worse when you took it?		



104	When you travel or leave home do you sometimes forget to bring your ART medicine?		
105	Did you take all your medicine yesterday?		
106	When you feel like your symptoms, under control Do you sometimes stop taking your ART medicine		
107	Taking medication every time is real inconvenience for some people. do you ever feel hassled about sticking to your ART treatment ?		
108	How often do you have difficulty remembering to take all your medications?		

---

**ART (clinical) situation( tese**

<b>NO</b>	<b>QUESTIONSAND FILTERS</b>	<b>CODINGCAT</b>	<b>CODE</b>
Q401	Before you start taking ART		
	How much was your body weight	-----	
	What was your functional status?	Working                    1 Ambulatory                2 Bed ridden                 3	
	How much was your CD4+ cell count?		
Q402	What is your current		
	Body weight	<input type="text"/>	
	Functional status		
	CD4+ T cell count		
Q404	In the past have you history of any lung diseases?	1 currently 2 in past history 3 no such history	
<i>[FOR THE DATA COLLECTOR] NEXT ARE SOME STATEMENTS THAT YOU ARE EXPECTED TO</i>			
<i>GENUINELY TREAT BEFORE YOU COMPLETE YOUR INQUIRY</i>			
	TAKETHE STUDY PARTICIPANT'S WEIGHT(KG)		

	TAKETHE STUDYPARTICIPANT'S HEIGHT(CM)		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT'S CD4+ CELL COUNTS BEFORE (S)HESTARTS ART		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT'S iniatial CD4+ CELL COUNTS at )HESTARTS ART		

**We would like to express our respect and gratitude to you for your interest and motive to participate in this study.**

Annex 5 Amharic questionnaire

መጠይቅ በአማርኛ

ክፍል 1 የህብረተሰብ አኗኗርና ማንነት ገለጻ (Socio demographic characteristics)

ቁ.	ጥያቄ	መልስ	ኮድ
Q101	እድሜ	18—24 ዓመት...1 25-30 ዓመት....2 31-37 ዓመት.....3 38-43 ዓመት....4 44-50 ዓመት....5 >50 ዓመት.....6	<input type="text"/>
Q102	ጾታ	ወንድ.....1 ሴት.....2	<input type="text"/>
Q103	በቤት ውስጥ የቤተሰብ ሀላፊ	1. አባወራ 2. እማወራ 3. ወንድ ከአባት ሌላ 4. ሴት ከእናት ሌላ	<input type="text"/>
Q104	ሃይማኖት	ኦርቶዶክስ.....1 ሙስሊም.....2 ፕሮቴስታንት.....3 ካቶሊክ.....4 ሌሎች(ግለፅ).....5	<input type="text"/> ሌሎች ----- ----
Q105	ብሔር	ኦሮሞ .....1 አማራ .....2 ጉራጌ.....3 ትግሬ .....4 ሌሎች(ግለፅ) .....	<input type="text"/> ሌሎች -----
Q106	የትምህርት ደረጃ	ያገባ/ች 1 ያላገባ/ች 2	<input type="text"/>

Q107	የትምህርት-ሁኔታ	<p>ምንም ያልተማረ</p> <p>1</p> <p>መፃፍና ማንበብ የሚችል</p> <p>2</p> <p>አንደኛ ደረጃ</p> <p>3</p> <p>ሁለተኛ ደረጃ</p> <p>ዲፕሎማና ከዚያ በላይ</p> <p>5</p>	<input data-bbox="1187 259 1318 315" type="text"/>
Q108	የወርገቢ (Birr)	<p>&lt;500</p> <p>1</p> <p>ከ500-1000</p> <p>2</p> <p>ከ1000 -1500</p> <p>3</p> <p>&gt;1500</p> <p>4</p>	
Q109	የሥራ-ሁኔታ	<p>10 ተቀጣሪነት</p> <p>11 ሥራ የለኝም</p> <p>12 ነጋዴነት</p> <p>13 የቀንሠራተኛ</p> <p>14 ተማሪ</p> <p>15 ገበሬ</p> <p>16 የቤት እመቤት</p> <p>17 አቅም ያነሰ</p>	<input data-bbox="1198 1171 1329 1205" type="text"/>
Q110 (social support)	በቤት ውስጥ ለማንጋር እንደምኖሩ?	<p>ብቻዬን</p> <p>1</p> <p>ከቤተሰቤ ጋር</p> <p>2</p> <p>ከጎደኞቼ ጋር</p> <p>3</p> <p>ቤት የለኝም (ጎዳና ተዳዳሪነት)</p> <p>4</p> <p>ሌሎች (ግለፅ) 5</p>	<input data-bbox="1163 1592 1294 1626" type="text"/> ሌሎች
Q111	ህክምና ወይንክጀመሩት ያለው ጊዜ (months)	<p>1 = ከ3-6 ወር</p> <p>2 = 6-12 ወር</p> <p>3 = ከ12-24 ወር</p> <p>4 = ከ24 ወራት በላይ</p>	<input data-bbox="1206 1989 1337 2022" type="text"/>
Q112	የቤተሰብ ብዛት (family size)	1=ሁለት	

		2=h2-5 3=>5 ከሆነ	
Q113 (Disclosure)	ከቫይረሱጋር እንደምኖሩ የሚያውቅ ሰው ይኖራል?	አዎን 1 አይደለም 2 አላውቀዋልም 99	<input type="text"/>
Q114	መልስዎ አዎን ከሆነ?	ባል/ሚስት 1 የገዛልጆችዎ) 2 እናት/አባት 3 ወንድም/አህት 4 ዘመድ 5 ጎደኛ 6 ሌሎች (ግለፅ) 7	<input type="text"/> ሌሎች
115	የምግብ ድጋፍ (እርዳታ እያገኙ ነው?)	አዎን 1 አይደለም 2 መልሱን አላውቀዋልም 99	<input type="text"/>
116	አዎን ከሆነ የድርጅቱን ስም)	----- -	<input type="text"/>
Q117	ለጥያቄ 116 መልስዎ አዎን ከሆነ የድጋፉን አይነት	1. ፕላመፔንት (RUTF) 2. ዘይትና ዱቄት 3. ሌሎች -----	<input type="text"/> 3(ሌሎች፣ፍ) = --- -
Q118	ሌሎች የገቢ ማስገኛ ድርጊቶች (IGA)	አዎን 1 አይደለም 2 መልሱን አላውቀዋልም 3	<input type="text"/>
Q119	መድኃኒት ምን ለመውሰድ የሚጎዙት ርቀት (የሚፈጅብዎት ሰዓት)	h <1(1) ሰዓት በታች 1 h 2(-)3 ሰዓት 2 h 3 ሰዓት በላይ 3	<input type="text"/>

**ክፍል 2.( HFIAS) የቤት-ወሰን የምግብ ሁኔታ ማረጋገጫ (USAID) –standardized scale**

ቁ	ጥያቄ	መልስ	ኮድ
1	ባለፉት አራት ሳምንታት በቂ ምግብ በቤታችን ውስጥ አይኖርም በማለት ስጋት ይዞት ያወቃል?	0 = አይደለም (እባክዎ ወደ ሁለተኛ ጥያቄ ይለፉ) 1=አዎ	....  —
1 . a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2=አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3=ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	....  —
2	ባለፉት አራት ሳምንታት, እርስዎ ወይም ከብተሱ በዎመካከል አንድ ምሳሌ ቢሆን ለመብላት የመረጠውን አይነት ምግብ በምግብ እጥረት ምክንያት ሳይባላ የቀረ አለ ?	0 = አይደለም (እባክዎ ወደ ስተኛ ጥያቄ ይለፉ) 1=አዎ	..../ ..... /
2 . a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2=አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3=ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	..../ ...../
3	ባለፉት አራት ሳምንታት, ባለፉት አራት ሳምንታት, እርስዎ ወይም ከብተሱ በዎመካከል አንድ ምሳሌ በምግብ እጥረት ምክንያት ጥቂት (በቂ ያልሆነ) የምግብ አይነት በልቶ አል (በልታቸውን)?	0 = አይደለም (እባክዎ ወደ አራተኛ ጥያቄ ይለፉ) 1=አዎ	..../ ...../
3 . a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ)	

		<p>2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ (ባለፉትሳምንታትውስጥ ከ 10 ጊዜበላይ)</p>	
4	<p>ባለፉትአራትሳምንታት, እርስዎወይንምከብተሱብዎመካከልአንድምሰውበምግብእጥረትምከንደትሌላየምግ ብአይነትማግኘትባለመቻልየማትፈልጉትንየምግብአይነትየበላይገኛል ?</p>	<p>0 = አይደለም (እባክዎወደአምስተኛጥያ ቄይለፉ) 1=አዎ</p>	
4 . a	<p>ለስንት(ለምንደህልጊዜያት)?</p>	<p>1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥ አንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ (ባለፉትሳምንታትውስጥ ከ 10 ጊዜበላይ)</p>	
5	<p>ባለፉትአራትሳምንታት,በምግብእጥረትምከንትእርስዎወይንምከብተሱብዎመካከ ልአንድምሰውጥቂት(በቂያልሆነምግብለመብላትተገዳችሁል (እንድትበሉተደርጋችሁል))?</p>	<p>0 = አይደለም(እባክዎወደስድስተኛጥያቄይለፉ) 1=አዎ</p>	
5 . a	<p>ለስንት(ለምንደህልጊዜያት)?</p>	<p>1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥ አንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ (ባለፉትሳምንታትውስጥ ከ 10 ጊዜበላይ)</p>	
6	<p>ባለፉትአራትሳምንታት,በምግብእጥረትምከንትእርስዎወይንምከብተሱብዎመካከ ልአንድምሰውበቀንጥቂት(በቂያልሆነምሳለመብላትተገዳችሁል (እንድትበሉተደርጋችሁል))?</p>	<p>0 = አይደለም (እባክዎወደስድስተኛጥያቄ ይለፉ)</p>	

		1=አዎ	
6 . a	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥ አንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ (ባለፉትሳምንታትውስጥ ከ 10 ጊዜበላይ)	
7	ባለፉትአራትሳምንታትበምግብእጥረትምከንደትምግብከቤትዎውስጥጠፍቶያወቃል )?	0 = አይደለም (እባክዎወደስምንተኛጥያቄይለፉ) 1=አዎ	
7 . a	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥ አንድወይምሁለትጊዜ) 2=አልፎአልፎ(ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ (ባለፉትሳምንታትውስጥ ከ 10 ጊዜበላይ)	
8	ባለፉትአራትሳምንታት,በምግብእጥረትምከንደትእርስዎወይንምከብተሱብዎመካከልአንድምስወሳይበላወደመኝታወያሄደ (የተኛአለ)?	0 = አይደለም (እባክዎወደዘጠነኛጥያቄይለፉ) 1=አዎ	
8 . a	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥ አንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ	



		(ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	
9	ባለፉት አራት ሳምንታት በምግብ እጥረት ምክንያት እርስዎ ወይም ከብተሰብዎ መካከል አንድ ሰው ሳይበላው ሎ ያደረገላል?)	0 = አይደለም (እባክዎ መጠይቁ አልቆኑል) 1 = አዎ	
9	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2 = አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3 = ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	

Source: Coates, Jennifer, Anne Swindale and Paula Bilinsky. 2007. Washington, D.C.: FHI 360/FANTA=1) food secure = “yes” to none of the items; 2) mild FI “yes” to item 1, 2, 3, or 4, but not items 5–9); 3) moderate FI “yes” to item 5 or 6, but not items 7–9); and 4) severe FI “yes” to item 7, 8, or 9 so, FS---- MFI,---- MOFI,----- SFI-----

1) ክፍል 3 የአመጋገብ ዓይነት (ልዩነት) እና ደጋግሞ የመመገብ መጠይቅ

ቁ	ጥያቄ	መልስ	ኮድ
Q200	ባለፉት ሃያ አርት (24) ሰዓታት ውስጥ (ትናንትና ቀንና ሌሊት) የትኛውን ምምግብ ብዙ ተመገቡ እንደሆነ?		
201A	ማንኛውንም ምግብ ከስራ ስር የተዘጋጀ ዳቦ፣ ሩዝ፣ ቡስኩት፣ ገንፎ፣ በሰፊ፣ ቁጣ፣ ቆሎ፣ እንጀራ፣ ንፍሮ	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>
201B	ማንኛውንም ምግብ ከስራ ስር የተዘጋጀ ድንች፣ የስርተክል	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>
201C	ማንኛውንም አትክልት ቅጠላ ቅጠል?	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>
201D	ማንኛውንም ፍራፍሬ?	አዎን 1 አይደለም	<input type="checkbox"/>
201E	ማንኛውንም ሥጋ በግ፣ በሬ፣ ፍያል፣ ጥንቸል፣ ዶሮ፣ ዳክዬ፣ ሌሎች ወፎች፣ ከላሊት፣ ጉበት፣ ዌንም ሌላ የሥጋ ክፍል	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>
201F	ማንኛውንም እንቁላል?	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>
201G	ማንኛውንም ትኩስ (የደረቀዓሣ?)	አዎን 1 አይደለም 2 መልሱን አልወቀዉም	<input type="checkbox"/>

201H	ማንኛውንምምግብከባቄላ፣አተር፣አቶሎኒ፣ምስርየተዘጋጀ	አዎን 1 አይደለም 2 መልሱንክልጠቀጠም	<input type="checkbox"/>
201I	ማንኛውንምየወተትወጤቶችዓይብ፣እረጎ፣ወተት?	አዎን 1 አይደለም	<input type="checkbox"/>
201J	ማንኛውንምምግብከቅቤ፣ዘይት፣ጮማ?	አዎን 1 አይደለም 2	<input type="checkbox"/>
201K	ስኳርማር?	መልሱንክልጠቀጠም 00 አዎን 1 አይደለም 2	<input type="checkbox"/>
201L	ቡና፣ሻይወይንምይሄንየመሰለ	አዎን 1 አይደለም 2	<input type="checkbox"/>
Q202	<b>ክፍል 4 ባለፉትሃያአርት (24)ሰዓታትወሰጥ (ትናንትናቀንጥሌሊት), የትኛውንምምግብየተመገቡትንጸይሆን</b>		
202A	ማንኛውንምምግብከቁርስበፊት	አዎን 1 አይደለም 2 መልሱንክልጠቀጠም	<input type="checkbox"/>
202B	ማንኛውንምምግብቁርስ	አዎን 1 አይደለም	<input type="checkbox"/>
202C	ማንኛውንምምግብበቁርስናምሳመካከል	አዎን 1 አይደለም 2 መልሱንክላወቀወም	<input type="checkbox"/>
202D	ማንኛውንምምግብምሳ	አዎን 1 አይደለም 2 መልሱንክላወቀወም	<input type="checkbox"/>
202E	ማንኛውንምምግብበምሳናበማታ(ምሽት) መካከል	አዎን 1 አይደለም 2 መልሱንክልጠቀጠም	<input type="checkbox"/>
202F	ማንኛውንምምግብምሽትላይ፣ማታ	አዎን 1 አይደለም 2 መልሱንክልጠቀጠም	<input type="checkbox"/>
202G	ማንኛውንምምግብከምሽትቦሃላ	አዎን 1 አይደለም 2	<input type="checkbox"/>

**ክፍል 5. (210-219) Depression Assessing Standardized Cut-Off Point Scale Center for Epidemiologic Studies Short Depression Scale (CES-D-R 10)**

እባክዎባለፍወአንድሳምንትወሰጥለምንያህልዝዜአንደተሰመዎትግለፁ.

	በጣምአል ፎክልፎክ ነዳልነበር (<1dy)	የተወሰ ነገዜ (1-2 days)	አልፎአ ልፎይ ደረጋል (3-4 days)	ሁልጊዜ(ምንጊ ዜም) (5-7 days)
210.	ምንጊዜምበማያስጨንቁኝነገሮችበአሁኑተጨንቁያለሁ			
211	የምስራውንስራበጥሞናናበመረጋጋትማጤንአልቻልኩምነበር.			
212.	ከፍቶኝነበር(ወስጤአዝኖነበር)			
213	የማደርጋቸወበሙሉበትግልናበድካምይመስሉኝነበር.			
214	ስለወደፊትባለሙሉተሰፋ-እንደሆንኩተሰመዎኝነበር			

215	በፍርሃትተውጨፍነበር.				
216.	በእንቅልፍሰዓትዕረፍትአልነበረኝም				
217	ደስተኛነብርኩ				
218	ብቸኝነትተሰምቶኝነበር				
219.	ሥራዎቼንመጀመርአልቻልኩም				

ቁ	ጥያቄ	መልስ	ኮድ
Q301	መድኃኒት ምን ያህል መደብኛሉ? (301-316)		
Q301	ከመድኃኒቱ ጋር የምወስደው ምግብ ስለሌለኝ?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q302	ከቤቴ እርቅነብር?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q303	በሌላ ጉዳይ ተይዘኩ ነበር?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q304	የምግብ ፍላጎቴ ከባድ ስለሚሆንህ ምን ማረጋገጫ ስለሌላህ?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q305	ብዙ መድኃኒቶች ስለተሰጡኝ? (pill burden)	3. If 1-4 4. >=5	<input type="text"/>
Q306	ከመድኃኒቱ ጋር የሚመጣ የጎንጎሽ ጉዳዮች ስለሌላህ?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q307	ሌሎች ሰዎች እንዲያስታወሱኝ እንዲያወቁኝ ስለማልፈልግ?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q308	ጤና ላይ ለውጥ ስለታየብኝ? ደህና ስለሆንኩ	በፍጹም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="text"/>
Q309	መድኃኒቱ መረዛማ እንደሆነ ስለሚሰማኝ/ ጎጂ?	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q310	እንቅልፍ እንቅልፍ ስለአለኝ? ወይም በመድኃኒቱ ሰዓት ተኝቼ ስለነበር	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>
Q311	ድካም ተሰምቶኝ / ደካምኝ/	በፍጹም 1 በጣም አልፎ አልፎ 2	<input type="text"/>

Q312	ስለተጫጫነኝ (ስለተደበርኩናጥሩስሜትስላልተሰማኝ) ወሰጤደስተኛስላልነበረ	በፍፁም 1 በጣምአልፎአልፎ 2	<input type="text"/>
Q313	በተወሰኑጊዜያትችግርገጥሞኝስለነበር(ምሳሌ፡ምግብአልነበረም፡ሆዴባዶነ በር...)?	በፍፁም 1 በጣምአልፎአልፎ 2	<input type="text"/>
Q314	መድኃኒቶቼድንገትስላለቁብኝ?	በፍፁም 1 በጣምአልፎአልፎ 2	<input type="text"/>
Q315	ረስቼ፡ተረስቶኝ?	በፍፁም 1 በጣምአልፎአልፎ 2	<input type="text"/>
Q316	ትንሽአልኮልጠጥቼስለነበር?	በፍፁም 1 በጣምአልፎአልፎ 2	<input type="text"/>

ክፍል 6. ኡብሮክምኖሩትህብረተሰብየሚመጣብዎትንመጥፎስም( ጫናበተመለከተ) (Internalized Social Stigma )=501-506)

ተ.ቁ	ስሜት	የስሜታቸውአገላለፅ				
		በጣምእስማ ማለሁ	እስማ ማለሁ	ገለልተናነ ኝ	አልስማማም	በጣምአልስማ ማም
501	ኤድስታማሚመሆኔንለሰዉለመግለፅበጣ ምይከብደኛል					
502	HIV +ve መሆኔየስጠላኛል(እንደብልግናእቆጥራለ ሁ)					
503	HIV +Ve በመሆኔጥፋተኛእንደሆንኩይሰማኛል					
504	HIV +Ve መሆኔያሳፍረኛል					
505	HIV +Ve መሆኔአንዳንዴዋጋቢስእንደሆንኩይሰማኛ ል					
506	በሽታዬንከሌሎችሰዎችእደብቃለሁ					

ክፍል 7. በኤችአይቪኤድስ መድኃኒት ላይ ያለውን እምነት ወይም ወስጥ ምዕራፍ ትይዎ በሌለው (Patient Belief Medication Questionnaire (BMQ)-ART drugs and ) (901-911)

	ስለ ታዘዘልዎት መድኃኒት ምን አስያያት አለዎት	በጣም እስማማለሁ	እስማማለሁ	እርግጠኛ ኤደለሁም	አልስማማም
901	የዕለት ዕለት ጤናዬ በመድኃኒቱ ላይ የተመሰረተ ነው				
902	መድኃኒት መውሰድ ያሳስብኛል				
903	ያለ መድኃኒቱ ለኔ መኖር አይቻለኝም				
904	የምያሳስብኝ ከረጅም ጊዜ በኋላ የሚያመጣውን ጉዳት ነው				
905	ያለ መድኃኒቱ በጣም እታመማለሁ				
906	መድኃኒቶቼ ምጣኔ ርቆናቸው				
907	የገጠሙ ጤናዬ በመድኃኒቱ ላይ የተመሰረተ ነው				
908	መድኃኒቱ ኑሮ የንጠጠጠ፣ አፋላስ፣ አናወጠ				
909	አንዳንድ በመድኃኒቱ ላይ መውሰድ፣ ጥገኛ መሆኔ ያሳስብኛል				
910	መድኃኒቱ ጤናዬን አስከፊ ከመሆን ያድነዋል				
911	መድኃኒቱ መጥፎ የጎንጎሽ ጉዳት ያመጣብኛል				

ክፍል 8. የመድኃኒቱን ጠቀሜታ ነት ምን ያህል ተረድቶ አል (Patient Perceptions about ART / scales (801-812))

801	ፈጣሪ ኤድስን ያድናል ስለዚህ ምንም ጠባቂ መድኃኒት ከሚወጥም ምንም ጠባቂ ሆኖ በተጨማሪም ወደ ገዳም ስሄድ መድኃኒትን አቆማለሁ
802	የኤድስ መድኃኒቶቼ ጤታማ መሆኑን ከጠሎት ጋር ነው
803	ባህላዊ ባለ መድኃኒቶች ኤድስን ያድናሉ ስለዚህ ለምን በመድኃኒት ህይወቴን አወሳሰባልሁ
804	መድኃኒቱን በየ ምን ጊዜ መውሰድ ክልክል ነው
805	የኤድስ መድኃኒት ምንም ጠባቂ ስላል (ከኛይ ካፈላል)
806	የኤድስ መድኃኒት ያለ ምን ጠባቂ ጤታማ አይሆንም
807	መድኃኒቱ ረገድ በሰጠው ጠቅላላ ጥገኛ ስላል ስለሆነ ጉዳትን (ጫት፣ ትምባሆ..) ቢወስድ ጥሩ ነው ምክንያቱም እነዚህ ጉዳቶች ከመድኃኒቱ ጋር ግንኙነት አለባቸው
808	የኤድስ መድኃኒት ጤታማ መሆኑን ለማረጋገጥ ስለሆነ ጉዳት ለመከላከል አቅም ይጨምራል
809	የኤድስ መድኃኒት ጎጂ ነው
810	መድኃኒቱን ለአጭር ጊዜ መዘለል (አለመውሰድ ችግር አያስከትልም ስለዚህ ምንም ጠባቂ ተዘጋጅ ጊዜ እንኮን መዘለሉ የተሻለ ነው
811	መድኃኒቱን ጥቂት መዘለል ጤናን አይጋላይ ይጥላል
812	መድኃኒቱን ለረጅም ጊዜ መዘለል (አለመውሰድ) ጤናን አይጋላይ ይጥላል

ክፍል 9. ባገኙት አገልግሎት የተሰማዎት እርካታ satisfaction standardized tool (University of Wollongong)

N	በጣም ረ	አልረ	ባልረ ካም በጣም	ረክ	በጣም ረ
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o.		ከቻለሁ 0	ካሁም 1	ምሳሌ/የሌሎችም 2	ቻለሁ 3	ከቻለሁ 4
1001	በተደረገልዎት ህክምና ምን ያህል ደስተኛ ነዎት {treatment/care}?					
1002	ህኪምዎ (ነርስዎ) የህክምና ምን ዓይነት ስጠውልዎት ምን ያህል ረከተዎብታል {treatment/care}?					
1003	ህኪምዎ በምርመራ ሰዓት ከፊት ጥንቃቄ አድርገዋል					
1004	ስለ ጤናዎ በመረጡት ሁኔታዎች ላይ ምን ያህል ደስተኛ ነበሩ?					
1005	ለህክምናዎ ሲመጡ ለምን ያህል ጊዜ ህኪምዎ የሚገባኝን ክብር ሰጥቶኛል ብለው ያስባሉ?					
1006	ከህኪምዎ ጋር የነበረዎት ሰዓት በጣም ያጥራል.					
1007	በሆስፒታሉ ውስጥ ባገኙት ጥንቃቄ ረከተዋል?					

ክፍል 10. ከዚህ በታች የተዘረዘሩት ሰዓት ለሰዓት ስራዎች (ASSIST substance use assessment scale) ( Humeniuk et al., 2010)

	የሚወሰደው ዓይነት (Substance)		
401	አልኮል (አረቄ፣ ቢራ፣ ጠላ፣ ጠጅ፣ ዊስኪ)		
402	ሌላ ማንኛውንም ዓይነት የሚወሰዱት ነገር ካለ		
403	ማሪጁኦና፣ የሚጨፍስ ወይም የሚወሰድ ሌላ ዓይነት (Marijuana)		
404	በአፈንጫ የሚወሰድ አንቃቁዳቁት መሳይዕ (Cocaine)		
405	አምሬታሚን መድኃኒት (አንቃቁ መድኃኒት በፊላሽ መልክ (በሌላ) (eg. Anti depressive፣ ለፊጥነት የሚወሰድ (Amphetamines )		
406	በአፍ ወይም በአፍንጫ የሚሰበሰቡ መድኃኒት (Inhalants)		
407	እንቅልፍ የሚያመጣ መድኃኒት (Sedatives)		
408	ብሶት አስረስቶ በውሸት ተስፋ ለምንት የሚሞላ፣ ነርቪን የሚያነሳ፣ በጭካኔ አንድን ነገር ለመፈጸም ሲያስቡ የሚወሰድ መድኃኒት (Hallucinogens)		

ክፍል 11. ታማሚ ወንጌ ወቅት ስርዓት ለመረዳት መጠይቅ (The Dr.Morisky 8-item medication adherence scale)

7 0 1	አንዳንድ መድኃኒት ምን ለመውሰድ ይረዳሉ?	አዎን =1	ኤደለ ም=2
7 0 2	አንዳንድ ሰዎች መድኃኒታቸውን በመርሳት ሳይሆን በተለያዩ ጉዳዮች መድኃኒታቸውን መውሰድ ይረዳሉ ብለፉት ሰባት ቀናት መድኃኒት ምን ያልወሰዱ በትቀንነበረ?		
7 0 3	መድኃኒት ምን ስወስዱ ስለታመሙ ለሐኪምዎ ሳይናገሩ (ሳያሳወቁ) መውሰድ ያቆሙ በትጊዜ ነበር?		
7 0 4	ከቤት ሰው ጠናቀቀ ስንደስት መድኃኒት ምን መውሰድ የረሱ በትቀንነበረ?		
7 0 5	በትላንትና ወደ ሌላ ቦታ ስንመድኃኒት ምን ወስደዋል?		
7 0 6	የህመም እና የበሽታ ወምልክቶች ስወጡ ለመድኃኒቱን መውሰድ አቁመው ያወቃሉ?		
7 0 7	መድኃኒት አስታሉ ለመውሰድ እንደሚታወቀው ናቸው ሰዎች እንደሚገልጹት አሰልፎ ነው፤ ለመሆኑ እርስዎ ምስጢር ህሁኔታ ወይም ስጥህ መድኃኒቱን ያቆሙ በትጊዜ ነበር?		
7 0 8	ደጋግመው ከመርሳት በተነሳ ለቢዙ ጊዜ መድኃኒቱን ለመውሰድ የተቸገሩ በትጊዜ ነበር?		

**ክፍል 12. የኤድስ መድኃኒት ጠቃሚ ህመምን ህሁኔታ ማሳወቅ ለመጠየቅ ART (clinical) situation**

ቁ	ጥያቄ	መልስ	ኮድ/ቁጥር/
Q601	መድኃኒቱን ከመጀመር ያለፈ		
	ክብደት	-----	
	የሰራሁ ኔታዎ እንዴት ነበር	እሰራለሁ 1 እንቀሳቀሳለሁ፤ እሄዳለሁ 2	
	CD4 T-Cell count ስንት ነበር	በህመም ምክንያት አልጋላይ ነበር ከ	
Q602	በመጠይቁ ሰዓት (በዚህን ወቅት)		
	የሰውነት ክብደት	<input type="text"/>	



	የሰራሁኔታዎ	እሰራለሁ 1 እንቀሳቀሳለሁ፤ እሄዳለሁ	2	
	CD4+ T cell count? ስንት ነበር			
Q603 OI	ባለፉት አራት ወር ስንት ሰውን ነፍሰውን ምየተቅማጥ አይነት ይዘት ያወቃል?	አዎን አይደለም መልሱን አላወቀውም፡፡፡	1 2	
Q604	ባለፉት አራት ወር ስንት ሰውን ነፍሰውን ምየተቅማጥ አይነት ይዘት ያወቃል?	አዎን አይደለም መልሱን አላወቀውም፡፡፡	1 2	
[FOR THE DATA COLLECTORS] NEXT ARE SOME STATEMENTS THAT YOU ARE EXPECTED TO				
<i>GENUINELY TREAT BEFORE YOU COMPLETE YOUR INQUIRY</i>				
	TAKETHE STUDY PARTICIPANT’S WEIGHT(KG)			
	TAKETHE STUDYPARTICIPANT’S HEIGHT(CM)			
	CHECK FROM THE RECORD THE STUDY PARTICIPANT’S CD4+ CELL COUNTS BEFORE (S)HE STARTS ART			
	CHECK FROM THE RECORD THE STUDY PARTICIPANT’S LAST CD4+ CELL COUNTS MONTHSAFTER(S)HESTARTS ART			

ከእኛ ጋር ስለ ቆይታዎ እና ስለ ግናሉን፤ ባለሙሉ ጤና እንድሆኑ እንመኝልዎታለን

**We would like to express our respect and gratitude to you for your interest and motive to participate in this study**

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**ክፍል 1 የህብረተሰብ አኗኗርና ማንነት ገለጻ (Socio demographic characteristics)**

ቁ.	ጥያቄ	መልስ	ኮድ
Q101	እድሜ	18—24 ዓመት...1 25-30 ዓመት...2 31-37 ዓመት.....3 38-43 ዓመት...4 44-50 ዓመት....5 >50 ዓመት.....6	<input type="text"/>
Q102	ጾታ	ወንድ.....1 ሴት.....2	<input type="text"/>
Q103	በቤት ውስጥ የቤተሰብ ሀላፊ	1. አባወራ 2. እማወራ 3. ወንድ ከአባት ሌላ 4. ሴት ከእናት ሌላ	<input type="text"/>
Q104	ሃይማኖት	ኦርቶዶክስ.....1 ሙስሊም.....2 ፕሮቴስታንት.....3 ካቶሊክ.....4 ሌሎች(ግለፅ).....5	<input type="text"/> ሌሎች ----- ----
Q105	ብሔር	አሮሞ .....1 አማራ.....2 ጉራጌ.....3 ትግሬ... .....4 ሌሎች(ግለፅ).....	<input type="text"/> ሌሎች -----
Q106	የትምህርት ደረጃ	ያገባ/ች 1 ያላገባ/ች 2	<input type="text"/>
Q107	የትምህርት ዓይነት	ምንም ያልተማረ 1 መፃፍና ማንበብ የሚችል 2 አንደኛ ደረጃ 3 ሁለተኛ ደረጃ 1 ዲፕሎማና ከዚያ በላይ 5	<input type="text"/>

Q108	የወርገቢ (Birr)	<p>&lt;500</p> <p>1</p> <p>ከ500-1000</p> <p>2</p> <p>ከ1000 -1500</p> <p>3</p> <p>&gt;1500</p> <p style="text-align: right;">4</p>	
Q109	የሥራሁኔታ	<p>18 ተቀጣሪነኝ</p> <p>19 ሥራየለኝም</p> <p>20 ነጋዴነኝ</p> <p>21 የቀንሠራተኛ</p> <p>22 ተማሪ</p> <p>23 ገበሬ</p> <p>24 የቤትእመቤት</p> <p>25 አቅምያነሰ</p>	<input type="text"/>
Q110 (social support)	በቤትውስጥከማንጋርእንደምኖሩ?	<p>ብቻዬን 1</p> <p>ከቤተሰቤጋር2</p> <p>ከጎደኞቼጋር3</p> <p>ቤትየለኝም (ጎዳናተዳዳሪነኝ) 4</p> <p>ሌሎች (ግለፅ)5</p>	<input type="text"/>  ሌሎች
Q111	ህክምናውንከጀመሩትያለዉጊዜ(m onths)	<p>1 =ከ3-6 ወር</p> <p>2 = 6-12 ወር</p> <p>3=ከ12-24 ወር</p> <p>4=ከ 24 ወራትበላይ</p>	<input type="text"/>
Q112	የቤተሰብብዛት (family size)	<p>1=ሁለት</p> <p>2=ከ2-5</p> <p>3= &gt;5 ከሆነ</p>	<input type="text"/>
Q113 (Disclosure)	ከቫይረሱጋርእንደምኖሩየሚያወቅ ሰውይኖራል?	<p>አዎን 1</p> <p>አይደለም 2</p> <p>አላወቀዉም99</p>	<input type="text"/>
Q114	መልስዎአዎንከሆነ?	<p>ባል/ሚስት 1</p> <p>የገዛልጆችዎ) 2እናት/አባት</p> <p>3 ወንድም/እህት</p> <p>4 ዘመድ</p> <p>5 ጎደኛፊሌሎች (ግለፅ)</p>	<input type="text"/>  ሌሎች

		7	
115	የምግብ ድጋፍ (እርዳታ እያገኙት?)	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	<input type="text"/>
116	አዎን ከሆነ የድርጅቱን ስም)	----- -	<input type="text"/>
Q117	ለጥያቄ 116 መልስዎ አዎን ከሆነ የድጋፉን አይነት	1. ፕላም ፔት (RUTF) 2. ዘይትና ዱቄት 3. ሌሎች -----	<input type="text"/> 3 (ሌሎች ግፍ) = --- -
Q118	ሌሎች የገቢ ማስገኛ ድርጊቶች (IGA)	አዎን 1 አይደለም 2 መልሱን አላወቀውም 3	<input type="text"/>
Q119	መድኃኒት ምን ለመውሰድ የሚገዙት ርቀት (የሚፈጅብዎት ሰዓት)	h 1 (1) ሰዓት በታች 1 h 2 (-) 3 ሰዓት 2 h 3 ሰዓት በላይ 3	<input type="text"/>

**ክፍል 2. ( HFIAS) የቤት ውስጥ የምግብ ሁኔታን የሚጠይቅ (USAID) –standardized scale**

ቁ	ጥያቄ	መልስ	ኮድ
1	ባለፉት አራት ሳምንታት በቂ ምግብ በቤታችን ውስጥ አይኖርም በማለት ስጋት ይዘት ያወቃል?	0 = አይደለም (እባክዎ ወደ ሁለተኛ ጥያቄ ይለፉ) 1 = አዎ	....  _
1 · a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2 = አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3 = ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	....  _

2	ባለፉት አራት ሳምንታት፣ እርስዎ ወይንም ከብተሱ በዎመካከል አንድምሰው ቢሆን ለመብላት የመረጠውን አይነት ምግብ በምግብ እጥረት ምክንያት ሳይበላየቀረ አለ ?	0 = አይደለም (እባክዎ ወደ ሶስተኛ ጥያቄ ይለፉ) 1 = አዎ	..../ ..... /
2 . a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2 = አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3 = ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	..../ ...../ /
3	ባለፉት አራት ሳምንታት፣ ባለፉት አራት ሳምንታት፣ እርስዎ ወይንም ከብተሱ በዎመካከል አንድምሰው በምግብ እጥረት ምክንያት ጥቂት (በቂ ያልሆነ) የምግብ አይነት በልቶ አል (በልታቸው ላይ)	0 = አይደለም (እባክዎ ወደ አራተኛ ጥያቄ ይለፉ) 1 = አዎ	...../ ...../ /
3 . a	ለስንት (ለምን ያህል ጊዜ ያት?)	1 = በጣም አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ አንድ ወይም ሁለት ጊዜ) 2 = አልፎ አልፎ (ባለፉት ሳምንታት ውስጥ 3 እስከ 10 ጊዜ) 3 = ሁል ጊዜ (ባለፉት ሳምንታት ውስጥ ከ 10 ጊዜ በላይ)	...../ ...../ /
4	ባለፉት አራት ሳምንታት፣ እርስዎ ወይንም ከብተሱ በዎመካከል አንድምሰው በምግብ እጥረት ምክንያት ሌላ የምግብ አይነት ማግኘት ባለመቻል የማትፈልጉትን የምግብ አይነት የበላይ ገኛል ?	0 = አይደለም (እባክዎ ወደ አምስተኛ ጥያቄ ይለፉ) 1 = አዎ	...../ ...../ /

<p>4 · a</p>	<p>ለስንት(ለምንያህልጊዜያት)?</p>	<p>1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥአንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ(ባለፉትሳምንታትውስጥ 10 ጊዜበላይ)</p>	
<p>5</p>	<p>ባለፉትአራትሳምንታት,በምግብእጥረትምከንትእርስዎወይንምከብተሰብዎመካከልአንድምስወጥቂት(በቂያልሆነምግብለሙብላትተገዳችሁል (እንድትበሉተደርጋችሁል))?</p>	<p>0 = አይደለም (እባክዎወደስድስተኛጥያቄ ይለፉ) 1=አዎ</p>	
<p>5 · a</p>	<p>ለስንት(ለምንያህልጊዜያት)?</p>	<p>1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥአንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ(ባለፉትሳምንታትውስጥ 10 ጊዜበላይ)</p>	
<p>6</p>	<p>ባለፉትአራትሳምንታት,በምግብእጥረትምከንትእርስዎወይንምከብተሰብዎመካከልአንድምስወጥቂት(በቂያልሆነምሳለሙብላትተገዳችሁል (እንድትበሉተደርጋችሁል))?</p>	<p>0 = አይደለም (እባክዎወደስባተኛጥያቄ ይለፉ) 1=አዎ</p>	
<p>6 · a</p>	<p>ለስንት(ለምንያህልጊዜያት)?</p>	<p>1 = በጣምአልፎአልፎ (ባለፉትሳምንታትውስጥአንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ) 3=ሁልጊዜ(ባለፉትሳምንታትውስጥ 10 ጊዜበላይ)</p>	

		ታትዉስጥከ 10 ጊዜበላይ)	
7	ባለፉትአራትሳምንታትበምግብእጥረትምከንያትምግብከቤትዎዉስጥጠፍቶያዉ ቃል )?	0 = አይደለም (እባክዎወደስምንተኛጥያቄ ይለፉ) 1=አዎ	
7 . a	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትዉስጥአ ንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትዉስጥ 3 እስከ 10 ጊዜ)  3=ሁልጊዜ(ባለፉትሳምን ታትዉስጥከ 10 ጊዜበላይ)	
8	ባለፉትአራትሳምንታት,በምግብእጥረትምከንያትእርስዎወይንምከተሰብዎመካከልአን ድምሰዉሳይበላወደመኝታዉየሄደ (የተኛአለ)?	0 = አይደለም (እባክዎወደዘጠነኛጥያቄይ ለፉ) 1=አዎ	
8 . a	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትዉስጥአ ንድወይምሁለትጊዜ) 2=አልፎአልፎ (ባለፉትሳምንታትዉስጥ 3 እስከ 10 ጊዜ)  3=ሁልጊዜ(ባለፉትሳምን ታትዉስጥከ 10 ጊዜበላይ)	
9	ባለፉትአራትሳምንታት,በምግብእጥረትምከንያትእርስዎወይንምከተሰብዎመካ ከልአንድምሰዉሳይበላዉሎያደረሀለ)?	0 = አይደለም (እባክዎመጠይቁአልቆአል) 1=አዎ	
9 .	ለስንት(ለምንያህልጊዜያት)?	1 = በጣምአልፎአልፎ (ባለፉትሳምንታትዉስጥአን	

a		<p>ድወይምሁለትጊዜ)</p> <p>2=አልፎአልፎ</p> <p>(ባለፉትሳምንታትውስጥ 3 እስከ 10 ጊዜ)</p> <p>3=ሁልጊዜ</p> <p>(ባለፉትሳምንታትውስጥ 10 ጊዜበላይ)</p>	
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Source: Coates, Jemifer, Anne Swindale and Paula Bilinsky. 2007.). Washington, D.C.: FHI 360/FANTA=1) food secure = “yes” to none of the items; 2) mild FI “yes” to item 1, 2, 3, or 4, but not items 5–9); 3) moderate FI “yes” to item 5 or 6, but not items 7–9); and 4) severe FI “yes” to item 7, 8, or 9 so, FS---- MFI,---- MOFI,----- SFI-----

2) ክፍል 3 የአመጋገብ ዓይነት (ልዩነት) እና ደጋግሞ የመመገብ መጠይቅ

ቁ	ጥያቄ	መልስ	ኮድ
Q200	ባለፉት ሃያ አርቅ (24) ሰዓታት ውስጥ (ትናንትና ቀን ሌሊት)፣ የትኛውንም መጠጥጥ ተመገብ እንደሆነ?		
201A	ማንኛውንም መጠጥጥ በከሰብ ልዩ ተዘጋጅ ዳቦ፣ ፍጥጥ፣ ቡስካት፣ ገንፎ፣ በሶ፣ ቁጣ፣ ቆሎ፣ እንጀራ፣ ንፍር	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201B	ማንኛውንም መጠጥጥ በከሰብ ልዩ ተዘጋጅ ድንች፣ የስርተክል፣	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	<input type="checkbox"/>
201C	ማንኛውንም አትክልት ቅጠላ ቅጠል?	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201D	ማንኛውንም ፍራፍሬ?	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201E	ማንኛውንም ሥጋ በግ፣ በሬ፣ ፍያል፣ ጥንቸል፣ ዶሮ፣ ዳክዬ፣ ሌሎች ወፎች፣ ኩላሊት፣ ጉበት፣ ዌንም ሌላ የሥጋ ክፍል	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	<input type="checkbox"/>
201F	ማንኛውንም እንቁላል?	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201G	ማንኛውንም ትኩስ (የደረቀዳህ?)	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201H	ማንኛውንም መጠጥጥ በከባቄላ፣ አተር፣ አቾሎኒ፣ ምስር የተዘጋጀ	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201I	ማንኛውንም የወተት ውጤቶች ዓይብ፣ አረጎ፣ ወተት?	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201J	ማንኛውንም መጠጥጥ በከቅቤ፣ ዘይት፣ ጭማ?	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	<input type="checkbox"/>
201K	ስኳር ማር?	አዎን 1 አይደለም 2 መልሱን አላወቀውም	<input type="checkbox"/>
201L	ቡና፣ ሻይ ወይንም ይህን የመሰለ	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	<input type="checkbox"/>



Q202	ክፍል 4 ባለፉት ሃያ አርት (24) ሰዓታት ውስጥ (ትናንትና ቀንና ሌሊት)፣ የትኛውን ምንም ግብዓት መገባቱን እንደሆነ	አዎን	1	አይደለም	
202A	ማንኛውንም ምንም ግብዓት ስብጥር ስበሬት	አዎን	1	አይደለም	<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
202B	ማንኛውንም ምንም ግብዓት ስብጥር	አዎን	1	አይደለም	<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
202C	ማንኛውንም ምንም ግብዓት ስብጥር ስናምሳ መካከል	አዎን			<input type="checkbox"/>
		1	አይደለም		<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
202D	ማንኛውንም ምንም ግብዓት ስምሳ	አዎን	1	አይደለም	<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
		99			<input type="checkbox"/>
202E	ማንኛውንም ምንም ግብዓት ስምሳና ስማታ (ምሽት) መካከል	አዎን	1	አይደለም	<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
202F	ማንኛውንም ምንም ግብዓት ስምሽት ላይ፣ ማታ	አዎን	1	አይደለም	<input type="checkbox"/>
		2	መልሱን አላወቀውም		<input type="checkbox"/>
		99			<input type="checkbox"/>
202G	ማንኛውንም ምንም ግብዓት ስምሽት ቦሃላ	አዎን		1	<input type="checkbox"/>
		አይደለም		2	<input type="checkbox"/>

**ክፍል 5. (210-219) Depression Assessing Standardized Cut-Off Point Scale Center for**

**Epidemiologic Studies Short Depression Scale (CES-D-R**

10) እባክዎ ባለፍው አንድ ሳምንት ውስጥ ለምን ያህል ጊዜ እንደተሰመዩት ግለፁ.

	በጣም አልፎ አልፎ እንደሆነ ባልተሰማኝ	የተወሰነ ጊዜ (1-2 days)	አልፎ አልፎ ደረጃ (3-4 days)	ሁል ጊዜ (ምንጊዜም) (5-7 days)
210.	ምንጊዜም በማያስጨንቁኝ ነገሮች በአሁኑ ተጨንቆ ያለሁ			
211	የምሰራውን ስራ በጥሞናና በመረጋጋት ማጠናከሩን አልቻልኩም ነበር.			
212.	ከፍቶኝ ነበር (ወይንም ለሌሎች ጋር)			
213	የማደርጋቸው በሙሉ በትግልና በድካም ይመስሉኝ ነበር.			
214	ስለ ወደፊት ባለሙሉ ተሰፋ እንደሆንኩ ተሰምቶኝ ነበር			
215	በፍርሃት ተወጫኝ ነበር.			
216.	በእንቅልፍ ሰዓት ዕረፍት አልነበረኝም			
217	ደስተኛ ነበርኩ			
218	ብቸኝነት ተሰምቶኝ ነበር			
219.	ሥራዎቼን መጀመር አልቻልኩም			

ቁ	ጥያቄ	መልስ	ኮድ
Q301	መድኃኒትዎን ከመደበኛ ሰዓቱ እንደ ዘሉ ያነሳሳዎትም ከንደቶም ነድነው? (301-316)		
Q301	ከመድኃኒቱ ጋራ የምወስደዉ ምግብ ስለሌለኝ?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q302	ከቤቴ እርቁነበር?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q303	በሌላ ጉዳይ ተይዬነበር?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q304	የምግብ ፍላጎት ጭነት ስለሚጨምር በኝ ፍላጎት ጭማሪ ለመብላት ስለሌለኝ?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q305	ብዙ መድኃኒቶች ስለተሰጡኝ? (pill burden)	5. If 1-4 6. >=5	<input type="checkbox"/>
Q306	ከመድኃኒቱ ጋራ የሚመጣ የጎንጎሽ ጉዳዮችን ለመከላከል?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q307	ሌሎች ሰዎች እንዲያስታወሱኝ እንዲያወቁ በኝ ምስላማ ልፈልግ?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q308	ጤና ላይ ለወጥ ስለታየብኝ? ደህና ስለሆንኩ	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ 3 ሁለንተኛ	<input type="checkbox"/>
Q309	መድኃኒቱ መረዛማ እንደሆነ ስለሚሰማኝ/ነጂ?	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q310	እንቅልፍ እንቅልፍ ስለአለኝ? ወይም በመድኃኒቱ ሰዓት ተኝቼ ስለነበር	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>
Q311	ድካም ተሰምቶኝ / ደካምኝ/	በፍፁም 1 በጣም አልፎ አልፎ 2 አልፎ አልፎ	<input type="checkbox"/>

Q312	ስለተጫጫነኝ (ስለተደበርኩናጥሩሰሜትስላልተሰማኝ) ወሰጤደስተኛስላልነበረ	በፍፁም 1 በጣምአልፎአልፎ 2አልፎአልፎ	<input type="text"/>
Q313	በተወሰኑጊዜያትችግርገጥሞኝስለነበር(ምሳሌ፡ምግብአልነበረም፡ሆዴባዶነ በር...)?	በፍፁም1 በጣምአልፎአልፎ 2አልፎአልፎ	<input type="text"/>
Q314	መድኃኒቶቼድንገትስላለቁብኝ?	በፍፁም1 በጣምአልፎአልፎ 2አልፎአልፎ	<input type="text"/>
Q315	ረስቼ፡ተረስቶኝ?	በፍፁም1 በጣምአልፎአልፎ 2አልፎአልፎ	<input type="text"/>
Q316	ትንሽአልኮልጠጥቼስለነበር?	በፍፁም1 በጣምአልፎአልፎ 2አልፎአልፎ	<input type="text"/>

ክፍል 6. አብሮከምኖሩትህበረተሰብየሚመጣብዎትንመጥፎስም( ጫናበተመለከተ) (Internalized Social Stigma )=501-506)

ተ.ቁ	ስሜት	የስሜታቸውአገላለፅ				
		በጣምአስማ ማለሁ	አስማማ ለሁ	ገለልተኛነኝ	አልስማማም	በጣምአልስማማ ም
501	ኤድስታማሚመሆኔንለሰዉለመግለፅበጣምይ ከብደኛል					
502	HIV +ve መሆኔየስጠላኛል(አንድብልግናአቆጥራለሁ)					
503	HIV +Ve በመሆኔጥፋተኛአንደሆንኩይሰማኛል					
504	HIV +Ve መሆኔያሳፍረኛል					
505	HIV +Ve መሆኔአንዳንዴዋጋቢስአንደሆንኩይሰማኛል					
506	በሽታዬንከሌሎችሰዎችእደብቃለሁ					

ክፍል 7. በኤችአይቪኤድስመድኃኒትላይያለዎትንእምነትወይምወስጥዎአንዴትይቀበለዎል(Patient Belief Medication Questionnaire (BMQ)-ART drugs and ) (901-911)

ስለታዘዘልዎትመድኃኒትምንአስያያትአለዎት	በጣምአስማማለሁ	አስማማለሁ	እርግጠኛኤደለሁም	አልስማማም	በጣምአል

901	የዕለት-ዕለት ጤናዬ በመድኃኒቱ ላይ የተመሰረተ ነው				
902	መድኃኒት መውሰድ ያሳስብኛል				
903	ያለ መድኃኒቱ ለጤናዬ ምንም ጥቅም አይሆንም				
904	የምያሳስብኝ ከረጅም ጊዜ በኋላ የሚያመጣውን ጉዳት ነው				
905	ያለ መድኃኒቱ በጣም እታመማለሁ				
906	መድኃኒቶቼ ምስጢር ጭናቸው				
907	የገንጠናዬ በመድኃኒቱ ላይ የተመሰረተ ነው				
908	መድኃኒቱ ነገር የሚያስጠብቀው፣ አፋላት፣ አጥጋቢ				
909	አንዳንድ ጤና ግብዓት ለመድኃኒቱ ላይ መውሰድ፣ ጥገኛ መሆኔ ያሳስብኛል				
910	መድኃኒቱ ጤናዬን አስከሬኑ ለመሆን ያደኝኛል				
911	መድኃኒቱ ምንም ጥቅም የሚያሰጥኝ ጉዳት ያመጣብኛል				

**ክፍል 8.** የመድኃኒቱን ጠቀሜታ ነገሮች ስለመለካት የሚያገለግል ተረድቶ አል (Patient Perceptions about ART / scales(801-812)

801	ፈጣሪ ሌሎችን ያደናገሱ ስለሆነ ህመም ጠብቆ መድኃኒቱን ከሚወጥሰው ምንም እምነት ማለት፣ በተጨማሪም ደገዳም ስሜድ መድኃኒቱን አቆማለሁ
802	የኤድስ መድኃኒቶች ወጤታማ የሚሆኑት ከፀሎት ጋራ ነው
803	ባህላዊ ባለ መድኃኒቶች ኤድስን ያደናገሱ ስለሆነ ህመምን በመድኃኒት ህይወቴን አወሳሰባለሁ
804	መድኃኒቱን በየምደባዬ መውሰድ ክልክል ነው
805	የኤድስ መድኃኒት ምግብን ይመገባል (ከኛይካፈላል)
806	የኤድስ መድኃኒት ያለ ምግብ ወጤታማ አይሆንም
807	መድኃኒቱ ለራሳቸው ስለሆነ ምንም ጥቅም የሚያስጠብቁትን (ጫት፣ ትምባሆ ..) በወስድ ጥሩ ነው ምክንያቱም እነዚህ ነገሮች ከመድኃኒቱ ጋር ግንኙነት ስለሚገኝ
808	የኤድስ መድኃኒት ወጤታማ የሆነው የሰውነትን ሽታ መከላከል አቅም ይጨምራል
809	የኤድስ መድኃኒት ጎጂ ነው
810	መድኃኒቱን ለአጭር ጊዜ መዘለል (አለመውሰድ) ግር አያስከትልም ስለሆነ ህመም ጠብቆ ተዘጋጅ ጊዜ እንኮን መዘለሉ የተሻለ ነው
811	መድኃኒቱን ጥቂት መዘለል ጤናን አይጋላይይ ጥላል
812	መድኃኒቱን ሆድ ባደበሀን ጊዜ መዘለል (አለመውሰድ) ጤናን አይጋላይይ ጥላል

**ክፍል 9.** ባገኙት አገልግሎት የተሰማዎት እርካታ satisfaction standardized tool (University of Wollongong)

N o.	በጣም ረክቻለሁ	አልረክም	ባልረክም በጣም ምላሽ ስጥም 2	ረክቻለሁ	በጣም ረክቻለሁ
	0	1		3	4

1001	በተደረገልዎት ህክምና ምን ያህል ደስተኛ ነዎት {treatment/care}?					
1002	ሀኪምዎ (ነርስዎ) የህክምና ምን ዓይነት ስጠት ሰጧልዎት ምን ያህል ልረክተዋል {treatment/care}?					
1003	ሀኪምዎ በምርመራ ሰዓት ከፊተኛ ጥንቃቄ አድርገዋል					
1004	ስለ ጤናዎ በመረጡት ሁኔታዎች ላይ ምን ያህል ደስተኛ ነበሩ?					
1005	ለህክምናዎ ሲመጡ ለምን ያህል ጊዜ ሀኪምዎ የሚገባኝን ክብር ሰጥቶኛል ብለው ያስባሉ?					
1006	ከሀኪምዎ ጋር የነበረዎት ሰዓት በጣም ያጥራል.					
1007	በሆስፒታሉ ውስጥ ገዢነት ጥንቃቄ ለረክተዋል?					

**ክፍል 10.** ከዚህ በታች የተዘረዘሩት ሰዓት ላይ የተጠቃሚዎች (ASSIST substance use assessment scale) ( Humeniuk et al., 2010)

	የሚወሰደው ዓይነት (Substance)		
401	አልኮል (አረቄ፣ ቢራ፣ ጠላ፣ ጠጅ፣ ዊስኪ)		
402	ሌላ ማንኛውንም ዓይነት የሚወስዱት ነገር ካለ		
403	ማሪጁኦና፣ የሚጨፍስ ወይም የሚወስድ መድኃኒት (Marijuana)		
404	በአፊንጫ የሚወሰድ አንቃቂ ዳቄት መሳይዕ (Cocaine)		
405	አምፊታሚን መድኃኒት (አንቃቂ መድኃኒት በፊሳሽ መልክ (በሌላ) (eg. Anti depressive፣ ለፊጥነት የሚወሰድ (Amphetamines )		
406	በአፍ ወይም በአፍንጫ የሚሰጥ መድኃኒት (Inhalants)		
407	አንቅልፍ የሚያመጣ መድኃኒት (Sedatives)		
408	ብሶት አሰረብ ብወሽት ተስፋ ለምን የሚሞላ ነርቪን የሚያነሳ፣ በጭካኔ አንድ ነገር ለመፈፀም ሲያስቡ የሚወሰድ መድኃኒት (Hallucinogens)		

**ክፍል 11.** ታማሚ ወንጌ ወቅትና ጠባይ (ሁኔታን) ለመረዳት መጠይቅ (The Dr.Morisky 8-item medication adherence scale)

7	አንዳንድ መድኃኒት ምን ለመውሰድ ይረሳሉ	አዎን	ኤደለ
---	---------------------------	-----	-----

0		=1	ም=2
1			
7	አንዳንድ ሰዎች መድኃኒታቸውን በመርሳት ሳይሆን በተለያዩ ጉዳዮች መድኃኒታቸውን መውሰድ ይራራሉ። ባለፉት ሰባት ቀናት መድኃኒት ምን ያልወሰዱ በትቀንነበረ		
0			
2			
7	መድኃኒት ምን ያልወሰዱ ስለሆነ ለሌሎች ምክትታዎች (ሳይሳወቁ) መውሰድ ያቆሙ በትጊዜነበር?		
0			
3			
7	ከቤት ስወጡና መንገድ ስንዙ መድኃኒት ምን ያልወሰዱ የረሱ በትቀንነበረ?		
0			
4			
7	በትላንትና ወላጅ ስራ ላይ ስለሚገኙ ምን ያልወሰዱ መድኃኒት ምን ያልወሰዱ?		
0			
5			
7	የህመም እና የበሽታ ወይም ልዩ ልዩ ስርዓት መድኃኒት ምን ያልወሰዱ አቁመው ያወቃሉ		
0			
6			
7	መድኃኒት አካታት ለመውሰድ እንደሚታወቀው ናቸው በሆነ ሰዎች እንደሚገልጹት አሰልፎ ነው። ለመሆኑ እርስዎ ስበዚ ህሁኔታ ወይም ስጥህ መድኃኒት ያቆሙ በትጊዜነበር?		
0			
7			
7	ደጋግ መውሰድ ለመርሳት በተነሳ ለሌሎች ምን ያልወሰዱ መድኃኒት ምን ያልወሰዱ የተቸገሩ በትጊዜነበር?		
0			
8			

**ክፍል 12. የኤድስ መድኃኒት ተጠቃሚ ህመም ማንን ህክምና ማሳወቂያ መጠይቅ ART (clinical) situation**

ቁ	ጥያቄ	መልስ	ኮድ/ቁጥር/
Q601	መድኃኒት ከመጀመር ያለፈት		
	ክብደት	-----	
	የስራ ህክምና ስራ ስርዓት	እስራሊት 1 እንቀሳቀሳለሁ፤ እሄዳለሁ 2 በህመም ምክንያት አልጋለይነበርኩ	
	CD4 T-Cell count ? ስንት ነበር		
Q602	በመጠይቁ ሰዓት (በዚህን ወቅት)		
	የሰው ነት ክብደት	<input type="text"/>	
	የስራ ህክምና ስራ ስርዓት	እስራሊት 1 እንቀሳቀሳለሁ፤ እሄዳለሁ 2 በህመም ምክንያት አልጋለይኝ 3	

	CD4+ T cell count? ስንት ነበር		
Q603 <i>OI</i>	ባለፉት አራት ሳምንታት ውስጥ ማንኛውንም የተቆማ ጥአይነት ይዘት ያወቃል?	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	
Q604	ባለፉት አራት ሳምንታት ውስጥ ማንኛውንም የተቆማ ጥአይነት ይዘት ያወቃል?	አዎን 1 አይደለም 2 መልሱን አላወቀውም 99	
<i>[FOR THE DATA COLLECTOR] NEXT ARE SOME STATEMENTS THAT YOU ARE EXPECTED TO GENUINELY TREAT BEFORE YOU COMPLETE YOUR INQUIRY</i>			
	TAKETHE STUDYPARTICIPANT’SWEIGHT(KG)		
	TAKETHE STUDYPARTICIPANT’SHEIGHT(CM)		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT’S CD4+ CELL COUNTS BEFORE (S)HESTARTS ART		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT’S LAST CD4+ CELL COUNTS MONTHSAFTER(S)HESTARTS ART		

ከእኛ ጋር ስለቆዩ እና መሰግናለን፤ ባለሙሉ ጤና እንድሆኑ እንመኝልዎታለን

**We would like to express our respect and gratitude to you for your interest and motive to participate in this study**

**ANNEX 6 Gaafannoo Fedhii Hirmaannaa****Univarsiitii Jimmaa****Dhaabbata fayyaa namaa****Dame Barnoota hordoffii fii faana dhawiinsa dhukkubaa****Maqaa qorataa: Daaniel Dastaa****Email: Danijiru@yahoo.com or Danieldesta94@gmail.com****DDeggartoota: Lelisa Sena (PHD, Associate professor)****Teshome Kebata (BSc.MPH,Biostat.)****Guca fedhii hirmaannaannaa ittin mirkaneeffatan**

Akkam bultan/ooltan maqaan kiyya ----- ani barataa sadarkaa maastarsiii tokkoofan ulaagaa eebba isaa guuttachuuf hojatu gargaaruufan hojjata jira;kanan isin gaafadhu, hanqina nyaata mana keessa fi rakkoowwan biro qoricha HIV fudhachuu irraa isin/ namoota biro hanbisan qoa'achuufi jirra.ulfaatina fi heerina keessanis n safarra; mana kaardiis deemuun faayila keessan kessaa raga xiqqoo ni fudhanna. Hirmmannaan keessan hojii kana baayyee milkeessa; haata'u malee yoo fedhii dhabddan dhiisuu nidandeessu;calqabddanii illee addaan kutuun mirga keessan

Iccitiin meessan nama gaaffii isin gaafatuun alatti nama 3ffan hindhagahu;mana duwwaa isin lamaan qofti keessa turtanitti deebii nuuf laattu;waanta kana gootaniifs faayidaan argachuu maltan kamiyyuu isin jalaaa hin hafu.Kanaaf deebii kennuuf daqiiqaa 40-50 isingaafata; yoonnuwalin turuu dandeessan baayyee isin galateffanna?

euyee  1

lakki asitti dhaabbata

Yoo waliigalamelakk. ART. \_\_\_\_\_ guyya\_na

Maqaa fi malltto suuppervayzaraa

Maqaa \_\_\_\_\_

Maqaa \_\_\_\_\_

\_\_\_\_\_m

\_\_\_\_\_m

mallattoo \_\_\_\_\_

allattoo \_\_\_\_\_



**Part I Ragaa bu'uuraa**

<i>No</i>	<i>gaaffilee</i>	<i>Garee koodii</i>	<i>koodii</i>
Q101	umurii	waggaa 18—22 ...1 waggaa 23-27 ....2 waggaa 28-32 .....3 waggaa 33-37 .....4 waggaa 38 fi isaa ol.5	<input type="text"/>
Q102	Abbaan warraa/haati warraa( saala)	1.abbaa 2.haadha 3.dhiira biroo 4. dubartii biroo	<input type="text"/>
Q103	saala	1 ----- dhiira 2-----dhalaa	<input type="text"/>
Q105	Amantaa	ORTHODOKSii.....1 Muslima.....2 Protestantii.....3 Kaatholi.....4 Kan biroo.....5	<input type="text"/>
Q106	lammii	Oromo .....1 Amhara .....2 Guraage.....3 Tigree .....4 Kan biroo... 5	<input type="text"/>
Q107	Haala gaaa'ilaa	Fuudhe/herumte1 gaaila kan hin qabne 2 Kan hike/te.....3 Kan jalaa du'e/duute...4	<input type="text"/>

Q108	<i>Haala barnootaa</i>	Kan hinbaranne 1 Dubbisuu fi barresu kan danda'u 2 Sadarkaa 1ffaa 3 Sadarkaa 2ffaa 4 Dipiloomaa fi isaa ol 5	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Q109	Galii ji'aa(birr)	<500 1 500-100 2 1000 -1500 3 >1500 4	
Q110	Haala hojii	26 Qacaramaa/tuu 27 Hojii kan hinqabne 28 daldalaa 29 hubnaan bulaa 30 barataa 31 Qote bulaa 32 dadhabaa 33 Mana srreeffamaa irraa 34 Kan biro	<input type="text"/>
Q111 ( <i>social support</i> )	Eenyu waliin jiraatta/ttu?	kophaa 1 maatii kiyya waliin 2 hiriya waliin 3kan biroo) iibs _____	<input type="text"/>
Q112	Umurii yaala irra turtan	1 =baatii 3-6 2 =baatii 12-24 3=baatii 25-36 4=baatii 36 ol	<input type="text"/>
Q113	Lakk.maatii	1=lama 2=sadi-5 3=shanii ol	<input type="text"/>
Q114	Vaayirasiin HIV dhiiga keessan keessatti akka ergamu namoonni nibeekuu	eyee 1 lakki2 hinbeeku 99	<input type="text"/>
Q115	Eyyee yoo ta'e?	Haadha manaa/abbaa manaa 1 Ijoollee 2 Warra 3	

		Obboleessa/obboleettii 4 firaaa 5 hiriyoota 6 kan biroo_____	
Q 1 1 6	Gargaarsa nyaataa argataa jirtuu	Eye 1 Lakki 2 Hinbeeku 999	<input type="text"/>
1 1 7	Maqaa Dhaabbata isin gargaaruu	----- --	<input type="text"/>
Q118	Gosa deeggarsa argataa jirtanii	1.plumpneetii 2.xaafii 3. kan biroo -----	<input type="text"/> 3(other=
Q119	Hojiilee galii guddisan	Eye 1 Lakki 2 Hinbeeku 999	<input type="text"/>
Q120	Fageenya mana keessani hospitaala Amboo irraa	Sa'a 1 gadi 1 Sa'a 2 2 Sa'a sadii fi isaa ol 3	<input type="text"/>

**Part 2. HFIAS –(Table 4). Guca haala nyaataa gaafatu**

lakk	Gaaffii	Deebii	Koodii
1	Torban afran darban mana keessatti dhabamuu nyaataatiin cinqamtaniirtuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee	....  <input type="text"/>

1.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol	.... _
2	Torban afran darban isin ykn maatiin keessan gosa nyaataa barbaadan sababii dhabinsaatiin osoo hin nyaatiin haftaniirtuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee	...../...../
2.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol	...../...../
3	Torban afran darban isin ykn maatiin keessan gosa nyaataa osoo barbaaddanuu, sababii dhabinsaatiin baayyee xiqqoo ta'e nyaachuuf dirqamtaniirtuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee	...../...../
3.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol	
4	Torban afran darban isin ykn maatiin keessan gosa nyaataa nyaachuu hinbarbaanne sababii dhabinsaatiin nyaachuuf dieqamtaniirtuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee	
4.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol	
5	Torban afran darban isin ykn maatiin keessan sababii dhabinsaatiin nyaata xiqqqoo ykn osoo hinguufiin dhiistaniirtu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee	

5.a	Yeroo meqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol
6	Torban afran darban isin ykn maatiin keessan laaqqana xiqqoo ykn nyaata guyyaa xiqqoo nyaachuuf dirqamtaniirtuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee
6.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol
7	Torban afran darban mana keessan keessaa rakkoo hiyyuummaatiin nyaanni gosa kamiyyuu gonkuma dhabamee beekaa ?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee
7.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol
8	Torban afran darban isin ykn miseensi maatii keessanii, sababii dhabinsaatiin osoo hin nyaatiin beella''aa gara ciisichaa deemtanii beektuu ?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee
8.a	Yeroo meeqaaf?	1 = faffagaatee (altokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol
9	Torban afran darban isin ykn miseensi maatii keessanii sababii dhabinsaatiin osoo hin nyaatiin guyyaa fi halkan walitti ansitanii turtanii beektuu?	0 = lakki (gaaffi 2ffatti darbi) 1=eeyee

9.a	Yeroo meeqaaf?	1 = faffagaatee (al tokko ykn lama) 2=darbee darbee;yeroo 3-10 3=yeroo hunda ykn ji'a darbe keessa yoo xiqqaate yeroo 10 ol)
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**Source:** Coates, Jennifer, Anne Swindale and Paula Bilinsky. 2007. *Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access: Indicator Guide (v. 3)*. Washington, D.C.: FHI 360/FANTA.

**Nyaata Gosa Gosaa fi baay'ina yeroo soorataa**

<i>lakk</i>	<i>Gaaffilee fi calaltuu</i>	<i>Kutaalee Koodii</i>	<i>Koodii</i>
<i>Q201</i>	<i>Sa'a 24 darban;jechuunis halkanii fi guyyaa darbe keessatti kan armaan gadii soorattaniirtuu?</i>		
201A	Daabboo,ruuzii,buskuutii, fi gosa nyaataa kamiyyuu calla irraa irraa qophaa'ee ykn warqe	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
201B	Dinnicha,hundee diimaa,kassava,kaarota, ykn nyaata hundee irraa qophaa'u gosa kamuu?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201C	Biqiltoota baala magariisaa,raafuu,qosxaa, fi kkf?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201D	Firii gosa kamiyyuu fkn burtukaana,loomii,muuzii?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201E	Gosa foonii kamiyyuu;jabbii,hoolaa,sangaa,re'ee, hindaaqqoo,kale,laphee, garaacha fi kkf.?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201F	Hanqaaquu gosa kamiyyuu?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201G	Foon qurxummii gosa kamiituu, gogaa ykn jiidhaa?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>

201H	Midhaan ittoo gosa kamiyyuu fkn, baaqqela, missira, atara, ochloonii,?	eyeel laakki 2 hinyaadadhu/beeku	<input type="text"/>
201I	Gosa aannanii kamiyyuu fkn ittoo, baaduu, areera, ittittuu ?	eyeel laakki 2 hinyaadadhu/beeku 99	<input type="text"/>

201J	Nyaata coomaa gosa kamiyyuu.dhadhaa,zayita, Cooma horii?	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
201K	Nyaata mi'aa kamiyyuu, damma,sukkaara,?	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
201L	Nyaata si'eessituu kamiyyuu; fkn.shaayii,buna?	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
Q202	<i>Sa'a 24 darban;jechuunis halkanii fi guyyaa darbe keessatti kan armaan gadii soorattaniirtuu?</i>		
202A	Nyaata kamiyyuu careen dura	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
202B	Ciree	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
202C	Nyaata gosa kamiyyuu ciree fi laaqqana gidduutti	eyee1 laakki 2 hinyaadadhu/beeku 999	<input type="text"/>
202D	Laaqqana	eyee1 laakki 2 hinyaadadhu/beeku 999	<input type="text"/>
202E	Nyaata gosa kamiyyuu laaqqanaa fi irbaata gidduutti	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>
202F	Nyaata irbaataa	eyee1 laakki 2 hinyaadadhu/beeku 99	<input type="text"/>
202G	Nyaata kamiyyuu irbaataan bodatti	eyee1 laakki 2 hinyaadadhu/beeku	<input type="text"/>

***Sababoota Qoricha HIV irra utaltaniif(irra tartaniif), osoon fudhatiin haftaniif nuuf ibsaa***



**ክፍል 5. (210-219) bee keessa yertoo meeqaaf akka isinitti dhagaahame nuuf ibsaaMiira armaan gadii torbaan dar**

		<b>Bayyee darbee darbee (akka hinturre)</b>	<b>Yeroo murasaaf guyyaa(1-2)</b>	<b>Drbeedarbee guyyaa(3-4))</b>	<b>Yeroo hundaa Guyyaa (5-7)</b>
210.	Yeroo baayyee dhimmoota nandhippisneen jeeqqameera				
211	Hojiin hojjataa turee xiinxaluu hindandeenye				
212.	Gara na hammaatee ture				
213	Hojiin koo hunduu dafqaa fi dhamaatiin natty fakkaateera				
214	Waayee jiruukoo borii abdiin guutamee ture				
215	Sodaadheen liqimfameen ture				
216.	Yeroo hirribaa koo boqonnaa hinqabuun ture				
217	Ofitti gammadaan ture				
218	Kophummaan natty dhagaahamee ture				
219.	Dalagaa koo raawwachuu hindandeenye				

#### ክፍል 6. Ilaalcha hawaasa naannoo irraa maddu (Internalized Social Stigma )=501-506)

lakk	Miira	Ibsa miiraa				
		Baayyee waliingala	walig ala	Yaada kennuu hindand a'u	waliingalu	Baayyee waliingalu
501	Dhukkubsataa HIV ta'uukoo ibsachuuf natty ulfaata					
502	Dhukkubsataa HIV ta'uukoo akka ijjituu ta'e natty hima					
503	Dhukkubsataa HIV ta'uukoo bu'aa badiikoo akka ta'e natty dhagaahama					
504	Dhukkubsataa HIV ta'uukoo naqaannessaa					
505	Dhukkubsataa HIV ta'uukoo gati dhabeessa ta'ukoo natty hima					
506	Haala dhukkuba koo namni biro akka beeku hinbarbaadu					

#### ክፍል 7. Illalch qorichaa HIV irratti qabdan Patient Belief Medication Questionnaire (BMQ)- ART drugs and ) (901-911)

	Waayee qoricha isiniif ajajamee maal jettu	Baayyeen waliingala	waliingala	Nan shakka	waliingalu	Baayyee Waliingalu
901	Fayyaankoo guyyaa guyyaa qorichaa koo irratti hundaaya					
902	Qoricha fudhachuun yaaddoo natty ta'a					
903	Qorichaa malee jiraachuun anaaf hindanda'amu					
904	Yaaddoonkoo rakkoo qorichi yeroo dheeraa booda natty fiduu danda'uudha					
905	Qorichakoo malee dhibeen natty hammaatti					

906	Qorichoonni koo icciitii kooti					
907	Fayyaankoo borii qoricha irratti kan hundaayedha					
908	Qorichi jiruukoo jeeqee,faalleesse,booesse					
909	Yeroo tokko tokko qorichatti hundaa'uunkoo irkataa ta'uukoo natty hima					
910	Qorichikoo fayyaan koo akka natty hin habaasne eega					
911	Qorichi kun miiltoo badaa qaba					

**h5A8**.faayidaa qorichaa hangam hubattaniirtu (Patient Perceptions about ART / scales(**801-812**))

<b>801</b>	Waaqayyoo na fayyisaa addan kutus dhiisus hindhiphadhu	waliingala(1)	Walii hingalu(2)
<b>802</b>	Qorichoonni HIV bu'aa kan argamsiisan kadhannaa waliin		
<b>803</b>	Qorichi aadaa HIV nifayyisa		
<b>804</b>	Yeroo soomanaa qoricha fudhachuun dhorkaadhaa		
<b>805</b>	Qorichi HIV nyaata nyaata,yoo dhabe nama nyaata		
<b>806</b>	Qorichi HIV nyaata malee bu'aahin argisiisu		
<b>807</b>	Qorich HIV nama beellessa,kanaaf caatii ykn tamboo yoon fudhadhee beelakoo nadagachiisu		
<b>808</b>	Qorich HIV danddeetti dhukkuba dhorkuu qaamaa ni dabala		
<b>809</b>	Qorichi HIV hammeessa dha		
<b>810</b>	Qoricha HIV yeroo gabaaduuf addan kutuun rakkoo hinfidu		
<b>811</b>	Qoricha yeroo tokkollee utaalun fayyaani miidha		
<b>812</b>	Qorichaa yeroo garaan duwwaa utaalun rakkoo fida		

**ክፍል 9. Tajaajila argatanitti miira isinitti dhagaahame** satisfaction standardized tool  
(University of Wollongong)

No.		<i>Baayyee itti hin quufne 0</i>	Itti hinquufne 1	<i>Itti quufuus baadhu hingaddine 2</i>	Itti quufeeera 3	Baayyee Itti quufeeera 4
1001	tajaajila isiniif kennametti hammam gammaddan }?					
1002	Ogeessi isn ilaale bu'aa tajaajila keessanii yeroo isiniif ibsu ammam itti gammaddaniirtu {treatment/care}?					
1003	Ogeessi keessan yeroo isin ilaalu offeeggannoo guddaa taasiseraa?					
1004	Fayyaa keessaniif filannoo keessan argachuu dandeessaniirtuu					
1005	Yeroo tajaajilaaf dhuftan hangam ogeessi nakabajeera jettanii yaaddu					
1006	yeroon ogeessa waliin qabddan baayyee gabaabateeraa?					
1007	Hospitaala kanatti ofeeggannoo isiniif godhametti quuftaniirtuu					

**Kutaa 10 wantoota araada ibsan** (ASSIST substance use assessment scale) WHO (Humenuk et al., 2010)

	<i>Substance)</i>		
401	Araqee,biiraa,xajjii, farsoo, whiskii)		
402	Sigaaraa , tamboo		
403	Kan aarsamu ykn xuuxamu (Marijuana)		

404	Funyaaniin kanfudhatamu ,waanta akka daakuu (Cocaine)		
405	Haala dhangala'aa ykn kan birootiin, kan fudhatamu human kan dabaluu fkn fiigichaaf( Amphetamines )		
406	Afaaniin kan harkifamu Inhalants)		
407	Hirriba kan fidu (Sedatives)		
408	Garaa hammenyaa fi abdiin muruu irraanfachiisee abdiin kan guutu (Hallucinogens)		

#### ክፍል 5. (210-219) bee keessa yertoo meeqaaf akka isinitti dhagaahame nuuf

##### ibsaMiira armaan gadii torbaan darban

		Bayyee darbee darbee (akka hinturre)	Yeroo muraasaaf guyyaa(1-2)	Drbe edarb ee guyyaa(3-4))	Yeroo hundaa Guyyaa (5-7)
210.	Yeroo baayyee dhimmoota nandhippisneen jeeqqameera				
211	Hojiin hojjataa turee xiinxaluu hindandeenye				
212.	Gara na hammaatee ture				
213	Hojiin koo hunduu dafqaa fi dhamaatiin natty fakkaateera				
214	Waayee jiruukoo borii abdiin guutamee ture				
215	Sodaadheen liqimfameen ture				
216.	Yeroo hirribaa koo boqonnaa hinqabuun ture				
217	Ofitti gammadaan ture				
218	Kophummaan natty dhagaahamee ture				
219.	Dalagaa koo raawwachuu hindandeenye				

ቁ	Gaaffii	deebii	koodii
Q301	<i>Sababoonni qorichoota keessan addan kutuuf isin dirqamsiisan maal</i>		
Q301	Nyaatan qorichakoo waliin fudhu waantan hinqabneef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q302	Mana koo irraa fagaadhee waantan tureef	gonkumaa 1 baayyee darbee darbee 2 darbee	<input type="text"/>
Q303	Dhimmoota biroon qabameen ture	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q304	Fdhii nyaataakoo baayyee waan natty dabaluu fi nyaachuuf waantan hinqneef	gonkumaa 1 baayyee darbee darbee 2 darbee	<input type="text"/>
Q305	Qorichoonni baayyeen waan naaf kennamaniif (pill burden)	1. 1-4 2. >=5	<input type="text"/>
Q306	Rakkoowwan miiltoo qorichaa ta'an hambisuuf ykn sodaachuun?	gonkumaa 1 baayyee darbee darbee 2 darbee	<input type="text"/>
Q307	Namoonni biroon akka na yaadachiisan waantan hin barbaanneef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q308	Fayyummaakoo irratti jijjiiramni waan dhufeef	gonkumaa 1 baayyee darbee darbee 2 darbee	<input type="text"/>
Q309	Qorichi suniyyuu summii fakkaatee waanta natty mul'ateef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>

Q310	Ysa'aa qorichaa kootti hirriba rafeen ture	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q311	Dadhabbiin waan natty dhagahamee tureef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q312	Natti haguugee,ykn of najibbisiisee waan tureef,ykn keessa koo of jibbaa waan tureef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
<b>Q313</b>	Yeroo muraasaaf rakkoon waan na mudatee turef	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q314	Qorichoonna koo tasa waan najalaa dhumaniif	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q315	Irraanfadheen ture	gonkumaa 1 baayyee darbee darbee	<input type="text"/>
Q316	Yeroo ta'etti dhgaatii alkoolii waanan fudheef?	gonkumaa 1 baayyee darbee darbee 2 darbee	<input type="text"/>

## ክፍል 6. Ilaalcha hawaasa naannoo irraa maddu (Internalized Social Stigma)=501-

506)

lakk	Miira	Ibsa miiraa				
		Baayyee walligala	wallig ala	Yaada kennuu hindand a'u	waliingalu	Baayyee waliingalu
501	Dhukkubsataa HIV ta'uukoo ibsachuuf natty ulfaata					
502	Dhukkubsataa HIV ta'uukoo akka ijjituu ta'e natty hima					
503	Dhukkubsataa HIV ta'uukoo bu'aa badiikoo akka ta'e natty dhagaahama					
504	Dhukkubsataa HIV ta'uukoo naqaannessa					
505	Dhukkubsataa HIV ta'uukoo gati dhabeessa ta'ukoo natty hima					
506	Haala dhukkuba koo namni biro akka beeku hinbarbaadu					

## ክፍል 7. Illalch qirichaa HIV irratti qabdan Patient Belief Medication Questionnaire

(BMQ)-ART drugs and ) (901-911)

	Waayee qoricha isiniif ajajamee maal jettu	Baayyeen Waliingala	waliingala	Nan shakka	waliingalu	Baayyee waliingalu
901	Fayyaankoo guyyaa guyyaa qoricha koo irratti hundaaya					
902	Qoricha fudhachuun yaaddoo natty ta'a					
903	Qorichaa malee jiraachuun anaaf hindanda'amu					
904	Yaaddoonkoo rakkoo qorichi yeroo dheeraa booda natty fiduu danda'uudha					



905	Qorichakoo malee dhibeen natty hammaatti					
906	Qorichoonni koo icciitii kooti					
907	Fayyaankoo borii qoricha irratti kan hundaayedha					
908	Qorichi jiruukoo jeeqee,faalleesse,booesse					
909	Yeroo tokko tokko qorichatti hundaa'uunkoo irkataa ta'uukoo natty hima					
910	Qorichikoo fayyaan koo akka natty hin habaasne eega					
911	Qorichi kun miiltoo badaa qaba					

**h5A8.** faayidaa qorichaa hangam hubattaniirtu (Patient Perceptions about ART / scales(801-812))

801	Waaqayyoo na fayyisaa addan kutus dhiisus hindhiphadhu	waliingala(1)	Walii hingalu(2)
802	Qorichoonni HIV bu'aa kan argamsiisan kadhannaa waliin		
803	Qorichi aadaa HIV nifayyisa		
804	Yeroo soomanaa qoricha fudhachuun dhorkaadhaa		
805	Qorichi HIV nyaata nyaata,yoo dhabe nama nyaata		
806	Qorichi HIV nyaata malee bu'aahin argisiisu		
807	Qorich HIV nama beellessa,kanaaf caatii ykn tamboo yoon fudhadhee beelakoo nadagachiisu		
808	Qorich HIV danddeetti dhukkuba dhorkuu qaamaa ni dabala		
809	Qorichi HIV hammeessa dha		
810	Qoricha HIV yeroo gabaaduuf addan kutuun rakkoo hinfidu		
811	Qoricha yeroo tokkollee utaalun fayyaani miidha		
812	Qorichaa yeroo garaan duwwaa utaalun rakkoo fida		

**h5A9.** Tajaajila argatanitti miira isinitti dhagaahame satisfaction standardized tool (University of Wollongong)

No.		Baayye	Itti	Itti	Itti	Baayyee
-----	--	--------	------	------	------	---------

		<i>e itti hin quufne 0</i>	hinquufn e 1	<i>quufuus baadhu hingaddin e 2</i>	quufeer a 3	Itti quufeer a 4
100 1	tajaajila isiniif kennametti hammam gammaddan}?					
100 2	Ogeessi isn ilaale bu'aa tajaajila keessanii yeroo isiniif ibsu ammam itti gammaddaniirtu {treatment/care}?					
100 3	Ogeessi keessan yeroo isin ilaalu offeeggannoo guddaa taasiseeraa?					
100 4	Fayyaa keessaniif filannoo keessan argachuu dandeessaniirtu u					
100 5	Yeroo tajaajilaaf dhuftan hangam ogeessi nakabajeera jettanii yaaddu					

100 6	yeroon ogeessa waliin qabddan baayyee gabaabateeraa?					
100 7	Hospitaala kanatti ofeeggannoo isiniif godhametti quuftaniirtuu					

***Kutaa 10 wantoota araada ibsan (ASSIST substance use assessment scale) WHO (Humeniuk et al., 2010)***

	<i>Substance)</i>	<i>Eye</i>	<i>Lakki</i>
<b>401</b>	Araqee,biiraa,xajjii, farsoo, whiskii)		
<b>402</b>	Sigaaraa , tamboo		
<b>403</b>	Kan aarsamu ykn xuuxamu (Marijuana)		
<b>404</b>	Funyaaniin kanfudhatamu ,waanta akka daakuu (Cocaine)		
<b>405</b>	Haala dhangala'aa ykn kan birootiin, kan fudhatamu human kan dabaluu fkn fiigichaaf( Amphetamines )		
<b>406</b>	Afaaniin kan harkifamu Inhalants)		
<b>407</b>	Hirriba kan fidu (Sedatives)		
<b>408</b>	Garaa hammenyaa fi abdiin muruu irraanfachiisee abdiin kan guutu (Hallucinogens)		

**.(The Dr.Morisky 8-item medication adherence scale)**

701	Yeroo tokkon tokko qoricha keessan I irraanfattuu	eyee=1	lakki=2
702	Guyyoota turban darban keessa yeroo qoricha keessan itti		

	utaaltan ture		
703	Rakkoon qoricchi isin irraan gaheen osoo ogeessatti hin himiim yeroon dhaabdan turee?		
704	Yeroo manaa baatanii fi karaa deemtan qoricha keessan irraanfattanii beektuu		
705	Guyyaa kaleessaa qoricha bkeessan hundayyuu fudhattaniirtuu?		
706	Yeroo mallattoon dhukkubaa isinirraa bade qoricha keessan addaan kuttanii beektuu		
707	Qorichi isinitti heddumachuun ykn isin siqisuun yeroon addan kuttan jiraa		
708	Irra deddeebi'uun qorcha keessan irraanfattanii beektuu		

### Guca haala yaalumsa qratu

<i>NO</i>	<i>gaaffii</i>	<i>Koodii</i>	<i>Koodii</i>
Q601	CD4 yeroo calqabaa		
	Ulfaatina	-----	
	Haala hojii	Sirrtti hojjatuu 1 xiqqoo xiqqoo 2 Ciisanii iirani 3	
	Dhukkuba daranyoo sombaa	Har'aa yyyu dhukubsataa Jiruu 1 Yeroo duriii 2 Gonkumaa dhibichaan waliin beekan 3	
<b><i>For Data collectors only</i></b>			
	TAKETHE STUDY PARTICIPANT'S WEIGHT(KG)		
	TAKETHE STUDYPARTICIPANT'S HEIGHT(CM)		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT'S CD4+ CELL COUNTS BEFORE (S)HESTARTS ART		
	CHECK FROM THE RECORD THE STUDY PARTICIPANT'S LAST CD4+ CELL COUNTS MONTHSAFTER(S)HESTARTS ART		

Waan nuwaliin turtaniif Galatoomaa!!

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**Annex 7 a) -GUIDELINEFORFOCUSGROUP DISCUSSION**

- (A) Introducing your self and contents then Focus
- (B) Client related factors:perception,belief,substance use,hh food insecurity status,depression,knowledge and others
- (C) Hopital related factors:drugs in stock,appointment date,service satisfaction,and others
- (D) Adherence status:adherence groups,drugs side effects,service quality,language barriers and other communication banches

1. During theprevious24-hoursperiod (yesterday day and night), which groups of food did you or anyone in your household consume? (*LIST THE FOOD GROUPS IF NECESSARY*)

- a. Which food groups are frequently consumed? Why?
- b. Which food groups are less frequently consumed? Why?
- c. What should be done to encourage PLWHA on ART feed on diversified food groups?

2. During theprevious24-hoursperiod (yesterday day and night), how frequent did you or anyone in your house hold consume meals? (*LIST THEMEAL TYPESIF NECESSARY*)

- a. Which meal types are frequently consumed? Why?
- b. Which meal types are less frequently consumed? Why?
- c. What should be done to encourage PLWHA on ART to increase theirmeal frequency?

theirmeal frequency?

3. How do you best describe the food eaten in your house hold in thelast12 months?

- a. Do you eat enough of the kinds of food you want to eat? How?
- b. Do you eat enough but not always the kinds of food you want? Why?
- c. Do you sometimes eat not enough? Why?
- d. Do you often eat not enough? Why?

4. In the last12 months did you worry about your food security situation? Why?

a. In the last 12 months did you worry about your food security situation in terms of feeding your child/children? Why?

b. In the last 12 months did you ever cut the size of (your/your child/any of the children) meals or skip meals because there wasn't enough money for food? How often did this happen?

c. In the last 12 months, did (you/your child/any of the children) ever note at for a whole day because there wasn't enough money for food? How often did this happen?

5. How common/rare is missing ART drugs among PLWHA on ART?

a. What are the reasons for missing ART drugs?

b. What should be done to encourage adherence to ART among PLWHA on ART?

c. What ART outcomes did you get? How beneficial they are?

6. Do you have any additional general comment on household food and of PLWHA in relation with ART?

### **Annex 7 b) -GUIDELINE FOR IN-DEPTH INTERVIEW**

(A) Mention objective of study: tasks, drugs treatment procedures, adherence issues,

(B) Food aid, Dietary diversity and meal frequency

(C) Challenges and improvements

1. 'Food dietary diversity' Is there a problem of eating less diverse food groups in this area? Is that a problem of PLWHA (on ART)? Why? What should be done to improve this?

2. 'Meal frequency' Is there a problem of eating less frequent meals in this area? Is that a problem of PLWHA (on ART)? Why? What should be done to improve this?

3. 'Food Access' Are PLWHA (on ART) in this area secure with adequate household food and nutrition? Why?

4. 'Doubt' Did PLWHA (on ART) worry about their household food and nutrition security situation? How often? Why?

5. 'Level of FI' How do you describe the food and nutrition security situation of PLWHA (on ART)?

6. 'Proportion of

Adherence' How common/rare is missing ART drugs among PLWHA on ART in this area?

Why? What should be done to improve adherence to ART in this area?

7. Relation ship of Nutrion&Adherence' Do you think the household food and nutrition security situation of PLWHA on ART affects their adherence to ART? How?

8. Do you have any additional ideas on household food and nutrition security situation of PLWHA and their adherence to ART?

1. During the previous 24-hour period (yesterday day and night) which groups of food did you or anyone in your household consume? (*LIST THE FOOD GROUPS IF NECESSARY*)

a. Which food groups are frequently consumed? Why?

b. Which food groups are less frequently consumed? Why?

c. What should be done to encourage PLWHA on ART feed on diversified food groups?

2. During the previous 24-hour period (yesterday day and night), how frequent did you or anyone in your house hold consume meals? (*LIST THE MEAL TYPES IF NECESSARY*)

a. Which meal types are frequently consumed? Why?

b. Which meal types are less frequently consumed? Why?

c. What should be done to encourage PLWHA on ART to increase their meal frequency?

3. How do you best describe the food eaten in your house hold in the last 12 months?

a. Do you eat enough of the kinds of food you want to eat? How?

b. Do you eat enough but not always the kinds of food you want? Why?

c. Do you sometimes eat not enough? Why?

d. Do you often eat not enough? Why?

4. In the last 24 months did you worry about your food security situation?

Why?

- a. In the last 24 hours did you worry about your food security situation  
interms of feeding your child/children? Why ?
  - b. In the last 24 hours did you ever cut the size of (your/your child/any of the  
children) meals or skip meals because there wasn't enough money to buy  
food? How often did this happen?
  - c. In the last 12 months, did (you/your child/any of the children) ever not eat for  
a whole day because there wasn't enough money for food? How often  
did this happen?
5. How common/rare is missing ART drugs among PLWHA on ART?
- a. What are the reasons for missing ART drugs
  - b. What should be done to encourage adherence to ART among PLWHA  
on ART?
  - c. What ART out comes did you get? How beneficial they are?
6. Do you have any additional general comment on household food and  
nutrition security

PLWHA in relation with ART?

### Annex3 -GUIDELINEFOR IN-DEPTH INTERVIEW

1. 'Food dietary diversity' Is there problem of eating less diverse food groups in this area? Is that problem of PLWHA (on ART)? Why? What should be done to improve this?
2. 'Meal frequency' Is there problem of eating less frequent meals in this area? Is that problem of PLWHA (on ART)? Why? What should be done to improve this?
3. 'Food Access' Are PLWHA (on ART) in this area secure with adequate household food and nutrition? Why?
4. 'Doubt' Did PLWHA (on ART) worry about their household food and



nutrition security situation? How often? Why?

5. Level of FI How do you describe the food and nutrition security situation of PLWHA (on ART)?

6. Proportion of Adherence How common/rare is missing ART drugs among PLWHA on ART in this area?

Why? What should be done to improve adherence to ART in this area?

7. Relation ship of Nutriion&Adherence Do you think the household food and nutrition security situation of PLWHA on ART affects their adherence to ART? How?

8. Do you have any additional ideas on household food and nutrition security situation of PLWHA and their adherence to ART?