HARAMAYA UNIVERSITY

SCHOOL OF GRADUATE STUDY

SUBSTANCE USE AND ASSOCIATED FACTORS AMONG ADULT HIV INFECTED PATIENTS ON ANTIRETROVIRAL TREATMENT AT PUBLIC HEALTH FACILITIES OF MODJO TOWN, OROMIA, ETHIOPIA

MSC THESIS

BY

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JULY, 2024

HARAR, ETHIOPIA

Substance Use and Associated Factors among Adult HIV Infected Patients On Antiretroviral Treatment At Public Health Facilities Of Modjo Town, Oromia, Ethiopia

A Thesis Submitted to the school of Public health

Post Graduate Program Directorate

HARAMAYA UNIVERSITY

In partial fulfillment of the requirements for the Degree of

Master of Science in Field Epidemiology

By

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July, 2024

Harar, Ethiopia

APPROVAL SHEET

SCHOOL OF GRADUATE STUDIES

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I was born in 1980 in Jimma Geneti district, Horro Guduru Wollega zone, Oromiya region, Ethiopia. I completed my primary and junior education in Hareto Elementary and Secondary School in Jimma Geneti district Horro Guduru Zone, Secondary school in Western Wollega Menesibu High School and Illubabor Zone Mettu comprehensive school. Then I have graduated from Nekemte School of Nursing In Diploma with clinical Nurse in 2003.and Jimma University in Public Health with Degree 2011. After graduation, I have been working at Illubabor Zone Borecha and Bilo Nopa Woredas, and Modjo Town Oromia Region in different institution for 16 years.

ACKNOWLEDGEMENT

Firstly I would like to extend my heartfelt gratitude to my Advisors Tesfaye Gobena (MPHM, PhD, Associate Professor of Public Health) and Tariku Dingeta (PhD, Assistant Professor) who showed me their unreserved guidance, constructive suggestions and comments, in all my ways of the proposal development. Secondly, I would like to thank all concerned departments and individuals who were participated in this proposal. The last but not the least my thanks goes to Modjo Town health office for providing me with health information background.

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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
AOD	Adjusted Odds Ratio
ART	Anti Retro viral Therapy
AUD	Alcohol Use Disorder
CPD	Cigarettes Per Day
DALYs	Disability Adjusted Life Years
DEA	Drug Enforcement Agency
HAART	Highly Active Anti-Retroviral Therapy
HIV	Human Immuno Virus
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PLWHIV	Peoples Living With Human Immuno Virus
RVI	Retro Viral Infection
STDs	Sexually Transmitted Diseases
Tsz	Total sample size

ABSTRACT

Background: Use of substances such as alcohol, khat and tobacco has become one of the rising major public health and socioeconomic problems worldwide. The global burden of disease attributable to alcohol and illicit drug accounts 5.4% of the total burden of disease. Sub-Saharan Africa exhibit very high levels of alcohol consumption, the most prevalent behavioral risk factors implicated in the transmission of Human Immuno Deficiency Virus. In Modjo town, although advances in Human ImmunoVirus treatment have resulted in morbidity and mortality reductions, the gains of Anti Retro viral Treatment may be attenuated by high rates of substance use.

Objective; To assess prevalence of substance use and associated factors among Adult Retroviral Infected Patients on Anti Retro viral Therapy at Public Health Facilities of Modjo town, Oromia Region, Ethiopia, from February 1- 20, 2020.

Methods: Facility based cross-sectional study was conducted. A total of 429 retro viral infected patients were selected by Systematic Random sampling technique. Data was collected through interview and checklist by using structured questionnaire. Descriptive statistics like frequency mean and standard deviations were computed for most of the variables. Logistic regression model was used for controlling the possible effect of confounders. AOR along with 95% CI were estimated to measure the strength of the association; and to identify predictors of the outcome. Level of statistical significance was declared at P-value ≤ 0.05.

Results: The prevalence of current substance use among Retro viral Infected patient was 104 24.2%, (CI: 20.3- 28.6). Being Males [AOR=1.94 (95% CI: 1.20 - 3.15)], Friend substance use [AOR=1.88 (95%CI: 1.13 - 3.13)], and family substance use [AOR=2.11 (95%CI: 1.49-4.00)] were factors significantly associated with substance use among retro viral infected patients.

Conclusions: The prevalence of substance use disorder was high. Of the studied variables, sex, friend substance use, and family substance use were independently associated with substance use disorder. Giving Awareness on effect of substance use specifically focusing male user was recommended. Screening and cessation support should be offered at Anti Retro viral clinics in Modjo town Public health facilities.

Keywords: Substance use, retroviral infection, patients on Anti-Retroviral Therapy, Modjo Town

1. INTRODUCTION

1.1 Background

According to British Colombian Health link the term “substance use” refers to the use of drugs or alcohol, and includes substances such as cigarettes, illegal drugs, prescription drugs, inhalants and solvents. A substance use problem occurs when using alcohol or other drugs causes harm to you or to others. Substance use problems can lead to addiction (HBC, 2019).

Use of substances such as alcohol, khat and tobacco has become one of the rising major public health and socioeconomic problems worldwide. Substance abuse is a primary vector for the spread of HIV through engagement in a number of high risk behaviors, either when intoxicated or engages in prostitution in order to obtain drugs(Segni *et al.*, 2017).

The global burden of disease attributable to alcohol and illicit drug accounts 5.4% of the total burden of disease. Another 3.7% of the global burden of disease is attributable to tobacco use. And disorders due to psychoactive substance use including alcohol, drug, and tobacco dependence are the main underlying conditions ultimately responsible for the largest proportion of the global burden of disease attributable to substance use (Tesfaye *et al.*, 2014).

Alcohol use disorders (AUDs) also contribute to 3.8% of the overall global burden of disease. The number of deaths attributed to alcohol worldwide is greater than the combined number of deaths from human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), violence and tuberculosis. The prevalence of alcohol use disorders appears to be high among people living with HIV (PLHIV) compared to the general population. AUDs are associated with premature mortality in PLHIV(Soboka *et al.*, 2014).

The use of khat leaves or alcohol are believed to alter one’s moods or emotional state either through the sustained release or inhibition of neurotransmitters, thereby enhancing or dampening the response of the individual. Effects of khat on the chewer include increased levels of energy, increased self-esteem, euphoria, increased libido, excitement, and increased proclivity for social interaction. Khat is widely consumed among the youth of Ethiopia as shown by several prevalence studies. Insomnia is a common problem associated with the use of khat which prompts the chewer to use/abuse sedatives and to indulge in alcohol as a means of overcoming

the side effect and hence the risk of exposure to HIV would be increased under such heavy influence of a combination of drugs (Malaju and Asale, 2013)

Tobacco use causes substantial morbidity and mortality in PLWHA. The tobacco related harm is substantially higher in PLWHA than smokers in the general population. Smoking was found to be attributable for 24.3% of all-cause mortality, 25.3% of major cardiovascular disease, 30.6% of non-AIDS-related cancer, and 25.4% of bacterial pneumonia amongst people living with HIV. This is partly due to a higher prevalence of tobacco use in PLWHA than the general population and partly due to their increased susceptibility to the impact of tobacco compared to other smokers (Pool *et al.*, 2016) .

Studying smoking-related morbidity and mortality among persons with HIV is especially important because their smoking prevalence is higher than that of the general population. Twenty-one percent of adults are current cigarette smokers, but many studies have reported rates 2 or 3 times as high (46%–76%) among HIV-positive persons. HIV-infected current smokers are reported to smoke an average of 6 to 23 cigarettes daily and to have smoked for an average of 23 to 24 year (Alan R. *et al.*, 2010)

Alcohol is a psychoactive substance with dependence-producing properties. Drinking alcohol is associated with a risk of developing such health problems as alcohol dependence, liver cirrhosis, cancers and injuries. The causal relationships suggested by research findings are those between alcohol consumption and incidence of infectious diseases such as tuberculosis and HIV/ AIDS as well as between the harmful use of alcohol and the course of HIV/AIDS, harmful use of alcohol can also have serious social and economic consequences for individuals other than the drinker and for society at large (WHO, 2014).

The latest causal relationships have been established between harmful drinking and incidence of infectious diseases such as tuberculosis as well as the course of HIV/AIDS. Worldwide 3 million deaths every year, overall 5.1 % of the global burden of disease and injury, 5.3 % of all deaths result from harmful use of alcohol, measured in disability-adjusted life years (DALYs)(WHO, 2018)

1.2 Statement of the Problem

The World Health Organization not only considers the widespread habit of khat chewing as pharmacologically equivalent to amphetamine abuse, but also it has included cathinone in its list of controlled drugs. Similarly, khat use in many European countries and Canada has been restricted or made illegal and is as such classified as a controlled substance. In the United States, the Drug Enforcement Agency (DEA) has asserted that the plant itself, Cathaedulis, is a Schedule I substance onapar with opiates for the period it has cathinonein it, In light of WHO's recommendation, the problems associated with khat chewing for the moment should be considered in a manner similar to amphetamine abuse (Abebe *et al.*, 2005).

There has been a growing body of evidence on the negative impact of alcohol use on HIV/AIDS care and treatment outcomes. Excess alcohol consumption were found to accelerate HIV disease progression, delay initiation Organization not only considers the widespread habit of khat chewing as pharmacologically equivalent to amphetamine abuse, but also it has included cathinone in its list of controlled drugs. Similarly, khat use in many European countries and Canada has been restricted or made illegal and is as such classified as a controlled substance (Lifson *et al.*, 2010). In the United States, the Drug Enforcement Agency (DEA) has to health care services, and more importantly, deteriorate adherence to and outcomes of antiretroviral therapy. Although patterns of hazardous alcohol consumption fuel the spread of HIV epidemics and the burden of health care systems. Therefore, screening and assessing alcohol abuse problems in HIV/AIDS patients are necessary to develop comprehensive care and treatment services and improve the effectiveness of the health systems (Tran *et al.*, 2013).

Cigarette smoking is common among PLWHA with prevalence ranging from 40% to 80%, considerably higher than in the general population. Smoking among PLWHA may result in many deleterious health effects. Moreover, research reveals that smokers who are on HAART have higher viral loads, poorer immunologic response, greater risk of virologic rebound, and more frequent immunologic failure. In other words, these smokers have a higher risk for developing AIDS. Compared with light smokers, thus cigarette smoking among HIV-infected individuals has profound health implications (Luo *et al.*, 2014).

Despite the declining prevalence of smoking in the United States, cigarette smoking is still highly prevalent among HIV positive populations three times greater than what is observed in

the general population (approximately 50–70% vs 20%). Furthermore, HIV positive smokers lose more life-years to cigarette smoking than they do to HIV. Additionally, a study of women on highly active antiretroviral therapy (HAART) found that cigarette smokers had poorer viral and immunologic responses, greater risk of virologic rebound, more frequent immunologic failure, and have a higher risk of developing AIDS than non-smokers (Pacek *et al.*, 2014).
Concurrent with the HIV/AIDS pandemic, many countries with in sub-Saharan Africa exhibit very high levels of alcohol consumption, one of the most prevalent behavioral risk factor simplicated in the transmission of HIV and other STDs (Malaju and Asale, 2013)

Even if substance use has become a common problem among RetroViral Infected (RVI) Patients on Antiretroviral Treatment in major urban/town areas of Ethiopia only scant information is available about the magnitude of substance use and factors contributing for its use in this segment of the population. In Modjo town, although advances in HIV treatment have resulted in morbidity and mortality reductions, the gains of ART may be attenuated by high rates of substance use. Therefore, this study will be conducted to explore the extent of substance use and the association factors among RetroViral Infected(RVI)Patients on AntiretroviralTreatment at (ART) at Modjo Town Public Health Facilities.

1.3 Significance of the study

The primary beneficiaries from the finding of this study will be Modjo town administrative Health office who can use the results about the assessment of Substance use and associated factors among RVI Patients on ART to lead the direction of proper measure. It will help the health professionals to create awareness about the influence of substance use on HIV to invaluable for benefit at overcoming this issue. The finding can also assist program planner and health educators to target on prevention of substance use in HIV patients. Hence, the finding of the study will provide the bases for decision makers and other stakeholders, hence proper measure can be taken to save the RVI patients on ART by providing programmed patient counseling service on lifestyle modification and strengthening the prevention activities in the town. In addition, this study could be used as a baseline for future studies and be a clue for further studies to be done on substance use and associated factors in general.

1.4 Objective

1.4.1 General Objective

To assess prevalence of substance use and associated factors among Adult RVI Patients on ART at Public Health Facilities of Modjo town, Oromia Region, Ethiopia, from February 1-20,2020.

1.4.2 Specific Objectives

- ✓ To assess prevalence of substance use among adult RVI patients on ART at public health facilities of Modjo town.
- ✓ To identify factors associated with substance use among adult RVI patients on ART at Public Health Facilities of Modjo town.

2. LITERATURE REVIEW

2.1 Overview of substance use

Substance abuse is a primary vector for the spread of HIV through engagement in a number of high-risk behaviors, either when intoxicated or engages in prostitution in order to obtain drugs. Poor Antiretroviral treatment adherence is public health problem among RVI patients in developing countries; like Ethiopia. It has been reported in multiple studies for decades globally that substance abuse can lead to risky sexual behaviors. These risky sexual behaviors can lead to HIV infection and, ultimately, to AIDS and early death. Substance use can affect people's overall health and make them more susceptible to HIV infection and, in those already infected with HIV, substance use can hasten disease progression and negatively affect adherence to treatment (Segni *et al.*, 2017).

2.2 Prevalence of substance use

Article review conducted in 2014 in China estimated that among HIV-infected individuals in a rural community, about 40% of the participants were current drinkers, Over 55% had ever used illicit drug, approximately 61.8% (281/455) of the participants were classified as current smokers, i.e. Smoking in the past 30 days (Luo *et al.*, 2014).

Another related study conducted in Mali reveals that a total of 93(30.9%) out of 301 patients have been exposed to tobacco (current and former smokers). The prevalence of current smokers was 24.6% (74/301), former smokers was 6.3% (19/301) and 69.1% (208/301) have never smoked. Most of the smokers, 86.5% (64/74) and 78.9% (15/19) of former-smokers have been informed of their HIV infection atheist 6months before their enrollment (Baya *et al.*, 2016).

According a Research Article conducted in 2012 Substance Use and Associated Factors among University Students in Ethiopia revealed that, 638(62.4%) participants used at least one substance in their lifetime,419 (41.0%) of the students chewed khat at least once in their life time and the current use of khat is 241 (23.6%). Concerning alcohol drinking habits,513 (50.2%) reported that they drank alcohol at least once in their lifetimewhile204 (20%) were drinking alcohol over the last 30 days prior to the study. The study showed that 225(22%) of the respondents smoked cigarettes at least once in their life time where as 110(10.8%) of the respondents have smoked cigarettes in the past 30 days. Furthermore, 178(17.4%) of the study participants used illicit drugs

like hashish at least once in their life time. Seventy-six(7.4%) of the participants have used illicit drugs in the last 30 days (Tesfaye *et al.*, 2014).

Facility based cross sectional study conducted in 2019 in Hawassa city showed that magnitude of alcohol use disorder among people living with HIV is 31.8%, current khat chewing(AOR=1.67,(95% CI=1.16-5.45) and current cigarette smoking (AOR=3.76,(95% CI=2.16-7.54) had statistically significant association with alcohol who consumed all alcohol, cigarettes and khat and those who consume only khat account 2.2%. Majority of participant who has used substance previously stop after they start ART. Moreover, the used is order(Duko *et al.*, 2019).

According to a cross sectional study conducted in 2017 by Asella University scholars among the study participants at Asella Teaching Hospital who were on ART followup;115(27.5%) have a history of substance abuse. The prevalence of current Alcohol, Alcohol and cigarettes and Alcohol and khat was 13.6%, 4.8% and 4.1%, respectively. Those prevalence of substance use currently in the last 30 days among PLWHA were 3.8%,of which alcohol and cigarettes smoking account2.6% and1.2%, respectively (Segni *et al.*, 2017).

2.3Factors Related with Substance Use

2.3.1. Socio demographic factors

2.3.1.1Gender

According to a research article conducted in 2015 in Vietnam, Prevalence of Cigarette Smoking has gender variation for example the current smoking proportion was much higher in males (59.7%) than females (2.6%). That is, HIV-positive males were 23.4 times (AOR=23.4, 95%CI=11.6–47.3) more likely to currently smoke than HIV-positive females (Nguyen *et al.*, 2015). Similarly in China, Smoking is largely a male phenomenon and it was estimated 28.1% (301 million) of adults in China (52.9% of men and 2.4% of women) were current smokers. In this study, smoking was also much common among male than female HIV-infected individual participants who were male (AOR=142.43,95%CI=35.61–569.72)(Luo *et al.*, 2014).

Substance use is much more common in males than females, similarly the prevalence of substance use among Asella Teaching Hospital RVI patients on ART substance use was higher in male that is about 53.4% of male participant. Hence being male is strongly associated with substance use compared to female (AOR= 14.1, 95CI= 5.84- 33.87) p=0.001(Segni *et al.*, 2017). more over World health Organization report on Harmful use of alcohol is accountable for 7.1% and 2.2% of the global burden for males and females respectively. The percentage of alcohol-attributable deaths among men amount to 7.7 % of all global deaths compared to 2.6 % of all deaths among women (WHO, 2018)

Male predominance were observed in different studies, for example according to a study in 2014 on Alcohol use disorders and associated factors among people living with HIV who are attending services in south west Ethiopia, alcohol was consumed by 22% (25% males vs 14% females, p=0.002) and khat use was reported by 7% (9% males vs 1.5% females<0.001) of the respondents. About 9% of the respondents (10.6% males vs 4.6% females p=0.014) reported ever use of cigarette smoking and 1.8% were found to be current smokers. Being male was strongly associated with alcohol use in the last 12 months (AOR=2.14,95%CI=1.22-3.76) (Deressa and Azazh, 2011).

2.3.1.2 Age

Age has also a contributing factor for substance use, for example according to a study conducted in South Africa Youngest age category, 20–29 years were significantly less likely to be current smokers compared with the older age categories. With the 20–29-years age group as the referent, participants in 30–39 years age group were 4.07 times more likely to be current smokers (AOR=4.07 95% CI~1.43–11.55), participants in the 40–49-years age group were 4.00 times as likely to be current smokers (AOR=4.00,95%CI~1.42–11.28)(Ellen R,.2004),more over alcohol is the leading risk factor for premature mortality and disability among those aged 15 to 49 years, accounting for 10 percent of all deaths in this age group. (WHO, 2010) .Heavy smoking was also significantly associated with age. Those who were older than 46 years of age were more likely to be heavy smokers). (Smoked at least 20 cigarettes per day). (AOR = 9.68, 95% CI= 1.41–66.59) (Luo *et al.*, 2014).

2.3.1.3 Income

Lose of track of mind induced by khat chewing may have contributed for this higher rate of

casual sex among the chewers than the non-chewers, earning annual income of 2,400-5,399 Ethiopian birr and annual income of 5,400-10,800 Ethiopian birr were significantly associated with alcohol use disorder (COR= 0.22, 95% CI = 0.12- 0.41) and (COR= 0.05, 95% CI = 0.02-0.10) compared to annual income of less than 2400 Ethiopian birr. This indicates that, as income of the individual increased the probability to have alcohol use disorder decreases (Soboka *et al.*, 2014).

2.3.2. Inter personal factors

2.3.2.1 Educational status

Educational status is one of the factors to influence substance use in individuals with HIV. For example according an article on the Psychoactive Substance Use among Nigerian Cohort with HIV/AIDS, significant association was noted between the educational status and use of psychoactive substance. The proportion of respondents using psychoactive substance were found to decrease as educational attainment increases, hence higher educational attainment positively predicted the use of psychoactive substance (COR =1.62, 95% CI=1.07 - 2.45, p=0.02) (Olagunju *et al.*, 2017). On the contrary Individuals who were illiterate individuals were 0.42 times (COR=0.42; 95% CI=0.18, 0.98) less likely to use substance than educated person in Asella teaching Hospital (Segni *et al.*, 2017).

2.3.2.2 Peer pressure

Peer pressure is one influential factor to start substance use, for example respondents whose friends currently consume alcohol in Addis Ababa university post graduates were 2.47 more likely to consume alcohol than who did not. (AOR = 2.47, 95% CI = 1.50-4.08) and whose friends' use tobacco more likely to smoke (adjusted OR = 3.89, 95% CI = 1.83-8.30). Khat use within the past 12 months was strongly and positively associated with alcohol consumption (adjusted OR = 15.11, 95% CI = 4.24-53.91). Similarly, ever use of cigarette was also significantly associated with alcohol consumption (AOR=8.65, 95% CI = 3.48-21.50) (Deressa and Azazh, 2011). Respondents who started to use substance through peer pressure in Debre Markos (AOR=3.405, 95% CI=1.047- 11.076) were 3.4 times more likely to abuse substances as compared to those who did not(Tesfahun *et al.*, 2013).

2.3.3. Biological factor

2.3.3.1 Parental substance abuse

Family history of substance use is one of the factors to lead individuals to abuse substance, for example among respondents in Asella teaching hospital those whose families use substance were 2.66 times more likely associated with substance use (AOR= 2.66,95%CI=1.15- 6.13) as compared to those whose families not (Segni *et al.*, 2017).

2.3.4. Socio cultural factor

2.3.4.1Access to drugs and substances

Not only the need for substance use leads to its use but also the access and easily availability play a great role in substance use. For example in Debre Markos39% of respondents are using due to availability of substances (AOR=3.39, 95%CI=1.68- 6.87) (Tesfahun *et al.*, 2013). More over easy availability of alcohol is the main environmental and psychological factors for the initiation of alcohol use disorder among alcohol users inthe study population which accounts for 14.6% and 4% of the cases respectively. (JemalA, 2018).

2.4 Conceptual Frame work

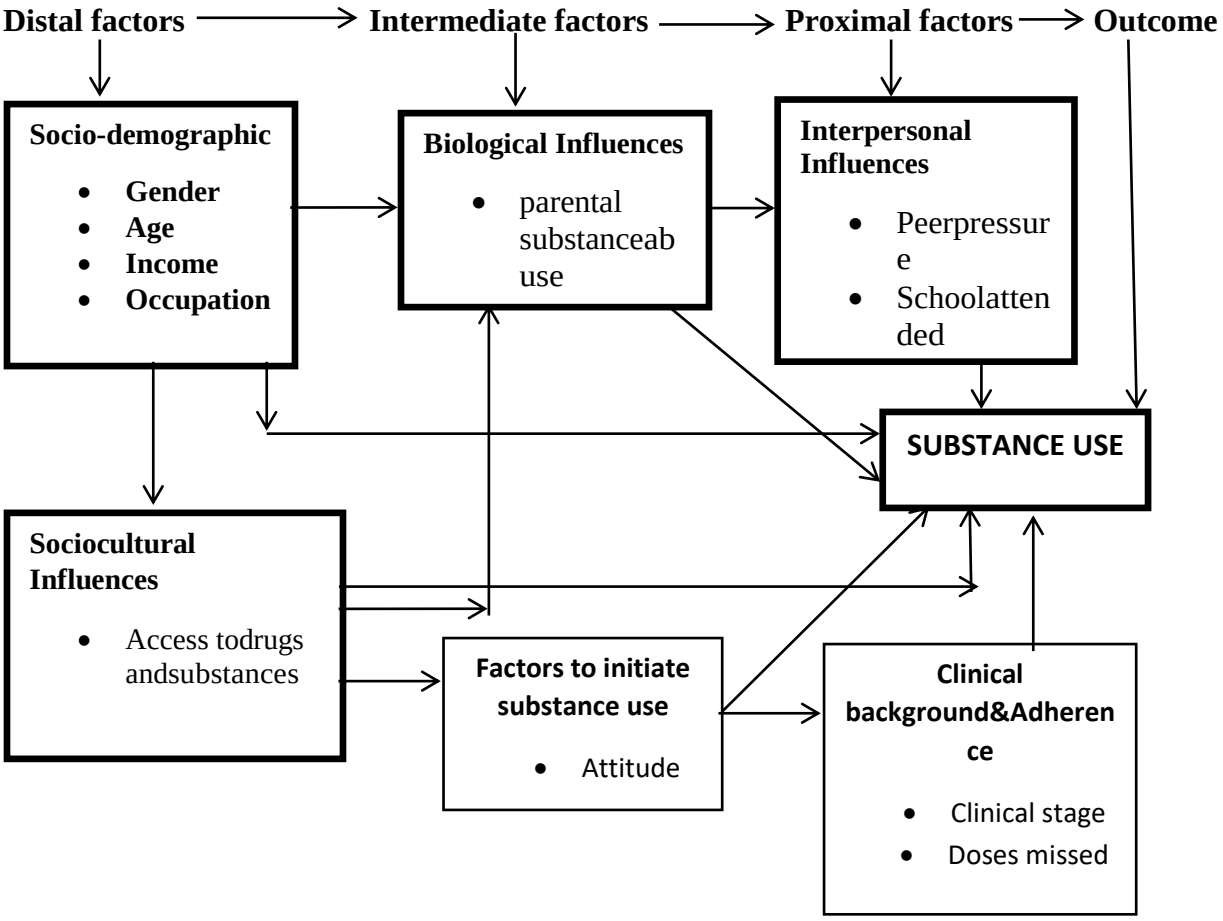

Figure 1.Conceptual framework of factors associated with substance use (adapted from Olley B, 2016)

3. METHOD AND MATERIALS

3.1 Study area and Period

The study was conducted in Modjo town which is located in Oromia region.Modjo town is located in eastern direction 58km from Addis Ababa capital city of Ethiopia. According to census 2007 number of population in Modjo town is 56,271(female 28,698male 27,573). Modjo has two Keble's (01 Keble and 02).There are one governmental hospital, one private hospital 2 governmental health centers, 14 private clinics of various types, providing health care service for the population. Only governmental facilities, that is, one hospital and two health centers render ART service but the rest clinics link HIV cases to these governmental facilities. The town has 26, 32 and63 large, medium and small industries respectively with more than 4,396 workers as Modjo town labor and social affairs data shows. The most languages spoken in this town is Afan Oromo followed by Amharic language. The study period for this research was from February1-20, 2020.

3.2 Study Design

Institutional based cross-sectional study design was conducted.

3.3 Source population

All HIV positive patients who are currently on ART follow up at public health facilities of Modjo town.

3.4 Study Population

All adult HIV positive patients who are currently on ART follow up at public health facilities of Modjo town.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

All HIV positive patients who are 18 years and above and on follow-up inModjo town Public health facilities during the time of data collection were included.

3.5.2 Exclusion Criteria

Seriously ill or hospitalized and unable to respond during data collection were excluded

3.6 Sample size determination

The sample size required for this study was calculated using single population proportion formula by assuming that27.5%prevalence of substance use at least once in their lifetime among RVI patient (SegniM et al,2017) with 95% confidence level and 5% margin of error

Sample size for objective1prevalence was determined by the following single proportion formula; $n = z^2 p(1-p)/d^2$

Where,

n =maximum sample size required=number of ART patients to be included in the study of substance use.

Z α /2 = Confidence level; taking 95% (1.96)

d=marginal sampling error (0.05)

p= prevalence of ART patients practicing substance use.

$$\underline{n = (1.96)^2 * 0.275(0.725)}$$

$$(0.05)^2$$

Where z (α/2) =1.96, p=0.275 and d=0.05

n=306

Then 10% of non-response rate was added on on the calculated number and the final sample size was 337.

For the second objectives sample size was determined by double population proportion formula by taking proportion of associated factors

$$N = n1 + n2 = \frac{4(Z\alpha + Z1-\beta)^2[(P)(1-P)]}{(d=P1-P2)^2}$$

Where n_1+n_2

Z1-α=Z score for the desired confidence level (Z1-α= 1.96 at 95% confidence level)

$Z1-_{\beta}$= Z score for the desired power ($Z1-_{\beta}$=0.84 at 80%power)

P (pooled population proportion) = $\frac{p1+rp2}{1+r}$

r =n1/n2=1 for the population allocation ratio

By using open Epi Info version 7 cross sectional studies with nonresponse rate of 10% the sample size will become as follows:

Parental substance use is the major factors associated with substance use. Among respondents in Asella teaching hospital those whose families use substance were 2.66 times more likely associated with substance use (AOR: 2.66 (1.15, 6.13) as compared to those whose families not (SegniM et al ,2017). According to study conducted in 2018 on Alcohol use disorders and associated factors among human immunodeficiency virus infected patients attending antiretroviral therapy clinic at Bishoftu General Hospital, Oromiya region, Ethiopia, the magnitude of Cigarette smoking was8.64%(adjusted OR=5.11,95%CI=1.60-16.33).(Jemal A et al, 2018).

Two sided confidence interval (1-α) =95%
Power (1-β)=80%
Ratio (exposed to unexposed) 1:1

Percent of outcome in unexposed=72.5%.parental substance use % of outcome in exposed group=27.5% parental substance use (SegniM et al,2017)

II Sample size for parental substance use:

Calculated sample size=248 Then 10% of non- response rate was added=25; total sample size=**273**.

III. Sample size for cigarette smoking on information collected from finding of (Jemal A ,et al, 2018) Outcome in unexposed =91.36% Outcome in exposed=8.64%, calculated sample size =390 by adding non response rate 10%=39 total sample size will be=**429**

Table 1:- Sample size calculation for the objective of Assessment of Substance use and associated factor among Retro Viral Infected patients on Anti-Retroviral Therapy at Modjo Town Public health facilities, Ethiopia

Factor		Prevalence	Adjusted odd ratio	Calculated sample size	Non response rate (10%)	Total sample size	Reference
Parental Substance use	Exposed Non exposed	P1=27.5% P2=72.5%	2.66	248	25	**273**	(SegniM et al ,2017)
Cigarette smoking	Exposed Non exposed	P1=8.64% P2=91.36%	5.11	390	39	**429**	(Jemal A et al,2018)

Since this is greater than sample sizes for other objectives and associated factor, the sample size of the study was = **429**

3.7. Sampling procedure or Technique

There are 2 public health centers and one primary hospital that offer ART services in Modjo town. There were a total of 2,326 adult HIV positive patients on ART in the town. Since only three of the public health facilities (2 Health centers and one Hospital) offering this service were included to allocate the sample size. Systematic random sampling technique was applied to select individuals. First k value was determined from total population (2326) and sample size (429). Calculating sampling interval K= (N/Tsz). N denotes total numbers of patients having ART follow up during the study period in Mojo Public health facilities; Tsz is the total sample size. So, every 5th client was selected from sampling frame. The sampled ART outpatients were present and exit interviews were carried out. The list of patients (sampling frame) was obtained from the registration books of the patients registered for follow up in facilities and study subjects were selected by Systematic Random sampling to keep respondent's privacy. The confidentiality of information collected from individuals were kept and explained for the respondents prior to interview (figure 2).

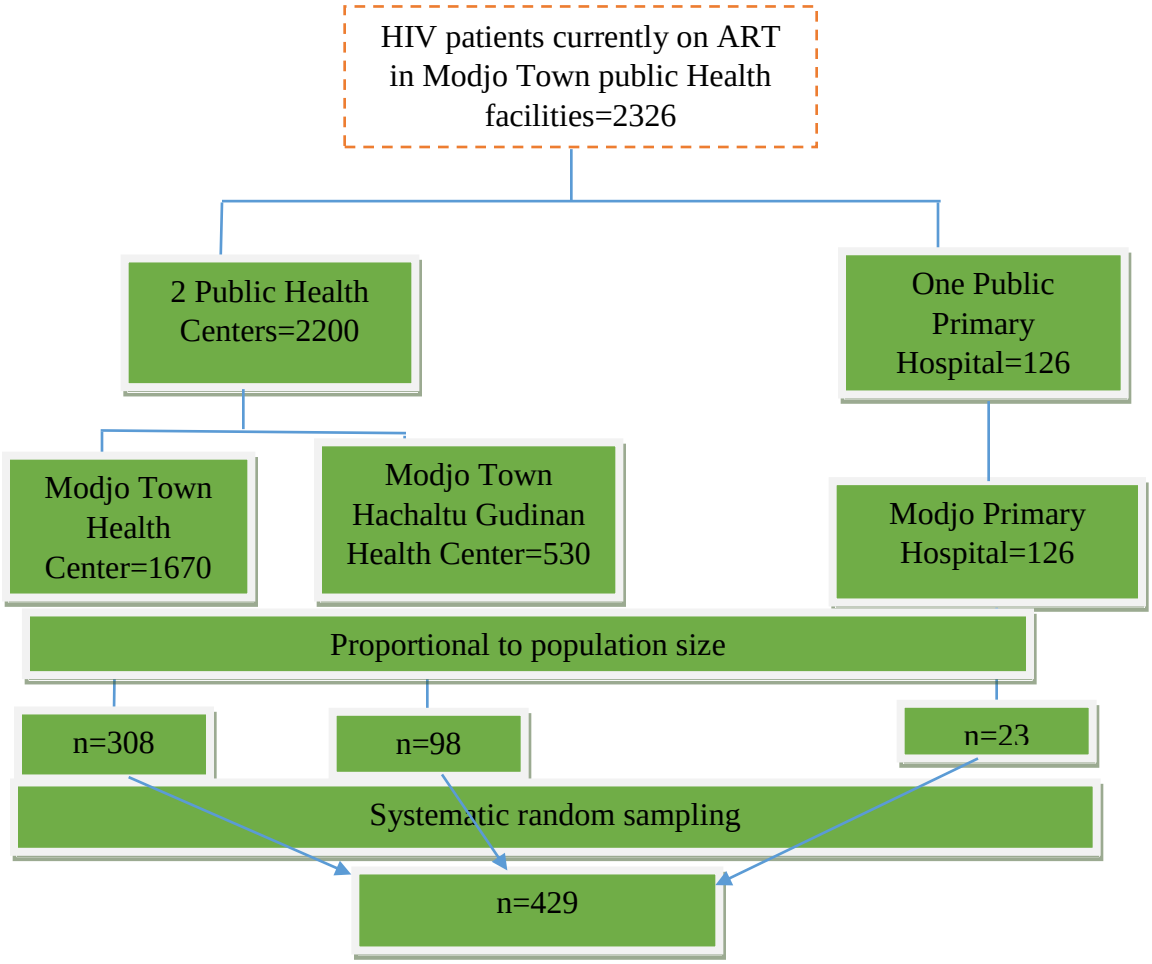

Figure 2 : The schematic presentation of the sampling procedure to select participants in Modjo public health facilities.

3.8 Data collection methods

3.8.1. Data collection instrument

It was used the WHO adapted and modified form of substance use Survey structured questionnaire(SegniM et al,2017) and it was translated the English version in to the local language (Afan Oromo) then back to the origin version to maintain its reliability. The questionnaire consists socio-demographic and variables related to substance use.

3.8.2 Data collectors

A total of ten data collectors (7 BSc and 3 diploma Nurses) were recruited as data collectors for one month. They had basic ART training and familiar with the study area and spoke the local language. Before the data collection process training for data collectors and supervisors were given about ethics, questionnaires as well as how to interview the study participants in order to collect full information. There were three experienced Health officers who have continuously supervised the data collection in the site. Initially the data collectors and supervisors were given one day training on their specific duties. Then the study team was deployed to the study sites to collect the data from the selected study units by following the data collection procedures (Express greeting-take verbal consent- collect the data based on the questionnaire - express thanks).

3.8.3 Procedure of data collection

Participation was on voluntary basis and confidentiality was maintained to encourage accurate and honest self-disclosure. For some specific question secondary data (card of the client) were reviewed. Daily reviewing of filled questionnaires were made by investigator to minimize the errors created during interview as early as possible Supervision was done while data collectors collect data and the information was checked for completeness and internal consistency.

3.9 Variables

3.9.1 Independent Variables

Socio demographic variables: Age, Sex, Address, Marital status, Educational status, Ethnicity Income

Clinical background: Year of diagnosis, Clinical stage, viral load,

Individual factor: Substance use once, Attitude towards sub use, personal pleasure

Environmental factors: Availability of substance,

Social factor: Peer influence

3.9.2 Dependent Variables

Substance use

3.10 Operational Definitions

Adult: An adult is an individual aged 18 years old in terms of law (Kunte B, 2018).

Substance use: In this study it is referred to as use of at least one of the substances (alcohol,khat,cigarettes,and illicit drugs) in an individual's life time to alter mood or behavior. (Gezahegn.T et al, 2014)

Current user: A person who consumed any substance at least once in the past 30 days (Gezahegn.T et al, 2014)

Illicit Drugs: It was defined as the use of psychoactive substances such as hashish, cannabis, and heroin, for which the production, sale, or use is prohibited (Gezahegn.T et al, 2014)

In this study, heavy smoking was defined as smoking an average of at least 20 cigarettes per day (CPD), moderate smoking as 10–19 CPD, and light smoking as <10 CPD (Xiaofeng. L et al, 2014)

Alcohol use: A current drinker is defined as an individual who has consumed alcohol at least once a month for more than one year and is still drinking in the 30 days prior to the interview (Xiaofeng. L et al, 2014)

Alcohol use can be defined by the **amount consumed** (e.g. at-risk, heavy) or by the consequences of its use (e.g. abuse, dependence). The consumption threshold for at-risk use as defined by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) is >4 drinks on an occasion or >14 drinks in a week for men, >3 and >7 respectively, for women. This level of drinking has been used to define "heavy" drinking for those with HIV infection. (Judith A & Jeffrey H, 2010)

A drug use is defined as an individual who had ever used illicit drug use such as opium, heroin, methamphetamine, ephedrine, ketamine or ecstasy for nonmedical purposes (Xiaofeng. L et al, 2014)

Clinical Stages:- the WHO system for adults sorts patients into one of four hierarchical clinical stages ranging from stage 1 (asymptomatic) to stage 4 (AIDS). Patients are assigned to a particular stage when they demonstrate at least one clinical condition in that stage's criteria. Patients remain at a higher stage after they recover from the clinical condition which placed them in that stage. (Jennifer L. and Carrie L, 2010)

Doses missed/month: individuals who missed one or more days of ART drugs (Bultum J et al,2018)

3.11 Data quality control

Training was given for data collectors and supervisors. Interview techniques using standardized questionnaires selected for this study was discussed in detail. Questionnaires were prepared in English and translated into Afan Oromo languages then translated back to English language to check for consistency. Data collectors were informed how to avoid data collection duplication and incomplete data recording. Interviewers were asked the respondents what is written on the questionnaires only including the instructions. Pre-test was conducted on 5% of the total sample size out of study area prior to data collection. Based on the pre-test finding, necessary modifications were made on the selected questionnaires according to the local context.

3.12 Methods of data analysis

Data was cleaned, coded and entered into Epi Data version 3.02 to check completeness and consistency. Data clerk entered the coded data and written on the paper. Double data entry was made to avoid errors, missing and duplication of data during data entry. Finally, data was exported to SPSS for windows version 23 for data processing and analysis. Descriptive statistics, binary logistic and multivariate logistic regression was used for identification of predictor variables of substance use. Variables whose P values less than 0.25 at bivariate analysis were entered to multivariate analysis. Backward-stepwise binary logistic regression models of multivariable analysis were employed in order to control confounders and the problem of multicollinearity. Hosmer–Lemeshow goodness-of-fit statistics were checked to assess whether the necessary assumptions for the application of multiple logistic regressions were fulfilled, with a P>0.05.variables that showed significant association with the outcome variable in backward-stepwise regression were selected as a full model of outcome-variable

predictors if all of the assumptions were fulfilled. Finally, the crude odds ratio (COR) and adjusted OR (AOR), together with their corresponding 95% confidence intervals (CIs), were computed. $P<0.05$ was considered statistically significant in this study

3.13 Ethical Consideration

Ethical approval was obtained from Haramaya University Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University College of Health and Medical Sciences of Harar campus and official letter was sent to the selected public health facilities. After getting permission from the facilities to participate in the study, informed, voluntary, written and signed consent was obtained for willingness of patients to participate and from heads of the public health facilities. Each participant and facility heads were notified about the purpose of the study and the right to refuse or to participate in the Study. The patients privacy was maintained by conducting the interview in a private place and they were informed that there will not be any incentive or harm for their participation in this study. Finally, participants' identity was kept anonymous throughout the data collection and analysis process

4. RESULTS

4.1. Socio demographic characteristics of the study participants

A total of 429 participants were included in the study with 100% response rate. Around 34.3% of the respondents were between the ages of 36-45 years with mean of 37.4 ± 10.7 SD. More than half of study participants were female 240(55.9%). Regarding the religion almost three fourth were Orthodox 321(74.8%), and 38.8% of the respondents had primary education. Those who live in urban area constitute the majority of participant (70.4%). And about 31.2 % of them had total income >2000 birr per month (Table2)

Table 2:-Socio-demographic characteristics of RVI patient at Modjo Town Public facilities, Ethiopia, 2019

Variables		Frequency n=429	Percent (%)
Age	<25	51	11.9
	26-35	144	33.6
	36-45	147	34.3
	46-55	60	14
	>55	27	6.3
Sex	Male	189	41.1
	Female	240	55.9
Recidency	Rural	127	29.6
	Urban	302	70.4
marital status	married	227	52.9
	Single	100	23.3
	divorced	78	18.2
	widowed	24	5.6
Educational status	no formal education	84	19.6
	primary education	167	38.9
	secondary education	147	34.3
	college diploma and above	31	7.2
Religion	Orthodox	321	74.8
	Muslim	55	12.8
	Protestant	40	9.3
	Others	13	3
Occupation	farmer	83	19.3
	merchant	22	5.1
	housewife	58	13.5
	driver	26	6.1

	employed	91	21.2
	student	17	3.7
	daily laborers	123	28.7
	female commercial sex workers	9	2.1
average monthly income	=<500 ETB	66	15.4
	501-1000ETB	57	13.3
	1001-1500ETB	101	23.5
	1501-2000ETB	71	16.6
	>2000ETB	134	31.2

4.2 **Magnitude of substance use**

Among the study participants, 153 (35.7%, 95% CI 31.0 - 40.8) have a history of ever substance use. The prevalence of current Alcohol, Alcohol and khat and Alcohol and cigarettes was 46.4%, 20.3%, 5.9% and respectively. Those who consumed all alcohol, cigarettes and khat account 1.9%. Moreover, the prevalence of substance use currently in the last 30 days among PLWHA were 24.2%, (95% CI 20.5-28.3.) of which alcohol, khat and cigarettes smoking account 48.1%, 24% and 20.2%, respectively (Table 3).

Table 3:-Magnitude and types of substance use among RVI patient in Modjo town Public health facilities, Ethiopia 2019.

Substance use once in life	**Frequency n=429**	**Percentage**
Yes	153	35.7
No	276	64.3
Types of substance used		
Alcohol	71	46.4
Alcohol and khat	31	20.3
Alcohol and cigarettes	9	5.9
All	3	1.9
Cigarette	8	5.2
Khat	31	20.3
Substance use in the past 30 days		
Yes	104	24.2
No	325	75.8
Discontinue substance after diagnosis		
Yes	92	88.5

No	12	11.5
Current substance use		
Alcohol	50	48.1
Cigarettes	21	20.2
Khat	25	24
Alcohol and khat	8	7.7

4.3 Clinical background and adherence of respondents

About 40.8% of the participants were diagnosed to be sero-positive in between 2001-2005 years E.C, 86% of the respondents were clinical stage I RVI patients and 89.5% had low viral load count <1000/ml while. Concerning missed medication, 35% of them did discontinue and not take their drugs regularly (Table 4)

Table 4:-Clinical background and ART adherence of the participants, of RVI patient at Modjo Town Public facilities, Ethiopia, 2019.

Variables		Frequency n=429	Percent (%)
year of diagnose	1990-1995 E C	3	0.7
	1996-2000	81	18.9
	2001-2005	175	40.8
	>2005	170	39.6
clinical stage	stage I	369	86.0
	stage II	44	10.3
	stage III	16	3.7
current viral load	>=1000 (high)	40	9.3
	<1000 (low)	384	89.5
	not seen	5	1.2
Doses missed/month			
	Yes	150	35
	No	279	65

4.4. Factors to initiate substance use

The most common attributed factor that initiated them to start substance use were to be sociable (28.9%), peer influence (27.9%), to get personal pleasure (17.3%), and availability of substance (14.4%), and Out of the total participants 31.5 % of them had friends who consume substance where as 35.7 % of them had family member who uses substance (Table 5).

Table 5:-Factors that initiate RVI patient to use substance in Modjo town public health facilities 2019.

Variables		Frequency	Percent (%)
Reason to start substance use	availability of substance	15	14.4
	peer influence	29	27.9
	religious practice	4	3.8
	to be sociable	30	28.9
	to get personal pleasure	18	17.3
	to stay awake	2	1.9
	To relief from tension	6	5.8
having friends with substance use	Yes	135	31.5
	No	294	68.5
family with substance use	Yes	105	24.5
	No	324	75.5

4.5 Factors associated with substance use among PLWHA in Modjo town

To control confounding factors bi-varaite and multivariable analysis was done, variables with P value < 0.25 were candidate for bi-variate analysis, thus variables like, age, sex marital status, educational status, family history of substance use, having friend with substance use, doses missed, and clinical stage were a candidate variables for bivariate analysis. Then variables those who was analyzed at bi-varaite stage was transferred to multivariate analysis. After controlling for the effects of potentially confounding factors using multivariate logistic regression model sex, friend substance use and family substance use were found to be statistically significant predictors of substance use. Being male is strongly associated with substance use [AOR=1.94 (95%CI: 1.20 – 3.15)]. Individuals with friend substance use were 1.88 times more likely to consume substance compared to those whose friends are not using [AOR=1.88 (95%CI: 1.13-3.13)]. Participants who family used substance were 2.11 times more likely to consume substance as compared to those individuals who do not miss their medications. [AOR=2.11 (95%CI: 1.49-4.00)](Table 6)

Table 6:- Factors independently associated with substance use in Modjo town public health facilities, Central Ethiopia, 2019

Variable	Substance use		COR 95% CI	P-value	AOR 95% CI	P-Value
	Yes	No				
Age category						
<25	15(29.4%)	36(70.6%)	2.40(0.71-8.12)	0.161	3.18(0.79-12.78)	0.102
26-35	31((21.5%)	113(78.5%)	1.58(0.51-4.90)	0.431	1.95(0.56-6.78)	0.291
36-45	40(27.2%)	107(72.8%)	2.15(0.70-6.60)	0.181	2.97(0.88-10.01)	0.079
46-55	14(23.3%)	48(76.7%)	1.68(0.52-5.92)	0.368	2.15(0.58-7.98)	0.251
>55	4(14.8%)	23(85.2%)	1	1	1	1
Sex						
Male	60(31.7%)	129(68.3%)	2.07(1.32-3.24)**	0.001	1.94(1.20-3.15)*	0.007
Female	44(18.3%)	196(81.7%)	1	1	1	1
Marital status						
Married	54(23.8%)	173(76.2%)	1	1	1	1
Single	30(30%)	70(70%)	1.37(0.81-2.32)	0.237	1.04(0.56-1.94)	0.909
Divorced	15(19.2%)	63(80.8%)	0.76(0.40-1.45)	0.407	0.64(0.32-1.27)	0.199
Widowed	5(20.8%)	19(79.2%)	0.84(0.30-2.37)	0.175	0.93(0.30-2.86)	0.898
Educational Status						
no formal education	16(19%)	68(81%)	0.98(0.35-2.79)	0.197	0.88(0.29-2.69)	0.826
Primary education	51(30.5%)	116(69.5%)	1.83(0.71-4.74)	0.212	1.86(0.68-5.07)	0.228
Secondary. education	31(21.1%)	116(78.9%)	1.11(0.42-2.95)	0.829	1.18(0.42-3.29)	0.757
Coll. dip. &above	6(19.4%)	25(80.6%)	1	1	1	1
Friend subs. use						
Yes	44(32.6%)	91(67.4%)	1.89(1.19-2.98)*	0.007	1.88(1.13-3.13)*	0.015
No	60(20.4%)	234(79.6%)	1	1	1	1
Doses missed/mon.						
Yes	33(22%)	117(78%)	0.83(0.52-1.32)	0.143	0.65(0.39-1.09)	0.104
No	71(25.4%)	208(74.6%)	1	1	1	1
Family subs. Use/						
Yes	35(33.3%)	70(66.7%)	1.85(1.65-4.09)**	0.000	2.11(1.49-4.00)**	0.000
No	69(21.3%)	255(78.7%)	1	1	1	1
clinical stage						
stage I	83(22.5%)	286(77.5%)	1	1	1	1
stage II	16(36.4%)	28(63.6%)	1.97(1.02-3.81)*	0.045	1.82(0.88-3.78)	0.107
stage III	5(31.3%)	11(68.7%)	1.57(0.53-4.64)	0.418	1.27(0.38-4.22)	0.697

Significant at P<0.001=***, at P<0.01=**and at P<0.05=*, COR=Crude odds ratio and CI= Confidence Interval, AOR=adjusted odds ratio

5. DISCUSSION

This public health facility based cross-sectional study attempted to assess the prevalence and factors associated with substance use among HIV patients on ART in Modjo town. The study results showed that overall prevalence of substance use at least once in life time among respondents was 35.7 %,(CI; 31.1- 40.4).This is higher than the prevalence of lifetime substance use in a study done in Assela Teaching Hospital 27.5% (Segni *et al.*, 2017)

On the other hand the current prevalence of this study was 24.2%, (CI; 20.3- 28.6), this signifies most HIV infected individual had not stopped substance use. Therefore, this study gives additional evidence for designing intervention and control programs for HIV individuals in the study area for substance use disorder for HIV infected patients. The prevalence of current alcoholic drinker is 48.1%. This is in line with similar study done in Gamo Gofa Zone, South West Ethiopia which is 47.6 % (Malaju and Asale, 2013). but higher than studies conducted in South West Ethiopia 32.6 % (Soboka *et al.*, 2014), 40% Yunnan Province, China (Luo *et al.*, 2014), Hawassa city 31.8%(Duko *et al.*, 2019), At ART Clinic in Jimma University Teaching Hospital 22.62 %(Abera *et al.*, 2015). Therefore, this study gives additional evidence for designing interventions for substance use disorder for HIV infected patients.

In this particular study prevalence Current Khat chewers among HIV positive patient was 24%, which is in line with similar study conducted in South West Ethiopia which is 23 % (Soboka *et al.*, 2014). But lower than in Gamo Gofa Zone, South West Ethiopia 33.3% (Malaju and Asale, 2013). Therefore, this study gives additional evidence for planning appropriate intervention in khat chewing HIV infected patients. The prevalence of former smoker among HIV positive patient were 22% in USA(Zyambo *et al.*, 2015), 21.7 %, 9.5% in Vietnam(Nguyen *et al.*, 2015), 6.3% Bamako, Mali (Baya *et al.*, 2016). However, it was lower in this study which is 5.2%.

The prevalence of current smoker in this study is 20.2% which is Higher than similar study conducted in South Africa which is 15%, but lower than other studies for instance USA 39% (Zyambo *et al.*, 2015), Mali 24 % (Baya *et al.*, 2016), in Vietnam 36.1% (Nguyen *et al.*, 2015). Thus the prevalence of current smoking among HIV infected person is considerably higher worldwide. This could be due to urbanization or considered as civilization.

Sex, friend substance use, and missing doses per month were factors significantly associated.

The study found out that males are 3.19 times more likely to use substance than females. This finding is similar with study conducted in Assela Teaching Hospital (Segni *et al.*, 2017), South West Ethiopia(Soboka *et al.*, 2014), Hawassa city (Duko *et al.*, 2019), Nigeria (Olagunju *et al.*, 2017), Vietnam(Nguyen *et al.*, 2015), and Yunnan Province, China (Luo *et al.*, 2014), A possible explanation for this is the cultural and economic dominance of males on the use of substances is common in Ethiopia. Friend's substance use was found to be significantly associated. HIV infected patients who had history of substance use were 1.87 times more likely to use substance relative to those whose friends do not use substance however this is not consistent with a study finding conducted in Asella Teaching Hospital (Segni *et al.*, 2017). The possible justification for this might be due to peer pressure individuals who did not use substance in the past can start substance as recreational manner with his/her friends and then become to addictive of that habits.

Regarding family substance use, those whose families use substance were 2.11 times more likely to use substance than those who do not their families were use substance. This finding was consistent with study findings conducted in South West Ethiopia (Soboka *et al.*, 2014), Hawassa city(Duko *et al.*, 2019). This might be due to family substance use might also initiate other family members to utilize the substance and also utilization of different substance was considered as a part of culture of communities in different parts Ethiopia.

5.1 Limitation of Study

Social desirability bias could be an important limitation as persons who use substances tend to under report or deny their use when questionnaires are administered by interview. Although we went to extensive efforts to adapt the concept of a 'standard drink' to the Ethiopian setting, the absence of a policy defining the standard alcohol drink in Ethiopia was a limitation.

5.2 Conclusions and recommendations

5.2.1 Conclusion

The prevalence of substance use among the study participants was high. Of the studied variables, sex, friend substance use, and family substance use were independently associated with substance use among adult RVI patients.

5.2.2 Recommendations

Based on the findings of the study the following recommendations were forwarded to the health

care providers and town health offices.

- ✓ Health information about substance use disorder and its devastating effect in public health facilities by care providers for RVI clients on ART will be essential to decrease substance use disorder.
- ✓ Adhering the youth in the town to youth recreational area also helps to reduce effect of friend substance use
- ✓ Strengthening home based follow up for RVI clients on ART by case managers should be encouraged to decrease substance use and related family problems and family substance use.
- ✓ The town health office should support health facilities rendering ART services to achieve quality health services.

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7. ANNEXES

AnnexI: Informed Voluntary Consent form for Head of Modjo public health facilities.

My name is_____I am working as a data collector for the study being conducted in this community by Temesgen Gelano who is studying for his Master's degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant

The study title: Substance Use and Associated Factors among Adult RVI patients on ART at Modjo Town public health facilities

Purpose/aim of the study: The findings of this study can be of a paramount importance for the Health facilities to plan intervention programs to prevent substance use and associated factor and measure can be taken to save the RVI patients on ART by providing programmed patient counseling service on lifestyle modification and strengthening the prevention activities in the town. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of Master's program in Public Health in Field Epidemiology for the principal investigator

Procedure and duration: I will be interviewing participants using a questionnaire to provide me with pertinent data that is helpful for the study. There are 24 questions to answer where I will fill the questionnaire by interviewing them. The interview will take about 20 minutes, so I kindly request them to spare me this time for the interview.

Risks and benefits: The risk of being participating in this study is very minimal, but only taking few minutes from participants time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality: The information the participants provide us will be confidential. There will be no information that will identify participants in particular. The findings of the study will be general for the study community and will not reflect anything particular of individual persons or housing. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

Rights: Participation for this study is fully voluntary. Participants have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits which they otherwise are entitled. They do not have to answer any question that they do not want to answer.

Contact address: If there are any questions or enquires any time about the study or the procedures, please contact: Temesgen Gelano through cell phone number 0911113487, through email at gelano.temesgen@gmail.com the Institutional Health Research Ethics Review Committee **(IHRERC)** at office phone **0254662011orP.O.BOX235**, **Haramaya University Harar Ethiopia.**

Declaration of informed voluntary consent: I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that the participants have the right to withdraw from the study at any time or not to answer any question that they do not want. Therefore, I declare my voluntary consent on behalf of _____health facility management to allow this study to be conducted in the hospital/health center with my signature.

Name and signature of head of facility---------- Date --------

Name and signature of data collector---------- Date --------

AnnexII: Participant Information Sheet and Informed Voluntary

My name is ----------.I am working as a data collector for the study being conducted by Temesgen Gelano who is studying for his Master's degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you to lend me your attention to explain you about the study and your institution being selected as the study setting.

The study title: Substance Use and Associated Factors among Retro Viral Infected (RVI) Patients on Antiretroviral Treatment (ART) at Modjo Town public health

Purpose/aim of the study: The findings of this study can be of a paramount importance for the Retroviral Infected (RVI) Patients on Antiretroviral Treatment (ART) to plan intervention programs to prevent substance use disorders and measure can be taken to save the RVI patients on ART by providing programmed patient counseling service on lifestyle modification and strengthening the prevention activities in the town. Moreover, the aim of this study is to write a thesis as apartial requirement for the fulfillment of Master's program in Public Health in Field Epidemiology for the principal investigator

Procedure and duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is help full for the study. There are 24 questions to answer where I will fill the questionnaire by interviewing you. The interview will take about20-30 minutes, so I kindly request you to spare me this time for the interview.

Risks and benefits: The risk of being participating in this study is very minimal, but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the workers as well as for the industry

Confidentiality: The information that we will be provided will be kept confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study community and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits which they otherwise are entitled. They do not have to answer any question that they do not want to answer.

Contact address: If there are any questions or enquires any time about the study or the procedures, please contact: Temesgen Gelano through cell phone number 0911113487, through email at gelano.temesgen@gmail.com the Institutional Health Research Ethics Review Committee **(IHRERC)** at office phone **0254662011orP.O.BOX235**, **Haramaya University Harar Ethiopia.**

Declaration of Informed Voluntary Consent:

I have read/was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my signature.

Name and signature of participant----------Date -------

Name and signature of data collector---------- Date -------

AnnexIII: Questionnaires(English Version)

Questionnaire for the Assessment of substance use and associated factors among Retro Viral Infected patients on Anti-Retroviral Therapy in Modjo Public Health facilities inModjo Town, Ethiopia

Health facility typeHealth facility code ParticipantIDNumber ----------

Instructions:askthequestiononebyoneaswritteninthisquestionnaireandcirclethe responses ofparticipantunder theresponse provided.

Section 1: Sociodemographic Information

S.No	Question	Response	Code
101	Age of the patient	1._____year	
102	Sex of the patient	1.Male 2.female	
103	Residency of the patient	1. Rural 2. Urban	
104	Current marital status	1.married 2.single 3.divorse 4.widowed	
105	Educational status	1. No formal education 2. Primary education 3. Secondary education 4. College Diploma and above	
106	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Others (Specify)_____	
107	Ethnicity	1. Oromo 2. Amhara 3. Tigrai	

		4. Wolayta 5. Gurage 6. Other (Specify)_____	
108	Occupation	1.Farmer 2.Merchant 2.Housewife 3.Driver 4.Employed 5.Students 6.Other(Specify)_____	
109	Average monthly Income	1. =<500 ETB 2. 501-1000 ETB 3. 1001-1500 ETB 4. 1501-2000 ETB 5. >2000 ETB	
PART II – FactorsthatinitiateRVIpatientstousesubstance			
201	What wasyour Reason to start substance use?	1.Availability of substance 2. Peer influence 3. Religious practice 4. To be sociable 5. To get personal pleasure 6. To relief from tension 7. To stay awake	
202	Do you have friends with sub use?	1. Yes 2. No	

203	Family use of substance	1.Yes 2.No	
PART III- ClinicalbackgroundandARTadherenceoftheparticipants			
301	Year of diagnosis(E.C)	1. 1990-1995 2. 1996-2000 3. 2001-2005 4. >2005	
302	Clinical stage	1 Stage I 2.Stage II 3.Stage III	
303	How much is Current viral load count?	1.>1000 (high) 2. <1000 (low)	
304	Are you currently on ART?	1. yes 2. no	
305	Have you ever discontinueART?	1. yes 2. no	
306	Dose missed/month	1. Yes 2.No	

Substance use and types of substance use among RVI patient			
401	Have you ever used Substance once in life?	1. Yes 2. No	
402	Types of substance used	1. Alcohol 2. Alcohol and khat 3. Alcohol and cigarettes 4. Cigarette 5. Khat 6. All 7.Other(specify)_____	
403	Have you used substance in the last 30 days?	1.Yes 2.No	
404	What substance are you currently using?	1. Alcohol 2. Cigarettes 3. Khat 4. Other(specify)_____	
405	Do you want to quit substance use after wards?	1. Yes 2. No	

THANK YOU FOR YOUR RESPONSE!!

Annex IV: Participant Information Sheet and VoluntaryConsent(Afan OromoVersion)

Ibsa waraqaa hirmaattotaa fi fedhummaa isaanii ibsu

MaqaankooObbo/Aadde----------jedhama. Qorannoo waa'ee fayyadamuuWantoot Araada nama qabsiisan waliinwalqabatee tajaajilamtoota Daawaa farra HIV/AIDS argatanii fi dhaabbilee fayyaa hawaasaa Bulchiinsa Magaalaa Mojoo keessatti argamanirratti geggefamuukana irrattianiAkaka oddefannoosaassabduutokkoottintajaajila.Qorannoonkunkanrawwatamu Yunivarsititii Haraamayaattifayya haawasumaandigiiri lamaffaa barachaakanjiru obboTamasgeen Galaanookanjedhamuuni.Hirmaanakeessanargisisuunyeroomuraasafakkayaadakeessani naaf kennitanif kabaajanisin gaffadha.

Mata-dureeqorannoo: Waa'ee fayyadamuu Wantoota Araada nama qabsiisan fi waliin walqabatee tajaajilamtoota dhaabbilee fayyaa hawaasaa Magaalaa Mojootti argaman fi qoricha farra HIV/AIDS fudhatan irratti qorachuu dha.

Kayyoo qorannookanaa: Argannoon qorannookanaa irraaargaamu dhaabbilee fayyaa hawaasaatii Magaalaa Mojoof karoorsuu fi dhimma kana irratti hojjecuuf akka galteetti gargaara.Karaa biroonimmooqorannoonkuni waraqaaqorannoo kanadhiyeesseefakkafayya haawasumaan digiiri lamaffaatiin eebbifaamufgargaraa.

Adeemsaqorannoofiyeroo: Gaffilee bareeffamaniinaaf kennaman kanaangaaffifideebii waalin tasaasifnukunaiqorannookanafbu'aaqaba. Gaffillee 24qofatu jiru, gaffilee kana daaqiqaa 20hanga 30keessattini xumurra.Kanafuuyeroo xiqqookana akka naafgummachitan kabajaan isingafaadha.

Miidhaafibu'aaqorannichaa: Midhaanqorannookana irraa nama mudaachudanda'uyeroo keessanxiqqookanfudhaatuirra kanhafee baay'ee xiqqoodha.Qorannoolabooratorifdhigaa keessanakkakennitanifhingaffatamtani.Kanaanduraamiidhaanhojjiiirraattiisinqunname yoo jiraate qofanutihimtu

Qorannookana irrattihirmaachuukeessanif kaffaltinaddaa isinifkaffalaamuhinjiru. Garuu argannoonqorannookana irraa argamuummata fikaroorsituufayyaanannoof odeeffannoo gaaggari ni kenna.

Icciitii: Odeffanoon isin nuuf kennitan icciitiidhaan kan qabamu ta'a.odeeffannoon waa'ee

keessan addaan baasee himu hinjiraatu.Argannoon qorannoo kanaa haala waliigala hawaasaa malee waa'ee nama dhuunfaa hin ibsu. Gaaffileen kuni koodii malee maqaan namaa keessatti hin ammatamu.wabiin afaaniis ta'e kan barreeffamaa harmaataa qorannoo waliin wlqabsiisu hin jiraatu.

Mirgahirmaatoota: Hirmanaan qorannoo kanaafgodhamuhunduufedhiihirmaatotaatin qofa. Qorannookana irrattihirmaachuufyookiindhisuuf mirgaguutuuqabdani.Yoo qorannookana irrattihirmaatan,yerookamittuugaffiifideebiikana addaanuutuuf mirgaqabdu. Sababiiaddaan kututtanifmiidhaanisinirra gahuuyookinbu'aanisindhabdaangonkumaa hinjiru. Bakka deebii kennuu hin barbaadneetti deebi kennu dhisuun ni danda'ama.

Teessooqunnamtiif:yoogaaffiidabaalataa qabaattanyeroo kammiyyuuteessooarmaangadiitiin nuqunnamuudandeessu.Qorataajalqaabaa:obbo**Tamasgeen Galaanoo**,lakkofsamobaayilaa; **0911113487**yookiin karaa e-mail: gelano.temesgen@gmail.comqunnamuu dandeessu.Yookiin **koree saakattatuunamuusaafinamummaaqorannoo fayyaa kanYnivarsiti Haramayaa**lakkoofsa bilbilaa,**0254662011**;lakkofsaa sanduqaa postaa**235**,Ynivaarsiti Haramaaya,Harar Itiyoophiyaa.

Mirkaneessayaadafeedhummaanhirmaachufitti walii galame: Yaadolee armaan olittidubbiseefyookiinnattihimameef,aniakkagaariittiwaa'eekayyooqorannookanaa,adeemsa fiyeroo qorannookanaa,midhaa fi bu'aa qorannookanaa,icciitiiodeeffannoofi hirmatootataf godhamuu,mirgoota hirmaattotaa fiteessooqunnamtiiqorannookanaaaddaa bafaachuukootiif, akkasumaasbakka naafhingaalle irrattigaaffiiakkangafaadhuuf carraaakkanqabuufi yeroon barbaadettigaaffiifi deebiiaddaankutuuakkandanda'u, gaaffiindeebiikennuf hinbarbaanne irraadarbuuakkan qabusirriittiaddaanbaafadheen jira.Kanafuuqorannookana irratti hirmaachufyaada fedhuumaa kootiimallattoo kiyyan ninmirkaannessa.

Maqaa fi mallattoo hirmaataa/ttuu---------- Guyyaa ----------

Maqaa fi mallattoo odeeffannoo sassaabduu---------- Guyyaa ----------

Annex V: Questionnaire (Afan OromoVersion)

GaaffileeQorannoo: sakatta'insaFayyadama Wantoota Araada nama qabsiisanwaliin wal qabate Tajaajilamtoota Daawaa farra HIV/AIDS fudhatan dhaabbilee fayyaa Wawaasaa Bulchiinsa Magaalaa Mojootti qorachuuf geggeeffamu dha

GosaDhaabilee fayyaakoodiiLakkoofsaeenyummahirmaatotaa-------- **Qajeelfama** : Gaffilee armaan gaadif osoo irraa hin hir'isni yookin itti hin dabaalin tokko tokkoon hirmaatootagaffachuun deebi isaanii bakkasiif kennameettiguutiyookin itti naanneesi.

Kutaa1:Odeeffannoo haala uummata ibsu

T/L	Gaaffii	Deebii	Koodii
101	Umrii dhukkubsataa	1. Waggaa_____	
102	Saala dhukkubsataa	1.Dhiira 2.Dhalaa	
103	Teessoo dhukkubsataa	1. Baadiyyaas 2. Magaala	
104	Haala gaa'elaa yeroo ammaa	1. Kan fuudhe/heerumte 2.Kan hinfuune/heerumne 3.Kan hiikte 4.Kan irraa duunaan hin heerumne/hin fuune	
105	Haala Barnootaa	5. Kan dubbisuufi barreesuu hin dandeenye 6. Kan dubbisuuf barreessuu qofa danda'u 7. Sadarkaa tokkoffaa 8. Sadarkaa lammaffaa 9. Dippiloomaa kolleejii fi isaa ol	
106	Amantaa	6. Ortodooksii 7. Musiliima 8. Proteestaantii 9. Kaatolikii 10. Kan biraa (Ibsi)_____	

107	Sabummaa	7. Oromoo 8. Amaara 9. Tigraay 10. Walaayittaa 11. Guraagee 12. Kanbiraa (Ibsi)_____	
108	Gosa hojii	1.Qotee bulaa 2.Daldalaa 2.Haadh warraa 3.Konkolaachisaa 4.Qacaramaa 5.Barataa 6.Kan biraa(Ibsi)_____	
109	Galii giddu gala ji'aan	1. =<500 BET 2. 501-1000 BET 3. 1001-1500 BET 4. 1501-2000 BET 5. >2000 BET	
Kutaa II – Dhimmoota tajaajilamtoota ART wantota Araada nama qabsiisaniif nama kakaasan			
201	Sababni wantoota araada nama qabsiisan fayyadamtuuf maali?	1.Salphaatti waan argadhuuf 2. Dhiibbaa hiriyyootaa 3.Goch amantaa 4. Nma waliin walii galuuf 5. Gammachuu dhuunfaa argachuuf 6. Gammachuu yeroo saal qunnamtii dabaluuf 7. Dhiphina irraa boqochuuf 8. Dammaqinaan turuuf	
202	Ilaalchi ati Wantota araada nama qabsiisaniif qabdu maali?	1. Gaarii 2. Badaa	

203	Hiriyaa wantoota araada nama qabsiisan fayyadaman qabdaa?	1. Eyyeen 2.Lakki	
204	Maatii keessa namni wanta araada nama qabsiisan fayyadamu jiraa?	1.Eyyeen 2.Lakki	
Kutaa III-Dhimmoota Fayyaan Walqabataniifi Qoricha seeraan hordofuuS			
301	Bara qoratamtee of beekte(ALI)	1. 1990-1995 2. 1996-2000 3. 2001-2005 4. >2005	
302	Sadarkeessi Kilinikaalii kee meeqa?	1 Sadarkeessa I 2.Sadarkeessa II 3.Sadarkeessa III	
303	LakkoofsiCD4 kee amma meeqa?	1. <200 2. 201-350 3. 351-500 4. 501-650 5. >650	
304	Amma qoricha ART fudhachaaa jirtaa?	1. Eyyeen 2. Lakki	

305	Qoricha ART addaan kuttee beektaa?	1. Eyyeen 2. Lakki	
306	Doozii kiniinaa ji'atti addaan kutte meeqa?	1. <=doozii 3 gadi 2. Doozii4-8 3. > Doozii 9 ol	
Hammaa fi gosa fayyadama waaantota araada nama qabsiisan			
401	Wantota Araada nama qabsiisan fayyadamtee beektaa	2. Eyyeen 2. Lakki	
402	Wantoota araada nama qabsiisan gosa kam fayyadamte?	1. Dhugaatii alkoolii 2. Dhugaatii alkoolii fi Caatii 3. Alkoolii fi sijaaraa 4. Hunda 5. Sijaaraa 6 .Caatii 7. Kanbiraa(ibsi)_____	
403	Guyyoottan 30 darban keessatti wantota araada nama qabsiisan fayyadamtee beektaa?	1.Eyyeen 2.Lakki	
404	Yeroo ammaa Wantot araada nama qabsiisan kamiin fayyadamaa jirta?	1. Dhugaatii alkoolii 2. Sijaaraa 3. Caatii 4. Kanbiraa(ibsi)_____	
405	Kanaan boodatti wantoota araada nama qabsiisan addaan kutuu nifeetaa?	1. Eyyen 2. Lakki	

DEEBII KEESSANIIF GALATOOMAA!!

Annex VI:Curriculum Vitae

8.1 Personal information

Name Temesgen Gelano Goro Marital Status Married

Sex Male Place of Birth Horro Guduru Wollega, Hareto

Date of Birth 29/03/ 1972 E.C Address Modjo Mobile no. 091-111-34-87

1. Educational Background And Qualification

Level	Year	School/College/University Name	Awarded	Remark
1-8	1978-1985	Hareto primary and secondary school	Cetificate	
Grade 9	1987	Menesibu High School	Cetificate	
10-11	1990-1991	Menesibu High School	Cetificate	
Grade 12	1992	Mettu High School	Cetificate	
Diploma	1994-1995	Nekemte School of Nursing	Dip.in Nursing	
Degree	2000-2003	Jimma University	BSc in PH	
MPH	2010-Todate	Haramaya University	On Studying	Year II

2. Language Skills

S/N	Language	Speaking and Listening	Writing	Reading	Remark
	Afaan Oromoo	Excellent	Excellent	Excellent	
	Amharic	Excellent	Excellent	Excellent	
	English	V. Good	Excellent	Excellent	

3. Work Experience

S/N	Organization	Year	Position
1	Ilubabor/Borecha Woreda	July1996-Dec.1999	OPD
2.	Ilubaror/Bilo Npoa Woreda	Dec.1999-Jan 2000	OPD
3.	Ilubaror/Bilo Npoa Woreda	Mar.2003- Jun.2006	PHCU Director,OPD
4.	Mdjo Town Adminstrative	Jul2006- Sep.2010	PHCU Director,OPD

Hobbies: Reading Bible Watching Football and National Geography

Reference Tadese Gelano Phone No. 091-785-37-89