ADDIS ABABA UNIVERSITY
SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF HIV– RISK BEHAVIORS AND HIV INFECTION AMONG HIV VOLUNTARY COUNSELING AND TESTING CENTERS ATTENDIEES IN HARARI REGION, ETHIOPIA.

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LIST OF ABBRIVATIONS

AAU	Addis Ababa University
ABC	Abiestinence Be faithful Condom use
AOR	Adjusted odds ratio
AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal care
ARV	Anti Retroviral Drugs
BSS	Behavioral Survey surveillance
CI	Confidence Interval
COR	Crude odds ratio
CSA	Central Statistics Authority
CSWs	Commercial sex workers
EDHS	Ethiopian Demographic Health Survey
ETV	Ethiopian Television
FMoH	Federal Ministry of Health
FGAE	Family Guidance Association of Ethiopia
FGD	Focus Group Discussion
FHAPCO	Federal HIV/AIDS Prevention and Control Office
HBV	Hepatitis B Virus
HCT	HIV Counseling and Testing
HIV	Human Immunodeficiency Virus
HSV	Herpes Simplex virus
HTP	Harmful traditional practice
IEC	Information Education and Communication
IGA	Income generating activities
IRB	Institution of Review Board
MCH	Mother and Child Health
MF	Medical Faculty
NGO	Non-Governmental Organization
OR	Odds Ratio

PLWHAs	People Living With HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
SSA	Sub-Saharan Africa
TB	Tuberculosis
UNAIDS	United Nations Program on HIV/AIDS
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

ABSTRACT

Background: Risk factors for HIV transmission in sub-Saharan African including Ethiopia are the same as other countries in the region. However, information on risk factors associated with HIV infection among HIV-VCT centers attendees are insufficient to make useful recommendations on HIV/AIDS prevention and control in Harari region; therefore assessment of high risk behaviors for HIV transmission in this regard is useful.

Objective: To assess the level of HIV-risk behaviors and their association with HIV infection among HIV -VCT centers attendees in Harari region.

Methods: An unmatched case-control study was conducted among HIV-VCT centers attendees from Sep 2008 to May 2009 in all health facilities providing HIV-VCT services in Harari region. A total of 429 participants grouped in to cases (n=143) and controls (n=286) were recruited and assessed for various socio-demographic and other important health variables. The assessment was supplemented with Focus group discussion two in each sex. The quantitative data were entered and analyzed using SPSS Version 15. The descriptive statistics was used to show the magnitude of various characteristics. Bivarate analysis was used to see the association of different variables. Odds ratio with 95% CI was computed to assess the presence and degree of association between variables. Step wise logistic regression analysis was also applied to identify the important HIV-risk behaviors among HIV-VCT attendees. The qualitative data was analyzed using thematic analysis approach.

Result: A total of 429 HIV-VCT attendees, of which 143 cases and 286 controls were participated. Of the 139(97.2%) cases and 219(76.6%) controls who ever had sex, 108(77.7%) cases and 136(62%) controls had two or more life time sexual partners. Sexually experienced 93(66.9%) cases and 184(84.0%) controls reported having sex in the 12 months preceding the study. Of those who had sex in the last 12 months, 29(31.2%) of cases and 13(7.1%) controls had history of STIs. 14(28.6%) of male cases and 10(11.1%) male controls had sex with CSWs in the last 12 months, of which 6(42.9%) of cases and 5(38.9%) controls had reported inconsistent condom use. Ever had sexual intercourse, having two or more life time sexual partners and having history of STIs in the last 12 months were positively and significantly associated with HIV infection. This finding was strengthened by qualitative study where the majority of the discussants in both sexes agreed on unprotected sex, having two or more life time sexual partners and history of STIs as the risk sexual behaviors.

Conclusion and recommendation: The major HIV-risk factors identified are ever had sexual intercourse, having two or more life time sexual partners and having History of STIs in the past 12 months. These findings suggest a need for designing HIV/AIDS prevention strategy focused on: reduction in number of sexual partners, improved sexually transmitted infection prevention and control, and an increase in condom use. In addition, prevention efforts should focus on high risk groups, particularly in urban areas where the HIV prevalence is higher such as daily laborer and housewives.

Key words: HIV risk behaviors, HIV infection, HIV-VCT centers attendees.

1. INTRODUCTION

1.1 Background Information

Risky sexual behavior is one of the most important factor for HIV infection. In Africa, Human immunodeficiency virus (HIV) is primarily spread through unprotected sex. In Sub-Saharan Africa, more than 85% of transmission is heterosexual, the remaining 15% of the transmission includes prenatal transmission and through contaminated blood (1). Several population based and HIV-VCT centers studies report showed clear association between risky sexual behaviors and substance use with HIV infection (2- 6). According to the recent study conducted in Thailand, young women having engaged in risky sexual behaviors such as earlier sexual activities, multiple sexual partner, inconsistent condom use and drug use associated with increased level of HIV infection(4).

In Ethiopia, only few studies have managed to analyze the various risk factors for HIV infection. The HIV/AIDS in Ethiopia report (2008) documented similar risk factors for HIV transmission as in other countries. According to the report, the various risk factors are Sexually transmitted infection (STIs) and sexual risk behaviors of different forms such as high number of life time partners and casual relationships or sex with sex workers (1).

The Ethiopian DHS (2005) also demonstrated the association between recent sexual activity and HIV infection. The Ethiopian DHS and BSS also revealed substantial level of unprotected sex and pre-marital sex among adult population (2, 3). Even though risky sexual behaviors appears to be leveled off or decreased slightly, a substantial proportion of the adult and youth population continues to engage in risk sexual behavior. This shows that there is still a huge potential that the epidemic may continue to be a threat to public health without continued focus on prevention in Ethiopia (1-3).

According to UNAIDS report, in most of sub-Saharan Africa, national HIV prevalence has either stabilized or is showing sign of a decline. Cote d' Ivoire, Kenya and Zimbabwe have all showed decline in national prevalence. Like wise, the Ethiopian national HIV prevalence is also declining (2.2%) (7-9).

In Ethiopia, some studies indicated that certain population groups were found to be potentially at high risk: these were youths, female sex workers, drivers, factory workers, refugees and displaced people, street children, uniformed services and students (1, 10).

Efforts to reduce the spread and impact of HIV/AIDS are very much related to changing high- risk sexual behaviors. This can be done successfully if these efforts are supported by relevant studies that aimed at analysis of sexual risk behaviors among potentially risk groups. So identifying risk sexual behaviors would be vital which may potentially trigger the rapid spread of the virus. Such information are also scanty and only few studies analyzed the relationship between HIV-risk behavior and HIV infection among VCT centers attendees, so there is a need to be addressed.

The Ethiopian single point prevalence estimate of adult HIV prevalence rate of Harari region in 2008 is 3.3 % in which 2.7% are adult males and (4 %) females, which is higher than the country prevalence (2.2%)(9). There were a total of 4,264 HIV positives in the region, in which 1,752 were males and 2511 were females. In Harari region, the share of those who receive HIV-VCT during their visit to the health facilities in 2008 from June – August was 6022, of which 189 were HIV sero-positive. Thus, this study tried to investigate risk sexual behaviors and their association with HIV infection among HIV-VCT centers attendees in Harari regional state so as to recommend appropriate intervention strategies based on the findings.

1.2. Significance of the study

Few studies identified HIV related risk behaviors associated with HIV infection among HIV-VCT clients in Ethiopia. However, the role of these identified HIV-risk behaviors, determinants of risky sexual behaviors and HIV infection in the context of Harari region has not been studied previously. Information on HIV-risk factors associated with HIV infection among HIV-VCT centers attendees also insufficient in Harari region. Therefore, assessment of high-risk behaviors for HIV transmission in this study setting is useful and provides useful information to make recommendation for designing HIV/AIDS prevention and controlling intervention.

2. Literature Review

2.1. Magnitude of HIV/AIDS

In recent times, no other diseases have captured attention as much as HIV/AIDS. In 1987, the World Health Organization (WHO) first recognized the seriousness of the AIDS epidemic and since then HIV has become a global problem. The estimated number of persons living with HIV worldwide was 33.2 million in 2007.

There are an estimated 22.5 million people living with HIV in Sub-Saharan Africa in 2007 that showed increment as compared with 20.9 million in 2001. Sub-Saharan Africa continues to be the region most affected by the HIV/AIDS pandemic. More than two-third (68%) adults and nearly 90% of HIV infected children live in this region, and 76 % of AIDS deaths occurred in SSA in 2007 (7).

Ethiopia is one of the Sub-Sahara African countries most severely hit by HIV epidemics. The 2008 national single point estimate, the adult HIV prevalence rate is 2.2%. The rural HIV prevalence was estimated at 0.9% with urban prevalence of 7.7%. The same report indicated that 1,037, 267 people infected with HIV nationally in 2008 (8-9). Since the report of the first HIV positive cases in Ethiopia in 1986, the number has escalated and affected 1,037,267 people, of which 424,452 are males and 612,815 are females in 2008 (8, 11). The magnitudes of HIV positive pregnant women are estimated to be 79,183(8). The estimated new HIV infection and AIDS deaths in 2008 were about 125,147 and 58,290 respectively. Although AIDS death is decreasing, the newly infected individual is increasing over the years (8-9).

2.2. Risk sexual behaviors and HIV infection

According to the (2007) UNAIDS report, 2.5 million people were newly infected with HIV in one year time, of which 2.1 million are adults. Despite this epidemic, many people practice risky sexual behaviour (1, 11). The dominant modes of acquiring HIV in Africa are transactional sex and concurrent partners (12-13). The prevalence of HIV infection varies by socio-demographic characteristics of VCT clients. Several studies conducted on HIV risk behaviors have reported the higher prevalence of HIV among women than men and an increased risk of HIV infection among the age category 25 years and above, being women, widowed, divorced, illiterate, civil servants/ merchants and having low salary (4, 14- 18, 21 - 27).

The study conducted in (1994) Bangkok, Thailand among VCT attendees showed an overall HIV prevalence of 16% with females (24%) being affected higher than males (13%). Reasons for requesting the HIV test were high-risk behavior (21%), feeling un-well (20%), re-checking previous HIV test result (18%), a planned marriage (10%) and planning a birth (5%). In this study, heterosexual risk behavior was reported by 85% of clients while in each case only 1% reported homosexual or intravenous drug use as a risk behavior (17). Another study done in the same VCT center in 2006 reported HIV prevalence of 17.5% among 54,578 of VCT attendees (4). A recent study in the same place in Thailand (2008) indicated a rise in the proportion of Thai women infected with HIV (19).

In Ethiopia, the national prevalence of HIV sero-positivity among VCT clients in 2008 is 13.7% and the Harari region is 20.5%, in which 17.4% were males and 23.1% were females (9). The studies conducted at different time in Addis Ababa, Ethiopia revealed higher prevalence of HIV infection (24.5%) among VCT attendees in 2005 and 25.1% in the study conducted in 2001(6, 20). HIV sero-positivity is higher among females 31.5% attendees than males 16.2% (6, 20). In these studies, those whose age was 25 years and above, with no income, unemployed, illiterate and ever married were more likely to be HIV sero-positive (5, 6, 20). HIV/AIDS more affects people of low socio-economic status and those exposed to risky sexual behaviors (20). To know their status 626(65.7%) and self suspect 140(15.7%) were reasons for visiting VCT centers mentioned by the study done in Addis Ababa, Ethiopia (6).

Meta-analysis of 68 epidemiological studies confirmed that the key sexual risk factors for HIV infection in sub-Saharan Africa are high number of lifetime sexual partners, engaging in paid sex, and having STIs (28). Further more, studies have revealed the clear association of HIV risk behaviors and HIV infection with the levels of HIV infection being higher among clients who ever had sexual experience, having multiple sexual partners, having history of STIs and inconsistent condom use (4- 5, 14, 20, 30 - 34). Studies in Tanzania and Uganda revealed significantly more men having multiple sexual partners than women (29, 30). The Meta analysis also showed a higher risk of HIV infection with number of multiple sexual partners $\geq$ 2 or more among 61% of HIV positive women (28).

Studies in Ethiopia also revealed an association of HIV risk behaviors and alcohol use with HIV infection (5 - 6, 20). According to the study conducted in Addis Ababa, Ethiopia, the majority of the clients (88.2%) ever had sexual practice in the past 12 months and 7.1% had more than one sexual partner, in which higher among males (9.7%) than females (4.9%) (20).

The study carried out among HIV-VCT attendees in Bale Zone, Oromia region showed higher HIV risk behaviors practice among HIV sero- positives (32.4%) than 18% in sero-negatives. Among sero-positives, 27.4% had multiple sexual partners and 31.1% history of STIs in the past 12 month (5).

Studies have also revealed the risk of HIV infection associated with ever had sex and unprotected non-regular non CSWs sex (20, 33, 35). Ever had sexual experience (26%) were more likely to be HIV sero-positive than never had (6.5%) (20). The Ethiopian DHS (2005) revealed having recent sexual activity associated with HIV infection (3). In the recent study conducted among VCT clients in Surata, India, 442(43.8%) of the clients had experienced sexual intercourse with non-regular non-CSWs, where 110(24.9%) were HIV positives and 332(75.1%) were HIV negatives (35).

2.3. Condom use and HIV infection

Heterosexual transmission is accelerating the spread of HIV infection worldwide where, 70% of new HIV infection is acquired through unprotected heterosexual contact (36-37). According to a recent study done in Botswana, VCT attendees who never used condom had higher risk of HIV infection (33.7%) than those who used sometimes (29.0%) or used always (22.7%) ($P<0.001$)(24). Similarly, another study conducted in Surata, India showed inconsistent use of condom during sex with non-regular, non-CSWs in 107(97.2%) of cases and 95.2%) of controls (35). A study conducted in Addis Ababa, Ethiopia, sex with out condom was stated as a single most important risk behavior to HIV/AIDS where non-use of condom was higher in females than males (20).

2.4. STI experience and HIV infection

Sexually transmitted infections (STIs) and HIV virus facilitate the sexual transmission of one another. STIs appear to increase the risk of the acquisition and transmission of HIV, and acute HIV infection is more frequent in individuals with active STIs (38).

Various Studies have revealed that high level of HIV infection among those who had history of STIs (17, 39 - 42). A study conducted in Israel, STI prevalence was significantly higher among HIV-positive (79.5%) than HIV-negative patients (37.5%) ($P<0.001$). Herps simplex virus (HSV), syphilis and HBV were more common among HIV-positive than HIV-negative patients (40). The studies conducted in Tanzania and Uganda revealed that having past history of sexually transmitted Infections (STIs) to be the risk factors of HIV sero-positivity among males (18, 34). The study done in Ethiopia also showed that HIV infection significantly higher (41.5%) among clients with history of STIs than those do not had (23.1%) (20).

2.5. Substance use and HIV infection

The research contributions of developed countries to the understanding of HIV transmission have long recognized the influence of substance use (43). Several studies indicated that substance use affect the sexual practices and the sexual decision of different people, as well as engagement in risky sexual behaviors in most people due to substance use (44 - 45). In a study conducted among Japanese and Hawani tourists, over 89% of Japanese and 86% of Hawani tourists had causal sex under the influence of alcohol in the past 12 months. Among the Japanese, 21 % of them had ever had sex under the influence of illicit drugs (46).

Similarly, Studies conducted in Ethiopia revealed alcohol drink and Khat chewing associated with multiple sexual practice, unprotected sex and risk of HIV sero-positivity (6, 47 - 48). A case control study conducted in Addis Ababa, Ethiopia among VCT attendees showed the association of alcohol drinking with HIV sero-positivity. The overall prevalence of alcohol drinking was 45.0%, in which, the majority (55.1%) of the cases drank alcohol in the past one year as compared to (41.1%) of the controls. In the same study, the majority (74.4%) of HIV sero-positives who drank alcohol acknowledged that alcohol increases their sex desire compared to 42.8% of HIV sero-negative drinkers(6). In addition, in another case control study conducted in Ethiopia, khat chewers constituted 285(59%) of the cases compared to 200(41%) of controls ($P<0.001$) (46).

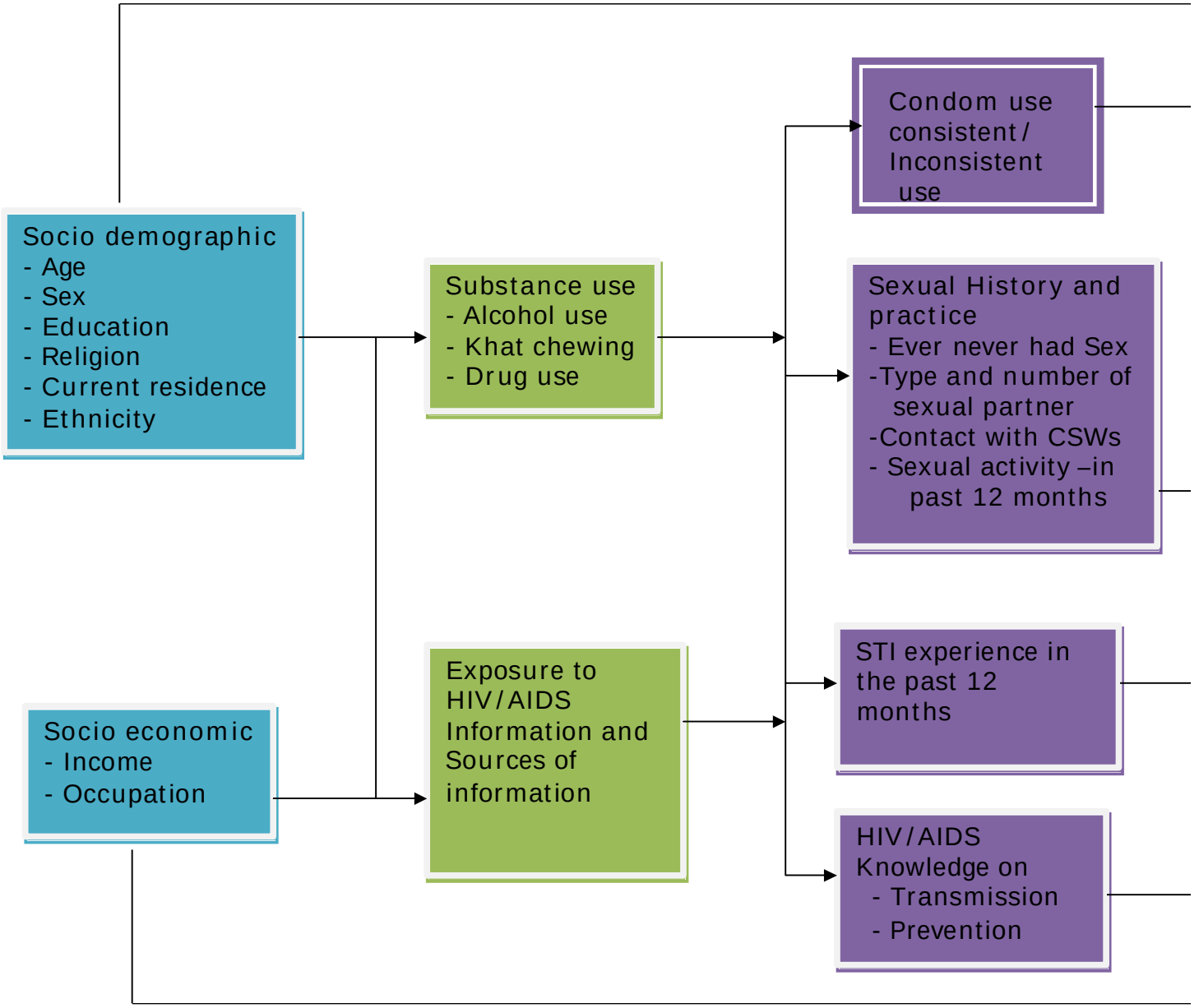

Figure 1 Conceptual frame work

3. OBJECTIVES

3.1. General objective

The general objective was to assess the level of HIV-risk behaviors and its association with HIV infection among HIV Voluntary Counseling and testing (VCT) centers attendees in Harari region.

3.2. Specific objectives

- To assess the magnitude and types of HIV-risk behaviors among HIV-VCT centers attendees.
- To assess the knowledge on HIV/AIDS transmission and prevention of HIV-VCT centers attendees.
- To determine factors related to HIV-risk behaviors among HIV-VCT centers attendees.
- To determine the relation between HIV-risk behaviors and HIV sero-status.

4. METHODOLOGY

4.1. Study area and period

The study was conducted in Harari region from September 2008 to June 2009. The region is 525 KM East of Addis Ababa. Administratively the region is sub-divided in to nine Kebeles: 6 urban and 3 rural kebeles. According to the 1994 census, the projected population of the region by 2008 is estimated to be 200,000 in which 65% reside in urban and 35 % in rural. The region has 4 hospitals, one TB Center, five health centers and 14 health posts run by the government and two NGO clinics, one private hospital and 22 private clinics. All hospitals and health centers of the region provide comprehensive HIV/AIDS services i.e. HCT, PMTCT, ART and two NGO clinics provide HCT service.

4.2. Study design

The Unmatched case-control study was conducted among Voluntary HIV Counseling and Testing centers attendees. The study examined HIV risk behaviors exposure with Sero-status (HIV Sero-positives and HIV Sero-negatives). The study considered sero-positive clients during the current visit as Cases and sero-negatives as Controls in selected health facilities providing HIV-VCT service. The risk behaviors were further elaborated by qualitative study (FGDs).

4.3. Source and study population

The source population was all people aged 18 years and above in the region and the study population were all people aged 18 years and above who came for Voluntary HIV Counseling and testing at health facilities providing HIV-VCT services.

4.4. Sample size determination

The sample size was determined using the formula for the case-control study given in Epi-info. For the sample size estimation, the proportion of HIV risk behavior [Multiple sexual partners] of 27.4% among HIV sero-positive persons, and 18% (5) among HIV sero-negative individuals with A 5% type I error, and 80% was used. Two controls for each case were taken to increase the power of the study.

P1 = 27.4 %

P2 = 18%

r (ratio of controls to cases) = 2:1

Using the assumptions in Epi-info (statcalc) and adding a 10% non- response rate, the sample size calculated was 482 (161 cases and 321 controls).

4.5. Sampling procedure

All Government health facilities where voluntary HIV counseling and testing services provided were included to increase the chance of getting the required number of HIV positive cases. Accordingly, Hiwot Fana Hospital, Jegol Hospital, TB clinic, Army hospital and Police Hospital; and Arategna Health center, Hasengeye Health center, Erer Health center as well as two NGO clinics were included. However, Army Hospital was not involved for data collection due to security and confidentiality issues. For selection of cases and controls, whenever HIV positive case was encountered, the case was enrolled in the study and two subsequently HIV negatives of the same sex were included as a control in the study. The procedure was continued throughout the data collection period until the required sample size was obtained.

For the qualitative study, selection of FGD participants was done with contact to the head of Down of hope/ Tesfago association and administrative body. Informed written consent also was obtained from volunteer PLWHAs after explaining the purpose of the study, the FGD, and the confidentiality of the information they provide.

4.5.1. Inclusion Criteria

- Age of 18 years and above using VCT services

4.5.2. Exclusion Criteria

- VCT clients that were not permanent residents of the region

4.6. Data collection methods and procedures

4.6.1. Quantitative method

Pre-coded and pre-tested structured questionnaire that was translated from English to Amharic and back to English to check for its consistency was employeed for quantitative study. Pre-testing was done among HIV-VCT attendees in two health facilities, at one hospital and one health center, and then they were excluded from actual study.

For data collection, eight interviewers and one B.Sc holder health professional supervisor were employed. The interviewers were counselor nurses who were working at VCT centers and selected from their respective health facilities. They were trained on the data collection technique for one day. The supervisors were BSc holder health professionals working on HIV program in the region and the principal investigator.

After obtaining informed written consent, the nurse counselor verbally administered the pre-tested, structured questionnaire to each participant in private room after they have obtained pre-test counseling and tested, and their sero status known by the counselor to classify as case and control. The interview was conducted before the client knew their HIV sero-status to decrease response bias. The purpose of selecting counselors was to keep confidentiality and to get maximum response. The principal investigator had no information on the test result of the study participants that was communicated using code. The supervisors have been providing all supplies necessary for data collection, checking filled questionnaires for completeness and consistency, and solving any problems that were arising during data collection.

4.6.2. Qualitative method

To further elaborate the HIV risk behaviors from the perspective of PLWHAs and to assess their opinions on HIV risk behaviors, the study was supplemented with Focus Group Discussions (FGDs). FGDs were organized in to male and female groups, each group composed of 5-7 participants. The number of FGDs conducted was two for each sex. FGD guide was used as a tool for the qualitative study. The participants were volunteer PLWHAs who are the member of Harar branch of Down of hope/ Tesfago association.

4.7. Data Quality Assurance

The translation of questionnaire in to Amharic and back to English ensured its consistency. It was also pre-tested in similar setting before the actual data collection. Data collectors were trained before starting the actual data collection for one day. Supervision was conducted throughout the data collection process. The Data completeness and consistency of filled questionnaires were checked thoroughly on daily basis by the supervisor and the principal investigator. 5% randomly filled questionnaires were rechecked by the principal investigator.

Data cleaning was done by running frequency of the variables using version 15, SPSS programme by the principal investigator. The above mentioned procedures ensured the quality of data collection process and data.

4.8. Variables

4.8.1. Outcome variables

- HIV sero status: HIV sero-positive and HIV sero-negative status.
- HIV risk behaviors: Multiple Sexual partners (MSPs) and History of Sexually Transmitted Infection (STI) and inconsistent use of condom.

4.8.2. Exposure Variable

- Socio-demographic variables (age, sex, religion, ethnicity, education and residence).
- Socio economic variable: income, occupation.
- HIV-risk behaviors and practice: Multiple sexual partners, History of sexually transmitted infection, sexual contact with commercial sex workers, inconsistent use of condom
- Knowledge: HIV/AIDS transmission and prevention.
- Substance use: Alcohol use, khat, and drug use.
- Exposure to HIV/AIDS Information and sources

4.9. Data entry and analysis

4.9.1. Quantitative data

Data were entered and analyzed using version 15, SPSS statistical package for social sciences by the Principal investigator. After the data has been entered, it was cleaned prior to data analysis. Responses to a particular question that appeared inconsistent or incorrect were verified by looking in to the filled questionnaires. Frequencies, Recoding, transforming, and re-categorizing of variables were done to compute some of the analysis. Odds ratio with 95% confidence interval was constructed to show statistical significance. Multiple logistic regression analysis was employed to adjust for confounding factors associated with HIV risk behaviors and HIV infection.

4.9.2 Qualitative data

Qualitative data was analyzed using content analyses that involved transcribing the tape recorded data followed by translating Amharic to English. The summary part of the translated content was coded manually, and then analyzed by thematic analysis approach with the theme of magnitude of HIV/AIDS, types of HIV risk behaviors most to HIV/AIDS transmission and infection, high risk groups of acquiring HIV AIDS, as well as pattern of HIV risk behaviors and practice. In addition, conditions predisposing people to risk sexual behaviors and practice, measures to be taken by people to protect themselves from HIV/AIDS, approaches or strategies to be instituted to prevent HIV/AIDS, types of HIV/AIDS information delivery approaches or strategies and their problems, accessibility of VCT services and related problems, any barriers for VCT utilization and way forwarded by PLWHAs to improve VCT uptake.

4.10. Ethical considerations

Ethical standards were adhered in all stages of the research.

- First, ethical clearance was obtained from Addis Ababa University, Faculty of medicine, Institutional Review Board (IRB) and
- Permission letter to conduct the research was obtained from School of Public health, then
- Permission letter to conduct the research was obtained from Harari regional health Bureau for each health facilities and VCT centers.
- Finally the head of each health facility was communicated to start data collection. During data collection,
- Informed Consent was obtained from all participants after explaining the purpose of the study.
- Participation in the study was voluntary and the eligibles were informed not to participate or refuse at any time during the interview.
- A one-page consent form was attached as a cover page to each questionnaire.
- The information obtained was kept confidential and was used only for this study purpose. Confidentiality was maintained through ensuring that the interview conducted in a private setting. In addition,
- Any identification information of the study participants was not recorded on the questionnaire, instead a code number was used to identify every participant and no name was used.
- The principal investigator also had no information on the status of test result of the participant. By doing so the concern of the study subjects for confidentiality was addressed.
- Post-test counseling was provided for all respondents.

4.11. Dissemination of the results

The study findings and recommendations would be disseminated to all concerned governmental and nongovernmental organizations. Attempts would be made to publish the research output in peer reviewed journal.

4.12. Operational definitions

Cases: Sero-positive during the current VCT visit in the particular Health facilities.

Controls: Sero- negative during current VCT visit in the particular Health facilities.

Consistent condom use: use of a condom during every sexual encounter.

Drugs: drugs considered in this study are stimulants other than alcohol, E.g. Khat (Catha edulis), hashish (marijuana), cocaine and heroin.

Multiple sexual partners: more than one sexual partner.

Knowledgeable on ways of HIV transmission: respondents were categorized as Knowledgeable when they correctly responded 4 or more choices out of 6 (Knowledge score > = 4)

Knowledgeable on means of HIV prevention: respondents were categorized as Knowledgeable when they correctly responded 4 or more choices out of 5 (Knowledge score > = 4).

Alcohol use: use of alcohol in the last 12 months among the HIV-VCT attendees.

Regular sexual partner: includes a spouse or sexual partner who has cohabited (lived-in) for twelve months or longer.

Risky sex: any unprotected sex (condom non-use) with any partner other than a regular partner.

Voluntary counseling and testing (VCT): is a process by which an individual undergoes counseling and testing to enable them to make an informed decision about being tested for HIV, assess their personal risk for HIV and develop a risk reduction strategy.

HIV-risk behaviors: having multiple sexual partners (MSPs) and History of Sexually Transmitted Infection (STI), inconsistent use of Condom and contact with Commercial sex workers (CSWs).

Substance abuse: the use of non-medical drugs such as alcohol, khat, Cannabis, heroin, cocaine, marijuana by the participant at any time with out medical prescription.

5. RESULT

5.1 Quantitative Findings

5.1.1. Socio-demographic characteristics

Among 441 clients who have attended HIV-VCT centers, 429(97.3%) participated in the study. The twelve attendees were non respondents making a non- response rate of 2.7% of which 4 were cases and 8 were Controls.

Table 1 shows the various characteristics of HIV-VCT clients by HIV sero-status. Among the studied clients, 143 were HIV positives (cases) and 286 were HIV negatives (controls). Of the 429 HIV-VCT attendees, the majority 83(58.0%) of cases and 166 (58.0%) of controls were females while males constituted 60 (42.0%) of the cases and 120 (42.0%) of controls. The median age of clients among cases and control was 33 years and 28 years respectively. Regarding educational status, 44 (30.8%) cases and 73 (25.5%) controls had completed primary level of education (1-8 grades). Most of the cases 121 (84.6%) and controls 197 (68.9%) were from urban area. Oromo ethnic group comprised the largest proportion 50 (35%) cases and 140 (49.0%) controls followed by Amhara 72 (50.3%) and 99 (34.6%) for cases and controls respectively.

As to the religion of study participants, 87 (60.8%) of cases and 119 (41.6%) of controls were Orthodox by religion followed by Muslim 48 (33.6%) and 139 (48.6%) for cases and controls respectively. The majority 285(66.4%) of the study subjects were ever married [121 (84.6%) of cases and 164 (57.3%) of controls]. Nearly one-third (31.0%) of the study subjects were house wife [42 (29.4%) of cases Vs 91(31.8%) of controls]. In addition, 25 (17.5%) of cases and 40(14.0%) of controls were merchants while daily laborers comprised 25(17.5%) of cases and 19 (6.6%) of controls.

Regarding the average monthly income of the study participants, 91 (63.6%) of cases and 135 (47.2%) of controls reported having average monthly income. The vast majority 396(92.3%) of the study subjects were from government health facilities, in which [132(92.3%) cases and 264(92.3%) controls].

Table 1: Socio-demographic characteristics of HIV-VCT centers attendees by HIV-status in Harari region, 2009.

Variables	Total (n= 429) n (%)	HIV Positives (n=143) n (%)	HIV Negatives (n= 286) n (%)
Sex			
Male	180(42.0)	60(42.0)	120(42.0)
Female	249(58.0)	83(58.0)	166(58.0)
Age (years)			
18 – 24 years	114(26.6)	19(13.3)	95(33.2)
>25 years	315 (73.4)	124(86.7)	191(66.8)
Median age	30.9	33	29.8
Educational Status			
Illiterate	114(26.6)	34(23.8)	80(27.9)
Read and write	35 (8.2)	16(11.2)	19(6.6)
1-8 grade	117(27.3)	44(30.8)	73(25.5)
9-12 grade	89(20.7)	30(21.0)	59(20.6)
Above 12	74(17.2)	19(13.3)	55(19.2)
Residence			
Urban	318(74.1)	121(84.6)	197(68.9)
Rural	111(25.9)	22(15.4)	89(31.1)
Religion			
Orthodox	206(48.0)	87(60.8)	119(41.6)
Protestant	33(7.7)	7(4.9)	26(9.1)
Catholic	3(0.7)	1(0.7)	2(0.7)
Muslims	187(43.6)	48(33.6)	139(48.6)
Ethnicity			
Amhara	171(39.9)	72(50.3)	99(34.6)
Oromo	190(44.3)	50(35.0)	140(49.0)
Gurage	28(6.5)	7(4.9)	21(7.3)
Tigre	19(4.4)	6(4.2)	13(4.5)
Harari	17(4)	7(4.9)	10(3.5)
Others	4(0.9)	1(0.7)	3(0.7)
Occupation			
Unemployed	30(7.0)	14(9.8)	16(5.6)
Government employee	69(16.1)	24(16.8)	45(15.7)
Merchant	65(15.2)	25(17.5)	40(14.0)
Driver	10(2.3)	3 (2.1)	7(2.4)
House servant	17(4.0)	7 (4.9)	10(3.5)
Daily laborer	44(10.3)	25(17.5)	19(6.6)
Student	61(14.2)	3(2.1)	58(20.3)
House wife	133(31.0)	42 (29.4)	91(31.8)
Monthly income			
Yes	226(52.7)	91(63.6)	135(47.2)
No	203(47.3)	52(36.4)	151(52.8)

Marital Status Ever Married Never Married	 285(66.4) 144(33.6)	 121(84.6) 22 (15.2)	 164(57.3) 122 (42.7)
Ownership of Health facilities Government NGO	 396 (92.3) 33(7.7)	 132(92.3) 11(7.7)	 264(92.3) 22(7.7)

Figure 2 and 3 show marital relationship of the study subjects. The majority of the cases 121(84.6%) and most of controls 164(57.3%) were ever married, 26 (21.5%) of the cases and 20 (12.2%) of the controls had more than one wife. 35(28.9%) of the cases and 17(10.4%) of the controls had extramarital relationship.

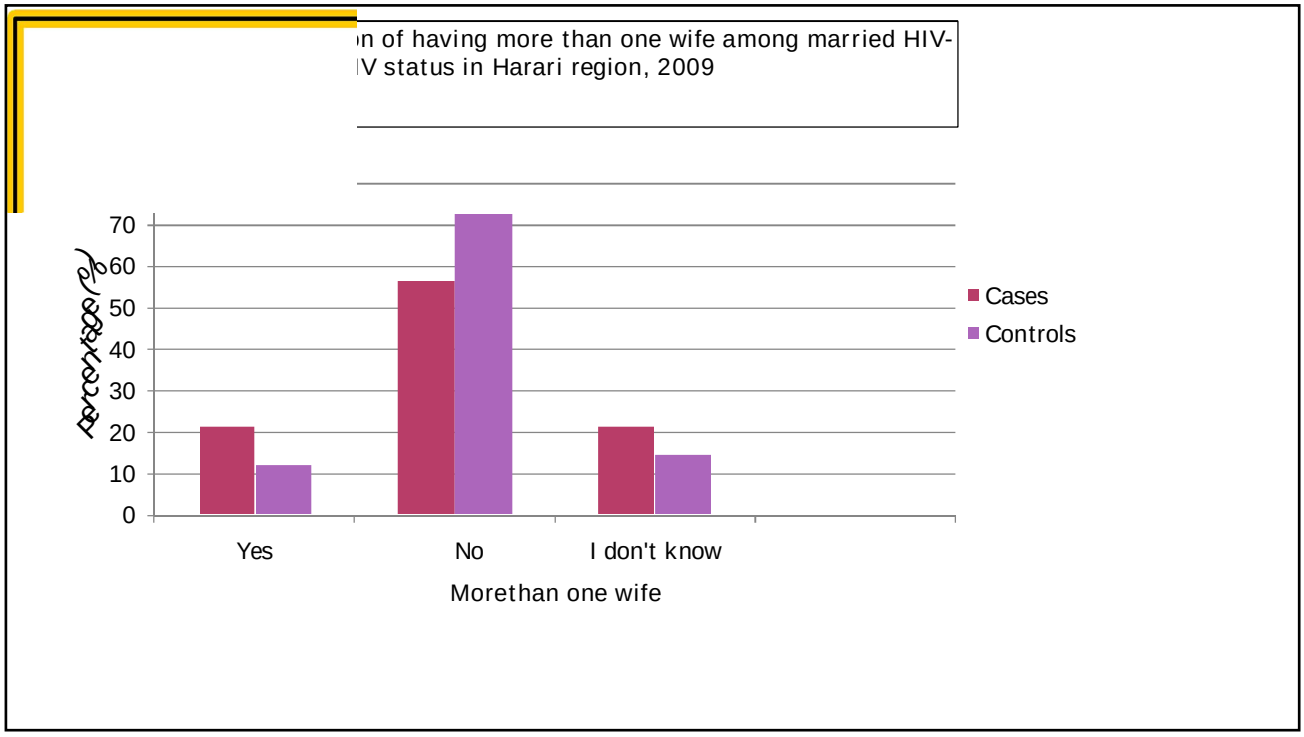

Figure 3: Distribution of extra marital relationship of married HIV-VCT attendees by HIV status in Harari region, 2009.

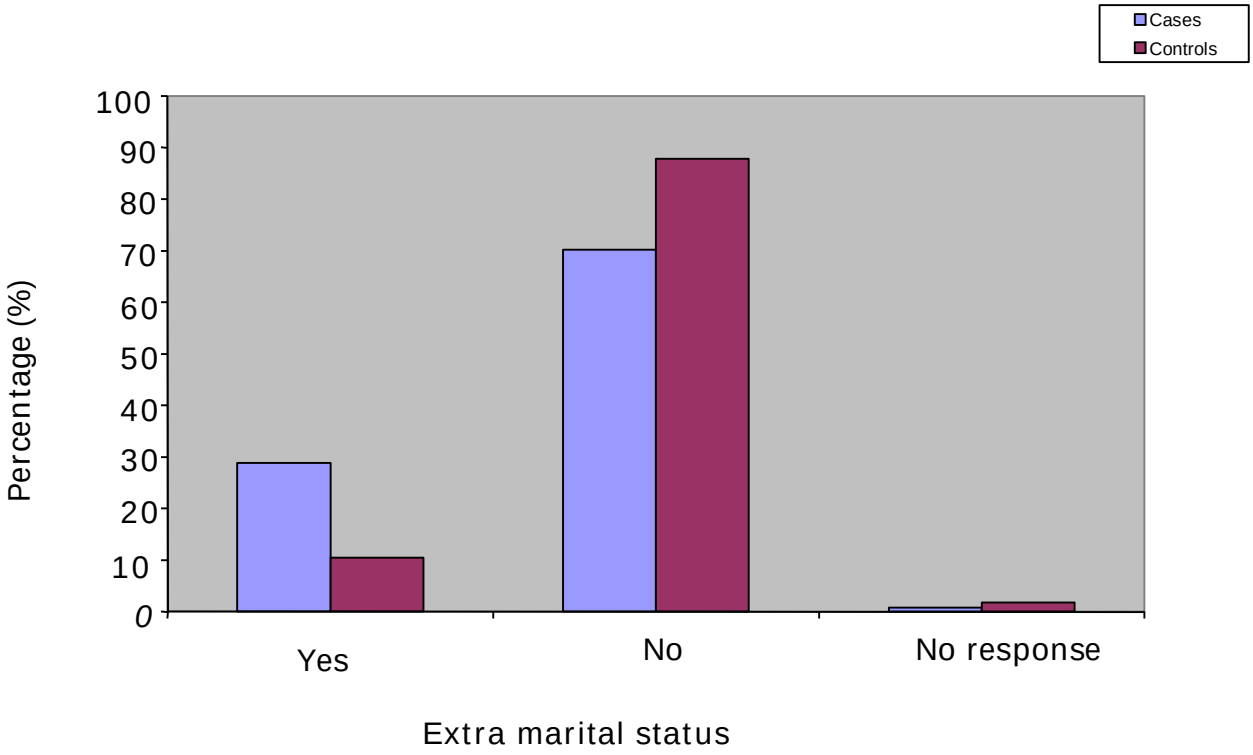

Figure 4 demonstrates the contribution of the HIV-VCT attendees by Health facilities and HIV status. The highest figure was observed at TB center (39.8%) followed by Hiwot Fana Hospital (37.8%). During the study period from Police hospital, Arategna Health center, Erer Health Center and Hasengaye Health Center and from one private hospital no positive client was found.

Figure 4: Distribution of HIV-VCT attendees by Health facilities providing HIV-VCT service and HIV status in Harari region, 2009.

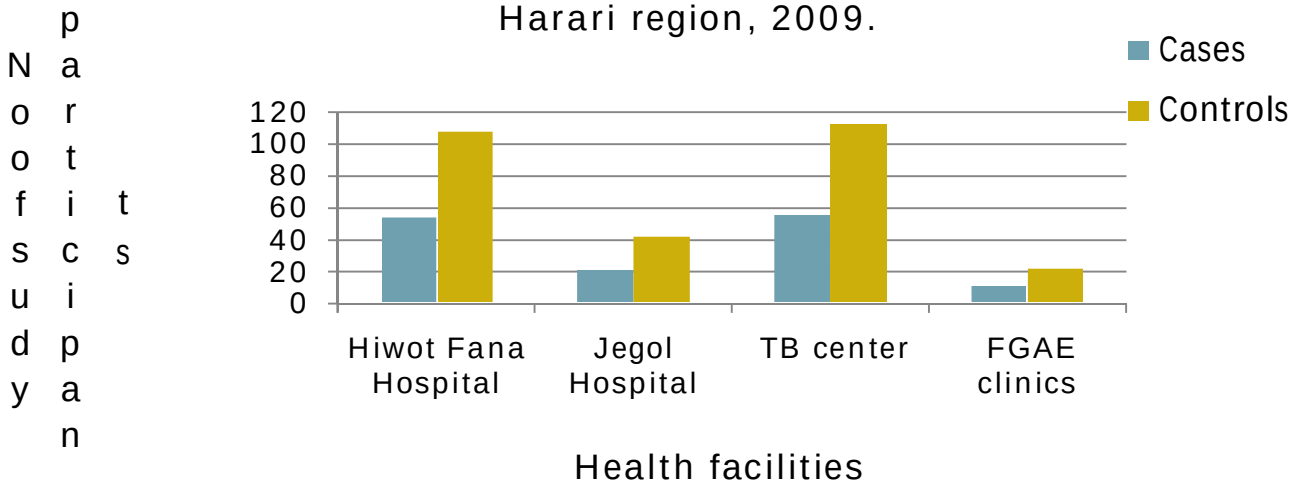

Table 2 describes the reasons for visiting HIV-VCT by the clients. Illness/symptom was mentioned as the major reason among 73 (51.0 %) of cases and 111 (38.8 %) of controls. To Know own HIV-status was the second reason forwarded by 38 (26.6%) of cases and 105 (36.7%) of controls. For the same question, premarital test, Suspect oneself and Death/illness of partner were also cited as a reasons in both cases and controls.

Table 2: Distribution of reasons for visiting HIV-VCT among HIV-VCT centers attendees by HIV- status in Harari region, 2009.

Reasons	Total (n=429)		HIV Positives (n=143)		HIV Negatives (n=286)	
	N	(%)	N	(%)	N	(%)
To Know own status	143	33.3	38	26.6	105	36.7
Suspect oneself	28	6.5	14	9.8	14	4.9
Not trust partner	16	3.7	4	2.8	12	4.2
Ill/symptoms	184	42.9	73	51.0	111	38.8
Premarital test	33	7.7	5	3.5	28	9.8
Visa applicant	1	0.2	0	.0	1	0.3
Confirm positive result	8	1.9	0	0	8	2.8
Pregnant, must know	1	0.2	1	0.7	0	0
Death/illness of partner	10	2.3	8	8	2	0.7
Sexual assault	2	0.5	0	.0	2	0.7
For job	1	0.2	0	.0	1	0.3
Others	2	0.5	0	.0	2	0.7

5.1.2. Magnitude and types of HIV/AIDS risk behaviors

Table 3 describes the median age for first marriage and first sexual intercourse of HIV-VCT attendees. The median age for first marriage of cases was 24 years while 20.5 years for controls among males. It was 20 years and 17 years among female cases and control respectively. The median age of first sexual intercourse was 18.5 years and 19 years for cases and controls among males while 18 years and 17 years among cases and controls for females.

Table 3: The median age of first marriage and first sexual intercourse by HIV-status among HIV-VCT centers attendees in Harari region, 2009.

Variables	HIV Positives n = 143		HIV Negatives n=286	
	Median	Range	Median	Range
Age at first marriage				
Male	24	16-40	20.5	16-37
Female	20	12-33	17	10–37
Total	21	12-40	19	10-37
Age at first intercourse				
Male	18.5	14-37	19	15–28
Female	18	12-25	17	10–30
Total	18	12-37	18	10-30

Table 4 depicts the type of HIV risk behaviors and practice by HIV sero-status. The proportion of ever having had vaginal sexual intercourse was higher (97.2%) among cases than controls (76.6%). Among sexually experienced respondents, majority of the cases reported that they had more than two life time sexual partners than the controls [108 (77.7%) for cases and 136(62.1%) for controls]. Regarding sexual activity in the last 12 months among sexually active respondents, 93(66.9%) of cases and 184(84.0%) of controls reported that they had had sex in the past 12 months. The majority 83(89.2%) of cases and 172 (93.5%) of controls had sex with regular partners. Furthermore, 44 (47.3%) of cases and 59(32.1%) of controls had sex with non-regular, non-commercial partners.

Among the 93(66.9%) of cases and 184(84.0%) of controls who had sex in the last 12 months and of those who had reported their sexual partners were regular partners [83(89.2%) of cases Vs. 172(93.5%) of controls], Almost equal proportion of cases (20.5%) and controls (20.9%) reported inconsistent use of condom. Similarly, among those cases and controls who had sex with non-regular, non-commercial partners, 18(40.9%) of cases and 27(45.0%) of controls reported inconsistent use of condom.

Study participants were also asked about symptoms of STI experience in the 12 months preceding the study. Of the 93 (66.9%) of cases and 184 (84.0%) of controls who had sex in the last 12 months, 27(29.0%) of cases and 13(7.1%) of controls had experienced genital discharge in the past 12 months. Equal proportion of cases and controls (1.9%) reported ever had experienced genital ulcer or sores in the past 12 months. Over one-fourth (28.6%) of male cases and 11.1 % of male controls had sex with CSWs in which, 6(42.9%) of the cases and 5(38.5%) of the controls reported inconsistent use of condom.

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Table 4: Types of HIV -risk behaviors among HIV-VCT centers attendees by HIV-status in Harari region, 2009.

Types of HIV risk behaviors	Total n (%)	HIV Positives n (%)	HIV Negatives n (%)
Sexual intercourse			
Ever had sex	358(83.4)	139(97.2)	219(76.6)
Never had sex	71(16.6)	4(2.8)	67(23.4)
Total	429(100)	143(100)	286(100)
Number of sexual partners			
One	114(31.8)	31(22.3)	83(37.9)
Two and above	244(68.2)	108(77.7)	136(62.1)
Total	358(100)	139 (100)	219 (100)
Sexual intercourse in the last 12 months.			
Yes	277(77.4)	93(66.9)	184(84.0)
No	81(22.6)	46(33.1)	35(16.0)
Total	358(100)	139 (100)	219 (100)
Type of sexual Partners			
Regular partners			
Yes	255(92.1)	83(89.2)	172(93.5)
No	22(7.9)	10(10.8)	12(6.5)
Total	277(100)	93(100)	184(100)
Non-regular, non- CSWs			
Yes	104(37.5)	44(47.3)	59(32.1)
No	173(62.5)	49(52.7)	125(67.9)
Total	277(100)	93(100)	184(100)
Inconsistent condom use			
Regular partners			
Yes	202(79.2)	66(79.5)	136(79.1)
No	53(20.8)	17(20.5)	36(20.9)
Total	255(100)	83(100)	172(100)
Non-regular, non- CSWs			
Yes	59(56.7)	26(59.1)	33(55.0)
No	45(43.3)	18(40.9)	27(45.0)
Total	104(100)	44(100)	60(100)
CSWS			
Yes	16(59.3)	8(57.1)	8(61.5)
No	11(40.7)	6(42.9)	5(38.5)
History of STIs			
Genital Discharge	40(14.4)	27(29.0)	13(7.1)
Genital ulcer	8(1.9)	7(1.9)	1(1.9)
Sex with CSWs			
Yes	24(17.3)	14(28.6)	10(11.1)
No	115(82.7)	35(71.4)	80(88.9)
Total	139(100)	49(100)	90(100)

Table 5 displays types of substance used by the study groups. Overall, the prevalence of alcohol intake in the past 12 months was 124(28.9%), of which 61(42.7%) were cases and 63(22.0%) were controls. Of the total respondents, the majority 92(64.3%) of the cases and controls 170(59.4%) reported ever chewed Khat. Among khat chewers, 59(64.1%) of the cases and 84(49.4%) of the controls reported feeling sleeplessness after chewing Khat where the majority do nothing to overcome the effect of sleeplessness [27(45.8%) cases Vs 51(60.7%) controls] followed by alcohol drinking among 24(40.7%) of cases and 26(31.0%) of controls. Experience with drug use was 3(2.1%) among cases. The types of drugs used were Cocaine, Heroin and Cannabis.

Table 5: Types of substances used among HIV –VCT attendees by HIV-status in Harari region, 2009.

Variables	Total n (%)	HIV Positives n (%)	HIV Negatives n (%)
Alcohol			
Yes	124(28.9)	61(42.7)	63(22.0)
No	305(71.1)	82(57.3)	223(78.0)
Total	429(100)	143(100)	286(100)
Khat			
Yes	262(61.1)	92(64.3)	170(59.4)
No	166 (38.7)	51(35.7)	115(40.2)
No response	1(0 .2)	0(.0)	1(0.3)
Total	429(100)	143(100)	286(100)
Feel sleeplessness			
Yes	143(54.6)	59(64.1)	84(49.4)
No	119(45.4)	33(35.9)	86(50.6)
Total	262(100)	92(100)	170(100)
Ways to overcome sleeplessness			
Alcohol drink	50(35.0)	24(40.7)	26(31.0)
Drug orally	1(0.7)	1(1.7)	0(.0)
Do nothing	78(54.5)	27(45.8)	51(60.7)
Others	14(9.8)	7(11.9)	7(8.3)
Total	143(100)	59(100)	84(100)
Elicit drugs			
Yes	3(0.7)	3(2.1)	0 (.0)
No	423(98.6)	139(97.2)	284(99.3)
Do not know	2(0.5)	1(0 .7)	1(0.3)
No response	1(0.2)	0(.0)	1(0.3)
Types			
Cocaine	1(33.3)	1(33.3)	0 (.0)
Heroin	1(33.3)	1(33.3)	0 (.0)
Cannabis	1(33.3)	1(33.3)	0 (.0)

Table 6 describes the knowledge of HIV-VCT attendees on HIV/AIDS transmission and prevention. Among the total 429 respondents, 137(95.8%) of cases and 278(97.2%) of controls had ever heard about HIV/AIDS. Respondents who ever heard about HIV/AIDS were also asked for the knowledge they had about transmission of HIV virus. For the question to assess knowledge on means of HIV transmission, respondents stated different responses such as unprotected sex, sharing of sharp materials, mother to child transmission, injection with non-sterile needle and transfusion of infected blood. Based on their knowledge score, 97(67.8%) of cases and 178(62.2%) of controls were knowledgeable on modes of HIV transmission. In the same way, for the questions to assess knowledge on means of HIV prevention, respondents replied different ways of reducing the chances of getting the HIV virus such as by abstaining from sex, having just one faithful sexual partner, using condom at every sexual encounter, avoiding physical contact like shaking hands with people living with the virus and avoiding sharing sharp objects. Based on their knowledge score, 82 (57.3%) of cases and 152 (53.1%) of controls were knowledgeable on means of HIV prevention.

Of those respondents knowledgeable on modes of HIV transmission, the majority of cases 135 (94.4%) and controls 273(95.5%) responded that the transmission could occur during sexual intercourse while 119(83.2%) of the cases and 246(86.0%) of controls responded sharing sharp objects. As to the way of preventing HIV/AIDS, the majority of 131(91.6%) cases and 257(89.9%) controls responded abstinence from sex as a means of prevention. On the other hand, 100(69.9%) of the cases and 186(65.0%) of the controls mentioned avoiding MSPs, and 100(69.9%) of cases and 179(62.6%) of controls responded using a condom at every sexual encounter as means of preventing HIV transmission.

Table 6: Knowledge on HIV/AIDS Transmission and Prevention of HIV-VCT centers attendees by HIV-status in Harari region, 2009.

Variables	Total (n=429) n (%)	HIV Positives (n= 143) n (%)	HIV Negatives (n= 286) n (%)
Hearing about HIV/AIDS			
Yes	415(96.7)	137(95.8)	278(97.2)
No	14(3.3)	6(4.2)	8(2.8)
Knowledge status on ways of HIV transmission			
Knowledgeable	275(64.1)	97(67.8)	178(62.2)
Not knowledgeable	154(35.9)	46(32.2)	108(37.8)
Knowledge status on means of HIV prevention			
Knowledgeable	234(54.5)	82(57.3)	152(53.1)
Not knowledgeable	195(45.5)	61(42.7)	134(46.9)
Ways of HIV transmission			
Sexual intercourse			
Yes	408(95.1)	135(94.4)	273(95.5)
No	21(4.9)	8(5.6)	13(4.5)
Mother to child transmission during pregnancy.			
Yes	190(44.3)	64(44.8)	126(44.1)
No	239(55.7)	79(55.2)	160(55.9)
Mother to child transmission through breast feeding			
Yes	193(45.0)	64(44.8)	193(45.0)
No	236(55.0)	79(55.2)	236(55.0)
Injection with unsterile Needle			
Yes	187(43.6)	66(46.2)	121(42.3)
No	242(56.4)	77(53.8)	165(57.7)
Through infected blood transfusion			
Yes	204(47.6)	68(47.6)	136(47.6)
No	225(52.4)	75(52.4)	150(52.4)
Sharing sharp objects			
Yes	365(85.1)	119(83.2)	246(86.0)
No	64(14.9)	24(16.8)	40(14.0)
Means of HIV prevention			
Abstinence			
Yes	388(90.4)	131(91.6)	257(89.9)
No	41(9.6)	12(8.4)	29(10.1)
Avoiding multiple sexual partnership			
Yes	286(66.7)	100(69.9)	186(65.0)
No	143(33.3)	43(30.1)	100(35.0)

Using condom			
Yes	279(65.0)	100(69.9)	179(62.6)
No	150(35.0)	43(30.1)	107(37.4)
Avoiding physical contact			
Yes	126(29.4)	46(32.2)	80(28.0)
No	303(70.6)	97(67.8)	206(72.0)
Avoid sharing of sharp materials.			
Yes	340(79.3)	113(79.0)	227(79.4)
No	89(20.7)	30(21.0)	59(20.6)

Table 7 indicates the HIV-VCT practices of the study subjects. About a one-third (33.6%) of the cases and 46.9% of the controls had ever been tested. The majority of the cases 43(89.6%) and controls 124(92.5%) undergone the previous test voluntarily. Likewise, above half of the cases 78(54.5%) and the controls 152(53.1%) also had undergone the current HIV test voluntarily while the remaining 65(45.5%) of the cases and 134(46.9%) of controls reported to undergone up on request. The tests in most of the cases (65.6%) and controls (51.1%) were requested by public health facilities for diagnostic purposes.

When asked to state the benefits of Voluntary HIV counseling and testing, 95.1% of the cases and 90.2% of controls responded that it would help to know HIV status. Likewise, 82.5% of the cases and 79.0% of controls mentioned that it would help to take care or preventive measures in the future after knowing the current HIV status. Furthermore, nearly equal proportion of cases (51.7%) and controls (51%) stated that it would help to prevent partners from HIV infection while 37.8% of cases and 42.0% of controls mentioned that it would help to prevent mother to child transmission.

Table 7: HIV counseling and testing practices among HIV-VCT centers attendees by HIV-sero status in Harari region, 2009.

VCT	Total n (%)	HIV Positives n (%)	HIV Negatives n (%)
Ever had HCT prior to the current visit			
Yes	182(42.4)	48(33.6)	134(46.9)
No	246(57.3)	95(66.4)	151(52.8)
No response	1(0.2)	0 (0.0)	1(0.3)
Total	429(100)	143(100)	286(100)
Previous HIV test			
Voluntary	167(91.8)	43(89.6)	124(92.5)
Required	15(8.2)	5(10.4)	10 (7.5)
Total	182(100)	48(100)	134(100)
Current HIV test			
Voluntary	230(53.6)	78(54.5)	152(53.1)
Required	199(46.4)	65(45.5)	134(46.9)
Total	429(100)	143(100)	286(100)
Benefits of VCT			
To know HIV status			
Yes	394(91.8)	136(95.1)	258(90.2)
No	35(8.2)	7(4.9)	28(9.8)
To take care in the future			
Yes	344(80.2)	118(82.5)	226(79.0)
No	85(19.8)	25(17.5)	60(21.0)
To prevent partner from Infection			
Yes	220(51.3)	74(51.7)	146(51.0)
No	209(48.7)	69(48.3)	140(49.0)
To prevent mother to child transmission			
Yes	174(40.6)	54(37.8)	120(42.0)
No	255(59.4)	89(62.2)	166(58.0)

Table 8 shows exposure of HIV-VCT center attendees to HIV/AIDS information and its sources. Close to two-thirds (79.0%) of cases and 207 (72.4%) of controls of the respondents stated that they had received information about HIV/AIDS in the past 12 months prior to the survey. The major sources of information mentioned were the media particularly Radio listening among 94(83.2%) of cases and 155(74.9%) of controls followed by Television in 80(70.8%) of cases and 135(65.2%) of controls; and newspapers /magazines in 25(22.1%) of cases and 54(26.1%) of controls. Among the respondents who had received HIV/AIDS information, almost half of the cases 49(52.1%) and controls 88 (56.8%) of controls reported that they had listened radio sometimes while 38(47.5%) of cases and 73(54.1%) of controls had watched Television sometimes. Moreover, 60(42.0%) of cases and 128(44.8%) of controls did not know availability of Anti-AIDS clubs/associations in their locality that provide information on the HIV/AIDS. Among those who knows the presence of Anti-AIDS clubs in their locality, 8(20.0%) of cases and 26(28.3%) of controls reported their membership in the Anti-AIDS club of their locality. 23(57.5%) of cases and 69(75.0%) of controls reported that Anti-AIDS clubs contribute in HIV/AIDS prevention and control.

Table 8: Exposure to HIV information among HIV-VCT centers attendees by HIV-status in Harari region, 2009.

Variables	Total n (%)	HIV Positives n (%)	HIV Negatives n (%)
Exposed to HIV/AIDS information in the past 12 months.			
Yes	320(74.6)	113(79.0)	207(72.4)
No	109(25.4)	30(21.0)	79(27.6)
Total	429(100)	143(100)	286(100)
Sources of information			
Television	215(67.2)	80 (70.8)	135(65.2)
Magazines/News paper	79 (24.7)	25(22.1)	54(26.1)
Radio	249 (77.8)	94(83.2)	155(74.9)
Friend/co-worker/peers	37(11.6)	13(11.5)	24(11.6)
Pamphlets/posters	33(10.3)	8 (7.1)	25(12.1)
Health professionals	43(13.4)	16(14.2)	27 (13.0)
School	27(8.4)	4(3.5)	23(11.1)
Movies	5(1.6)	2(1.8)	3(1.4)
Seminar/workshop	8(2.5)	1(0.9)	7 (3.4)
Community conversation (Buna Tetu)	8(2.5)	1(0.9)	7 (3.4)
Work place HIV/AIDS office	6(1.9)	1(0.9)	5(2.4)
Frequency of radio listening			
Always	72(28.9)	26(27.7)	46(29.7)
Most of the time	40(16.1)	19 (20.2)	21(13.5)
Some times	137(55.0)	49(52.1)	88(56.8)
Total	249 (100)	94(100)	155(100)
Frequency of TV watching			
Always	53(25.0)	19(23.8)	34(25.2)
Most of the time	51(23.7)	23(28.8)	28(20.7)
Some times	111(51.6)	38(47.5)	73(54.1)
Total	215(100)	80(100)	135(100)
Knowing Anti-AIDS clubs in their locality.			
Yes	132 (30.8)	40 (28.0)	92(32.2)
No	188(43.8)	60(42.0)	128(44.8)
Do not know	109(25.4)	43(30.0)	66(23.0)
Total	429(100)	143(100)	286(100)
Membership in these clubs			
Yes	34(25.8)	8(20.0)	26(28.3)
No	98(74.2)	32(80.0)	66(71.7)
Total	132(100)	40(100)	92(100)
Contribute in the prevention of HIV/AIDS			
Yes	92(69.7)	23(57.5)	69(75.0)
No	31(23.5)	13(32.5)	18(19.6)
Do not know	9(6.8)	4(10)	5(5.4)
Total	132(100	40(100)	92(100)

5.1.3 Factors associated with HIV- risk behaviors

Table 9 shows some of the socio-demographic factors associated with multiple sexual partners. As shown in the table, sex, educational status and having average monthly income were negatively and significantly associated with having MSPs while age, residence, religion, occupation and alcohol drinking were positively and significantly associated with having MSPs. Regarding sex, the odds of having MSPs among females were 0.31 times less likely than males (COR=0.31; 95% CI= 0.19 to 0.50). This association was maintained when it was adjusted with other socio demographic variables (AOR= 0.33; 95% CI = 0.19 to 0.59). Similarly, the odds of having MSPs by those who were illiterate was 0.21 times less likely than those who were grade 12 and above (COR= 0.21; 95% CI= 0.09 to 0.48). When it was controlled for other socio demographic variables, the above association was not seen (AOR= 0.46; 95% CI= 0.15 to 1.43). On the contrary, those who have no average monthly income were 0.5 times less likely to have MSPs compared to those who have average monthly income (COR= 0.55; 95% CI= 0.35 to 0.87). However, it was not significant when adjusted with other socio-demographic variables (AOR= 0.64; 95% CI=0.33 to 1.24).

On the other hand; among positively and significantly associated socio-demographic variables, those whose age $\geq$ 25 years were found to have a three fold increased odds of having MSPs compared to those 18-24 years (COR= 3.04; 95% CI=1.76 to 5.26). The odds ratio also showed the presence of significant association when it was controlled for other socio-demographic variables (AOR= 2.94; 95% CI = 1.74 to 5.89).

Regarding client's residence, those who live in urban had three-fold higher odds of having MSPs compared to those who live in rural area (COR= 3.02; 95% CI = 1.85 to 4.94). The above association was also consistent when controlled for other socio-demographic variables (AOR= 2.34; 95% CI= 1.24 to 4.42). Moreover, the odds of MSPs among Christians were 2.67 times higher than Muslims (COR= 2.67; 95% CI= 1.69 to 4.20). The above association was not observed when it was adjusted for other socio-demographic variables (AOR= 1.51; 95% CI= 0.83 to 2.74).

As to the occupation of the respondents concerned, those who were unemployed (COR= 6.00; 95% CI = 1.54 to 23.44), Government employees (COR= 8.57; 95% CI= 2.71 to 27.16), and daily laborers (COR=5.83; 95% CI= 1.81 to 8.76) were 6.00 times, 8.57 times and 5.83 times respectively more likely to have MSPs than those who were students. However, the adjusted odds ratio remained significant for unemployed only (AOR= 4.44; 95% CI = 1.00 to 19.6).

Concerning Alcohol drinking, the odds of having MSPs was six times higher among those who drank alcohol compared to those who have not drank it (COR= 6.17; 95% CI=3.29 to 11.59). This association was also significant when it was adjusted for other socio-demographic variables (AOR = 2.90; 95% CI= 1.45 to 5.81).

Table 9: Socio-demographic characteristics associated with multiple sexual Partners by HIV-VCT centers attendees in Harari region, 2009.

Variables	Total (n= 358) n (%)	MSPs		COR (95% CI)	AOR (95% CI)
		Yes (n= 244) n (%)	No (n= 114) n (%)		
Sex					
Male	161(45.0)	131(53.7)	30(26.3)	1	1
Female	197(55.0)	113(46.3)	84(73.7)	0.31(0.19, 0.50) **	0.33(0.19, 0.59) **
Age (years)					
18 – 24 years	66(18.4)	31(12.7)	35(30.7)	1	1
>25 years	292(81.6)	213(87.3)	79(69.3)	3.04(1.76, 5.26) **	2.94(1.47, 5.89) **
Educational Status					
Illiterate	106(29.6)	56(23.0)	50(43.9)	0.21(0.09, 0.48) **	0.46(0.15, 1.43)
Read and write	29(8.1)	23(9.4)	6(5.3)	0.73(0.23, 2.31)	0.63(0.17, 2.50)
1-8 grade	100(27.9)	71(29.1)	29(25.4)	0.47(0.20, 1.08)	0.69(0.25,1.98)
9-12 grade	67(18.7)	47(19.3)	20(17.5)	0.45(0.19, 1.09)	0.39(0.14,1.15)
Above 12	56(15.6)	47(19.3)	9(7.9)	1	1
Residence					
Urban	265(74.0)	198(81.1)	67(58.8)	3.02(1.85, 4.94) **	2.34(1.24, 4.42) **
Rural	93(26.0)	46(18.9)	47(41.2)	1	1
Religion					
Christians	206(57.5)	159(65.2)	47(41.2)	2.67(1.69, 4.20) **	1.51(0.83, 2.74)
Muslims	152(42.5)	85(34.8)	67(58.8)	1	1
Ethnicity					
Amhara	142(39.7)	108(44.3)	34(29.8)	1.73(0.59, 5.04)	1.15(0.24, 5.49)
Oromo	156(43.6)	88(36.1)	68(59.6)	0.70(0.25, 2.01)	0.78(0.22, 2.82)
Gurage	25(7)	22(9.0)	3(2.6)	4.00(0.84, 19.10)	2.24(0.35,14.36)
Tigre	18(5.0)	15(6.1)	3(2.6)	2.73(0.56, 13.37)	1.37(0.18,10.30)
Harari	17(4.7)	11(4.5)	6(5.3)	1	1
Occupation					
Unemployed	24(6.7)	20(8.2)	4(3.5)	6.00(1.54, 23.44)	4.44(1.00, 19.6) *
Gov't employee	57(15.9)	50(20.5)	7(6.1)	**	2.94(0.75, 11.49)
Merchant	61(17.0)	41(16.8)	20(17.5)	8.57(2.71, 27.16)**	1.00(0.31, 3.28)
Driver	10(2.8)	7(2.9)	3(2.6)	2.46(0.91, 6.66)	0.69(0.11, 4.34)
House servant	14(3.9)	8(3.3)	6(5.3)	2.80(0.57, 13.76)	1.07(0.24, 4.89)
Daily laborer	41(11.5)	34(13.9)	7(6.1)	1.60(0.41, 6.18)	2.06(0.54, 7.84)
House wife	129(36.0)	74(30.3)	55(48.2)	5.83(1.81, 18.76) *	1.05(0.33, 3.31)
Students	22(6.1)	10(4.1)	12(10.5)	1.62(0.65, 1.98)	1
				1	
Marital Status					
Ever Married	284(79.3)	192(78.7)	92(80.7)	1	1
Never Married	74(20.7)	52(21.3)	22(19.3)	1.13(0.65, 1.98)	1.46(0.63,3.35)

Monthly income					
Yes	205(57.3)	151(61.9)	54(47.4)	1	1
No	153(42.7)	93(38.1)	60(52.6)	0.55(0.35, 0.87) **	0.64(0.33,1.24)
Alcohol					
Ever drink	121(33.8)	108(44.3)	13(11.4)	6.17(3.29,11.59) *	2.90(1.45, 5.81) **
Never Drink	237(66.2)	136(55.7)	101(88.6)	1	1
Khat					
Yes	239(66.8)	166(68.0)	73(64.0)	1.19(0.75, 1.91)	1.37(0.74, 2.51)
No	119(33.2)	78(32.0)	41(36.0)	1	1

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01

Socio-demographic variables were also examined for possible association with contact of CSWs for male respondents using bivarate analysis and multiple logistic regressions. None of the Socio-demographic characteristics were associated with having sex with CSWs in the past 12 months.

Table 10 shows the association of socio-demographic characteristics with history of Sexually Transmitted Infection (STIs). As shown in the table, educational and occupational status were found to be negatively and significantly associated with STIs experience while religion and alcohol intake were positively and significantly associated with STI experience in the last 12 months.

The odds of STIs experience in the last 12 months among illiterate (COR=0.33; 95% CI= 0.12 to 0.99); those grade 12 and above (COR=0.23; 95% CI= 0.05 to 0.83) respectively were 0.33 times and 0.23 times less likely compared to those who read and write. However, when adjusted with other socio-demographic variables, the adjusted odds ratio indicated the presence of association for those grade 12 and above (AOR= 0.19; 95% CI= 0.05 to 0.79). On the contrary, the odd of STI was almost two and half times higher among Christians than Muslims in the crude analysis (COR= 2.48; 95% CI =1.19 to 5.17). Nevertheless, no significant association was seen with STIs experience when controlled for other socio-demographic variables (AOR= 2.22; 95% CI= 0.95 to 5.22).

As to alcohol drinking of the clients, those who drink alcohol were found to have four fold increased odds of having STIs compared to those who did not (COR= 4.28; 95% CI= 2.10 to 8.72). The adjusted odds ratio also indicated the presence of association with STIs after controlling for other socio-demographic variables (AOR =3.97; 95% CI=1.84 to 8.56).

Table 10: Socio-demographic characteristics associated with STI experience among HIV-VCT centers attendees in Harari region, 2009.

Variables	Total (n= 277) n (%)	STIs		COR (95% CI)	AOR (95% CI)
		Yes (n= 42) n (%)	No (n= 235) n (%)		
Sex					
Male	139(50.2)	24(57.1)	115(48.9)	1.39(0.72, 2.69)	0.87(0.37,2.07)
Female	138(49.8)	18(42.9)	120(51.1)	1	1
Age (years)					
18 – 24 years	54(19.5)	4(9.5)	50(21.3)	1	1
≥ 25 years	223(80.5)	38(90.5	185(78.7)	2.57(0.86, 7.54)	1.23(0.35, 4.35)
Educational Status	80(28.9)	10(23.8)	70(29.8)	0.33(0.12, 0.99) *	0.72(0.21, 2.46)
Illiterate	23(8.3)	7(16.7)	16(6.8)	1	1
Read and write	74(26.7)	14(33.3)	60(25.5)	0.53(0.18, 1.54)	0.65(0.21, 2.01)
1-8 grade	52(18.8)	7(16.7)	45(19.1)	0.36(0.12, 1.17)	0.32(0.09, 1.11)
9-12 grade	48(17.3)	4(9.5)	44(18.7)	0.23(0.05, 0.83) *	0.19(0.05, 0.79) *
Above 12					
Residence					
Urban	201(72.6)	35(83.3)	166(70.6)	2.08(0.88, 4.91)	0.65(0.19, 2.24)
Rural	76(27.4)	7(16.7)	69(29.4)	1	1
Religion					
Christians	156(56.3)	31(73.8)	125(53.2)	2.48(1.19, 5.17) *	2.22(0.95, 5.22)
Muslims	121(43.7)	11(26.2)	110(46.8)	1	1
Ethnicity					
Amhara	102(36.8)	19(45.2)	83(35.3)	1.26(0.26, 6.16)	0.49(0.05, 4.72)
Oromo	128(46.2)	14(33.3)	114(48.5)	0.68(0.14, 3.36)	0.63(0.90, 4.46)
Gurage	18(6.5)	3(7.1)	15(6.4)	1.10(0.16, 7.74)	0.45(0.40, 4.99)
Tigre	16(5.8)	4(9.5)	12(5.1)	1.83(0.28, 12.07)	0.68(0.58, 8.10)
Harari	13(4.70	2(4.8)	11(4.7)	1	1

Occupation					
Unemployed	14(5.1)	4(9.5)	10(4.3)	1	1
Gov't employee	51(18.4)	10(23.84.3)	41(17.4)	0.61(0.16, 2.35)	1.23(0.26, 5.86)
Merchant	42(15.2)	9(21.4)	33(14.0)	0.68(0.17, 2.69)	1.47(0.30, 7.06)
House wife	103(37.2)	8(19.0)	95(40.4)	0.21(0.05, 0.83) *	0.34(0.76, 1.55)
Daily laborer	34(12.3)	8(19.0)	26(11.1)	0.77(0.19, 3.13)	0.76(0.16. 3.70)
Students	24(8.7)	1(2.4)	23(9.8)	0.12(0.01, 1.09)	0.20(0.02, 2.33)
Driver	9(3.2)	2(4.8)	7(3.0)	0.71(010, 5.04)	1.41(0.17,12.06)
Marital Status					
Ever Married	214(77.3)	36(85.7)	178(75.7)	1	1
Never Married	63(22.7)	6(14.3)	57(24.3)	0.52(0.21, 1.29)	0.65(0.24, 1.78)
Monthly income					
Yes	163(58.8)	28(66.7)	135(57.4)	1.48(0.74, 2.96)	1.51(0.51,4.44)
No	114(41.2)	14(33.3)	100(42.6)	1	1
Alcohol					
Ever drink	107(38.6)	29(69.0)	78(33.2)	4.28(2.1, 8.72)**	3.97(1.84, 8.56)**
Never Drink	170(61.4)	13(31.0)	157(66.8)	1	1
Khat					
Yes	189(68.2)	31(73.8)	158(67.2)	1.37(0.66, 2.88)	1.39(0.59, 3.19)
No	88(31.8)	11(26.2)	77(32.8)	1	1

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval

*significant at p<0.05; **significant at p<0.01

5.1.4. Factors associated with HIV infection

Table 11 shows socio-demographic factors associated with HIV infection. Among the variables, age was found to have significant association with HIV infection. HIV-VCT centers attendees whose ages ≥25 years were 3.25 times more likely to be HIV sero-positive than those 18- 24 years (COR= 3.25; 95% CI = 1.89 to 5.58). However, when adjusted with other factors the above association was not significant (AOR= 1.27; 95% CI= 0.26 to 2.54).

Among the socio-demographic variables, lower educational level was found to have a positive association with HIV infection in crude analysis. The odds of HIV infection among those who read and write was almost two and half times higher than those who are grade 12 and above (COR= 2.44; 95 % CI = 1.05 to 5.68). However, when adjusted with other factors no significant association was seen (AOR=1.95, 95 % CI = 0.73 to 5.26).

The odds of HIV infection among those who live in urban was 2.52 times more likely than those who live in rural (AOR= 2.52; 95% CI= 1.37 to 4.65). Religion also had significant association with the risk of HIV infection. Those who are Christians were 1.87 time more likely to be HIV positive compared to Muslims (COR= 1.87; 95% CI= 1.23 to 2.84). There was no significant association when religion was controlled for other socio-demographic variables (AOR=1.04; 95% CI=0.44 to 2.46).

HIV infection was positively and significantly associated with occupation status in crude analysis. Daily laborers were 2.85 times more likely to have HIV infection than housewives (COR= 2.85; 95% CI = 1.42 to 5.74) and the adjusted association remained significant as well (AOR=2.86; 95% CI= 1.36 to 5.99).On the contrary, the odds of HIV infection for those whose occupation was students was 0.1 times less likely than house wives (COR= 0.1; 95% CI= 0.03 to 0.39). When adjusted for other variables, significant association was observed (AOR= 0.25; 95% CI= 0.07 to 0.93).

With respect to average monthly income of the attendees, those who have monthly income were almost two times more likely to be HIV sero-positive than those who do not (COR= 1.96; 95% CI = 1.29 to 2.96). On the other hand, the odds of HIV infection among those who were never married was 0.24 times less likely than those who were ever married (COR= 0.24; 95% CI = 0.15 to 0.41). The above association was also maintained when it was controlled for other socio-demographic variables (AOR=0.31; 95% CI= 0.18 to 0.56).

Tables 11: Socio-demographic factors associated with HIV status among HIV-VCT centers attendees in Harari region, 2009.

Variables	HIV Positives (n= 143) n (%)	HIV Negatives (n= 286) n (%)	COR(95% CI)	AOR(95% CI)
Sex				
Male	60(42)	120(42)	1	1
Female	83(58)	166(58)	1.0.(0.66, 1.50)	1.09(0.65, 1.87)
Age (years)				
18 – 24 years	19(13.3)	95(33.2)	1	1
≥25 years	124(86.7)	191(66.8)	3.25(1.89,5.58) **	1.27(0.26, 2.54)
Educational Status				
Illiterate	34(23.8)	80(27.9)	1.23 (0.64, 2.38)	1.45(0.60, 3.51)
Read and write	16(11.2)	19(6.6)	2.44 (1.05,5.68) *	1.95(0.73, 5.26)
1-8 grade	44(30.8)	73(25.5)	1.75 (0.92, 3.32)	1.84(0.85, 3.99)
9-12 grade	30(21.0)	59(20.6)	1.47 (0.74, 2.91)	1.75(0.79, 3.91)
Above 12	19(13.3)	55(19.2)	1	1
Residence				
Urban	121(84.6)	197(68.9)	2.49(1.48, 4.17) **	2.52(1.37, 4.65) **
Rural	22(15.4)	89(31.1)	1	1
Religion				
Christians	95(66.4)	147(51.4)	1.87(1.23, 2.84) **	1.04(0.44, 2.46)
Muslims	48(33.6)	139(48.6)	1	1
Ethnicity				
Amhara	72(50.3)	99(34.6)	1.04 (0.38, 2.86)	1.09(0.38, 3.17)
Oromo	50(35)	140(49.0)	0.51(0.18, 1.41)	0.79(0.27, 2.32)
Gurage	7(4.90)	21(7.3)	0.48 (0.13, 1.73)	0.44(0.11, 1.66)
Tigre	6(4.2)	13(4.5)	0.66 (0.17, 2.59)	0.51(0.12, 2.19)
Harari	7(4.9)	10(3.5)	1	1

Occupation				
Unemployed	14(9.8)	16(5.6)	1.89 (0.85, 4.24)	2.02(0.85, 4.77)
Government employ	25(17.5)	49(17.1)	1.16 (0.63, 2.14)	1.25(0.65, 2.43)
Merchant	24(16.8)	37(12.9)	1.35 (0.73, 2.52)	1.56(0.79, 3.05)
Driver	3(2.1)	6(2.1)	0.93 (0.23, 3.77)	0.86(0.19,3.73)
House servant	7(4.9)	10(3.5)	1.52 (0.54, 4.26)	1.46(0.48,4.42)
Daily laborer	25(17.5)	19(6.6)	2.85(1.42, 5.74) **	2.86(1.36, 5.99) *
Student	3(2.1)	58(20.3)	0.10(0.03, 0.39) **	0.25(0.07, 0.93) *
House Wife	42(29.4)	91(31.8)	1	1
Monthly income				
Yes	91(63.6)	135(47.2)	1.96(1.29, 2.96) **	1.12(0.60,2.07)
No	52(36.4)	151(52.8)	1	1
Marital Status				
Ever Married	121(84.6)	164(57.3)	1	1
Never Married	22 (15.2)	122 (42.7)	0.24(0.15, 0.41) **	0.31(0.18, 0.56)**

A= No ethnic information for 1 case and 3 controls.
COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01,
Controlled for sex, age, educational, residence, religion, ethnicity, occupation, income, marital status, alcohol drink and Khat chewing.

Table 12 depicts HIV-risk behaviors of the HIV VCT attendees by their sero-positivity and sero-negativity. Those who ever had sex were 10.6 times more likely to be HIV sero-positive than those who had no sex in crude analysis (COR= 10.6; 95% CI = 3.79 to 29.8). This observation after adjustment was made, it remained significant (AOR=3.94; 95% CI=1.22to 12.75). Similarly, respondents who had two and above life time sexual partners were found to be 2.13 time more likely serum-positive than those who had one life time sexual partner in crude analysis (COR= 2.13; 95%CI=1.31 to3.45). However, when controlled for some risk behaviors and other variables, the above significant association was maintained (AOR=3.59; 95% CI= 1.08 to 11.91).

Regarding sexual experience of the respondents, those who had sex in the last 12 months were 0.39 times less likely to be HIV sero-positive than to those who had no sex (COR= 0.39; 95% CI = 0.23 to 0.64). When adjusted with some socio-demographic factors and HIV risk behaviors, the adjusted odds ratio also remained significant (AOR= 0.30; 95% CI= 0.17 to 0.55). In addition, the odds of HIV infection among those who had sexual contact with non- regular, non-CSWs were 1.90 times more likely than those who had no sex with non-regular, non-CSWs (COR=1.90; 95% CI =1.14 to 3.17). Nevertheless, the above association was not maintained when it was controlled for other HIV-risk behaviors (AOR=1.46; 95 % CI=0.87 to 2.42).

Sexually Transmitted Infection (STI) experience was also examined for possible association with HIV infection. The odds of HIV infection among those who had history of STI in the past 12 months were almost six times more significantly higher than those who had no STI experience in the bivarate (COR= 5.96; 95% CI = 2.92 to 12.18). The above association was statistically significant as well in adjusted adds ratio (AOR=4.38; 95% CI= 2.23 to 8.58). Male participants who had sex with CSWs were 3.20 times more likely to be HIV sero-positive than who had no sex with Commercial sex workers (COR = 3.20; 95% CI = 1.29 to 7.89).

Table 12: Types of HIV risk behaviors practice associated with HIV status among HIV-VCT centers attendees in Harari region, 2009.

Types of HIV risk behaviors	HIV Positives n (%)	HIV Negatives n (%)	COR(95% CI)	AOR(95% CI)
Sexual intercourse				
Ever had sex	139(97.2)	219(76.6)	10.6(3.79, 29.8)**	3.94(1.22,12.75)*
Never had sex	4(5.6)	67 (23.4)	1	1
Number of sexual partners				
One	31 (22.3)	83(37.9)	1	1
Two and above	108(77.7)	136(62.1)	2.13(1.31, 3.45)**	3.59(1.08, 11.91)*
Sexual intercourse in the last 12 months.				
Yes	93(66.9)	184(84.0)	0.39(0.23,0.64) **	0.30(0.17, 0.55)**
No	46(33.1)	35(16.0)	1	1
Type of partners				
Regular partners				
Yes	83(89.2)	172(93.5)	1	1
No	10(10.8)	12(6.5)	1.73(0.72, 4.16)	1.33(0.56, 3.40)
Non-regular, non CSWs				
Yes	44(47.3)	60(32.6)	1.9(1.12, 3.09) **	1.46(0.87, 2.42)
No	49(52.7)	124(67.4)	1	1
Inconsistent condom use				
Regular partners				
Yes	66(79.5)	136(79.1)	1	1
No	17(20.5)	36(20.9)	1.03 (0.54, 1.97)	0.54(0.19, 1.53)
Non regular non CSWs				
Yes	26(59.1)	33(55.0)	1	1
No	18(40.9)	27(45.0)	1.18 (0.54, 2.59)	0.97(0.28, 3.47)
CSWs				
Yes	8(57.1)	8(61.5)	1	
No	6(42.9)	5(38.5)	1.75(0.31, 9.75)	
History of STIs				
Yes	29(31.2)	13(7.1)	5.96(2.92,12.18) **	4.38(2.23, 8.58) **
No	64(68.8)	171(92.9)	1	1

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01,
Controlled for MSPs, STI experience, sex in the last 12 months, sex with regular partners, non regular partners, non-CSWs, and condom use.

Table 13 indicates the type of substance used by HIV-VCT attendees and its association with HIV status. There was a positive and significant association between alcohol use and HIV infection. Those who drink alcohol in the last 12 months had three times higher odds than those who did not drink (AOR= 3.16; 95% CI = 1.46 to 6.86).

Khat chewing in the last 12 months was not associated with HIV sero positivity (P= 0.33) in Bivarate analysis. Similarly, when it was controlled for alcohol and some socio-demographic variables in multivariate analysis, no significant association was observed.

Table 13: Types of substances used among HIV-VCT centers attendees by HIV-status in Harari region, 2009.

Variables	HIV Positives (n= 143) n (%)	HIV Negatives (n= 286) n (%)	COR(95% CI)	AOR(95% CI)
Alcohol				
Yes	61(42.7)	63(22.0)	2.63(1.71, 4.06)**	3.16(1.46, 6.86)**
No	82(57.3)	223(78.0)	1	1
Khat				
Yes	92(64.3)	170(59.4)	1.23 (0.81, 1.87)	1.03(0.61,1.73)
No	51(35.7)	116(40.6)	1	1

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01,
Controlled for sex, age, educational, residence, religion, ethnicity, occupation, income and marital status.

Table 14 demonstrates the association of knowledge of HIV/AIDS transmission and prevention with HIV-infection. The knowledge on HIV transmission among cases (P= 0.26) and controls (P=0.41) was not statistically associated in crude analysis (COR=0.78; 95% CI= 0.51 to 1.19). Knowledge on HIV prevention was also insignificant (COR=0.84; 95% CI= 0.56 to 1.27). Similarly, the adjusted odds ratio also showed no statistical significant difference between cases and controls for knowledge on transmission (AOR=1.82; 95% CI= 0.63 to 1.88) and Knowledge on HIV prevention (AOR=0.83; 95% CI= 0.49 to 1.41).

Table 14: Knowledge on HIV/AIDS Transmission and Prevention associated with HIV status among HIV-VCT centers attendees in Harari region, 2009.

Variables	HIV Positives (n= 143) n (%)	HIV Negatives (n= 286) n (%)	COR(95% CI)	AOR(95% CI)
Knowledge status on ways of HIV transmission				
Knowledgeable	97 (67.8)	178(62.2)	1	1
Not knowledgeable	46(37.8)	108(32.2)	0.78 (0.51, 1.19)	1.82(0.63,1.88)
Knowledge status on means of HIV prevention				
Knowledgeable	82(57.3)	152(53.1)	1	1
Not knowledgeable	61(42.7)	134(46.9)	0.84(0.56, 1.27)	0.83(0.49,1.41)

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01.
Controlled for ever had sex, MSPs, STIs experience, sex in last 12 months, sex with regular partners, sex with non-regular, non-commercial partners, condom use and exposure to HIV/AIDS information.

Table 15 describes the association of exposure to HIV/AIDS information with HIV infection. There was no significant association that was observed in the crude analysis (COR=0.69; 95% CI=0.43 to 1.12). However, a significant association was seen when exposure to HIV/AIDS information was adjusted with other HIV risk behaviors. HIV-VCT attendees who had not been exposed to HIV information had 3.29 times higher risk of HIV-sero positive than those who had exposed to HIV information (AOR= 3.29; 95% CI = 1.18 to 9.13).

Table 15: Association of exposure to HIV information and sources with HIV infection among HIV-VCT centers attendees in Harari region, 2009.

Variables	HIV Positives (n=143) n (%)	HIV Negatives (n=286) n (%)	COR(95% CI)	AOR(95% CI)
Exposure to HIV/AIDS information in the past 12 months.				
Yes	113 (79.0)	207(72.4)	1	1
No	30(21.0)	79(27.6)	0.69 (0.43, 1.12)	3.29(1.18, 9.13) *

COR= Crude odds ratio; AOR= adjusted odds ratio; CI= Confidence Interval
*significant at p<0.05; **significant at p<0.01.
Controlled for ever had sex, MSPs, STIs experience, sex in last 12 months, sex with regular partners, sex with non-regular, non-commercial partners, condom use and Knowledge on HIV/AIDS.

5.2. Qualitative finding

Thematic /content areas of focus group discussion

The focus group discussions were compiled in to ten thematic areas.

5.2.1 Currently, HIV/AIDS is a major public health problem in Harari region?

The majority of the discussants agreed that HIV/AIDS is a major public health problem because of the expansion of HIV risk behaviors and practice such as Chat chewing, shisha smoking, and alcohol drinking in the community mainly among youth; increment of the incidence of HIV/AIDS justified by higher numbers of HIV positive people found in the hospital and becoming the member of Down of Hope/Tesfagoh; presence of stigma and discrimination in the community; higher number of females engaged in CSW; poor adherence of ART; and higher number of PLWHAs infecting other people as a revenge and fear of disclosure of HIV status in the community.

One of the discussants aged 40 years described stigma as follows, “you know PLWHAs from Dire Dawa and Jijiga come to Harar for ART” and “PLWHAs from Harar go to Dire Dawa and Jijiga for ART” which shows fear of disclosure. Moreover, the rising number of students and females affected by HIV/AIDS, absence of government workers or losing their job due to illness were also mentioned as reasons.

Another discussants aged 35 years stated by saying “It is difficult to say HIV/AIDS is not a major health problem currently” he said misconception is still a problem as there are two groups of people in this community, The “*Accepting group*” means people that consider HIV/AIDS like other disease, and believe anyone can live with HIV/AIDS, and the “*Denying group*” that believe HIV/AIDS can not catch me

Few of the participants expressed that HIV/AIDS as not a major public health problem. They stated the presence of behavioral changes on HIV/AIDS and HIV risk behaviors. There is now low HIV/AIDS death rate, good achievements and behavioral changes observed as a result of the implementation of HIV/AIDS prevention and control progammes such as expansion of HIV/AIDS education, community conversation like Shai-Buna program in all kebeles, HCT and ART services etc. One of the male participants shared his experience by saying "if you see me before two years physically, I was not like this, I was emaciated and bed ridden, but now since I started ART, thanks God, I became healthy and I speak confidently now that I am not inferior to others."

Some of the discussants agreed HIV/AIDS is still a major problem but not serious as in the past by mentioning some behavioral change observed in the community. They mentioned increased community awareness about HIV/AIDS, decrease in HIV risk behaviors practice and availability of HIV/AIDS prevention and control program being implemented; and the care and support provision as reasons.

5.2.2. HIV risk behaviors exposing to HIV/AIDS?

The majority of the discussants agreed that unprotected sex or non condom use, having multiple sexual partners, sex with CSWs and substance abuse such as *chat* chewing, shisha smoking which are widely being practiced and Alcohol drinking to be kinds of HIV risk behaviors exposing people to HIV/AIDS. Only few of them mentioned exposure to HIV/AIDS by having extra marital sex "*Kimit*" and having causal sexual partners mostly with CSWs among married. One of the male discussants aged 37 years shared his experience by saying that "you know how I myself was infected initially; I chew khat, smoke shisha and tobacco daily in group in the afternoon, then after we go to pubs/Hotels to drink alcohols locally known as "*Mirkana chebsi*" I end up sleeping with CSWs, some times I had sex with out condom when I loose my consciousness" This were the causes of my being HIV positive as you see me now.

5.2.3. Group of People at higher risk of HIV/AIDS?

The majority of the discussants agreed that youth, students and females to be at the highest risk of HIV/AIDS. The next high risk people agreed by the discussants were economically poor people, soldiers, taxi drivers, house servants and traders. Only few of them mentioned street girls, boys and elderly to be other higher risk groups.

5.2.4. Current patterns of HIV-risk behaviors and practices?

The majority of the discussants agreed that the pattern of HIV risk behaviors is widely practiced and increasing. For example having multiple sexual partners (MSPs) and substance use among youth and students; engagement of females in paid sex, expansion of pornographies currently practiced were mentioned as HIV risk behaviors.

In addition, expansion of *"Chat and shisha Bet"* (the place where people chew Chat and smoke shisha), increase number of chat chewers, shisha and tobacco smokers were also stated as indications for an increment of HIV-risk behaviors and practice. One of the male discussant aged 32 years said currently Chat and shisha bet are moving from inner city to outer city and being established to hide themselves from policemen. Youth who use the substance have a nick name known as *"Harifoch" "Modmadoch",* referring to go and chew Chat, smoke shisha to the newly established areas. People who stay in the town are considered as *"Mogn", "Fara* to mean uncivilized. Another participant explained the common practice of Saturday in Harar town by saying "you know Saturday is a special, unique day in Harar, most people chew khat, smoke shisha in the afternoon, then they go to *"Bote"* an area where most Bars are found in Harar town, during the night for drinking alcohol and enjoyment. Everybody becomes paired with his/her partner or CSW" and pass the night together as if there is no HIV Saturday night.

In contrast, only few of the discussants agreed that the pattern of HIV risk behaviors are decreasing because of the increased community awareness and understanding of HIV/AIDS as reasons.

5.2.5. What Conditions predisposing people to HIV risk behaviors?

The participants mentioned various conditions that predispose people to HIV risk behaviors. The majority of the discussants had agreed that poverty specially the current life challenges, availability of many pub/Hotels, high payment for paid sex, expansion of "*Chat Bet and Shisha Bet"*, expansion of pornography, open and ignorant behaviors of the people, and *"Tinat Bet"* local referring studying room, as a conditions predisposing to HIV risk behaviors. Moreover, lack of adequate knowledge, seeing condom use as *"Haram"* means sin among Muslims, misconception about condom, lack of recreational centers, lack of jobs opportunities, and lack of gymnasium were also stated as a predisposing factors.

One of the participants shared his friend's experience" He bought condom and failed to use it during sex by saying, you know I chewed chat and drink alcohol at night for enjoyment, and finally slept with CSWs". Why bother and use condom I may have the HIV virus because I had passed through many risky situation, then I throw the condom and made sex without condom.

5.2.6. What measures to be taken by the people to prevent HIV/AIDS?

The majority of the discussants agreed that people could prevent HIV/AIDS by applying Abstinence, Be faithful and use condom (ABC) rules and avoiding substance use such as Chat chewing, shisha and alcohol drinking. On the other hand, few discussants stated that pre-marital couple counseling and testing, being HIV tested and knowing HIV status, avoiding stigma and discrimination and holding open discussion about HIV/AIDS as additional measures that people have to take in the context of HIV/AIDS prevention only.

Few of the discussants also agreed that being married and get disciplined, avoiding Harmful traditional practice (HTPs) and avoiding sex before marriage as some of the measures to prevent HIV/AIDS.

5.2.7. What approaches/strategies to be instituted to prevent HIV/AIDS?

The participants mentioned various strategies to be instituted to prevent HIV/AIDS. The majority of the discussants agreed that strengthening massive community awareness about HIV/AIDS and substance abuse, creating job opportunities for youth, expansion of recreational centers, construction of gymnasium, creating IGAs for CSWs and strengthening community conversation like Shai-Buna programs as the maim approaches to prevent HIV/AIDS.

Few of the discussants stated that establishing Anti-AIDS clubs at schools, HIV/AIDS mainstreaming in every government organization, preparation of IEC materials leaflets, brochures by local languages and distribution, strengthening mini-media in the school and Harar FM and out reach strategies as approaches to be instituted to prevent HIV/AIDS. In addition designing strategies of using government officials managers/leaders or administrators, designing a system to reach house servants and students like integration of HIV/AIDS as one subject in the curriculum in the schools, Integrative work between Harari HAPCO and RHB with religious leaders and different institutions in the region and provision of care and support directly for PLWHAs who actually need it were also mentioned as a strategies.

5.2.8. What types of HIV/AIDS information delivery approaches used and its problems?

The participants mentioned various approaches used for HIV/AIDS education in Harar region. These were Community conversation like Shai-Buna program in every Kebele and Woreda, media such as ETV and Harar FM, HIV– related journals, leaflets and brochures in government organization and in the community. In addition, HIV/AIDS education at work place, schools and Edir, house to house HIV/AIDS education, involving all government workers from the Harari region president to every government workers as volunteer members were mentioned.

The discussants also agreed that lack of regional HIV news paper distribution, interruption of IEC material distribution such as leaflets, brochures, problems with Medias like irregularity and short air time, the content of the presentation, and repetition of similar information for long period as a problem associated with the approaches. One female discussant disclosed the degree of the stigma and discrimination created following HIV/AIDS information distributed via Harar FM saying "HIV/AIDS is found in the Urine and Sweat, so contact with Urine and Sweat can transmit HIV/AIDS" Even this morning, one HIV positive has come with this issue to Tesfagoh for allegation due to the fear in the community to clamp the hands of the PLWHAs as a result of information disseminated by Harari FM and Harari Regional Health Bureau.

The participants have mentioned resuming and strengthening the distribution of IEC materials, using *"Edir"* for HIV/AIDS education, integration of HIV/AIDS as one subject in the curriculum for schools, and designing a system to reach house servants and students as better approaches to deliver HIV/AIDS information, strengthening Harari FM on regularity, adequate air time, contents and ways of presentation.

5.2.9. Accessibility of HIV-VCT services and related problems in services Provision?

The majority of the discussants agreed that it is good but less in quality with gradual deterioration from time to time compared to the previous HIV-VCT services. The participants stated factors related to the VCT services were poor pre and post counseling, availability of exhausted and negligent counselors, confidentiality issue in most VCT centers, lack of care and support after HIV test for HIV positives, and inconveniency of VCT room which is dark and non-ventilated. One of male participants explained about the counseling practice by saying "for example.....if one goes to VCT center the counselor asks you only "why did you come?"...The client responds " to give blood" then the counselor asks directly to give blood without appropriate pre counseling, and also when the HIV test result is informed to the client, the client get shocked", this shows poor counseling. Few of the participants expressed to say that there is adequate VCT service provision in most VCT centers, good counseling services, good approach of the counselors, and availability of the service at any time necessary.

5.2.10. Any Barriers of VCT uptake and way forward to improve VCT Uptake?

The discussants have mentioned some factors as barriers of VCT utilization. The majority of the participants agreed that lack of confidentiality to be the first barriers of VCT uptake. The next was location of VCT centers where it is integrated with other service like ART clinic to be a barrier. More over, Fear of being HIV positive result, fear of stigma and discrimination, poor approach and lack of skills of the counselors, and lack of care and support after the test.

The participants also agreed on the way forward to improve VCT uptake, that were repeated awareness creation on VCT services at churches, Mosque, Edir, schools and on meetings, establishing VCT centers at separate confidential area and providing refreshment training for the counselor about VCT service.

6. Discussion

This study has attempted to highlight the socio demographic characterstistics and magnitude of HIV risk behaviors as well as the major risk behaviors for HIV infection among HIV-VCT attendees in Harari region where such information is scanty.

The study highlighted that higher (58.0%) females were affected than males (42.0%). These figures are similar to the previous study done among HIV-VCT center attendees of Addis Ababa, Ethiopian where (64.3%) females and (35.7%) males were affected (6). The proportion of female cases (58.0%) is lower than the Ethiopian study which is 64.3% while the proportion of male cases (42.0%) is higher than the Ethiopian study.

As to the reasons for visiting VCT centers, majority stated feeling illness by 73(51.0%) cases and 111(38.8%) controls followed by to know HIV status by 38(26.6%) cases and 105(36.7%) controls that may shows their previous engagement in risk sexual behaviors and might exposed them to HIV infection.

Studies in Africa demonstrated gender statistically associated with HIV infection (1-3, 20-21). An epidemiological synthesis of some of studies in Ethiopia revealed high HIV infection rate in women compared to men (1). In Tanzanian HIV-VCT attendees study done in Meshi, females appeared to be more associated with HIV sero-positivity (OR= 3.5; 95% CI= 2.0 to 6.3) (21). Simmilarly, the study conducted at HIV-VCT centers of Addis Ababa, Ethiopia high HIV infection was reported among female clients than males (OR= 2.66, P=0.001) (20). However, in our study high proportion of females was HIV sero-positive even though not statistically significant. To answer such discordant finding, further study is required.

Based on epidemiology of HIV infection among HIV-VCT centers attendees study in Botswana, clients who had received no formal education or completed primary education were more likely to be HIV positive than those with territory education (P< 0.001)(24). Another study conducted among VCT clients in 3 cities in Kenya also showed low educational level to be more likely to be HIV sero-positive (26). A study conducted in Addis Ababa, Ethiopian among VCT clients revealed higher educational attainment or tertiary having lower chance to be HIV positive as compared to the illiterates (OR=0.45; P=0.00) (20). In the contrary, the recent (2008) study done in Tanzania revealed no significant association between HIV infection and educational status (25). Our study finding is consistent with the Tanzanian study (25). This might indicates having equal level awareness on HIV/AIDS among individuals of different educational level.

Age in some studies was significantly associated with HIV infection. The study conducted on Socio-demographic characteristics and sexual behavior of HIV-VCT attendees at Betezata Hospital indicated that older age more likely to be HIV positive than younger clients (22). Another cross-sectional study done in rural Kilimanjaro region, Tanzania also showed those aged 25- 44 years having higher risk of HIV infection (33). Nevertheless, in this study, age was not significantly associated with HIV infection. So further detailed study is required to know the reasons for the discordant finding.

The prevalence rate of HIV is much higher in urban area in Ethiopia (1, 3, 23). Similarly, in our study, participants who lived in urban were found to be significantly associated with HIV sero-positivity compared to those who lived in rural area. This finding is consistent with a case-control study conducted at STIs clinic, in Port of Spain in Trinidad that Urban residence was demonstrated as a significant risk factors for HIV-1 infection (OR= 2.2; 95% CI= 1.6 to 3.0) (23).

In Ethiopia, as other countries, daily laborers, students and other mobile groups are the most vulnerable groups for HIV infection (1-3, 28). Similarly, the above risk groups were also identified in the present study. Being daily laborer was found to be positively associated with HIV infection while being students was negatively associated. Similar finding was obtained in the study conducted in Botswana. According to the study, 28% of employed attendees were more HIV sero-positive than 23.1% of unemployed clients (P<0.001) (24). The finding is also in line with another study conducted in South West Uganda that revealed employed persons more likely to be HIV sero positive than unemployed (P<0.05) (32). This underlines the need to do sensitization and campaign targeting the employed people. The protective factor of being students could be attributed to higher HIV/AIDS knowledge and exposure to HIV/AIDS message of the study participants.

In our study, there was no significant association between average monthly income of the respondents and HIV infection after controlling for other covariates. Our study finding was inconsistent with a study conducted in Rwanda among pregnant women. According to Rwandan study, high house hold income was strongly associated with HIV-infection (27).

In recent studies, marital status was shown significantly associated with higher risk of HIV positivity (1, 3, 32-33, 48). The Ethiopian DHS (2005) analysis found 2.1% of married individuals being HIV sero-positive (3). The finding in our study showed that never married clients 22(15.2%) were found less likely to be HIV-positive compared to those ever married 121(84.6%). This finding is supported by Ugandian study where never married had a lower HIV sero-positive than ever married (P= 0.005) (32). Similar finding was also reported in a previously done study among VCT attendees in Oromia and SNNPR regions, Ethiopia where HIV positivity were significantly higher among married than singles (P<0.001)(48).

Besides, in qualitative study having extra marital sex among married was indicated to be common in the region. The finding does not related with the VCT attendees response about extramarital sex and having more than one wife. This could be due to under report of their sexual life, risk sexual behaviors they had practiced before marriage, the hypothesis of “causal sex” being practiced with in married and low condom use.

Studies showed a significant association of alcohol use and Khat chewing with HIV infection (6, 35, 47-48). The present study revealed similar association where those who had ever drink alcohol were more likely to be HIV positive as compared to those never drink it. This finding is in line with other study conducted in Addis Ababa, Ethiopia. In the Study, HIV-infection was significantly higher among those who had ever drink alcohol (55.0%) in the past 12 months (6). The study conducted among the VCT attendees Surat in India also demonstrated the same finding where those who consumed alcohol were 1.13 times more likely to be HIV positive compared to those who did not consumed alcohol (35).

In this study, the majority of the cases 92(64.3%) and 170(59.4%) had chewed Khat. However, no significant association was observed between Khat chewing and HIV sero-positivtiy in bivarate analysis and in a step wise back ward multivariate analysis. The lack of significant association of Khat chewing with HIV sero-positivtiy is contrary to the previous case control study conducted among HIV-VCT attendees in Addis Ababa, Ethiopia that reported higher rate of HIV infection among chewers than non chewers (OR=1.97; 95% CI= 1.59 to 2.33) (48). The high proportion of alcohol drinking and Khat chewing even though Khat not significantly associated show that alcohol and Khat chewing as risk behaviors of HIV infection.

The qualitative study had showed alcohol intake, Khat chewing and Shisha smoking as risk behaviors in the region. The lack of significant association of Khat chewing might be related to low alcohol drink (35.0%) following Khat chewing to overcome sleeplessness and less sexual desire among Khat chewers in previous studies.

Several studies in sub-Saharan Africa reported association of sexual risk behaviors and HIV infection (1-3, 28). Ever had sex, having MSPs, history of STIs and paid sex were identified as key sexual risk behaviors (1-2, 28, 33-34). In the present study, ever had sex was found to be positively and significantly associated with HIV sero-positivity (AOR=3.94; 95% CI= 1.22 to 12.8). The same finding was reported in the study done in Addis Ababa, Ethiopia where 26.9% of VCT clients ever had sex more likely to be HIV sero-positive than never had sex (6.5%) (P=0.001)(20). Exposure to HIV infection occurring due to factors other than sexual practice have also contributed to 5.6% of the cases among those never had sexual practice. The consistent and higher sexual experience suggest that the mode HIV spread is heterosexual in the Harari region as other countries.

Higher number of life time sexual partners was significantly associated with higher HIV infection rate (1, 3, 28). The same finding was observed in this study where having two or more life time sexual partners more likely to be HIV sero-positive as compared to those with one life time sexual partner. This finding is consistent with studies conducted in Kenya and rural Kilimanjaro region of Tanzania. These studies showed having two or more life time sexual partners significantly associated with HIV infection (26, 33). Moreover, our finding is supported by the study done in Uganda where the life time number of sexual partners was indicated as risk factors for HIV infection in both sex (34). This finding also agree with the Ethiopian DHS (2005) that confirmed having number of sexual partners in one's life time associated with significantly higher rate of HIV infection(3).

In this study, those HIV-VCT attendees who had a history of STIs experience in the last 12 months had higher odds of HIV positivity than those who did not experienced STIs. This finding is line with different studies conducted in African country including Ethiopia (20, 41-42). The study conducted in Addis Ababa, Ethiopia reported significantly higher HIV infection among VCT attendees with history of STIs (P= 0.001) (20). In a retrospective cross-sectional study done in Jimma Hospital, Jimma, Ethiopia also history STI was identified as one of the leading risk factors for HIV infection (41). This finding was strengthened by qualitative study where the majority of the discussants in both sexes agreed on unprotected sex, having two or more life time sexual partners and history of STIs as the risk sexual behaviors. This shows the wide practice of sexual risk behaviors in Harari region and support the view that heterosexual contact is the predominant mode of transmission in Ethiopia.

Important finding in this study, sex in the last 12 months was negatively and significantly associated with HIV infection. This could be due to the fact that most of the participants reported having sex with regular partners (92%) which indicate application of one of the ABC rules “Be faithful”.

The Ethiopian epidemiological synthesis study revealed Casual sex significantly associated with a very high prevalence of HIV infection among who had sex in the last year (1). However, in this study, sex with casual sex was significantly associated in Bivarate analysis and removed in step wise multivariate analysis after controlling for other risk behaviors. This could be due to few numbers of participants reported about casual sex, under report of sexual behaviors and possibly recall bias.

In Ethiopia, as elsewhere commercial sex workers (CSWs) have been identified as the dominant high risk group (1). In this study, males who had sex with female commercial sex workers (CSWs) were significantly associated with risk of HIV infection in bivarate analysis and disappeared in multivariate analysis. The lack of association might be attributed to few numbers of male respondents reported their sexual history with CSWs and hiding sexual history due to sensitive nature of risk behaviors.

In our study, knowledge about HIV/AIDS transmission and prevention from one person to another was found to be the same between HIV positive and HIV negative of HIV-VCT center attendees on their current visit. This finding is consistent with the study done in Addis Ababa, Ethiopia among HIV-VCT center attendees on the association between substance use and HIV infection (6). This might also be an indication that knowledge alone is not a guarantee for behavior change.

In qualitative study, lack of regional HIV news paper; interruption of IEC materials distribution; problems related to Media such as irregularity and short air time, and repetition of similar information for long period were identified and agreed by the majority of the participants as a major gap related to HIV/AIDS information delivery approaches used in the Harari region.

As a solution resuming and strengthening the distribution of IEC materials, using *"Edir"* for HIV/AIDS education, integration of HIV/AIDS as one subject in the curriculum for schools and designing a system to reach house servants as well as strengthening Harari FM were forwarded as better approaches.

In addition, poor quality of VCT services with gradual deterioration from time to time was also indicated as problem. Poor pre and post-counseling service, availability of exhausted and negligent counselors, lack of confidentiality in most VCT centers, lack of care and support for HIV positives, and inconveniency of VCT room which is dark and non-ventilated were mentioned as barriers for VCT services utilization and the participants had forward repeated awareness creation on VCT services at churches, Mosques, Edir, schools and on meetings, establishing VCT centers at separate confidential area as well as providing refreshment training for the counselors as way to improve VCT service uptake.

7. STRENGTH AND LIMITATION

7.1 Strength

- The study used an appropriate design to assess HIV- risk behaviors for HIV infection could be cited as the strength of the study.
- The HIV risk behaviors obtained from quantitative study being further supplemented with qualitative study is strength of this study.
- The application of multiple logistics regression to control for the effect of confounding factors is another strength of this study.

7.2 Limitation

- The possibility of selection bias that may have been introduced when HIV-VCT attendees refuse to participate.
- There might be possibility of interview administered bias as the interviewers were health professionals.
- Social desirability bias due to sensitive and personal question related to sexuality.
- There was a possibility of recall biases during determination of some sexual behavior.
- Limitation of similar related literatures and research to compare and discuss some of the present findings.
- The findings of this study can not represent the general population, as only self selected people visited the HIV-VCT centers.
- Shortage of Time for data collection

8. CONCLUSION AND RECOMMENDATION

8.1 Conclusion

Our Study has concluded the following HIV–risk behaviors and those associated with HIV infection:

- Having two or more life time sexual partners was positively and significantly associated with male gender, age ≥ 25 years and above, urban residence, being unemployed and alcohol intake.
- Educational status grade 12 and above is found to be protective while alcohol intake is found to be a risk factor for sexually transmitted Infection (STIs).
- The study also identified the major socio-demographic factors associated with HIV infection in the studied community are urban residence and being daily laborers being the most important risk factors for HIV infection. Being a students and never married were found to be protective for HIV sero-positivity.
- In this study, from substance use, alcohol intake is responsible for exposure to HIV infection.
- All in all the strongest HIV risk behaviors for HIV infection identified and statistically significant with HIV sero-positivity among Voluntary HIV Counseling and Testing Centers attendees are ever had sexual experience, having two or more life time sexual partners, having history of STIs in the last 12 months. These findings support the view that heterosexual contact is the predominant mode of HIV transmission in Harari.
- No significant difference between cases and controls with regard to knowledge about HIV transmission and prevention methods.
- The qualitative study had indicated problems related to HIV/AIDS information delivery approaches and poor quality of HIV-VCT service provision.
- We believe that our study has important findings for strengthening of HIV/AIDS prevention and control program design and implementation in Harari region and areas with similar set-up.

8.2 Recommendation

Based on the findings of our study, we recommend:

1. To prevent further escalation of the HIV epidemic, efforts to scale up HIV prevention programmes addressing females and adults ≥ 25 years of age even though no statistically significant should be made.
2. Preventive efforts should focus on high risk groups, particularly in urban areas where the HIV prevalence is higher such as daily laborer, housewives and married people.
3. Government and other responsible bodies should design a strategy to control Substance use like alcohol drinking which were found to be responsible for the spread of HIV infection.
4. Emphasis should be given on behavioral change to prevent HIV infection, as knowledge alone does not help to combat the epidemic.
5. Promotion of condom use and distribution for all sexually active people.
6. Prevention efforts should also focus on sexual partner reduction, sexually transmitted Infection (STIs) through social mobilization and strengthening STIs services.
7. VCT service should be scaled up through regular refreshment training for counselors and establishing convenient set up, as well as repeated awareness creation through Faith based organization (Church, Mosque); and community based organization (Edir) and schools.
8. In addition to this, community based study needs to be carried out to identify the true magnitude of HIV risk behaviors and HIV infection among married people.

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10. ANNEXES

10.1. Annex I: Scoring: Knowledge on ways of HIV transmission and means of Prevention.

S.N	Variables	Knowledge scores		
		1= Yes	2= No	3= Don't Know
1	Ways of HIV transmission			
1.1	Unprotected sexual intercourse	1	0	0
1.2	Mother to child transmission during pregnancy.	1	0	0
1.3	Mother to child transmission during Brest feeding.	1	0	0
1.4	Injection with non- sterile needle.	1	0	0
1.5	Transfusion of infected blood	1	0	0
1.6	Sharing of sharp materials	1	0	0
2	Means of HIV prevention			
2.1	Abstinence	1	0	0
2.2	Avoiding multiple sexual intercourse/ partners	1	0	0
2.3	Using condom	1	0	0
2.4	Avoiding physical contact with PLWHA)	0	1	0
2.5	Avoiding sharing of sharp materials	1	0	0

10.2. Annex II: Quantitative research tool

ADDIS ABABA UNIVERSITY
MEDICAL FACULTY
SCHOOL OF PUBLIC HEALTH

Questionnaire of a study on assessment of HIV/AIDS and HIV risk sexual behaviors among clients seeking Voluntary HIV counseling and testing in Harari region conducted through AAU school of public health.

Information sheet:

My name is _____. I came from Addis Ababa University, Medical Faculty, School of Public Health. I am the member of the research team of Addiss Abeba University. I am going to have a short interview on the study conducted on HIV/AIDS/STI in all VCT centers in Harari region. Before we go to the interview, I am going to read to you about the purpose and general condition of the study and tell me whether you agree or disagree to participate in this study. I will interview clients seeking Voluntary HIV counseling and testing at all VCT centers in Harari region concerning HIV/AIDS and HIV risk behaviors, and their knowledge, attitude in the region. The purpose of this study is to assess the association between HIV infection and HIV risk behaviors among clients seeking Voluntary HIV counseling and testing, identify High risk behaviors in the transmission of HIV infection in region. In addition the results may provide useful information for prevention and control intervention, and program planning. So you are selected to be one of the participants in the study. The study will be conducted through interview.

I will ask you questions on your personal behaviors, the information you give is confidential and will be used only for the study purpose. A code number is used to identify every participant and no name will be used. If a report of the result is published, only summarized information of the total group will appear. The interview is voluntary; you have the right to participate, or not to participate or to refuse at any time during the interview. Your refusal will not have any effect on the services that you receive. However, your participation is important to fulfill the study and design appropriate HIV prevention and control intervention and program in Harari region and other similar set ups. I would like to appreciate your help in responding to my questions. If you have any questions or any thing that is not clear, please fell free to ask. The questionnaire may take 30 - 40 minutes.

Consent form

I have read the information sheet concerning the study/The researcher has described the purpose of the study and my rights to decide not to participate or discontinue my participation at any time in the process of the interview. So I have volunteered to participate in this study.

1. May I continue the interview?
   1.1. Yes ----------Continue the interview
   1.2. No ----------Stop the interview and thank the respondent.
2. Signature of Interviewee _____ Date _____
3. Interviewer's signature certifying that the informed consent is given verbally.
   3.1 Interviewer‘s name _____
   3.2 Interviewer’s signature_____ Date _____
4. Test result code: 1. Positive
   2. Negative
5. Questionnaire Identification Number_____
6. Name of Health Facility/ VCT center_____
7. Ownership: 1. Public 2. Private 3. NGO

8. Result: Questioner completed _____

Questioner partially completed _____

Participant refused _____

Others (please Specify) _____

9. Supervisor check;

Supervisor's Name: _____

Supervisor's Signature_____

Date _____

Contact address

- Principal Investigator

Contact address: 0911707950

E- mail: fzewdu@yahoo.com

- IRB Office:

Contact address: 0115538734

E- mail: aaumfirb@yahoo.com

Part 1: Socio-demographic Characteristics

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
101.	Record sex of the respondent	Male.....1 Female.....2	
102.	How old are you at your last birthday?	Age in yrs_____ I do not know.....88 No response.....99	
103.	What is the highest level of education that you attended?	Illiterate.....0 Able to read and write only.....1 Grade_____ Certificate.....2 University/College diploma.....3 University/ College degree.....4 Others(Specify)_____5	
104.	Where is your place of residence?	Urban.....1 Rural.....2	
105.	What is your religion?	Protestant.....1 Orthodox.....2 Catholic.....3 Muslim.....4 Others(specify)_____5	
106.	What is your ethnic group?	Amhara.....1 Oromo.....2 Gurage.....3 Tigre.....4 Harari.....5 Others (specify_)_____6	
107.	What is your current occupation?	Unemployed.....0 Government employee.....1 Merchant.....2 Driver.....3 House servant.....4 Daily laborer.....5 Student.....6 House wife.....7 Others (specify)_____8	
108.	What is your monthly personal income in Birr?	No income.....0 Br_____ I Don't know....88	

109.	What is your net average monthly household income when you compare it with your community members?	No income.....0 Br_____ I Don't know....88	
110.	What is your primary reason to seek HIV testing? (Only one response)	Yes No 1. Know self status 1 2 2. Suspect self 1 2 3. Not trust partner 1 2 4. Ill/symptoms 1 2 5. Premarital 1 2 6. Visa applicant 1 2 7. Referred 1 2 8. Confirm positive result 1 2 9.Test before pregnant 1 2 10. Pregnant, must know 1 2 11. Death/illness of partner 1 2 12. Occupational exposure 1 2 13. Sexual assault 1 2 14. For job 1 2 15. Other s(specify)_____	

Part Two: Substance use

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
201.	During the last 12 months, have you drink alcohol, if so how often have you had drinks containing alcohol?	Every day.....1 Twice a week.....2 At least once a week.....3 Less than once a week.....4 Never.....5 No response.....99	skip to Q → 204
202.	What was the type of drink you usually had?	Whisky.....1 Beer.....2 Draft.....3 Areke/Jen.....4 Tela.....5 Tej.....6 Other(Specify)_____ 7	
203	What is the usual amount that you take (use local measurement unit)?	_____	
204.	Some people have tried a range of illegal (non-medical) addictive drugs. Have you tried one?	Yes.....1 No.....2 Don't know.....88 No response....99	skip to Q → 207 → 207 → 207
205.	Which of the following, if any, have you tried? (Circle that apply)	Yes No DK NR Cocaine 1 2 88 99 Heroin 1 2 88 99 Cannabis 1 2 88 99 Marijuana 1 2 88 99	
206.	How long have you been using these illegal/non-medical/ addictive drugs?	Number of months [___]	
207.	Some people have tried injecting drugs using syringe. Have you injected drugs in the last 12 months?	Yes.....1 No.....2 Don't know.....88 No response....99	 → 212 → 212 → 212
208.	How long have you been injecting drugs?	Number of months[_____]	

209	During the past 12 months, how often would you say you injected drugs?	Only once .....1 2-3 times..... 2 About once a week.....3 2-3 times a week .....4 4 - 6 times a week..... 5 About once a day..... 6 2-3 times a day..... 7 4 or more times a day..... 8 Don't know .....88 No response.....99	
210	Think about the last time you injected drugs. Did you use a needle or syringe that had Previously been used by someone else?	Yes.....1 No.....2 Don't know.....88 No response.....99	→ 212 → 212 → 212
211	In the past 12 months, when you injected with needles or syringes that had previously been used, how did you clean them first?	Cold water.....1 Hot water.....2 Boiling.....3 Bleach.....4 Alcohol.....5 Use sterile syringe.....6 Never clean it.....7 Others(specify)_____8	
212	Have you chewed khat in the last 12 months?	Yes.....1 No..... 2 No response.....99	→ Q301 → Q301
213	How often did you chew khat in the last 12 months?	Every day.....1 Every two days.....2 Once a week.....3 Twice a week.....4 Once a month.....5 Occasionally.....6	
214	Do you feel sleeplessness after you chewed khat?	Yes.....1 No.....2 Don't know.....88 No response.....99	→ Q301 → Q301 → Q301
215	If so, what do you do to overcome this effect?	Drink alcohol.....1 Take hypnotics orally.....2 Inject hypnotics.....3 Do nothing.....4 Others(specify)_____5 No Response.....99	

216	Do these drinks and drugs increase your sexual desire and risky behaviors?	Yes.....1 No .....2 Don't know.....88 No response.....99	

Sexual behavior related for HIV

Part three: Marriage and live in partnership

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
301	Have you ever been married?	Yes.....1 No.....2 No response...99	If "no" skip to Q.303
302	How old were you when you first get married, Age in years?	Age in years_____	
303	What is your current sexual relationship? (Both Married and Unmarried)	Married and living with spouse.....1 Divorced & living with other sexual partner.....2 Divorced and not living with spouse or any other sexual partner.....3 Not married living with sexual partner .....4 Not married not living with sexual partner.....5 Spouse died and living alone.6 Others(specify)_____7 No response.....99	skip to → Q401 → Q401
304	If married Men; Do you have more than one wife Women; Do your husband have other wife?	Yes.....1 No .....2 Don't know.....88 No response.....99	
305	Men and Women: Do you have an extramarital sexual relationship?	Yes.....1 No.....2 No response...99	

Part Four: sexual history: numbers and types of partners. (Both Married and Unmarried)

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
401	For unmarried, Have you ever had sexual intercourse?	Yes.....1 No.....2 No response...99	skip to → Q.801
402	At what age did you first have sexual intercourse?	Age in years _____	
403	Would you tell me the number of life time sexual partners you had?	_____	
404	Have you had sexual intercourse in the last 12 months?	Yes.....1 No.....2 No response...99	

Part Five: Sexual history: regular partner

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
501	Did you have sex with regular partner in the past 12 months?	Yes.....1 No.....2 Do not remember....88	skip to → Q601 → Q601
502	If "yes" the last time you had sex with this regular partner, did you and your partner use condom?	Yes.....1 No.....2 Do not remember.....88 No response.....99	 → Q505 → Q504
503	If you used condom, who suggested condom use that time?	Myself.....1 My partner.....2 Joint decision.....3 Don't remember...88 No response.....99	
504	With what frequency did you and all of your regular partner(s) use condom during the past 12 months?	Every time.....1 Some times.....2 Don't know.....88 No response.....99	

505.	Why didn't you and your partner use a condom that time? (Circle all that apply, do not read the option)	Yes No 1. Not available 1 2 2. Too expensive 1 2 3. Partner objected 1 2 4. Don't like it 1 2 5. Used other contraceptive 1 2 6. Didn't think it is necessary 1 2 7. Didn't think of it 1 2 8.Others(specify)_____7 9. Don't know.....88	

Part Six: Sexual history: commercial partners /only for males/

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
601.	Did you have sexual intercourse with a commercial sex partner in the last 12 months?	Yes.....1 No.....2 Do not remember....88	→ Q701 → Q701
602.	If "yes" the last time you had sex with a commercial partner, did you and your partner use condom?	Yes.....1 No.....2 Do not remember.....88 No response.....99	→ Q605 → Q604
603.	If you used condom, who suggested condom use that time?	Myself.....1 My partner.....2 Joint decision.....3 Don't remember...88 No response.....99	
604	With what frequency did you and your commercial sex partner(s)) use condom during the past 12 months?	Every time.....1 Some times.....2 Don't know.....88 No response.....99	
605.	Why didn't you and your partner use a condom that time? (Circle all that apply, do not read the option)	Yes No 1. Not available 1 2 2. Too expensive 1 2 3. Partner objected 1 2 4. Don't like it 1 2 5. Used other contraceptive 1 2 6. Didn't think it is necessary 1 2 7. Didn't think of it 1 2 8.Others(specify)_____7 9. Don't know.....88	

Part Seven: Sexual history with non-regular, non-commercial partner.

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
701.	Did you have sex with non-regular, non-commercial sex partner during the last 12 months?	Yes.....1 No.....2 Do not remember....88	 → Q801 → Q801
702.	If "yes" the last time you had sex with no regular, non-commercial partner; did you and your partner uses a condom?	Yes.....1 No.....2 Do not remember.....88 No response.....99	 → Q705 → Q704
703.	If you used condom, who suggested condom use that time?	Myself.....1 My partner.....2 Joint decision.....3 Don't remember...88 No response.....99	
704	With what frequency did you and all of your non regular partner(s) use condom during the past 12 months?	Every time.....1 Some times.....2 Don't know.....88 No response.....99	
705.	Why didn't you and your partner use a condom that time? (Circle all that apply, do not read the option)	Yes No 1. Not available 1 2 2. Too expensive 1 2 3. Partner objected 1 2 4. Don't like it 1 2 5. Used other contraceptive 1 2 6. Didn't think it is necessary 1 2 7. Didn't think of it 1 2 8.Others(specify)_____7 9. Don't know.....88	

Part Eight: Condom use

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
801.	What is the use of condom? (Circle all that apply)	Yes No 1.To prevent pregnancy 1 2 2.To prevent STDs 1 2 3.Toprevent HIV/AIDS 1 2 4. Don't know 88 5. No response 99	
802	Which place do you know where you can obtain condoms? (Circle all that apply)	Yes No 1. Shop 1 2 2. Pharmacy 1 2 3. Market 1 2 4. Clinic/Hospital 1 2 5. Family planning center 1 2 6. Bar/hotel 1 2 7. Other_____7 8.Don't know.....88	

Part nine: Sexually transmitted diseases

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
901	Have you ever heard of diseases that can be transmitted through sexual intercourse?	Yes.....1 No.....2	
902	If yes, can you tell me those diseases that can be transmitted through sexual intercourse? (Circle all that apply)	Yes No 1. Syphilis 1 2 2. Gonorrhea 1 2 3. Chancroids 1 2 4. HIV/AIDS 1 2 5. Others(specify)_____ 6.Don't know.....88	
903.	Have you had genital discharge during the past 12 months?	Yes.....1 No .....2 Don't know.....88 No response.....99	
904.	Have you had genital ulcer/sore during the past 12 months?	Yes.....1 No .....2 Don't know.....88 No response.....99	

Part Ten: HIV/ AIDS knowledge attitude and opinion.

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
1001	Have you ever heard of HIV or the disease called AIDS?	Yes.....1 No.....2	→Q1101
1002	Do you know any one who is infected with HIV or who has died of AIDS?	Yes.....1 No.....2	
1003	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	Yes, a close relative.....1 Yes, a close friend.....2 No.....3 No response.....99	
1004	What are the modes of HIV/AIDS transmission? (Circle all that apply, do not the options)	1. Sexual intercourse 1.1.Yes 1.2.No 2.Mother to child transmission during pregnancy. 2.1. Yes 2.2. No 3.Mother to child transmission through breast feeding 3.1. Yes 3.2. No 4. Injection with non- sterile needle 4.1. Yes 4.2. No 5. Through infected blood transfusion 5.1. Yes 5.2. No 6. Sharing sharp objects 6.1. Yes 6.2. No 7.Others(specify)_____ 8.Don't know.....88	
1005	How can one protect herself/himself from getting HIV/AIDS? (Circle all that apply, do not the options)	1. Abstinence 1.1. Yes 1.2. No 2. Avoiding multiple sexual partnership 2.1 Yes 2.2 No 3. Using condom 3.1 Yes 3.2 No 4. Avoiding physical contact 4.1 Yes 4.2 No 5. Avoid sharing of sharp materials 5.1 Yes 5.2 No 6.Others(specify)_____ 88. Don't know	

1006	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	Yes.....1 No .....2 Don't know.....88 No response.....99	
1007	Can a person get HIV by sharing a meal with someone who is infected?	Yes.....1 No .....2 Don't know.....88 No response.....99	
1008	Can a person get HIV from mosquito bites?	Yes.....1 No .....2 Don't know.....88 No response.....99	
1009	Can people protect themselves from HIV virus that causes AIDS by using a condom correctly every time they have sex?	Yes.....1 No .....2 Don't know.....88 No response.....99	
1010	Can people protect themselves from HIV by having one uninfected faithful sex partner?	Yes.....1 No .....2 Don't know.....88 No response.....99	
1011	Do you think drinking alcohol leads to promiscuity?	Yes.....1 No .....2 Don't know.....88 No response.....99	

Part eleven: VCT

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
1101	I do not want to know the result, but have you ever had an HIV test?	Yes.....1 No .....2 No response.....99	skip to → 1106
1102	Please do not tell me the result, but did you find out the result of your test?	Yes.....1 No .....2 No response.....99	
1103	When did you have your most recent HIV test?	D/M/Y_____ Don't know.....88 No response.....99	
1104	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary.....1 Required.....2 Don't know.....88 No response.....99	
1105	Now, did you come voluntarily to undergo the HIV test, or are you required to have the test?	Voluntary.....1 Required.....2 No response.....99	
1106	If required: Who asked you to undergo HIV test?	Public health institution.....1 Private health institution.....2 Military institution.....3 Government institution.....4 Friend/relative.....5 NGO.....6 School.....7 Religious institution.....8 Embassy.....9 Others(specify)_____10	
1107	What are the benefits of VCT? (Circle all that apply))	1. To know HIV status Yes No 2. To take care in the future 1 2 3. To prevent partner from Infection 1 2 4. To prevent mother to child transmission 1 2 5. Others(Specify) _____ 6. Do not know.....88	

Part Twelve: EXPOSURE TO HIV/AIDS INFORMATION AND SERVICES

NO	QUESTIONS	CODING CLASSIFICATIONS	SKIP
1201	Have you received information about HIV/AIDS in the past 12 months?	Yes.....1 No .....2 No response.....99	Skip to →1205 → 1205
1202	Would you suggest the sources where you obtained the information? (Circle all that apply, read the option)	1. Television advertisements 2. Newspapers/magazines/books 3. Radio 4. Friend/co-worker/peer group 5. Pamphlets/brochures/posters 6. Health professionals 7. School 8. Movies/films and cinema show 9. Seminar/workshop 10. Community conversation (Buna Tetu) 11.Work place HIV/AIDS office 12. Others (specify)_____	Yes No 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
1203	If" radio" how frequent you have been listening in the last 12 months?	Always.....1 Most of the time.....2 Sometimes.....3	
1204	If" Television" how frequent you have been watching in the last 12 months?	Always.....1 Most of the time.....2 Sometimes.....3	
1205	Do you know any anti-AIDS clubs/associations in your locality?	Yes.....1 No .....2 Do not know....88	If "2, 88" End the intervie w here.
1206	Do you participate as membership in these clubs/associations?	Yes.....1 No 2	
1207	Do you think that these clubs/associations contribute in the prevention of HIV/AIDS?	Yes.....1 No .....2 Do not know....88 No response.....99	

This is the end. Thank you very much for the cooperation and the time spared in filling this questionnaire!!!

10.3. Annex III: Qualitative research tool

This discussion points were designed to collect qualitative data to provide explanations later on in the discussion part for the quantitative method findings.

Good morning/afternoon; welcome to our group discussion, I am Frezer Zewdu. I came from Addis Ababa University, Faculty of Medicine attending a post graduate study in school of public health. Currently I am doing my master thesis in Harari region on assessing HIV risk behaviors associated with transmission of HIV/AIDS and HIV infection, and the level of risk sexual practices in the region. We are here today to discuss about the HIV risk behavior which is practiced by the individual and in the community. You are free to talk what ever information you think on HIV risk behavior based on the topic guideline prepared. We expect all of you to participate in the discussion. We will use tape recorder and please speak one at a time in order the tape recorder can pick up everything. I assure you that you will not face any kind of harm for your participation in this study. What ever information that you give will be very useful and used for this study only, it is confidential. This information will help policy makers to design intervention activities based on research findings. Are you willing to participate in the discussion? Thank you for participation and genuine discussion once again.

- Date _____/_____/_____.
- No of participants: _____
- Sex of participants: Male: _____ Female: _____
- Time FGD started: _____
- Time FGD ended: _____
- Venue of the FGD: _____

Guidelines for Focus Group Discussions (FGD)

Thematic areas for discussion

1. Currently, do you think HIV/AIDS is a major health problem in Harari region? Why? How? Why not?
2. What kind of HIV- risk behaviors are contributing most to HIV/AIDS transmission and infection in this area? Why?
3. Which groups of people are at increased risk of acquiring HIV/AIDS? Why?
4. How do you explain the pattern of risky sexual practice, alcohol intake, and khat chewing and shisha in Harar town, comparing with the past?
5. What conditions predispose people to risky sexual practices and HIV/AIDS in Harari region?
6. What measures do people take to protect themselves from HIV/AIDS?
7. What approaches do you think should be instituted to prevent HIV/AIDS in your locality?
8. What kinds of HIV/AIDS messages were accessible to the population? Any problem with those approaches? Any suggestion on better approaches of delivering HIV/AIDS related information to your population.
9. How do you describe the accessibility of VCT services, VCT related information, and any problem with the services in the region.
10. Any Barriers in using VCT and suggested solutions to improve VCT uptake.

This is the end of our discussion. Thank you very much for your participation in the discussion.

10. Annex IV: Amharic version questionnaire

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1

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101		……1 ……2	
102	?	_____ ……88 ……99	
103	?	/ ……0 ……1 _____ / ……2 / ……3 ……4 _____5	
104	?	……1 ……2	
105	?	……1 ……2 ……3 ……4 _____ 5	
106	?	……1 ……2 ……3 ……4 ……5 _____6	
107	? ( )	……0 ……1 ……2 ……3 u? c ^ } ……4 ……5 ……6 ……7 . _____8	
108	?	……0 _____ ……88	
109	?	……0 _____ ……88	

110	? ( )	1. 1 2 2. 1 2 3. 1 2 4. 1 2 5. 1 2 6. 1 2 7. / 1 2 8. 1 2 9. 1 2 10. 1 2 11. / 1 2 12. 1 2 13. 1 2 14. 1 2 15. _____	

2

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201	12 ?	.....1 .....2 .....3 .....4 5	 5 204
202	 ?	.....1 .....2 .....3 / .....4 .....5 .....6 _____7	
203	 ?	 _____	
204	 / ?	.....1 .....2 ..... 88 99	 2 88 99 207
205	 ( )	1 2 88 99 1 2 88 99 1 2 88 99 1 2 88 99	
206	 / ?	 _____	
207	 12 ? _____ _____	.....1 .....2 .....88 99	 2 88 99 212

208		___________	
209	12 ?	……………………………1 2 3 …………………2 / …………3 2 3 …………4 4 6 ……….5 ………………………6 2 3 ……………7 4 ……….8 ……………………..88 ……………………..99	
210	?	……………………………1 ……………2 …………………88 …………………99	2 88 99 212
211	12 ?	……………………..1 ……………………..2 ……….3 ……………………………4 ……………………………5 ….6 …………………………7 ________________	
212	12 ?	……………1 ……2 ….99	2 99 301
213	12 ?	………………….1 …………2 …………3 ……….4 ……………5 ………………6	
214	?	………………….1 ……………2 …………88 …………99	2 88 99 301
215	?	………………….1 ….2 …..3 ………………….4	

		_____5 ……..99	
216		……..1 / ……..2 ……88 ……99	

3

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301	?	……1 ……2 ……99	2 99 303
302	?	_____	
303	? ( )	……1 ……2 ……3 ……4 …..5 / ……6 _____7 ……99	4 5 401
304	____ _____ ? ____ ?	……1 / ……2 ……3 ……4	
305	_____ ?	……1 ……2 ……99	

4 (
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401	?	……1 ……2 ……99	2 99 801

402	?	_____	
403	/ ?	_____	
404	12 ?	.....1 .....2 99	

5

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501	12 / / / ?	.....1 .....2 99	2,99 601
502	?	.....1 .....2 .....88 99	→ 505 → 504
503	?	.....1 .....2 .....3 .....88 99	
504	12 ?	.....1 .....2 .....88 99	
505	? ( )	1. 1 2 2. 1 2 3. / 1 2 4. 1 2 5. 1 2 6. 1 2 7. 1 2 8. _____ 9. 88	

6 ( )

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601	12 ?	.....1 .....2 99	2 99 701
602	 ?	.....1 .....2 .....88 99	→ 605 → 604
603	?	.....1 .....2 .....3 .....88 99	
604	12 ?	.....1 .....2 .....88 99	
605	 ? ( )	1. 1 2 2. 1 2 3. / 1 2 4. 1 2 5 1 2 6. 1 2 7. 1 2 8. _____ 9. 88	

7

.			
701	12 ?	.....1 .....2 99	 2 99 801
702	 ?	.....1 .....2 .....88 99	→ 705 → 704

703	?	.....1 .....2 .....3 .....88 99	
704	12 ?	.....1 .....2 .....88 99	
705	? ( )	1 2 1 2 / 1 2 1 2 1 2 1 2 1 2 _____ 88	

¡ õM 8: ¢ ÊU

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8®1	¢ ÊU KU ÃÖpT ? ( )	: - : Ã •`Ó´ KSxLxM 1 2 ¾: vL²` ui• KSxLxM 1 2 :? .: Ã y= :?É KSxLxM 1 2 :L¨‹pU..... 88 SMe ¾KU.....99	
8®2	¢ ÊU x¾' ¨‹ x• : ÅT›ÁÑ‹ /K=ÁÑ‹ T›9K‹ Á¨‹nK‹? ( )	: - : Ã xc‹p 1 2 1 2 xÑuÁ 1 2 xxK=›¡/xJeú•M 1 2 1 2 xu‹ u?'/J M 1 2 K?L "K ÃÓKì_____ :L¨‹pU 88	

¡õM 9: eK : vK² ` u i •

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901	uÓw[eÒ Ó ‹ ’ K=}LKõ cK T›9 K‹ u i • - 9 c U } ¨‹ Á¨‹nK‹;	: -……1 : Mc T G‹U……2 S Me ¾KU……99	
902	uÓw[eÒ Ó ‹ ’ K=}LKñ eK 9 K‹ u i • - 9 K= Ó		

1005	: É c ¨‹ :?9 : y= Ã9 LM; ( )	: - : Ã 1. Ów[eÒ Ó ‹ ’ 1 2 2. 9 : Ã . 1 2 3. 1 2 4. 9 : Ã 1 2 5. 9 : Ã 1 2 6. _____ 7. : L¨‹pU 88	
1006	Ö? T S cM c - 9 :?Ée uT›ÁS × zÃ[e ¾}Ö l K=J ‹ Ã9 LK‹ wK¨‹ ÁevK‹;	: - .....1 : LewU.....2 : L¨‹pU.....88 S Me ¾KU.....99	
1007	: É c :?9 : y= xÁ²¨‹ c¨‹ Ò` UÓw uS wL ’ :?9 : y= Ã² Ã9 LM ;	: - .....1 : Ã9 MU.....2 : L¨‹pU .....88 S Me ¾KU 99	
1008	: É c¨‹ u¨v ’ Ü : T " Ü ’ :?9 : Ã y= K=Ã² Ã9 LM ;	: - .....1 : Ã9 MU.....2 : L¨‹pU .....88 S Me ¾KU 99	
1009	- 9 uÓw[eÒ Ó ‹ ’ ¨p ’ ¢ ÊU u ’ ¡¡M uS Ö U •^d ¨‹ :?Ée xT›ÁS ×¨‹ :?9 : Ã y= zÃ[e S LxM Ã9 LK‹ ;	: - .....1 : Ã9 MU.....2 : L¨‹pU .....88 S Me ¾KU 99	
1010	- 9 u 9 : Ã y= "M}Á² : É T Ü ÕÅ Ò` uS J •^d ¨‹ S xLxM Ã9 LK‹;	: - .....1 : Ã9 MU.....2 : L¨‹pU .....88 S Me ¾KU 99	
1011	: M¢M ’ ÁL ¨‹ S ÖÙ9 S Ö× ’ Mp ¨Å J ¾Ów[eÒ Ó ‹ ’ K=Ñóó Ã9 LK‹;	: - .....1 : Ã9 MU.....2 : L¨‹pU .....88 S Me ¾KU 99	

¡ õM 11: ¾: ?9 : y= U¡ ` U ` S ^ : ÑMÓKA ' u } SKx }

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1101	¨‹Ö?~ T ¨p : MðMÓU Ó x²=I uò ' ¾: ?9 : Ã y= U ` S ^ : É ` Ñ ª M ;	: - .....1 : LÅ[x‹U.....2 SMe ¾KU.....99	2 99 1105
1102	•v¡ - ¨‹Ö?~ : Ã Ñ Ü Ó ¾U ` S ^ ¨‹ ¨‹Ö?' : Ó Ü} ª M ;	: - .....1 : LÑ G‹U.....2 SMe ¾KU....99	
1103	up ` w ÁÅ[Ñ‹' ¾: ?9 : Ã y= U ` S ^ ;	/ / _____ : Le • ¨‹eU.....88 SMe ¾KU.....99	
1104	¾: ?9 : Ã y= U ` S ^ ¨‹ ÁÅ Ñ‹' u^e - õnÉ u` ¨Ãe • Ç=ÁÅ ` Ñ‹ } ÖÃk ¨‹ ¨‹;	u^c? ðnÉ u`.....1 } ÖÃo ¨‹.....2 : Le • ¨‹eU.....88 SMe ¾KU.....99	
1105	: G‹ e U ` S ^ ¨ K=ÁÅ ` Ñ‹ ¾SÖ‹' u^e - ðnÉ ¨‹ ¨Ãe • Ç=ÁÅ ` Ñ‹ } ÖÃk ¨ ¨‹;	u^c? ðnÉ u`.....1 } ÖÃo ¨‹.....2 SMe ¾KU.....99	
1106	x } Ö¾l T U ` S ^ ¨‹ • Ç=ÁÅ ` Ñ‹ ¾Ö¾q ' ;	¾lw[} cw Ö? } sU..... 1 ¾ÓM Ö? } sU .....2 ¨ • Å^© } sU.....3 ¾S Óe ' } sU.....4 ÕÅ ¨ÃU ² SÉ.....5 S Óe • © ÁMJ É ` Ï ' .....6 ' UI ` ' u?' .....7 ¾ ÃT "9 } sU.....8 : ?Uvc=.....9 K?L "K ÃÓKì‹_____10	
1107	: ?9 : Ã y= U ` S ^ ; ( )	: - : Ã 1. 1 2 2. 1 2 3. ÕÅ : ?9 : Ã y= 1 2 4. 1 2 5. K?L "K ÃÓKì‹_____ 6. : L ¨‹pU 88	

¡õM 12: ¾: ?9 : Ã y= S [Í : ÑKÓKA'

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1201	vKñ' 12 ¨^' eK :?9 : Ã y=/¾: vL²` ui • ¾T›SKx' S [Í cU} ¨‹ Á¨‹nK‹;	: - .....1 : KcTG‹U.....2 SMe ¾KU....99	2 99 1205
1202	S [Í¨‹ x¾' ¨ÃU xT :Ñ ‹;	K?y= » ..... 1 Ò²?×/S îH¦' .....2 _Ç=Ä.....3 ÕÅ .....4 ¾: ?9 : Ã y= u^] ¨[k' .....5 ¾Ö? vKS‹Á.....6 '/u?' .....7 xòMU.....8 xc?T› ` x¨`¡ j .....9 ( )..10 xSe]Á u?' :?9 : Ã y ....11 K?L "K ÃÓKì‹_____	
1203	_Ç=Ä v ñ' 12 ¨^' ¨‹eØ ;	.....1 .....2 3	
1204	K?y= » v ñ' 12 ¨^' ¨‹eØ ;	.....1 .....2 3	
1205	:"vu= - ¾ì[-:?Ée ¡uu‹ • K Á¨‹nK‹;	: - .....1 ¾KU.....2 :L¨‹pU.....88	¾KU .
1206	: - xJ ¾ ì[-:?Ée ¡u :vM "' ¨Ã;	: - .....1 ¾KU.....2 :L¨‹pU.....88	
1207	• ²=I ¾ì[-:?Ée ¡uv' 9 : Ã y= uSxLxM :e}ªî* ÁÅ`ÒK‹ ;	: - .....1 :ÁÅ`Ñ‹U.....2 :L¨‹pU.....88 SMe ¾KU....99	

ÃI ¾SÖÃI ¾S Ú[h ¡õM ¨‹:: Ñ›²?- ¨eÅ¨‹ ØÁo - 9 uS SKe eK}vu

10.5. Annex V: Declaration

1. Declaration of the Principal Investigator

I, the undersigned, declared that this thesis is my original work in partial fulfillment of the requirements for the degree of master of public health. All the sources of the materials used for this thesis and all people and institutions who gave support for this work are fully acknowledged.

Name- Frezer Zewdu

Signature- _____

Place of submission – School of public Health, Medical Faculty,

Addis Ababa University

Date of submission _ February, 2010

2. Approval of the Primary Advisor

This thesis work has been submitted for examination with my approval as the university advisor.

Advisor's name – Dr Jemal Hayder (MD., M.Sc, DRM. Associate professor)

Signature _____

Date _____