

ADDIS ABABA UNIVERSITY
SCHOOL OF PUBLIC HEALTH

Assessment of premarital HIV testing results and discordant rate and factors associated with them in public voluntary counseling and testing centers in Addis Ababa

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SCHOOL OF GRADUATE STUDIES**

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DECLARATION

I, the undersigned, declare that this is my original work and has never been presented in this or any other university and that all the source materials used for the thesis have been fully acknowledged.

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Abbreviations

AAU	Addis Ababa University
AAU-MF	Addis Ababa University-Medical Faculty
AIC	AIDS Information Center
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal care
AOR	Adjusted odds ratio
ART	Antiretroviral therapy
CI	Confidence interval
CSA	Central Statistical Authority
DPCD	Disease prevention and control department
EC	Ethiopian calendar
EDHS	Ethiopian Demographic and Health Survey
EPHA	Ethiopian Public Health Association
FMOH	Federal Ministry of Health
HAPCO	HIV/AIDS Prevention and Control Office
HIV	Human immunodeficiency virus
IV	Intravenous
MPH	Master of public health
OR	Odds ratio
PI	Principal Investigator
RR	Relative risk
SPSS	Statistical package for social science
SSA	Sub Saharan Africa
STD	Sexually transmitted disease
STIs	Sexually transmitted infections
UNAIDS	United Nations Program on AIDS
VCT	Voluntary counseling and testing for HIV
WHO	World Health Organization

Abstract

Introduction: - Understanding and monitoring the prevalence of Human immunodeficiency virus (HIV) infection among premarital clients and discordant rate among premarital couples and applying specific interventions targeted at this group could bring dual benefit as it prevents both heterosexual and vertical transmission of the disease.

Objective: - The main objective of this study was to assess the prevalence of HIV and discordant rate and factors associated with them among premarital voluntary counseling and testing (VCT) clients in public VCT centers in Addis Ababa.

Methods: - A cross-sectional facility based study was conducted from March to April 2008. Seven public VCT centers were selected using simple random sampling. Then all consecutive premarital VCT clients were interviewed until the required sample size was attained using pre- tested structured questionnaire. Data were entered using Epi-info 2007 version 3.4.1 and analysis was carried out using SPSS-13 statistical packages.

Results:-Of 392 premarital VCT clients who participated in the study, 32 (8.2%) were sero positive for HIV. HIV sero status was significantly associated with the number of life time sexual partner (AOR=9.06(2.66-30.83)), previous history of HIV testing (AOR=6.70(2.32-19.35)) and type of VCT service utilization (AOR=4.17(1.53-11.36)). Out of 276(138 couples) who presented as couple, 6.5% were found to be sero discordant, while concordant negative and concordant positive accounted for 92.0% and 1.4% respectively. Significantly higher rate of sero discordance was observed among participants who had more than one life time sexual partner, (AOR=15.06(2.87-79.17)) and who lack history of previous HIV testing (AOR=13.91(3.08-62.91)). Both HIV sero

positivity and discordance were relatively higher among those who previously separated/divorced and widowed partners.

Conclusion and recommendation: - As considerable prevalence of sero positivity and sero discordant among premarital couples were observed in this study, every effort to be exerted to make premarital couples aware of their own and their partners' sero status before engagement was recommended.

1. Introduction

Even though promising global efforts have been seen in increasing effective treatment and prevention programs, the number of people living with human immunodeficiency virus (HIV) is still high, as does the number of Acquired Immunodeficiency Syndrome (AIDS) deaths. According to UNAIDS/WHO report the estimated number of persons living with HIV worldwide in 2007 was 33.2 million [30.6-36.1 million], a reduction of 16% compared with the estimate published in 2006 (39.5 million [34.7-47.1million]). It is emphasized that these differences between estimates published in 2006 and those published in 2007 result largely from refinements in methodology, rather than trends in the pandemic itself (1). For this reason, it is inappropriate to draw conclusions by comparing 2007 estimates with those published in 2006(1). There were also 2.5 million and 2.1 million new HIV infections and AIDS deaths in 2007 respectively (1).

Sub-Saharan Africa has just over 10% of the world's population, but is home to the majority of people living with HIV (2). It is the area more affected by the disease than any other region of the world. An estimated 22.5 million people were living with HIV at the end of 2007 and approximately 1.7 million additional people were infected with HIV during that year. In just the past year, the AIDS epidemic in Africa has claimed the lives of an estimated 1.6 million people in this region. More than 11 million children have been orphaned by AIDS in this region (3).

Ethiopia is among the countries most heavily affected by the HIV epidemic (4). According to health and health related indicators report, the national HIV prevalence is estimated to be 2.1%. About 1,922,666 people utilized VCT service in 1999 E.C and of whom 7.4% were positive for HIV (5). The report also revealed that, HIV prevalence in Addis Ababa is estimated to be 7.5%. A total of 316,178 people utilized VCT service in Addis Ababa in the same year and 11.9% of them became HIV positive (5).

HIV counseling and testing is the key entry point to prevention, care, treatment and support services where people learn whether they are infected, and are helped to understand the implication of their HIV status and make informed choice for their future. Currently, there are three types of HIV testing in Ethiopia, these are, client oriented voluntary counseling and testing (VCT), provider initiated testing and counseling and mandatory HIV testing (e.g. for blood donors) (6).

Voluntary counseling and testing for HIV (VCT) has been identified as a cost-effective measure for the prevention and control of HIV (7). It is widely recognized that individuals living with HIV who are aware of their sero status are less likely to transmit HIV infection to others like their partners, and that through testing they can be directed to care and support that can help them to stay apparently healthy. VCT also provides benefit for those who test negative, in that their behavior may change as a result of the test (3). Voluntary HIV counseling can also be one of the promising approaches to increase HIV screening, prevention, and control (8).

Premarital voluntary HIV counseling and testing is one way of preventing both vertical and heterosexual transmission of the virus (9). It also helps couples make informed decisions and adopt risk reduction strategies. Assessing the magnitude of HIV among premarital VCT clients and factors associated with it can help to direct intervention measures towards these groups. In addition, understanding the prevalence of HIV infection among premarital clients and discordant rate among premarital couples may help to consider issues like making premarital test mandatory.

The prevalence of HIV and discordant rate among premarital clients and factors associated with test results are not well-studied and documented in Ethiopia. Therefore, this study was conducted to assess the prevalence of HIV and sero discordance among premarital VCT clients and factors associated with them in public VCT centers of Addis Ababa.

2. Literature review

2.1. The magnitude of HIV/AIDS

The UNAIDS/WHO report revealed that globally 33.2 million people were living with HIV in 2007, which is 16% less than the estimate published in 2006 (39.5 million). About 2.5 million (2.1million adults and 420 000 children under 15) were newly infected with HIV in the same year. There were also 2.1 million (1.7million adults and 330 000 children under 15) AIDS deaths in that year (1).

Sub-Saharan Africa remains the most affected region in the global AIDS epidemic. More than two thirds (68%) of all HIV-positive people live in this region where more than three quarters (76%) of all AIDS deaths in 2007 occurred. It is estimated that 1.7 million [1.4 million-2.4 million] people were newly infected with HIV in 2007, bringing to 22.5 million [20.9 million-24.3 million] the total number of people living with the virus. Unlike other regions, the majority of people living with HIV in sub-Saharan Africa (61%) are women (1).

HIV prevalence in Ethiopia is estimated to be 2.1% with 1.7% and 2.6% for males and females respectively. About 977,394 people were living with HIV & 125,528 additional people were newly infected in 2006/07. There were also 71,902 AIDS deaths occurred in the same year. HIV prevalence in Addis Ababa is estimated to be 7.5% with 6.0% & 8.9% for male & female respectively. About 156,577 people were living with HIV&

21,585 people were newly infected in 2006/07. There were also 7,993 AIDS deaths occurred in the City in the same year (5).

According to the ANC sentinel sites report of the 6th AIDS in Ethiopia Report, the prevalence of HIV among pregnant mothers was 5.3% (9.5% urban and 2.2 rural). Overall, the ANC-based HIV Sentinel Surveillance results show that the national and rural HIV prevalence for Ethiopia has stabilized, while the urban epidemic reveals a slow and gradual decline following peaks in prevalence in 1998-2000 for national, 1999-2001 for rural, and 1997-98 for urban areas (10).

2.2. HIV counseling & testing

Knowledge of HIV status is the gate way to AIDS treatment and has documented prevention benefits; however, the uptake of HIV testing service is low, largely because of fear of stigma and discrimination (2). Voluntary HIV testing, in combination with pre and post –test counseling, has become increasingly important in national and international prevention and care efforts. VCT facilitates access to Care and Support of HIV infected and affected people. Program experiences have also shown that VCT is one of the factors that help to reduce stigma and secrecy surrounding HIV /AIDS (9).

A study conducted among 149 sero-discordant couples in Kinshasa (Congo), demonstrated a marked increase in condom use following VCT intervention, from less than 5% before the VCT intervention to 70% following the intervention (11). Another study conducted in Rwanda on the impact of VCT in a cohort of women indicated an

increase in condom use from only 7% having ever used condom before the intervention, to 16% in HIV sero-negative women and 35% in HIV sero-positive women after the intervention (12). Analysis of data from 3000 clients receiving VCT at the AIDS Information Center (AIC) in Uganda demonstrated a substantial reduction in risk behaviors at 3 and 6 months following the intervention (13).

In 1995-96, the Voluntary HIV-1 Counseling and Testing efficacy study group carried out a clinical trial in Kenya, Tanzania, and Trinidad, to determine whether VCT was effective in reducing risk behavior associated with sexual transmission of HIV-1. The study showed that the proportion of individuals reporting unprotected intercourse with non-primary partners declined significantly more for those receiving VCT than those receiving health information (men, 35% reduction with VCT vs 13% reduction with health information; women, 39% reduction with VCT vs 17% reduction with health information), and these results were maintained at the second follow-up (7). Couples from the counseling and testing group also showed a greater change in terms of less unprotected intercourse with each other and more abstinence from sex. Another study conducted to assess the effectiveness of VCT in reducing sexual transmission of HIV, showed that although VCT is not as cost-effective as improvement of sexually transmitted disease services, VCT is more cost-effective when it is targeted to high-risk groups (14). Many of the couples enrolled in the study made some changes in their sexual lives.

Despite the personal implication of knowing ones HIV status, the vast majority of HIV infected people don't know their HIV status (15, 16, and 17). According to the national HIV/AIDS prevention and control office (HAPCO) 2005/2006 report, utilization of VCT is far below the target, representing only 16.4% of the national target. Only 4% of the population has ever been tested for HIV (18). With the development of affordable and effective medical care for people living with HIV, demand for testing is increasing rapidly, creating urgent need to increase access (6).

2.3. Premarital HIV testing and HIV prevalence among premarital clients

Most HIV infection in Sub-Saharan Africa occurs during heterosexual intercourse between couples in a relationship. Premarital HIV counseling and testing protect individuals from infection by HIV sero-positive partner. This in turn protects their infants from HIV infection (19).

In many high HIV prevalence countries, parents of young people and religious organizations are promoting pre-marital HIV testing, for instance, Catholic community organizations in Nigeria (20). Analysis of VCT clients at AIDS Resource Center (AIC) in Uganda showed that, there was a steady increase in demand for premarital HIV testing from 6% in 1992, 17% in 1993, 21% in 1994, 28% in 1995, 33% in 1997 and 35% in 1998 (21). The study also analyzed data of the 1997 premarital VCT clients and showed that 64% of all premarital VCT clients came with their prospective partners. In the study,

sero positivity was much lower among clients intending to get married (6.3%) than those who gave another reason (25%) (21).

The Ethiopian HIV policy encourages premarital HIV counseling and testing; the policy statement states, “Pre- engagement, premarital, and preconception counseling and testing will be promoted” (6). Premarital HIV testing is becoming a custom by communities in some part of the country, for example, Guraghe Zone, Southern Nations Nationalities and people. Study conducted on magnitude and determinants of utilization and demand for pre-marital VCT in civil marriages in Addis Ababa, Ethiopia, showed that out of the total number of respondents, 356 (55.6%) reported to have had pre-marital HIV testing (56.6% of males and 54.7% of females) (22). The remaining 284 did not have pre-marital HIV testing, and the reasons given for not doing so were reported to be not feeling at risk (57.8%), having never thought about it (23.9%), having had HIV testing for another reason (8.1%), fear of a positive test result (4.9%), and fear of stigma (4.6%).

A study done in Kenya among VCT clients showed that 15% of all attendants of the VCT sites gave premarital testing as a major reason for attending & of all premarital clients, only 25% presented as a couple (23). Previously married, widowed, or divorced persons accounted for 12% of premarital clients (23).

A study conducted in south- eastern Nigeria among individuals referred from faith-based organizations for mandatory pre-marital HIV screening indicated that the prevalence of HIV was 7.8%, with 8.8% & 7% among male and female participants respectively (24).

Another study conducted in Port Harcourt, Nigeria on premarital HIV testing in couples from Faith-based organizations, showed that among the 168 individuals tested, 20.8% were found to be positive. (25). A study done in Mexico where premarital HIV testing is mandatory showed that the prevalence of HIV among premarital clients was 0.04%, which was similar to the general population (26).

Two blinded or non-linked HIV-1 surveys conducted in New Jersey to answer questions related to the usefulness of premarital testing for HIV-1 indicated that of the 4247 specimens tested, 21(0.49%) were positive in the 1987-1988 survey and among 4696 specimens in the 1989 survey 29(0.62%) were positive (27). These percentages of premarital HIV-1 infections were higher than earlier estimates and reports and the authors recommended voluntary HIV-1 counseling and testing for marriage applicants in New Jersey.

A study conducted in Addis Ababa among VCT clients to assess the relation between drug use and HIV infection indicated that 11.1% of the total VCT clients were premarital clients (28). It also indicated that the prevalence of HIV infection among the total VCT clients was 25.1% and that of premarital clients was 13.2 %.

2.4. Voluntary counseling & HIV testing of couples and sero discordant rate

The HIV sero-negative partners of people with HIV are the group of individuals who are at greatest risk of contracting HIV through sexual transmission. As measures to decrease

sexual transmission among the general population have been seen to be effective, it is likely that specific interventions targeted at this high-risk group could bring additional benefit (29). The prevalence of sero-discordant couples in populations varies. In sub-Saharan Africa, studies have found rates of 3–20% in the general population, and higher rates of 20–35% in studies of those presenting to voluntary counseling and testing (VCT) services (29).

In a longitudinal study of couples in Tanzania, risk of HIV for a sero-negative partner in a sero-discordant couple was several folds higher than that of partners in sero-concordant HIV negative couples (RR 57.9, 95% CI 12 to 244) (30). Similar increased risk was seen in studies conducted in Uganda, where females in sero-discordant marriages were reported as having twice the infection risk of males (31, 32). Another study conducted in Uganda to identify HIV-infected members and HIV-discordant couples in households of individuals taking antiretroviral therapy showed that, of the 120 spouses of ART patients that were tested for HIV, 52 (43%) were HIV negative, and of these, 99% had not been previously tested (33).

A study conducted in Chennai, India to assess HIV prevalence among couples showed that in 65% of couples both partners were infected (sero-concordant) (34). Heterosexual intercourse is the primary risk factor. Concordance was related to, sex with commercial sex workers for men and to genital ulcer disease for women. Condom use increased among all couples after HIV diagnosis (34). A study conducted in Kenya revealed that, of 1,096 couples tested pre-maritally, 15% were serologically discordant, one partner being

HIV-infected and the other negative (23). In the majority of discordant premarital couples, it was the women who were HIV-infected.

A study conducted on assessment of couple voluntary counseling and testing service utilization at Addis Ababa government hospital VCT sites indicated that the overall prevalence of HIV was 21%, with 62% females and 38% males. And among the couples enrolled in the study, 6.6% were sero-discordant (35). According to EDHS 2005, the prevalence of HIV among couples was 2.1% (at least one of the partners is infected) and sero-discordant rate was 1.8% (only one of the partner is infected) (36).

Study conducted on socio-demographic and behavioral determinants of sero-discordance among couples taking HIV test in Dessie (Ethiopia), in which of all couple types considered in the study 83.6% were premarital couple, indicated that 9.8% were found to be sero discordant, while concordant positive and concordant negative accounted for 0.93% and 88.3% respectively. In the study, only 11.9% of the participants reported to be HIV tested previously (37).

2.5. Factors associated with premarital HIV test results and discordant serum outcome

HIV transmission is not a random event; the spread of the virus is profoundly influenced by the surrounding social, economic and political environment (2). Efforts to prevent the spread of HIV need to focus both on individual behaviors and on the broad structural factors underlying exposure to HIV.

In a study conducted in Kenya revealed that the prevalence of HIV infection in all premarital females was 14% compared with 8% in premarital males. It also showed that those previously married (OR 1.7 (1.2-2.3); divorced (OR 1.9 (1.4-2.5); or widowed (OR 6.3 (4.4-9.0) had significantly higher rates of HIV infection than single persons (23). Other significant risk factors identified in the study include gender, educational level and coming for VCT alone.

Another study done in Nigeria among individuals referred from faith-based organizations for mandatory pre-marital HIV screening revealed that the highest prevalence of HIV infection (8.9%) was recorded among individuals in the 21–30 years age category, while the least HIV infection prevalence (5.3%) was observed among persons above 40 years old (24). There was no significant difference in the association between HIV infection and age (P-value= 0.05).

The study conducted in Port Harcourt, Nigeria on premarital HIV testing in couples from Faith-based organizations, showed that infection rate was highest in the 25-29 years group (29.7%, n=22) and lowest in those of 35-39 years (6.1%, n=2), though this difference was not statistically significant (p-value=0.058) (25). Infection rate was significantly higher among females (p-value=0.036); among prospective participants from Orthodox churches (p-value=0.021); participants with prolonged courtship (>6 months) (p-value=0.0001); participants with history of pre-marital sex (p-value=0.0001); and participants with history of cohabitation (p-value=0.0001) (25).

In a study conducted in Addis Ababa to assess the relation between drug use and HIV infection, alcohol drinking was found to be associated with serum HIV positivity after controlling for other confounding variables. While young age of 15 to 24 and being single were found to be associated with serum HIV positivity and having monthly family income was found to be protective against HIV infection (28).

In a study done in Addis Ababa among VCT clients from hospitals, HIV sero positivity was 41.8% in the age group 18 - 24 while 43.6% in the age group 45 and above. More than one quarter, (29.4%), of the married study subjects were sero positive (35). HIV infection rate was highest among the widowed (64.5%) and divorced (53.2%) and lowest among those who were never married (12.5%). Among those who had never gone to a regular school, 34% were HIV positive, 29.1% were sero-positive among elementary completed and 17.1% were sero-positive among the secondary and above education level. Of those who were individual VCT users, 24.5% were sero-positive and 10.3% were sero-positive among couples (35).

A study conducted among street dwellers in Gondar City, North West Ethiopia, showed that HIV prevalence in females (11.8%) was significantly higher than that in males (5.1%), OR=2.5(1.1-5.8) (38). HIV sero positivity also was significantly associated with the number of sexual partners ($p < 0.0001$) (38). A study conducted in Dessie revealed that 13.7% of married couples were found to be discordant, while the prevalence of sero discordance among never married was 6.2% (37). Higher prevalence of discordant serum

outcome was also observed among separated and divorced partners (21.4%) and (21.8%), respectively (37).

3. Statement of the problem

Most HIV infection in Sub-Saharan Africa occurs during heterosexual intercourse between couples in a relationship (19). Premarital voluntary HIV counseling and testing is one way of preventing both vertical and heterosexual transmission of the virus (9). It also helps couples make informed decisions and adopt risk reduction strategies.

The HIV sero-negative partners of people with HIV are the group of individuals who are at greatest risk of contracting HIV through sexual transmission (29). Understanding and monitoring the prevalence of HIV infection and discordant rate among premarital couples and applying specific interventions targeted at this group could bring dual benefit. In addition, it may help to consider issues like making premarital test mandatory. Yet, little is documented about prevalence of HIV among premarital clients and discordant rate among premarital couples and associated factors.

Therefore; this study was conducted to assess the prevalence of HIV infection and discordant rate among premarital VCT clients and factors associated with them, which is expected to be helpful in designing and implementing possible interventions and provide a base line information for further assessment and monitoring of the prevalence and determinant of HIV among premarital couples in general and premarital VCT clients in particular.

4. Objectives

4.1. General objective

- To assess the prevalence of HIV and discordant rate and factors associated with them among premarital VCT clients in public VCT centers of Addis Ababa.

4.2. Specific objectives

- To determine the prevalence of HIV among premarital VCT clients
- To determine HIV sero-discordant rate among premarital VCT couples
- To identify factors associated with premarital HIV test results

5. Methods and Materials

5.1. Study area

The study was conducted in Addis Ababa, the capital city of Ethiopia, which is administratively divided in to 10 sub cities and 99 kebeles. According to the 1994 National Census, Addis Ababa had a projected population of 3,164,411 for 2006/2007. There were 34 public VCT centers in five hospitals, 24 health centers and five clinics under the Addis Ababa Health Bureau providing VCT services in the city. There were also 26 non-governmental and 92 private VCT centers operating in the city, which were not included in this study due to resource constraints. HIV prevalence in Addis Ababa is estimated to be 7.5% with 6.0% and 8.9% for male and female, respectively (5).

5.2. Study design

Institution based, cross-sectional study was conducted among VCT clients who visited the public VCT centers for premarital HIV test from March to April 2008.

5.3. Source population

All premarital clients/ couples who potentially believed to utilize VCT service at public VCT centers of Addis Ababa for pre marriage HIV check up.

5.4. Study population

The study population was all VCT clients who visited public VCT centers of Addis Ababa and whose reason to visit the centers was for pre marriage HIV check up during the study period.

5.5. Sample size determination

The required sample size of the study was determined using a formula for a single population proportion:

$$n = [(Z_{\alpha/2})^2 p (1-p)] / d^2 \quad \text{Where:}$$

P=the prevalence of HIV among premarital VCT clients. From a study conducted in Addis Ababa, the prevalence of HIV infection among premarital VCT clients was 13.2 % (28).

Z=a standard score corresponding to 95% confidence level (1.96)

d=the margin of error (3.5%)

n=the required sample size

Accordingly, the sample size calculated was 360. Considering 10% non response rate, the required sample size was 396.

5.6. Sampling procedures

As displayed in figure 1 below, one hospital out of five and one clinic out of five were selected using simple random sampling. And five health centers out of 24 in ten sub cities were selected as follow, first five sub cities out of 10 were selected using simple random sampling, then one health center was selected in each selected sub cities using simple random sampling. A total of seven public health institutions which provide VCT service in Addis Ababa were selected. Then all consecutive VCT clients who visited the selected health institutions during the study period and whose main reason to visit the VCT centers was premarital HIV testing were included until the required sample size was

attained (Fig 1). The total sample was allocated to each VCT center based on the number of VCT client flow in the previous year.

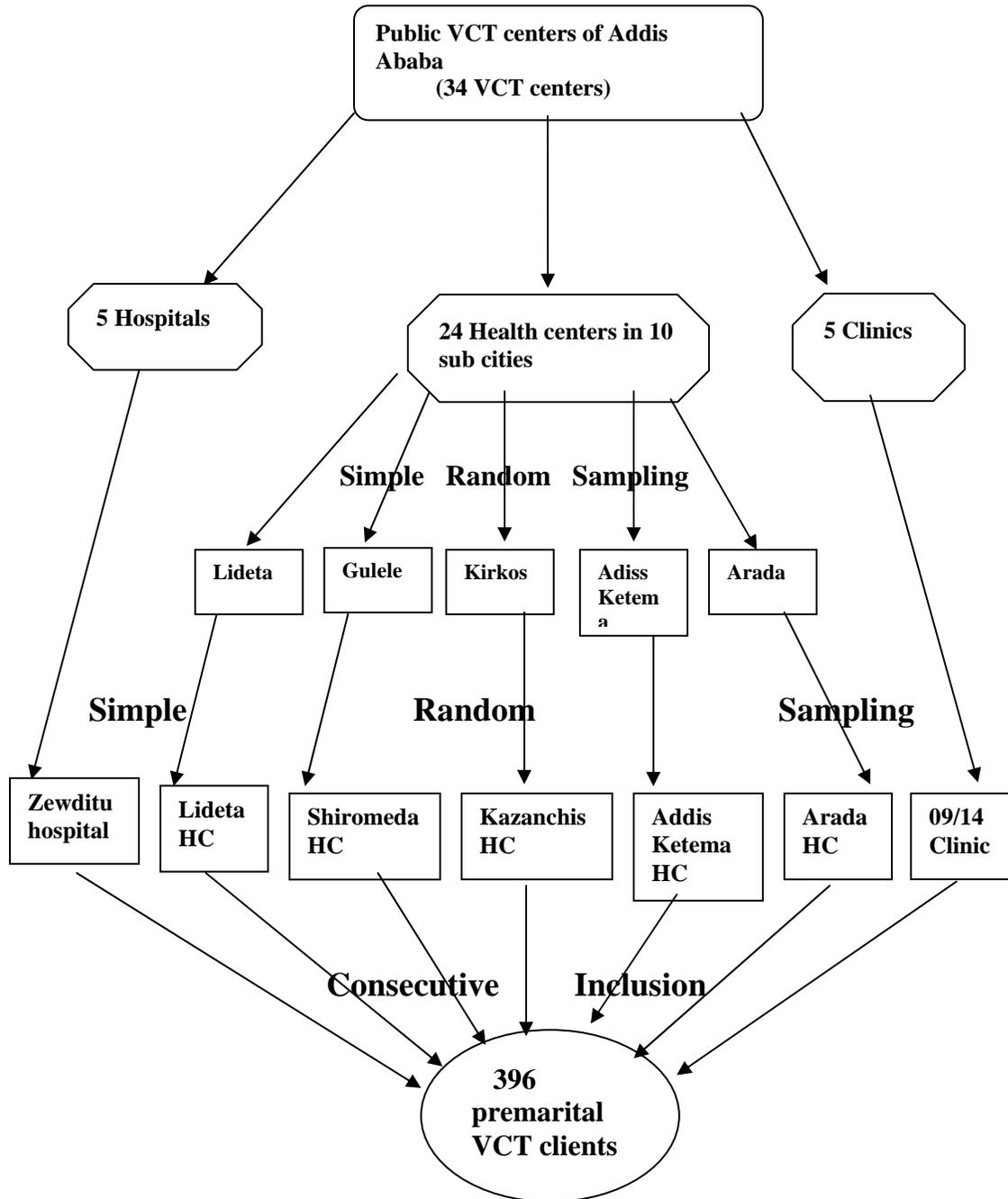


Figure 1. Schematic presentation of the sampling procedure

5.6.1. Inclusion criteria

All VCT clients who visited the health institutions during the study period and whose main reason to visit the VCT center was premarital HIV testing, whether presented as a couple or individually.

5.6.2. Exclusion criteria

Age below 18 years, VCT clients whose reasons were other than premarital HIV test and those who were not volunteer to participate in the study

5.7. Data collection

A closed ended structured Amharic questionnaire was utilized for data collection. The questionnaire was developed in English based on literature review and translated in to Amharic, then back to English to check for its consistency. Finally the Amharic version was used for data collection. The main components of the questionnaire were: socio demographic characteristics, sexual history and substance use and knowledge on HIV and other STIs. Data collectors were counselors in the respective health institutions (10 counselors), which helped to maximize confidentiality. Three supervisors were recruited to supervise the data collection process. After identifying the premarital VCT clients by asking the reason of HIV testing, the interview took place in the counseling room, before the usual session of pre-test counseling. In case when participants presented as couple each member of the couples was interviewed separately with separate questionnaire.

Test results (laboratory results): - The test results of the clients were according to the report of laboratories of the institutions which follow the routine laboratory procedure and algorithm (Determine → Capilus → Unigold) endorsed by Ministry of Health. The principal investigator did not have any involvement in the laboratory procedures.

5.8. Data quality assurance

A carefully designed questionnaire was translated first into Amharic and back to English to assure its consistency. The questionnaire was pre-tested on premarital VCT clients, who were not included in the study to assess the clarity of the questions, their sensitiveness as well as understanding of the data collectors. Discussion was held based on the result of the pre-test and accordingly, some amendments were made. Two days training was given to the supervisors and the data collectors on the procedure. The data was checked for completeness, accuracy, clarity, and consistency by the supervisors and the principal investigator on daily basis. Any error or ambiguity and incompleteness were corrected accordingly. The data were intensively cleaned up before analysis.

5.9. Data processing and analysis

Data was entered using Epi-info 2007 version 3.4.1 and analysis was carried out using SPSS-13 statistical packages. Mean, median and percentage value of different variables were computed for description as appropriate. Chi-square statistics and odds ratio with 95% confidence interval were computed to assess the presence and degree of association between dependent and independent variables. Furthermore, multivariate analysis was done to control the possible confounding effect of selected variables. P-value of 0.05 was

set as a cut-off point for the significance of the association between dependent and independent variables.

5.10. Study variables

Dependent variables

- HIV sero-status (positive vs negative and discordant vs concordant)

Independent variables

- Socio-demographic and economic characteristics (age, sex, educational level, marital history, ethnicity, religion, monthly income, employment status etc.)
- Knowledge of HIV/AIDS (means of transmission and prevention)
- Sexual history (ever had sex, life time sexual partner, condom use, etc.)
- Substance use (alcohol, Khat and intravenous (IV) drugs)
- Previous history of HIV test and type of VCT utilization

5.11. Ethical considerations

Ethical clearance and approval was obtained from the Ethical Committee of the Faculty of Medicine at Addis-Ababa University and Addis Ababa Health Bureau. Official letters were written to the respective sub city health departments and the health institutions and permission was secured at all levels. After explaining about the purpose, the possible benefit of the study and confidentiality, verbal consent was obtained from each respondent. To assure the confidentiality of the response and the test result, anonymous interview was conducted.

5.12. Operational definitions

Adequate knowledge – Respondents who correctly identified three or more modes of transmission and preventive ways of HIV.

Sero-discordant couples – A state where only one of the premarital couples was HIV positive.

Sero-concordant – Couples tested for HIV and had identical serum test results.

Premarital VCT clients – VCT clients whose main reason to visit the VCT center was pre marriage HIV status check up.

Self perceived risk – Acknowledging ones own risk of acquiring HIV.

Employed – Participants who were working for pay or had a job or business.

Consistent condom use – Use of condom in each sexual intercourse

5.13. Dissemination of findings

The findings of this study will be communicated to different stakeholders like Addis Ababa University, Ethiopian Public Health Association, Ministry of Health, Addis Ababa Health Bureau, and others. The findings are expected to be presented in different seminars, meetings and workshops and published in scientific journals.

6. Results

A total of 396 premarital VCT clients who met the set criteria were enrolled in the study with response rate of 392/396(99%), since four participants were not volunteer to participate. Two hundred twenty six (57.7%), 155(39.5%) and 11(2.8%) of the study participants were from health center, hospital and clinic, respectively. Of all participants, 116(29.6%) presented as individual and the rest 276 (70.4%) presented as couples.

6.1. Socio-demographic Characteristics

Among the total participants, 204(52.0%) were females and 188(48.0%) were male. One hundred twenty three (31.4%) of the participants were in the age group 20-24, followed by the age group 25-29, 30- 34 and 18-19 with 110 (28.1%), 60(15.3%) and 36(9.2%), respectively (Table1). Overall mean (\pm SD) age of the participants was 27.5 (\pm 7.7) with 30.6 (\pm 8.5) and 24.7 (\pm 5.5) for males and females respectively.

The majority 283(72.2%) of the participants were Orthodox followed by Muslim 61(15.6%) and Protestant 46(11.7%) by religion. With regard to ethnicity, 191 (48.7%) were Amhara followed by Guraghe 84(21.4%), Oromo 71(18.1%) and Tigre ethnic group 24(6.1%). One hundred thirty (33.2%) and 107 (27.3%) of the respondents had educational level of grade 9-12 and above grade 12 respectively and 32(8.2%) were illiterate. Three hundred five (77.8%) of the study participants were employed and the rest were unemployed. Only 7(3.7%) of male participants were unemployed, while 80(39.2%) of female participants were unemployed (Table1).

Thirty eight (9.7%) of the participants were not volunteer to respond about their monthly personal income. Seventy seven (19.6%) of the respondents reported having no personal income. Only 4(2.1%) of male participants had no monthly personal income, while 73(35.8%) of female participant had no monthly income. Eighty four (21.4%) and 73(18.6%) of the total participants earned 50-300 and 301-600 birr per month respectively. Three hundred seventy seven (96.2%) of the participants were from Addis Ababa and the rest were from out side Addis Ababa (Table1).

Table 1. Socio demographic characteristics of study participants by sex, Addis Ababa, 2008

Characteristics	Male (n=188) Freq. (%)	Female (n=204) Freq. (%)	Total (n=392) Freq. (%)
Age			
18-19	4(2.1)	32(15.7)	36 (9.2)
20-24	46(24.5)	77(37.7)	123 (31.4)
25-29	51(27.1)	59(28.9)	110(28.1)
30-34	37(19.7)	23(11.3)	60(15.3)
35-39	21(11.2)	9(4.4)	30(7.7)
40-44	17(9.0)	3(1.5)	20(5.1)
45-49	6(3.2)	1(.5)	7(1.8)
50 & above	6(3.2)	--	6(1.5)
Religion			
Orthodox	131(69.7)	152(74.5)	83(72.2)
Muslim	34(18.1)	27(13.2)	61(15.6)
Catholic	---	2(1.0)	2 (0.5)
Protestant	23(12.1)	23(11.3)	46(11.7)
Ethnicity			
Amhara	88(46.8)	103(50.5)	191(48.7)
Oromo	36(19.1)	35(17.2)	71(18.1)
Gurage	36(19.1)	48(23.5)	84(21.4)
Tigre	14(7.4)	10(4.9)	24(6.1)
Others	13(6.9)	8(3.9)	21(5.4)
Non response	1(0.5)	--	1 (0.3)
Education			
Illiterate	9(4.8)	23(11.3)	32(8.2)
Read & write	4(2.1)	7(3.4)	11(2.8)
Grade 1-6	30(16.0)	30(14.7)	60(15.3)
Grade 7-8	22(11.7)	30(14.7)	52(13.3)
Grade 9-12	62(33.0)	68(33.3)	130(33.2)
Above grade 12	61(32.4)	46(22.5)	107(27.3)
Employment status			
Employed	181(96.3)	124 (60.8)	305(77.8)
Unemployed	7(3.7)	80(39.2)	87(22.2)
Monthly income			
No income	4(2.1)	73(35.8)	77(19.6)
50-300	26(13.8)	58(28.4)	84(21.4)
301-600	43(22.9)	30(14.7)	73(18.6)
601-1000	40(21.3)	19(9.3)	59 (15.1)
1001-1500	15(8.0)	3(1.5)	18 (4.6)
1501 & above	37(19.7)	6(2.9)	43 (11.0)
No response	23(12.2)	15(7.4)	38 (9.7)
Residence area			
Addis Ababa	182(96.8)	195(95.6)	377(96.2)
Outside Addis Ababa	6(3.2)	9(4.4)	15(3.8)

6.2. Sexual history & experience of substance use

Among the total participants, 290(74%) reported having initiated sexual intercourse of whom 156(53.6%) were male (Table2). Two hundred thirty eight (82.1%) of the participants responded/ remembered about their age at first sex. The median ages at first sex were 19, 20 and 18 for overall, males and females, respectively. Females were seen to be involved in sexual act relatively at an earlier age than males in this study. As low as 10 years age at first sex was reported by female participants. Among respondents who reported having initiated sexual intercourse, 155 (53.4%) of them reported having more than 1 sexual partner in their life (Table2).

Among participants who ever had sexual intercourse, less than half (41.4%) of them used condom in their last sexual intercourse. Of all respondents who ever had sexual intercourse, 173(59.7%) had sexual intercourse in the last one year period, of whom 37(21.4%) had sexual intercourse with more than one partner and 58(33.5%) constantly used condom (Table2).

One hundred thirty one (33.4%) of the respondents reported having sexual contact with their current partner of whom only 36(27.5%) and 25(19.1%) reported consistent condom use and HIV test prior to sexual intercourse with the current partner, respectively. Majority of the respondents 242(61.7%) were introduced with their current partner with in the last 12 month. Sixty nine (17.6%) of the respondents reported a history of prior marriage (Table2). Fifty nine (81.2%) and 10(18.8%) of the respondents with history of

previous marriage were separated from their previous partner because of separation/divorce and partner death respectively.

One hundred thirty seven (34.9%) of the respondents ever had drunk alcohol and of whom 17(12.4%) reported having had drunk every two days and more in the last 12 months. Only 55 (14.0%) of the respondents reported ever had chewed Khat and of whom 16 (39.1%) reported having had chewed every two days or more in the last 12 months (Table2). None of the respondents reported experience of IV drugs.

Table 2. Sexual history & experience of substance use of study participants, Addis-Ababa, 2008

Characteristics	Number	Percent
Ever have sex (n=392)		
Yes	290	74.0
No	102	26.0
Age at 1st sex (n=290)		
10-14	12	5.0
15-19	124	52.1
20-24	77	32.4
25 & above	25	10.5
No response	52	17.9
No. of life time sexual partner (n=290)		
One	135	46.6
Two & above	155	53.4
Last sex condom use (n=290)		
Yes	120	41.4
No	170	58.6
Last 12 month sexual intercourse (n=290)		
Yes	173	59.7
No	117	40.3
No. of partner last 12 months (n=173)		
One	136	78.6
Two & above	37	21.4
Condom use last 12 months (n=173)		
Always	58	33.5
Some times	44	25.4
Never	71	41.0
Sex with current partner (n=392)		
Yes	131	33.4
No	261	66.6
Condom use with current partner (n=131)		
Always	36	27.5
Sometimes	32	24.4
Never	63	48.1
HIV test before sex with current partner (n=131)		
Yes	25	19.1
No	106	80.9
No. of marriage (n=392)		
The current one only	323	82.4
Other prior marriage/s	69	17.6
Ever drink alcohol (n=392)		
Yes	137	34.9
No	255	65.1
Alcohol drinking last 12 months (n=392)		
Every two day & more	17	4.3
Less than every two day	120	30.6
None	255	65.1
Ever chew Khat (n=392)		
Yes	55	14.0
No	337	86.0
Khat chewing last 12 months (n=392)		
Every two day & more	16	4.0
Less than every two day	39	10.0
None	337	86.0

6.3. Experiences and knowledge on HIV and STIs

All (100%) and 333(85.0%) of the respondents reported to have heard of HIV and know people infected/ died of HIV/AIDS respectively. A total of 195 (49.7%) respondents had adequate knowledge on mode of HIV transmission (Table3). Three hundred seventy nine (96.7%) of the respondents correctly mentioned at least two mode of HIV transmission.

Three hundred eighty nine (99.2%) and 338(86.2%) of the study subjects mentioned that unsafe sexual intercourse and sharing of contaminated sharp materials respectively as ways of HIV transmission. Only 103(26.3%) and 183(46.7%) participants were able to identify mother to child transmission, and blood transfusion as modes of HIV transmission, respectively (Fig 2).

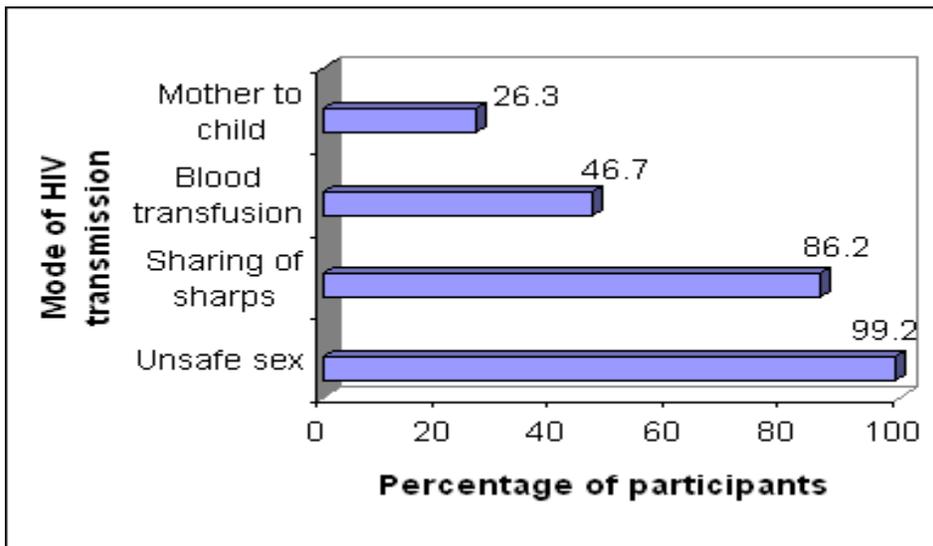


Figure 2. Distribution of study participants by knowledge on mode of HIV transmission Addis Ababa, 2008

One hundred fourteen (29.1%) of the participants claimed to be at risk (Table 3) and mainly mentioned reasons are because of unsafe sex (21.1%) and sharing sharps (18.4%). Two hundred thirty two (59.7%) of the respondents had adequate knowledge on means of HIV prevention (Table3). Three hundred sixty (91.8%) of the respondents correctly mentioned at least two means of HIV prevention. Two hundred seventy five (70.2%) and 331(84.4%) of the study subjects mentioned that abstinence and staying with one partner as a means of HIV prevention method respectively. Over half of the participants, 219(55.9%) also mentioned use of condom as means of HIV prevention method.

Three hundred four (77.6) of respondents reported having heard about other STIs other than HIV. Only 11(2.8%) of the respondents reported having STIs in the past one year, with 10 (2.6%) and 4 (1.0%) for abnormal genital discharge and genital ulcer respectively. Of all respondents, 242 (61.7%) reported having been tested for HIV previously (Table3). Almost all (99.7%) of them received their result of the test and 90.9%, 55.8% and 31.8% of them performed the test with in the last 12, 6 and 3 months, respectively.

Table 3. Experiences and knowledge on HIV and STIs of the study participants, Addis Ababa, 2008

Characteristics	Number (n=392)	Percent
Heard about HIV		
Yes	392	100
No	---	---
Know people infected/ died of HIV/AIDS		
Yes	333	85.0
No	59	15.0
Knowledge on HIV transmission		
Yes	195	49.7
No	197	50.3
Risk perception		
Yes	114	29.1
No	278	70.9
Knowledge on HIV prevention		
Yes	232	59.2
No	160	40.8
Heard about other STIs		
Yes	304	77.6
No	88	22.4
Had STIs in last 12 months		
Yes	11	2.8
No	381	97.2
Abnormal genital discharge in last 12 months		
Yes	10	2.6
No	382	97.4
Genital ulcer in last 12 months		
Yes	4	1.0
No	388	99.0
Previous HIV test		
Yes	242	61.7
No	150	38.3

6.4. Sero- status of the study participants and factors associated with sero status

To assess factors associated with sero status, the study participants with HIV sero positive and negative results were compared for different variables and both bivariate and multivariate analysis were performed. From the total study participants who had their blood tested, 32 (8.2%) turned out to be infected with HIV.

The prevalence of HIV was seen to be significantly ($P=0.002$) higher among participants with history of other previous marriage 16(23.2%) than those with no other previous marriage. Sero positivity rate was highest among participants who previously widowed (70%) and separated/divorced (15.3%) than among those who had no previous marriage (Fig 3).

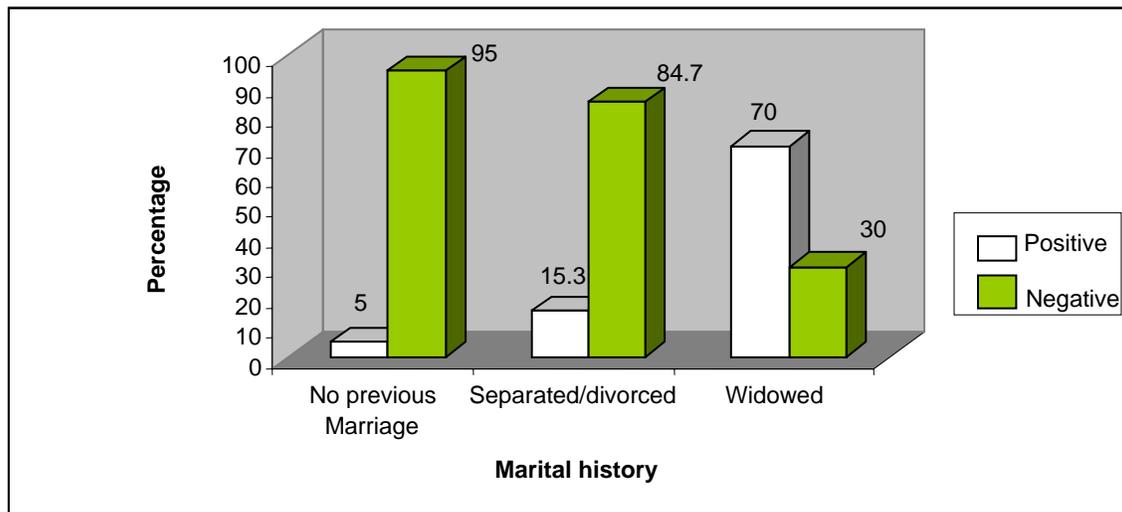


Figure 3. Sero status of the study participants across marital history, Addis Ababa, 2008

HIV prevalence among participants who presented individually was 19(16.4%), while among those who presented as couple was 13 (4.7%). HIV prevalence among males and females were 11(5.9%) and 21(10.3%) respectively. The prevalence of HIV was observed to be increased with increasing age, the prevalence increased from 3.8% in the age group 18-24 to 14.3% in the age group 35 & above. HIV prevalence decreased from 8(18.6%) among participants who were illiterate/ only read & write to 13(5.5%) among participants with educational status of secondary & above. The prevalence of HIV among employed and unemployed were 24(7.9%) and 8(9.2%) respectively (Table 4).

The prevalence of HIV infection was 8(10.4%) among who had no monthly personal income. The prevalence was observed to be decreased from 11(13.1%) among whose monthly personal income was 50-300 to 2(5.0%) among whose monthly personal income was more than 600 Birr, though this difference was not statistically significant (p-value=0.26). Higher rate of HIV infection was observed among participants who had two or more life time sexual partner 6(16.8%) than who had only one partner 6(4.4%) (Table 4).

Table 4 also shows that the prevalence was higher among participants who didn't use condom during the last sexual intercourse 26(15.3%) than those who used 6(5.0%). The prevalence among who had adequate knowledge on means of HIV transmission was 13(6.7%) while among who didn't have adequate knowledge was 19(9.6%). Participant who reported to have history of STIs in the last 12 months were shown to have

significantly ($P=0.001$) higher prevalence 5(45.5%) than those with out history of STIs in the last 12 months 27(7.1%).

Relatively higher rate of HIV infection 16(11.7%) was observed among participants who ever drunk alcohol than those who never drunk 16(6.3%). The prevalence of HIV was significantly ($P=0.000$) higher among participants who did not have history of previous HIV test 25(16.7%) than those who did 7(2.9%) (Table 4).

Table 4. Sero- status of the study participant by socio-demographic and some other selected variables, Addis Ababa, 2008

Characteristics	Sere status		X² (P-value)
	Positive Freq. (%)	Negative Freq. (%)	
VCT utilization			
As individual	19(16.4)	97(83.6)	13.3(0.000)
As couple	13(4.7)	263(95.3)	
Sex			
Male	11(5.9)	177(94.1)	2.0(0.155)
Female	21(10.3)	183(89.7)	
Age			
18-24	6(3.8)	153(96.2)	7.9(0.005)
25-34	17(10.0)	153(90.0)	
35 & above	9(14.3)	54(85.7)	
Education			
Illiterate/ read & write	8(18.6)	35(81.4)	8.5(0.004)
Elementary (1-8)	11(9.8)	101(90.2)	
Secondary & above (>=9)	13(5.5)	224(94.5)	
Employment status			
Employed	24(7.9)	281(92.1)	0.03(0.860)
Unemployed	8(9.2)	79(90.8)	
Monthly personal income			
No income	8(10.4)	69(89.6)	4.8(0.188)
50-300	11(13.1)	73(86.9)	
301-600	5(6.8)	68(93.2)	
601 & above	6(5.0)	114(95.0)	
No. of life time sexual partner			
One	6(4.4)	129(95.6)	10.0(0.002)
Two & more	26(16.8)	129(83.2)	
Condom used during last sex			
Yes	6(5.0)	144(95.0)	6.6(0.010)
No	26(15.3)	144(84.7)	
Knowledge on HIV transmission			
Yes	13(6.7)	182(93.3)	0.8(0.372)
No	19(9.6)	178(90.4)	
STIs in last 12 months			
Yes	5(45.5)	6(54.5)	11.5(0.001)
No	27(7.1)	354(92.9)	
Ever drink alcohol			
Yes	16(11.7)	121(88.3)	2.8(0.095)
No	16(6.3)	239(93.7)	
Previous HIV test			
Yes	7(2.9)	235(97.1)	21.6(0.000)
No	25(16.7)	125(83.3)	

In the bivariate analysis, sero status was not significantly associated with knowledge on means of HIV transmission ($P=0.37$) and prevention ($P=0.88$), ever chew chat ($P=0.21$), age at first sex ($P=0.34$), monthly personal income ($P=0.19$) and employment status ($P=0.86$).

In the bivariate analysis, sero positivity was about three and four times higher in the age group 25-34 and 35 & above, respectively than age group 18-24, with ($OR=2.83(1.09, 7.38)$) and $OR=4.25(1.44-12.50)$, respectively. However, these associations were not maintained when adjusted for other variables. In multivariate logistic regression analysis females were about four times more likely to be HIV positive than males with $AOR=5.07(1.59-16.11)$ (Table 5).

Participants with educational status of secondary and above were less likely to be infected than those who were illiterate/read & write $OR=0.25(0.10, 0.66)$. This association still existed when adjusted for other variables $AOR=0.21(0.06-0.79)$ (Table 5).

Prevalence of HIV was 4.33 times significantly higher among participants with two or more life time sex partner than those who had only one life time sex partner with $OR=4.33(1.73-10.88)$. Participants who didn't use condom during their last sexual intercourse were more than three times more likely to be infected than those reported to have used, $OR=3.43(1.37-8.62)$. These associations were maintained when adjusted for other

variables with, AOR=9.06(2.66-30.83) and AOR=3.42(1.06-11.06) for life time partner and condom use in last sex respectively (Table 5).

Participants with out history of STIs during the last 12 months were less likely to be infected than those with history of STIs, OR=0.09(0.03-0.32). However, the association was not maintained when adjusted for other variables, AOR=0.55(0.09-3.58) (Table 5).

Participants who had no history of previous HIV test were about seven times more likely to be positive than who had history of previous HIV test, OR=6.71(2.83-15.96). Participants who presented alone were about four times more likely to be positive than who presented as couple, OR= 3.96(1.89- 8.33), (Table 5). The associations still existed when adjusted for other variables with AOR=6.70(2.32-19.35) and AOR=4.17(1.53-11.36) for previous HIV test and type of VCT utilization respectively. In multivariate analysis, participants who never drunk alcohol were less likely to HIV positive than who ever drunk, AOR=0.30(0.10-0.88) (Table 5).

Table 5. Association of selected socio-demographic and other characteristics with sero status of the study participants, Addis Ababa, 2008

Characteristics	Sero status (Freq.)		OR (95%CI) **	AOR (95% CI) ***
	Positive	Negative		
Age				
18-24	6	153	1.00	1.00
25-34	17	153	2.83(1.09-7.38)*	1.97(0.56-6.95)
35 & above	9	54	4.25(1.44-12.50)*	1.32(0.29-5.99)
Sex				
Male	11	177	1.00	1.00
Female	21	183	1.85(0.87-3.94)	5.07(1.59-16.11)*
Education				
Illiterate/ read & write	8	35	1.00	1.00
Primary	11	101	0.48(0.18- 1.28)	0.39(0.10-1.47)
Secondary & above	13	224	0.25(0.10-0.66)*	0.21(0.06-0.79)*
Life time sex partner				
One	6	129	1.00	1.00
Two & above	26	129	4.33(1.73-10.88)*	9.06(2.66-30.83)*
Last sex condom use				
Yes	6	114	1.00	1.00
No	26	144	3.43(1.37-8.62)*	3.42(1.06-11.06)*
STIs in the last 12 months				
Yes	5	6	1.00	
No	27	354	0.09(0.03-0.32)*	0.55(0.09-3.58)
Previous HIV test				
Yes	7	235	1.00	1.00
No	25	125	6.71(2.83-15.96)*	6.70(2.32-19.35)*
VCT utilization				
As couple	13	263	1.00	1.00
As individual	19	97	3.96(1.89- 8.33)*	4.17(1.53-11.36)*
Ever drink alcohol				
Yes	16	121	1.00	1.00
No	16	239	0.51(0.24-1.05)	0.30(0.10-0.88)*

* Statistically significant

** Crude odds ratio

*** Adjusted for age, sex, education, life time sex partner, last sex condom use, history of STIs, previous HIV test, type of VCT utilization and ever drink alcohol.

6.5. Discordant rate and factors associated with discordant serum outcome among premarital couples

A total of 276(138 couples) respondents who presented as couple were considered for analysis of discordant rate and factors associated with discordant serum outcome. And to assess factors associated with discordant serum outcome, respondents with discordant and concordant serum outcome were compared for different variables.

Of all respondents who presented as couple, 13(4.7%) were HIV positive. Out of 276 respondents who presented as couple 18(6.5%) were found to be sero discordant while concordant negative and concordant positive accounted for 254(92.0%) and 4(1.4%) respectively. Out of 9 discordant couples, 6(66.7%) of the females were sero positive while 3(33.3%) of the males were sero positive.

The prevalence of Sero discordance was significantly ($P=0.002$) higher among those who had history of other previous marriage 9(17.6%) than those with the current one only 9(4.0%). Higher prevalence of discordant serum outcome was observed among previously separated/divorced and widowed partners 6(14.0%) and 3(37.5%) respectively than those who had no other previous marriage 9(4.0%) (Fig.4). The association was statistically significant with $X^2(P\text{-value})$ of 12.3(0.002).

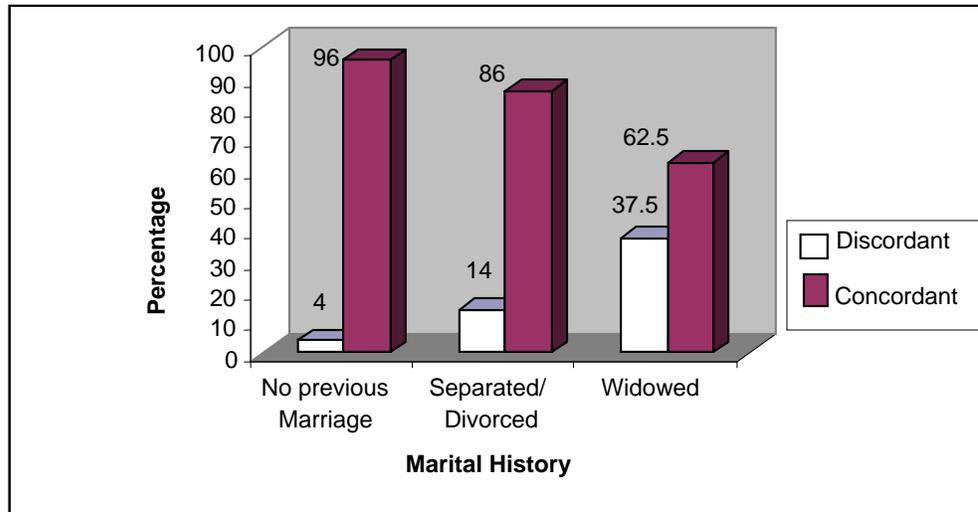


Figure 4. Prevalence of HIV sero discordance by marital history, Addis Ababa, 2008

Table 6 below shows that, 11.1% of the study participants in the age group 35 & above were sero discordant, while 4.5% in the age group 18-24 were sero discordant, though the difference was not statistically significant ($P=0.14$). Sero discordant rate was decreased from 18.2% in the study participants who were illiterate/ read and write to 4.3% in study participants with educational status of secondary and above, which was statistically significant ($P=0.009$).

The prevalence of sero discordant among unemployed was 5(8.8%), while among employed was 13(5.9%). Relatively higher rate of sero discordance 5(10.0%) and 6(11.1%) were observed among participants with no monthly personal income and among who earned 301-600 birr per month, respectively than among those who earned more than 600 birr, however the difference was not statistically significant (P -value=0.26) (Table 6).

Higher proportion 14(12.8%) of the study subjects with life time sex partner of two or more were discordant than those with only one life time sex partner 3(3.1%). Sero discordant was higher among participants who didn't use condom during their last sexual intercourse 13(10.9%) than those who used 4(4.7%), though the difference was not statistically significant (P-value=0.12). The prevalence of sero discordance was also significantly (P=0.004) higher among study participants who did not have history of previous HIV test 12 (13.0%) than those who did 6(3.3%) (Table 6).

Table 6. Prevalence of Sero-discordance by socio demographic and some other characteristics of the study participants, Addis Ababa, 2008

Characteristics	Discordant Freq. (%)	Concordant Freq. (%)	X²(p-value)
Age			
18-24	5(4.5)	106(95.5)	
25-34	8(6.7)	112(93.3)	
35 & above	5(11.1)	40(88.9)	2.2(0.142)
Ethnicity			
Amhara	13(9.4)	126(90.6)	
Oromo	2(3.9)	49(96.1)	
Guraghe	---	56(100.0)	
Tigre	1(6.7)	14(93.3)	
Others	2(13.3)	13(86.7)	7.4(0.119)
Education			
Illiterate/read & write	6(18.2)	27(81.8)	
Elementary (1-8)	5(6.2)	75(93.8)	
Secondary & above (>=9)	7(4.3)	156(96.7)	8.7(0.009)
Employment status			
Employed	13(5.9)	206(94.1)	
Unemployed	5(8.8)	52(91.2)	0.6(0.456)
Monthly personal income			
No income	5(10.0)	45(90.0)	
50-300	4(6.7)	56(93.3)	
301-600	6(11.1)	48(88.9)	
601 & above	3(3.4)	86(96.6)	4.0(0.259)
Life time sex partner			
One	3(3.1)	93(96.9)	
Two or more	14(12.8)	95(87.2)	5.1(0.024)
Condom use in last sex			
Yes	4(4.7)	82(95.3)	
No	13(10.9)	106(89.1)	1.8(0.177)
Sexual contact with current partner			
Yes	8(10.0)	72(90.0)	
No	9(7.2)	116(92.8)	0.2(0.653)
Knowledge on HIV transmission			
Yes	10(7.3)	127(92.7)	
No	8(5.8)	131(94.2)	0.08(0.783)
Previous HIV test			
Yes	6(3.3)	178(96.7)	
No	12(13.0)	80(87.0)	8.1(0.004)

In the bivariate analysis the prevalence of sero discordant was not significantly associated with variables like age ($P=0.14$), employment status ($P=0.46$), monthly personal income ($P=0.26$), condom use in the last sexual intercourse ($P=0.18$), history of sexual contact with the current partner ($P=0.65$) and knowledge on means of HIV transmission ($P=0.78$).

The study participants with educational status of secondary and above were less likely to be sero discordant, $OR=0.20(0.06-0.65)$ than who were illiterate/ able to read and write only. However, when adjusted for other variables there was no significant association, with $AOR=0.32(0.06-1.80)$ (Table 7).

Study participants who had two or more life time sexual partner were about five times more likely to be sero discordant than those with only one life time partner with $OR=4.57(1.27-16.42)$. Participants with out history of previous HIV test were significantly more likely to be discordant than those with history of previous HIV test with $OR=4.45(1.61-12.28)$. These associations were maintained when adjusted for other variables with $AOR=15.06(2.87-79.17)$ and $AOR=13.91(3.08-62.91)$ for life time sexual partner and previous HIV test respectively (Table 7).

Table 7. Association of selected socio-demographic and other characteristics of the study participants with HIV sero discordance, Addis Ababa, 2008

Variables	Frequency		OR (95%CI)**	AOR (95%CI)* **
	Discordant	Concordant		
Age				
18-24	5	106	1.00	1.00
25-34	8	112	1.51(0.48-4.78)	1.23(0.24-6.26)
35 & above	5	40	2.65(0.73-9.65)	1.67(0.27-10.32)
Ethnicity				
Amhara	13	126	1.00	1.00
Oromo	2	49	0.40(0.09-1.82)	0.44(0.07-2.83)
Guraghe	---	56	---	---
Tigre	1	14	0.69(0.08-5.70)	0.44(0.03-6.80)
Others	2	13	1.49(0.30-7.35)	2.04(0.30-14.03)
Education				
Illiterate/read & write	6	27	1.00	1.00
Elementary	5	75	0.30(0.09-1.06)	0.20(0.03-1.33)
Secondary and above	7	156	0.20(0.06-0.65)*	0.32(0.06-1.80)
Life time sex partner				
One	3	93	1.00	1.00
Two or more	14	95	4.57(1.27-16.42)*	15.06(2.87-79.17)*
Condom use in last sex				
Yes	4	82	1.00	1.00
No	13	106	2.51(0.79-8.00)	2.00(0.42-9.48)
Previous HIV test				
Yes	6	178	1.00	
No	12	80	4.45(1.61-12.28)*	13.91(3.08-62.91)*

* Statistically significant

** Crude odds ratio

*** Adjusted for age, ethnicity, education, lifetime sexual partner, condom use in last sex and previous HIV test.

7. Discussion

Most HIV infection in Sub-Saharan Africa occurs during heterosexual intercourse between couples in a relationship (19). The HIV sero-negative partners of people with HIV are the group of individuals who are at greatest risk of contracting HIV through sexual transmission. HIV prevention measure targeted at premarital couples has dual benefit as it prevent both horizontal and vertical transmission of the disease. Premarital HIV testing also help couples to make informed decisions and adopt risk reduction strategies.

In this study, a total of 392 premarital VCT clients, both who presented as couple and individually were included. Of all participants, 276(70.4%) presented as couple. This finding is relatively comparable with a study done in Uganda among VCT clients (21), which showed that among those coming for pre-marital testing, 64% came with their prospective partners. However, it is higher than the result of a study conducted in Kenya, which indicated that of all premarital clients only 25% presented as a couple (23). This discrepancy may be due to variation in the prevalence of risky behaviors between the two study populations. Individuals who present alone are more likely to be suspicious about their test result because of experience of some risky behavior.

The prevalence of HIV infection in the study population was 8.2%. This is comparable to the finding of a study conducted in south- eastern Nigeria among individuals referred from faith-based organizations for mandatory pre-marital HIV screening, which indicated

that the prevalence of HIV was 7.8% (24). But this is lower than a study conducted in Addis Ababa public hospitals among VCT clients, where the overall prevalence in the study was 21% (35). This may be due to the fact that the study participants of the study were general VCT clients and all of them were from hospital. The result is also relatively lower than the prevalence of HIV reported in VCT centers of Addis Ababa in 2006/07 which reported a prevalence of 11.9% (5). This may be due to the fact that most of the study participants of the current study were premarital couples, who are less likely to be HIV positive than the general VCT clients since individuals who presented as a couple most likely had less risky behavior or tested themselves individually prior to presentation as couple. Majority (66.7%) of the study subjects who presented as couple in the current study were HIV tested previously.

The median ages at first sex for males and females were 20 and 18 years, respectively, which are relatively comparable with the result of study conducted among couples who came for civil marriages in Addis Ababa, Ethiopia (22), which showed that the median ages at first sex for male and female were 22 and 20, respectively. One can expect that, the earlier one starts intercourse, the higher the chance of being exposed to different sexually transmitted diseases, including HIV/AIDS. However, such association was not observed in this study. The same was observed in another study (28), in which HIV infection was not significantly associated with age at first sexual contact. This may be due to recall bias.

Unlike other regions the majority of people living with HIV in sub-Saharan Africa are women (1). The same is true for Ethiopia (5). In this study, females were significantly more likely to be HIV positive than males. This finding is comparable with the result of another study conducted in Port Harcourt, Nigeria on premarital HIV testing in couples from Faith-based organizations, (25) in which, HIV infection rate was significantly higher among females than males (p-value=0.036).

The prevalence of HIV was significantly higher among participants who presented alone than those who presented as couple. The same association was observed in other studies (23, 35). This may be because of the fact that VCT clients who present alone are more likely to have some risky behaviors, on the other hand, clients may present as couple either because they have less risky behavior or might have tested themselves individually prior to couple presentation.

The prevalence of HIV was significantly higher among participants who ever drunk alcohol than among those who never drunk alcohol. This in line with a study done in Addis Ababa (28) in which the prevalence of HIV was significantly higher among those who ever drunk than those never drunk alcohol, AOR=2.48 (1.65, 3.72

The current study showed that HIV prevalence was significantly lower among participants who used condom during the last sexual intercourse than among those who didn't use condom. Condom use in the last sex can be a rough predictor of consistent use of condom. This study also revealed that significantly higher rate of HIV infection was

observed among participants who were illiterate/only read and write than among those with educational status of secondary and above. Related finding was observed in another study (35) in which higher rate of HIV infection (34%) was observed among those who had never gone to a regular school than among those with secondary and above education level (17.1%). However, this finding is not compatible with another study (28) in which a statistically significant number of people with educational level of above grade 12 were found to be HIV sero positives. This may not indicate actual prevalence among the two groups; rather it may be due to the fact that, individuals with higher education were aware of the services and were more likely to screen themselves prior to couple presentation, as 68.4% of participants with secondary education and above, were tested previously in the current study.

Higher rate of HIV infection 16(23.2%) was observed among participants with history of previous marriage than those who didn't have other prior marriage. This is comparable with study conducted in Addis Ababa public hospitals among VCT clients (35), which revealed that more than one quarter, 29.4%, of the married study subjects were sero positive, while among those who were never married was 12.5%. The current study also revealed that HIV prevalence was higher among participants who were previously separated/divorced and widowed than those who had no other previous marriage. This is in line with another study (23) which showed that those previously married (OR 1.7 (1.2-2.3); divorced (OR 1.9 (1.4-2.5); or widowed (OR 6.3 (4.4-9.0) had significantly higher rates of HIV infection than single persons. It is also comparable with the finding of the study conducted in Addis Ababa public hospitals among VCT clients (35), which

revealed a higher rate of HIV infection among divorced (53.2%) and widowed (64.5%) than those who never married (12.5%). This suggests the need to undergo HIV testing prior to marriage when couples intend for marriage after separation/divorce or partner death.

In this study, all study subjects reported that they have heard of HIV/AIDS. This result is comparable with the results observed in the study conducted among premarital couples who came for civil marriage in Addis Ababa (22). This finding is also compatible with the finding from BSS round two which revealed that 98% of study populations were aware of HIV /AIDS (10). In this study almost all (96.7%) and (91.8%) of the study participants correctly knew at least two main means of HIV transmission and prevention respectively. However, this study showed that knowledge on HIV transmission and prevention had no association with HIV prevalence. The same finding was observed in a study conducted in Addis Ababa (28), in which there was no association between HIV sero status and knowledge on mode of HIV transmission and prevention. This indicates that knowledge alone may not be protective unless it is accompanied by behavioral change.

Significantly higher prevalence of HIV was seen among participants with more than one lifetime sexual partner than those with only one partner. This is in line with the finding of a study conducted among street dwellers in Gondar City, North West Ethiopia (38). This signifies the importance of one of the preventive means of sexual transmission of HIV, which is staying with only one uninfected sexual partner. HIV prevalence was

significantly lower among participants who had been tested for HIV previously. This may indicate that individuals who were tested alone and become positive might not return for retesting with their partner. This may lead to an underestimation of the magnitude of HIV and discordant results among premarital couples and that further assessment might be required in this regard.

A total of 276(138 couples) respondents who presented as couple were considered for analysis of discordant rate and factors associated with discordant serum out come. This study revealed that, out of all premarital couples 6.5% were found to be sero discordant. This is relatively lower than the result of a study conducted in Dessie (Ethiopia) among all couples who visited VCT centers (37) which showed prevalence of sero discordance to be 9.8%. This may be due to the fact that most of the study subjects of the current study were premarital couples, who were most likely to be tested prior to couple presentation. This is substantiated by the current study that, 66.7% of individuals who presented as couple were tested previously. On the other hand, only 11.9% of study subjects of the previous study claimed that they had previous history of voluntary counseling and testing (37).

Out of 9 discordant couples 6(66.7%) of the females were sero positive, where as only 3(33.3%) of males were sero positive. This is in line with the finding of another study (23), which showed that, in the majority of discordant premarital couples, it was the women who were HIV-infected. This may be due to biological, social and economical disadvantages.

This study showed that sero discordance was significantly associated with number of lifetime sexual partner. This is also shown to be a risk factor for HIV sero positivity. Participants with history of previous HIV test were significantly less likely to be sero discordant than those with out previous history of HIV testing. This may be due to the fact that most individuals screen themselves individually prior to couple presentation as 66.7% of individuals who presented as couple had history of prior HIV testing. This may lead to an underestimation of the prevalence of sero discordance among premarital couples and suggests the need for further investigations.

Higher rate of sero discordance was observed among study participants who had history of previous marriage (17.6%) than those without history of previous marriage (4.0%). The prevalence of sero discordant was higher among those who previously separated/divorced and widowed partners 14.0% and 37.5% respectively than those with out history of previous marriage 4.0%. This is in line with the finding of another study (37) in which 13.7% of married couples were found to be discordant, while the prevalence of sero discordance among never married were 53(6.2%) and relatively higher prevalence of discordant out come was observed among separated and divorced partners 24(21.4%) and 22(21.8%) respectively. This result signifies the importance of HIV testing prior to marriage particularly when couples intend for marital reunion after separation/divorce or partner death.

8. Strengths and limitations of the study

Strengths

- Little is documented about HIV prevalence and determinants of sero status among premarital couples and almost no specific studies have been conducted particularly in the study area. Therefore, this study can be taken as a baseline for further studies.
- The study assessed both behavioral and biological aspects of the disease.
- The daily data collection activity was strictly and daily supervised by the principal investigator and the supervisors.

Limitation

- The findings of this study cannot represent all premarital VCT clients, as only government owned VCT centers were included.
- Use of health professionals as data collectors may create bias as they might direct the respondents during the interview.
- Social desirability and recall biases could also be other limitations of the study.

9. Conclusions

- The prevalence of HIV among premarital VCT clients was 8.2% and that of discordant rate among premarital couples was 6.5%. Even though these figures were still high, they might be underestimated as majority of the study participants had undergone HIV testing previously.
- In this study, HIV sero status was found to be significantly associated with gender, number of life time sexual partner, lack of previous history of HIV testing, lack of condom use in the last sexual intercourse, type of VCT utilization (individually), and ever drink alcohol.
- Prevalence of sero discordant was significantly associated with number of lifetime sexual partner and previous history of HIV testing.
- Both HIV sero positivity and discordance were relatively higher among those who previously separated/divorced and widowed partners.

10. Recommendations

- As considerable prevalence of sero positivity and sero discordant among premarital VCT couples were observed in this study, every effort should be exerted to make premarital couples aware of their own and their partners' sero status before marriage.
- As sero positivity and discordant serum out come were found to be higher among previously separated/divorced and widowed individuals, HIV testing is highly recommended for couples who intend for marriage after separation/ divorce or partner death.
- As revealed by this study knowledge alone is not observed to be protective against HIV infection, hence, emphasis should be on behavioral change to prevent HIV infection.
- Premarital couples in general and discordant couples in particular should be aware of the presence of possible risk reduction strategies, incase discordant couples want to continue the relationship.
- Study needs to be conducted to further investigate prevalence and determinants of the infection and discordant rate among premarital clients, as the current study included only VCT clients from public VCT centers.

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If the study subject agrees to participate in the study, start the interview.

03. Interviewer's signature certifying that, the informed consent has been given by the respondents

a. Name-----

b. Signature -----

c. Date-----

04. Result

a. Completed

b. Refused

c. Partially completed

d. Other (specify)

05. Checked by supervisor

Name -----Signature-----Date-----

06. Test result (the individual's)

1. Positive

2. Negative

07. Partner's test result (if presented as a couple only)

1. Positive

2. Negative

Part one: Socio-Demographic characteristics

No	Questions	Coding classifications	Skip to	Remark
101	Record sex of the client	1-----Male 2-----Female		
102	How old are you?	-----Years(full yrs)		
103	What is your religion?	1-----Orthodox 2-----Muslim 3-----Catholic 4-----Protestant 5-----Others (specify)		
104	To which ethnic group do you belong?	1----- Amhara 2-----Oromo 3-----Guraghe 4-----Tigray 5-----Other (specify) ----- 99-----No response		
105	What is your completed educational status?	1-----Illiterate 2-----Read and write 3-----Grade 1 to 6 4-----Grade 7 to 8 5-----Grade 9 to 12 6-----Above grade 12 99-----No response		
106	What is your current occupation?	1-----Jobless 2-----Daily Laborer 3-----Government employee 4-----Merchant 5-----Soldier 6-----Driver 7-----Student 8-----Others (Specify) ----- 99-----No response		
107	What is your monthly personal income?	-----Birr per month 1-----No income 99-----No response		
108	Where is your place of residence?	1-----Addis Ababa 2-----Other		

Part two: sexual history, condom use and substance use

No	Questions	Coding classifications	Skip to	Remark
201	Did you ever have sexual intercourse?	1-----Yes 2-----No 99-----No response	→Q215 →Q215	
202	If yes to Q201, with whom? (multiple responses is possible, needs probing)	1----Current partner 2----Previous regular partner 3----Non regular partner 4----Commercial sex worker 5----Others (specify) _____ 99---No response		
203	If Yes to Q201, at what age you had sex first?	_____ Years old 1-----Don't remember 99-----No response		
204	What is the total number of partners you have had sexual intercourse with during your life time (including the current one)?	1-----One 2-----Two 3-----Three and above 99-----No response		
205	If yes to Q201, did you use condom in your last sexual intercourse?	1-----Yes 2-----No 99-----No response		
206	Have you had sexual intercourse in the past one year?	1-----Yes 2-----No 99-----No response	→210 →210	
207	If yes to Q206, with how many different people have you had intercourse during the past one year?	_____ Number		
208	If yes to Q206, with whom? (multiple responses is possible, needs probing)	1----Current partner 2----Previous regular partner 3----Non regular partner 4----Commercial sex worker 5----Others (specify) _____ 99---No response		
209	If yes to Q206, how often you have used condom when you have sexual intercourse in this one year?	1-----Always 2-----Sometimes 3-----Never 99---- No response		
210	Have you started sexual inter-course with the current partner?	1-----Yes 2-----No 99-----No response	→ 213 →213	

211	If yes to Q 210, how often you have used condom when you have sexual intercourse?	1-----Always 2-----Some times 3-----Never 99-----No response		
212	If yes to Q 210, did you and your partner perform HIV test prior to first intercourse?	1-----Yes 2-----No 99-----No response		
213	Did you have any sexual intercourse other than your fiancé after this relationship?	1-----Yes 2-----No 99-----No response	→Q215 →Q215	
214	If yes to Q213, how often you have used condom when you have such sexual contact?	1-----Always 2-----Sometimes 3-----Never 4-----No response		
215	When was you first introduced with your current partner?	_____ months		
216	How many times have you been Married?	_____ Number of times 1-----Only this one 2-----Polygamy 3-----Other (specify) _____ 99-----No response	→ Q218	
117	If you have been married previously, how did you separated from your previous partner?	1-----Separation/divorce 2-----Partner died Other(specify)----- ----- 99-----No response		
218	Did you ever have drunk drinks that contain alcohol?	1-----Yes 2-----No 99-----No response	→Q220 →Q220	
219	If yes to Q218, during the last 12 months, how often have you drunk?	1----Every day 2----Every two days 3----At least once a week 4----Less than once a week 99---No response		
220	Did you ever have chewed kcat?	1-----Yes 2-----No 99-----No response	→Q222 →Q222	
221	If yes to Q220, how often did you chew in the last 12 months?	1----Every day 2---- Every two days 3----At least once a week 4----Less than once a week 99---No response		

222	Some people have tried injecting drugs using syringe. Have you ever injected such drugs?(not medically prescribed drugs)	1-----yes 2-----No 99-----No response	→Q301 →Q301	
223	If yes to Q222, how old were you when you first injected such drugs?	-----years old		
224	If yes to Q222, have you injected such drugs in the last 12 months?	1-----yes 2-----No 99-----No response		

Part three: Knowledge and perceptions on STD/HIV

No	Questions	Coding classifications	Skip to	Remark
301	Have you heard about HIV/AIDS?	1-----Yes 2-----No	→Q307	
302	Do you know any one who is infected with HIV or who has died of AIDS?	1-----Yes 2-----No 99-----No response		
303	How is HIV/AIDS transmitted? (multiple response is possible, needs probing)	1--Sexual intercourse 2---Mother to child 3--Transfusion of infected blood 4---By sharing sharps (Blade, Needle, etc) 5----By kissing 6---By mosquito Others(specify)----- ----- 6-----Don't know		
304	Do you think you can get HIV/AIDS?	1-----yes 2-----no 99-----no response	→ Q306 → Q306	
305	If yes to Q304, what are the reasons?	Specify _____		
306	How can people prevent themselves from getting HIV/AIDS? (multiple response is possible, needs probing)	1-----Avoid Sex/Abstinence 2-----Avoid multiple Sexual Partner (one to one) 3-----Using condom 4-----Avoid sharing sharps 5-----Using sterile/disposable needles 6-----Others (specify)		

		7----Don't know		
307	Do you know diseases that are transmitted sexually other than HIV/AIDS?	1-----yes 2-----no 99-----no response	→Q310 →Q310	
308	If yes to Q307, which STD's do you know? (multiple response is possible)	1-----Syphilis 2-----Gonorrhea 3-----LGV 4-----Chancroid 5-----Others(specify)		
309	Did you have any STDS in the past one year?	1-----yes 2-----no 99-----no response		
310	Did you have an abnormal genital discharge during the past 12 months?	1-----yes 2-----no 99-----no response		
311	Did you have a genital ulcer /sore during the past 12 months?	1-----yes 2-----no 99-----no response		
312	I do not want to know the result, but have you ever had an HIV test before?	1-----yes 2-----no 99-----no response		
313	If yes to Q312, how long since the last test? (in months)	_____ months		
314	If yes to Q312, did you find out the result of your test?	1-----yes 2-----no 99-----no response		

That is the end of our questionnaire. Thank you very much for taking time to answer the questions.

12.2. Structured Amharic version of the questionnaire

በአዲስ አበባ ዩኒቨርሲቲ

የህብረተሰብ ጤና ትምህርት በጋት

በቅድመ ጋቢቻ የኤች አይ ቪ ምርመራ ውጤቶችና ተያያዥነት ባላቸው ጉዳዮች ዙሪያ ለሚደረግ ጥናት አዲስ አበባ በሚገኙ የመንግስት የኤች አይ ቪ ምክርና ምርመራ መስጫ ማዕከላት ለቅድመ ጋቢቻ ምርመራ ለሚመጡ ሰዎች የሚሞላ መጠይቅ:

01. የምረምራ ማዕከሉ ስም-----

02. የመጠይቁ መለያ ቁጥር-----

መግቢያ

በተመሳሳይ ሁኔታ በሌሎች አዲስ አበባ በሚገኙ የኤች አይ ቪ ምክርና ምርመራ መስጫ ማዕከላት ለቅድመ ጋቢቻ የኤች አይ ቪ ምርመራ የሚመጡትን ሰዎች የዚህ ጥናት ቡድን ያነጋግሯቸዋል ። የጥናቱ አላማ የቅድመ ጋቢቻ የኤች አይ ቪ ምርመራ በሚያደርጉ ሰዎች የኤች አይ ቪ ስርጭትና ተያያዥነት ያላቸው ጉዳዮችን ለማወቅና አስፈላጊውን ጤና ነክ ዕቅድና ዕርምጃ በፖሊሲ አውጪዎች እንዲወሰድ ለማመቻት ነው። ስለ ራስዎ አንዳንድ ጥያቄዎችን እጠይቅዎታለሁ። መልስዎ ሚስጢራዊነቱ ከማንኛውም አካል ከአጮኛዎም ጭምር የተጠበቀ ነው። ስምዎም በዚህ ፎርም ላይ አይሞላም ወይም አይጻፍም። ከሌላ ከሚነግሩኝ መረጃ ጋርም አይያያዝም። መመለስ የማይፈልጉትን ጥያቄ የግድ መመለስ የለብዎትምና መተው ይችላሉ። በመሆኑም ይህንን ቃለመጠይቅ በፈለጉበት ጊዜ ሊያቆሙ ይችላሉ። ነገር ግን ለጥያቄው እርስዎ የሚሰጡን ቅንና ትክክለኛ መልስ ጥናቱ የተሟላ እንዲሆንና አስፈላጊውን ጤና ነክ እርምጃዎች ለመውሰድ በጣም ጠቃሚና አስፈላጊ ነው። ለጥያቄው ለሚሰጡን መልስ አድናቆታችን በጣም ከፍ ያለ ነው። መጠይቁ 20 ደቂቃ ያህል ይወስዳል ።

ግልጽ ነው? 1. አዎ 2. አይደለም

ስለዚህ በመጠይቁ ለመሳተፍ ፍቃደኛ ነዎት? 1. አዎ 2. አይደለሁም

አመሰግናለሁ።

03. ፈቃደኝነቱን ያረጋገጠው መረጃ ስብሰቢ ስምና ፊርማ

ስም----- ፊርማ----- ቀን-----

04. የመጠይቁ ውጤት

ሀ. ሙሉ ለሙሉ የተጠናቀቀ ለ. ፍቃደኛ አይደለም

ሐ. በከፊል የተጠናቀቀ መ. ሌላ (ይጠቀስ)-----

05. የተቆጣጣሪው ስምና ፊርማ ስም-----ፊርማ-----ቀን-----

06. የምርመራ ውጤት (የተጠያቂው/ዋ) 1. ፖዘቲቭ 2. ኔጋቲቭ

07. የዕጮኛ ምርመራ ውጤት (ሁለቱም ጥንዶች ከተገኙ ብቻ) 1. ፖዘቲቭ 2. ኔጋቲቭ

ክፍል 1: አጠቃላይ የተጠያቂው መረጃዎች

ተ.ቁ.	መጠይቅ	የመለያ ኮድ(መልስ)	ዝለልወደ	ምርመራ
101	የተጠያቂው ጾታ	1-----ወንድ 2-----ሴት		
102	ዕድሜዎ ስንት ነው?	-----ዓመት		
103	ኃይማኖትዎ ምንድን ነው?	1-----አርቶዶክስ 2-----እስልምና 3-----ካቶሊክ 4-----ፕሮቴስታንት ሌላ ይገለጽ-----		
104	ከየትኛው ብሄረሰብ ነዎት?	1-----አማራ 2-----አሮሞ 3-----ጉራጌ 4-----ትግራይ ሌላ ይገለጽ----- 99-----መልስ የለም		
105	ያጠናቀቁት ክፍተኛ የትምህርት ደረጃ ስንት ነው?	1-----አልተማርኩም 2-----ማንበብና መጻፍ 3-----ከ1-6ኛ ክፍል 4-----ከ7-8ኛ ክፍል 5-----ከ9-12ኛ ክፍል 6-----ከ12ኛ ክፍል በላይ 99-----መልስ የለም		
106	መደበኛ ስራዎ ምንድን ነው?	1-----ስራ አጥ 2-----የቀን ስራተኛ 3-----የመንግስት ስራተኛ		

		4-----ነጋዴ 5-----ወታደር 6-----ሹፊር 7-----ተማሪ ሌላ ይገለጹ----- 99-----መልስ የለም		
107	የግል የወር ገቢዎ በብር ስንት ይሆናል?	-----የኢትዮጵያ ብር 1-----የግል ገቢ የለኝም 99-----መልስ የለም		
108	የመኖሪያ አድራሻዎ የት ነው?	1-----አዲስ አበባ 2-----ከአዲስ አበባ ውጭ		

ክፍል 2: የግብረ ስጋ ግንኙነት፣ ኮንደም አጠቃቀምና ሱስ አስያዥ ነገሮችን ስለመጠቀም

ተ.ቁ.	መጠይቅ	መለያ ኮድ (መልስ)	ዝለልወደ	ምርመራ
201	የግብረ ስጋ ግንኙነት ፈጽመው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	→ ጥ215 → ጥ215	
202	ለጥ201 መልስ አዎ ከሆነ፣ ከማን ጋር? (ከአንድ በላይ መልስ ይቻላል)	1-----ከአሁን እጮኛዬ 2-----ከቀደሞ መደበኛ ፍቅረኛ 3-----ከመደበኛ ፍቅረኛ ወጪ 4-----ከሌተኛ አዳሪ ሌላ ይገለጹ----- 99-----መልስ የለም		
203	ለጥ 201 መልስ አዎ ከሆነ፣ ለመጀመሪያ ጊዜ የግብረ ስጋ ግንኙነት ሲያደርጉ እድሜዎት ስንት ነበር?	-----ዓመት 1-----አላስታውስም 99----- መልስ የለም		

204	ለጥ 201 መልስ አዎ ከሆነ፣ በህይወት ዘመንዎ ከስንት የተለያዩ ሰዎች የግብረ ስጋ ግንኙነት ፈጽመዋል?	1-----ከአንድ 2-----ከሁለት 3-----ሶስትና ከዛ በላይ 99-----መልስ የለም		
205	ለጥ201 መልስ አዎ ከሆነ፣ ለመጨረሻ ጊዜ የግብረ ስጋ ግንኙነት ሲያደርጉ ኮንዶም ተጠቅመው ነበር?	1-----አዎ 2-----አልተጠቀምኩም 99-----መልስ የለም		
206	ባለፉት 12 ወራት ጊዜ ውስጥ የግብረ ስጋ ግንኙነት ፈጽመው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	► ጥ210 ► ጥ210	
207	ለጥ206 መልስ አዎ ከሆነ፣ ከስንት የተለያዩ ሰዎች የግብረ ስጋ ግንኙነት ፈጽመዋል?	-----በቁጥር		
208	ለጥ206 መልስ አዎ ከሆነ፣ ከማን ጋር? (ከአንድ በላይ መልስ ይቻላል)	1-----ከአሁን እጮኛዬ 2-----ከቀደም መደበኛ ፍቅረኛ 3-----ከመደበኛ ፍቅረኛ ወጪ 4-----ከሌተኛ አዳሪ ሌላ ይገለጽ----- 99-----መልስ የለም		
209	ለጥ206 መልስ አዎ ከሆነ፣ የኮንዶም አጠቃቀምዎ ለምን ያህል ጊዜ ነበር?	1-----ሁል ጊዜ 2-----አንዳንድ ጊዜ 3-----በጭራሽ 99-----መልስ የለም		
210	ከአሁን እጮኛዎ የግብረ ስጋ ግንኙነት መፈጸም ጀምረዋልን?	1-----አዎ 2-----አልጀመርኩም 99-----መልስ የለም	► 213 ► 213	

211	ለጥ210 መልስ አዎ ከሆነ፣ የኮንዶም አጠቃቀም ለምን ያህል ጊዜ ነበር?	1-----ሁል ጊዜ 2-----አንዳንድ ጊዜ 3-----በጭራሽ 99-----መልስ የለም		
212	ለጥ210 መልስ አዎ ከሆነ፣ የግበረ ስጋ ግንኙነት ከመፈጸም በፊት እርስዎና እጮኛዎ የኤች ኤይቭ ምርመራ አድርገው ነበር?	1-----አዎ 2-----አላደረግንም 99-----መልስ የለም		
213	ከእጮኛዎ ጋር ከተዋወቁ በኋላ ከእሳቸው ውጪ የግብረ ስጋ ግንኙነት ፈጽመው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	→ ጥ215 → ጥ215	
214	ለጥ213 መልስ አዎ ከሆነ፣ የኮንዶም አጠቃቀም ለምን ያህል ጊዜ ነበር?	1-----ሁል ጊዜ 2-----አንዳንድ ጊዜ 3-----በጭራሽ 99-----መልስ የለም		
215	ከአሁን እጮኛዎ ለመጀመሪያ ጊዜ የተዋወቁት መቼ ነው?	ከ-----ወር በፊት		
216	ለምን ያህል ጊዜ የተለያዩ ጋቢቻዎችን ፈጽመዋል?	-----ጊዜያት በቁጥር 1-----የአሁኑ ብቻ 2-----ከአንድ በላይ በባህል የተፈቀደ ሌላ ይገለጽ----- 99-----መልስ የለም		
217	ከዚህ በፊት ጋቢቻ ፈጽመው ከሆነ፣ ከቀድሞ ባለቤትዎ እንዴት ነበር የተለየዎት?	1-----በፍቺ 2-----ባለቤተ ሞቶብኝ/ታብኝ ሌላ ይገለጽ----- 99-----መልስ የለም		
218	አልኮልነት ያላቸው መጠጦችን ጠጥተው ያውቃሉ?	1-----አዎ		

		2-----አላውቅም 99-----መልስ የለም	→ ጥ220 → ጥ220	
219	ለጥ218 መልስ አዎ ከሆነ፣ ባለፉት 12 ወራት በየ ስንት ጊዜ ይጠጡ ነበር?	1-----በየ ቀኑ 2-----በየ ሁለት ቀን 3-----ቢያንስ በሳምንት አንዴ 3-----በሳምንት ከአንዴ በታች 99-----መልስ የለም		
220	ጫት ቅመው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	→ ጥ222 → ጥ222	
221	ለጥ220 መልስ አዎ ከሆነ፣ ባለፉት 12 ወራት በየ ስንት ጊዜ ይቅሙ ነበር?	1-----በየ ቀኑ 2-----በየ ሁለት ቀን 3-----ቢያንስ በሳምንት አንዴ 4-----በሳምንት ከአንዴ በታች 99-----መልስ የለም		
222	አንዳንድ ሰዎች በህክምና ያልታዘዙ/ ሱስ የሚያሲዙ በመርፌ የሚሰጡ መድሃኒቶችን ይወስዳሉ፣ እርስዎ እንደዚህ አይነት መድሃኒቶች ወስደው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	→ ጥ301 → ጥ301	
223	ለጥ222 መልስ አዎ ከሆነ፣ ለመጀመሪያ ጊዜ እነኝህ መድሃኒቶች ሲወስዱ እድሜዎት ስንት ነበር?	-----ዓመት		
224	ለጥ222 መልስ አዎ ከሆነ፣ ባለፉት 12 ወራት እነኝህ መድሃኒቶች ወስደው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም		

ክፍል 3: ስለ አባላዘር በሽታዎች/ ኤች ኤይ ቪ ዕውቀትና አመለካከት

ተ.ቁ.	መጠይቅ	መለያ ኮድ(መልስ)	ዝልልወደ	ምርመራ
301	ኤች ኤይ ቪ/ ኤድስ ስለሚባል በሽታ ስምተው ያውቃሉ?	1-----አዎ 2-----አላውቅም	➔የ307	
302	በኤች ኤይ ቪ/ ኤድስ የተያዘ ወይም የሞተ ሰው ያውቃሉ ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም		
303	ኤች ኤይ ቪ/ ኤድስ እንዴት ይተላለፋል ? (ከአንድ በላይ መልስ ይቻላል)	1-----በግብረ ስጋ ግኑኝነት 2-----ከእናት ወደ ልጅ 3-----የተበከለ ደም ለህክምና ሲወሰድ 4-----የተበከሉ ስለታም እቃዎች በጋራ በመጠቀም (ምሳጭ፣ መርፌ) 5-----በመሳሳት 6-----በወባ ትንኝ ሌላ ይገለጽ----- 5-----አላውቅም		
304	በኤች ኤይ ቪ ልያዝ እችላለሁ ብለው ያስባሉ ?	1-----አዎ 2-----አላስብም 99-----መልስ የለም	➔የ306 ➔የ306	
305	ለጥ304 መልስ አዎ ከሆነ፣ በምን ምክንያት የተጋሰጡ ይመስሉታል?	ይገለጽ-----		
306	ሰዎች ራሳቸውን እንዴት ከኤች ኤይ ቪ ሊከላከሉ ይችላሉ ? (ከአንድ በላይ መልስ ይቻላል)	1---ከግብረ ስጋ ግኑኝነት በመታቀብ 2---አንድ ለአንድ በመወሰን 3---ኮንዶም በመጠቀም 4---ስለታም ነገሮችን በጋራ ባለመጠቀም 5---ንጽህናው የተጠበቀ መርፌ በመጠቀም ሌላ ይገለጽ-----		

		6----አላውቅም		
307	ከኤች አይ ቪ ሌላ በግብረ ስጋ ግንኙነት የሚተላለፉ በሽታዎችን ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም	→ ጥ310 → ጥ310	
308	ለጥ307 መልስ አዎ ከሆነ፣ የትኞችን በሽታዎች ያውቃሉ? (ከአንድ በላይ መልስ ይቻላል)	1-----ቁጥኝ 2-----ጨብጥ 3-----ባንቡሌ 4-----ከርክር ሌላ ይገለጽ-----		
309	ባለፉት 12 ወራት ውስጥ በግብረስጋ ግንኙነት የሚተላለፉ በሽታዎች ይዘዎት ያውቃል?	1-----አዎ 2-----አያውቅም 99-----መልስ የለም		
310	ባለፉት 12 ወራት ውስጥ ከብልቶት ያልተለመደ ፈሳሽ ፈሶ ያውቃል?	1-----አዎ 2-----አያውቅም 99-----መልስ የለም		
311	ባለፉት 12 ወራት ውስጥ በብልቶት አካባቢ ቁስል ወጥቶ ያውቃል?	1-----አዎ 2-----አያውቅም 99-----መልስ የለም		
312	ውጤቱን ማወቅ አልፈልግም ግን ከዚህ በፊት የኤች አይ ቪ ምርመራ አድርገው ያውቃሉ?	1-----አዎ 2-----አላውቅም 99-----መልስ የለም		
313	ለጥ312 መልስ አዎ ከሆነ፣ ለመጨረሻ ጊዜ ከተመረመሩ ስንት ጊዜ ሆኖታል? (በወር)	-----ወር		
314	ለጥ312 መልስ አዎ ከሆነ፣ የምርመራ ውጤቱን አግኝተዋል?	1-----አዎ 2-----አላገኘሁም 99-----መልስ የለም		

ቃለመጠይቁን ጨርሻለሁ። ላደረጉልን ትብብር በጣም አመሰግናለሁ።

12.3. Conceptual framework for determinant factors of HIV sero status

