

**SOCIO-DEMOGRAPHIC AND BEHAVIORAL  
DETERMINANTS OF SERO-DISCORDANCE  
AMONG COUPLES TAKING HIV TEST  
DESSIE (ETHIOPIA)**

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## Acronyms

AIDS	Acquired immuno deficiency syndrome
ART	Anti retroviral therapy
BSS	Behavioral surveillence survey
CDC	Centers for disease control
CI	Confidence interval
FGAE	Family guidance Association Ethiopia
HIV	Human immunodeficiency virus
ICSI.	Intra-cytoplasmic sperm injection
IUI	Intra-uterine insemination
MSM	Men who have sex with men
OR	Odds ratio
OSSA	Organization for social service of AIDS
PLWHA	Patients living with HIV AIDS
SD	Standard deviation
SPSS	Software package for social science studies
STI	Sexually transmitted infections
VCT	Voluntary counseling and testing

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## **Abstract**

**Background:** There is no room for complacency about AIDS anywhere. It is estimated some 5 million people become infected with HIV per annum. The pandemic is continuing unabated. Though more than 40 million people are living with HIV/AIDS today, we must remember that this epidemic is still in its early stage in many nations. Since the major means of transmission for the virus is heterosexual intercourse, identifying serodiscordant couples/partners through VCT would have paramount importance to mitigate the propagation of the disease.

**Objective:** To assess the prevalence of serodiscordant test result possible socio demographic and behavioral determinants. Assessment of post test reaction of discordant couples & perceived competency of counselors towards couple counseling.

**Methods:** The study was retrospective cross-sectional study design based on simple random sampling of couples tested for HIV in 2004/5. The Ethiopian Standard VCT client record formats was sorted chronologically to serve as sampling frame. The calculated sample size for the quantitative study was 601 couples (1202 individuals). Qualitative data was generated from counselors and peer supervisors to enrich the quantitative data & address issues far fetched quantitatively. Tape recorder and semi structured open-ended questions were used for the qualitative data. Computerized data entry, cleaning and analysis was executed using relevant software packages like SPSS and Open code. Ethical clearance was considered for each step, which mandates to do so.

**Result:** The prevalence of sero discordance was found to be 9.8%. Of all study-subjects, 0.93 % were concordant positive while the remaining 88.3 % were concordant negative. Discordance was more prevalent among previously divorced and separated couples 22.4% & 22.8 % respectively. Married couples found to be significantly discordant than premarital couples, OR= 2.408; 95 % CI (1.26, 4.602); P=008.

**Conclusion:** several socio demographic and behavioral factors were associated with sero discordance for couples. Posttest reactions of couples were so grave, counselors used to face considerable challenges.

**Key words:** Behavioral determinants, HIV/AIDS, seroconcordant, serodiscordant, Socio-demographic determinants, voluntary counseling and testing (VCT).

# **1-Back ground and Statement of the problem**

## **1.1-Introduction**

Tremendous HIV prevention programs globally and nationwide elucidate their focus on reducing the number of casual partners, using condoms during casual sex and increasing fidelity among married partners. However, for persons in an HIV-discordant relationship, encouraging monogamy with out safer sexual behavior will not decrease the risk of HIV transmission. HIV discordance among couples is an increasingly important issue in HIV prevention activity <sup>1</sup>. HIV counseling is defined as “Confidential dialogue between a person and a care provider aimed at enabling the person to cope with stress and make personal decisions related to HIV/AIDS. For the person being tested, HIV testing has consequences that reach far beyond the diagnosis <sup>2</sup>.

Serodiscordant HIV test refers the incidence of mixed/opposite serum test result for couples or sexual partners. The prevalence of serodiscordant test result ranges from 9-30% in various studies; in Uganda 9% of all couples and 18% of married couples are found to be discordant <sup>1</sup>. <sup>3</sup>. However, CDC claims up to 30% serodiscordance in areas where HIV is highly prevalent <sup>3</sup>. The per-act rate of sexual transmission from an infected index case to corresponding serodiscordant partner has been estimated at 1 in 700 from female to male, 1 in 300 for male to female, and as high as 1 in 10 for male to male <sup>4</sup>. Options for HIV-affected discordant couples to realize the wish for parenthood theoretically vary from unprotected intercourse to several techniques of assisted reproduction, donor insemination or adoption. Usually, couples are advised against unprotected intercourse, as the priority is to prevent infection in the uninfected partner or child <sup>5,6,7</sup>.

## **1.2- Rationale of the study**

The magnitude of serodiscordance and its determinants among couples is not well known in Ethiopia due to lack of research endeavor in this specific arena. Assessing all these issues in our context would have prominent significance in augmenting prevention endeavors, as the major mode of contracting the virus is heterosexual intercourse among couples/partners with mixed/discordant sero status. Especially those negative partners with in discordant partnership are the most vulnerable segment of the population to seroconvert. Timely recognition of discordant couples or partners has valuable significance to curb the prevalence of this pandemic; as knowing their own/partner's serostatus and the options can motivate people to change higher risk behaviors. Moreover, knowing the magnitude and some determinants for serodiscordance would lay basis for further biomedical researches geared towards detail immunological studies. Having this research gap and significance in mind, it is worth and high time to get deployed in this particular study arena.

Knowing posttest reaction of couples will help to design important intervention strategies to diminish the psychological trauma and socioeconomic complications those couples faced. Assessing perceived knowledge and attitude of counselors and peer supervisors towards couple counseling and testing is significant to determine whether further training is needed regarding couple counseling. Shedding some light on the prevalence of serodiscordant couples, efforts to assess post-test reaction of couples, unearthing possible determinants associated with discordance and knowing perceived competency of counselors towards couple counseling has enormous significance for policy and decision-making procedures regarding this pandemic on top of academic interest.

## **2-Literature review**

### **2.1-Global and Regional burden**

Since its recognition, human immuno deficiency virus (HIV) has infected close to 65 million individuals and over 25 million have already died due to AIDS. Currently, over 42 million people are living with the virus and of these more than 70% are in sub-Saharan Africa<sup>8</sup>. With more than two-thirds of the total global number of HIV infections, Africa is by far the worst affected region by HIV/AIDS. In the worst affected countries, the epidemic is reversing the health and development gains of the past 50 years, including the hard-won improvements in child survival and life expectancy<sup>9</sup>.

### **2.2-Ethiopian context**

HIV was first detected in Ethiopia in stored sera of 19 84. HIV surveillance in Ethiopia is begun in 1989 and since then the epidemic appears to have steadily increased. The HIV/AIDS situation of Ethiopia has evolved from two cases in 19 86 to more than two million PLWHA currently. With the advent of the epidemic, an increased number of people are also requiring care and support which poses further socio-economic burden to the nation. The epidemic poses a great threat to overall development effort of the country and the impact should not be underestimated at any cost. Indeed, the current state of the epidemic in Ethiopia calls for timely and scaled up intervention to curb the gradual rise in the number of people infected and affected by HIV/AIDS<sup>10</sup>.

### **2.3-Reproductive issues among serodiscordant couples**

Careful preconception counseling of the risks involved and advice on how to time intercourse accurately are necessary for couples prepared to risk unprotected intercourse to have a child.

Having an undetectable viral load in the blood does not eliminate the possibility of transmitting the virus because levels of HIV in the blood and semen or vaginal secretions are poorly correlated. The risk per act of unprotected intercourse is estimated to be between 1 in 500 and 1 in 1,000. Nevertheless, a single act of unprotected intercourse is sufficient to infect one's partner. Couples may try to minimize the transmission by accurately timing intercourse using ovulation detection. Another option to consider is washed intra-uterine insemination (IUI), commonly referred to as artificial insemination. IUI eliminates the need for intercourse and subsequent risk of HIV transmission. In this case, special techniques are used to separate the sperm from the seminal fluid. The sperm are then placed directly into the uterus after accurately assessing the time of ovulation. Another option that is more commonly performed in the US is *in vitro fertilization*. This should be considered when IUI is not feasible or is unsuccessful. The specific technique used is called intracytoplasmic sperm injection (ICSI). The woman's oocytes (eggs) are harvested after undergoing ovulation induction and the male's sperm is isolated. The ICSI technique involves fertilizing each egg with one sperm instead of exposing the egg to millions of sperm as is done in IUI. *Adoption* is a final option for those couples that do not want to risk HIV transmission from unprotected intercourse or who fail or choose not to undergo assisted reproductive techniques. In practice, the presence of HIV infection in one or both partners may make adoption a challenge<sup>6, 11</sup>.

#### **2.4-Serodiscordant test and sexual behavior of couples**

Though 36% of HIV discordant heterosexual Haitian couples continued to engage in unprotected intercourse, a low seroconversion rate was reported for discordant Zairian couples who participated in an intensive psychological counseling program. The effect of counseling in motivating behavioral change should not be underestimated.

The California Partner Study, a study of sexual HIV transmission among heterosexuals, recruited 372 HIV serodiscordant couples and followed a total of 175 couples over a 10-year period (1985-1995). Over 80% of couples always used condoms at any given follow-up visit, compared to 49% at intake <sup>11</sup>. It is not uncommon for people who are infected with HIV to engage in risky (unprotected) sex without disclosure of their HIV-positive status. Studies found that 42 percent of gay or bisexual men, 19 percent of heterosexual men, and 17 percent of all women said they had unprotected sex without disclosing their HIV status to their partner. For gay or bisexual men, 13 percent of serodiscordant partnerships (sex between an HIV-positive and HIV-negative person) involved unprotected anal or vaginal sex without disclosure of HIV status, compared with 9 percent of heterosexual men's and 10 percent of women's serodiscordant partnerships. About half of the sexually active gay or bisexual men (58 percent), heterosexual men (46 percent), and women (47 percent) had serodiscordant sexual partners during the 6 months before the interview <sup>12</sup>.

## **2.5-Determinants of seroconversion among serodiscordant couples**

To determine the risk factors associated with heterosexual transmission in Rakai (Uganda), a retrospective analysis was performed on these 415 HIV-discordant couples and a comparison group of over 4,000 couples who were concordantly negative for HIV. Of the 415-serodiscordant couples, the male was infected in 55%, and the female partner was infected in 45% of the couples at enrollment. Ninety or 22% of the HIV-negative partners seroconverted during the course of this study for an incident rate of 11.8 per 100 person-years. If the seronegative male partner was circumcised, (there were 50 such men), no seroconversions occurred, in contrast to an incident rate of 16.7% among the 137 uncircumcised male partners.

The median age at enrollment was 30 years of age, but the highest incidence of seroconversion occurred in couples between the ages of 15 to 19 years, with an incident rate of 18.6%. The incident rate declined with the age of both the HIV-negative and HIV-positive partners. Symptoms of STIs in the HIV-infected partner (such as vaginal or urethral discharge or dysuria) were associated with a greater risk of transmission to the uninfected partner. Similarly, the presence of AIDS-defining symptoms or signs was also significantly associated with an increased rate of transmission (incidence = 27.3% vs. 11.4%). Among the 51 couples in which the HIV-positive partner had a viral level <1,500 including those undetectable, no transmissions occurred. Similar to previous reports from the U.S. and Europe, serum levels of HIV RNA were significantly higher among the HIV-positive men (59,591 c/ml) compared to the mean level in women (36,875 c/ml). Of interest, there was no significant difference between male-to-female and female-to-male transmission rates after adjustment for viral load or within strata of viral load. When the above variables were entered into models to predict transmission of HIV within the serodiscordant couples, viral load was the factor that most strongly predicted the risk of transmission. When viral load was analyzed as a continuous variable, the risk of transmission increased 2.45 for each log<sub>10</sub> increment in viral load. Age was inversely associated with risk of transmission. Finally, the other significant predictor of reduced transmission was circumcision in the HIV-negative men. The results of this study have important implications for furthering our understanding of heterosexual HIV transmission and for development of means to prevent such transmission and to hopefully slow the spread of HIV globally<sup>13</sup>.

## **2.6- Role of Condom in preventing seroconversion among serodiscordants**

Information on condom usage and HIV serology was obtained from 25 published studies of serodiscordant heterosexual couples. Condom usage was classified as always (in 100% of acts of intercourse), sometimes (1-99%, 0-99% or 1-100%) or never (0%). Studies were stratified by design, direction of transmission and condom usage group. Condom efficacy was calculated from the HIV transmission rates for always-users and never-users. For always-users, 12 cohort samples yielded a consistent HIV incidence of 0.9 per 100 person-years (95% confidence interval, 0.4-1.8). For 11 cohort samples of never-users, incidence was estimated at 6.8 per 100 person-years (95% confidence interval, 4.4-10.1) for male-to-female transmission, 5.9 per 100 (95% confidence interval, 1.5-15.1) for female-to-male transmission and 6.7 per 100 (95% confidence interval, 4.5-9.6) in samples that specified the direction of transmission. Generally, the condom's effectiveness at preventing HIV transmission is estimated to be 87%, but it may be as low as 60% or as high as 96%. Consistent use of condoms provides protection from HIV. The level of protection approximates 87%, with a range depending upon the incidence among condom nonusers. Thus, the condom's efficacy at reducing heterosexual transmission may be comparable to or slightly lower than its effectiveness at preventing pregnancy<sup>14, 15</sup>.

## **2.7-Antiretroviral therapy and serodiscordant couples**

Advances in anti-HIV therapy and improved treatment of opportunistic infections have produced a significant increase in the life expectancy and quality of life of HIV-infected adults<sup>7</sup>. From the mid-1980s through the early 1990s, there was a significant reduction in sexual risk behavior among some groups.

However, with the introduction of ART in 1996, there has been an increase in sexual risk behavior, and increased incidence of new HIV infections and transmission of multi-drug resistant virus in the United States. Studies available for review come from samples of HIV-positive and/or HIV-negative men who have sex with men (MSM), HIV-positive individuals (including MSM) on ART, and HIV-serodiscordant couples (both MSM and heterosexual). These studies have been conducted in San Francisco, New York, Atlanta, Chicago, Ottawa, London, California, France, and Australia. Notwithstanding the problems of comparability mentioned above, some interesting findings have emerged from these studies. Findings from these studies are equivocal with respect to the relationship between perceptions about the impact of ART on HIV transmissibility and actual risk behaviors. Data aggregated from a number of studies indicate that somewhere between (10-34) percent of people are less concerned about HIV transmission now than before the advent of ART; and for 8 percent to 20 percent of them, their belief has translated into increased sexual risk behaviors. Another issue to consider is the relationship between adherence to ART regimens and sexual risk behaviors or safe sex behaviors. Unpublished data from a study among 40 HIV-serodiscordant couples (gay and heterosexual) indicate that couples reporting unprotected anal or vaginal sex were more likely to have lower scores on an adherence measure<sup>13, 17</sup>.

## **3-Objective**

### **3.1-General objective**

- ✓ To assess the prevalence of serodiscordant couples for HIV test and possible determinants as well as post test reactions associated with this test result and counselors perceived knowledge towards couple counseling.

### **3.2-Specific objectives**

- ✓ To determine the prevalence of discordant serum out come among couples taking VCT.
- ✓ To assess socio-demographic and behavioral determinants for serodiscordant HIV antibody test out come among couples tested in VCT centers.
- ✓ To assess perceived knowledge and attitude of counselors towards couple counseling and testing.
- ✓ To assess post-test reaction of discordant couples.
- ✓ To asses management options exercised by counselors.

## **4-Methodology**

### **4.1-Study design**

Cross sectional study design primarily with quantitative data retrieved from Ethiopian HIV voluntary counseling and testing record format. Qualitative data was generated from counselors through in depth interview to elucidate issues not addressed by the quantitative data and to enrich some quantitative findings.

### **4.2-Study area**

The study area is Dessie town located in South Wollo zone of Amhara regional state. Though there are seven institutions which offer voluntary counseling and testing service in the town, the District health office authorized only five of them. The town comprises 154,465 inhabitants according to statistical projections for 2004. Male to female ratio of those dwellers is estimated to be 1.041<sup>18</sup>.

### **4.3-Source population**

All couples dwell in Dessie town or the near by vicinities who potentially believed to utilize voluntary counseling and testing service for HIV at those centers in the town.

### **4.4-Study population**

Couples who have undergone voluntary counseling and testing for HIV in those VCT centers which do have legitimate right to conduct the test in the study area with in the specified time period (i.e. September 2004-August 2005).

#### ***Inclusion criteria***

Couples tested for HIV in those recognized VCT centers of the study area, with in the specified time period and whose pretest, test and post test records are well documented in the standard format.

### *Exclusion criteria*

Those couples and all other clients tested for HIV earlier or later than the specified time period or do not compatible for one or more reasons mentioned in the inclusion criteria.

## **4.5-Sampling procedure**

### *Quantitative*

All couples voluntarily counseled & tested in those eligible centers within the specified time period were listed chronologically in their respective VCT centers. Proportionally simple random sampling was done from three institutions based on their client intake capacity till the optimum sample size was attained. Out of those five recognized institutions data was collected only from three centers as the remaining two were not using the standard client intake format.

### *Qualitative*

Qualitative data was collected from all those five VCT centers recognized by the woreda health office. In-depth interview of counselors was held with open ended and semi structured guide. Three in-depth interviews from Family Guidance Association Ethiopia (FGAE), two from Organization for Social Service against AIDS (OSSA) and the remaining three institutions contribute each one to make the total In-depth interview eight. The number of interviews held within each institution roughly correlates with their client intake capacity. Each in-depth interview was taped and averagely took 45 minutes.

## **4.6-Sample size**

Sample size was determined using sample size determination for single population proportion. Sample size was determined considering the prevalence (P) of serodiscordance test result 50%; because there was no well-established research finding in Ethiopia, which can serve as base line information.

On top of that, it would give maximum sample size with fixed value of “d” (margin of error) which in turn help to execute internal comparison as per the determinants are concerned.

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

$$d = 0.04$$

$$z = 1.96$$

$$p = 0.5$$

*d= margin of error*  
*z= confidence interval*  
*p= prevalence*

$$n = 601$$

#### **4.7-Principal research instrument**

Pre structured Secondary data reviewing format compatible to the national standard VCT record format which comprises, socio demographic characteristics, sexual behavior, test result and some other important variables. An open-ended semi-structured in depth interview guide was used for the qualitative data collection among VCT counselors.

#### **4.9-Data collection**

##### *Quantitative*

To retrieve data from those three institutions four counselors were recruited. Two counselors were from FGAE while the Hospital and the health center each contribute one. All the data retrievers were health professionals with special counseling training. All those data collectors have got orientation as to how to collect the data by the principal investigator before the onset of their activity. The principal investigator was closely supervising over all data collection duty.

##### *Qualitative*

To enrich & address issues not uncovered by quantitative data, qualitative data was generated through in-depth interview.

The collection of qualitative data was executed just preceded by the quantitative data. Relevant interview guideline was used to facilitate the in-depth interview. The principal investigator aided with tape recorder executed all in depth interviews with eligible informants (counselors) who had practical work experience in counseling couples owing special emphasis to serodiscordants. Points regarding posttest reaction of discordant couples and counselor's attitude towards couple counseling was assessed through interview conducted with those counselors, not by directly contacting discordant couples for ethical reasons. Totally eight in-depth interviews were held each taking average of 45 minutes.

#### **4.10-Variables**

##### ***-Some of Independent variables***

<p><i>=Socio demographic variables</i>  <i>-Age</i>  <i>-Gender</i>  <i>=Behavioral variables</i>  <i>-Condom use,</i>  <i>-Number of sexual partners</i></p>
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##### ***-Some Dependent (Out come) variables***

<p><i>-HIV sero-status</i>  <i>-Posttest reaction</i></p>
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#### **4.11-Operational definition**

Behavioral determinants: Factors associated with human behavior and believed to have determining role in aggravating or aggrandizing the occurrence of the variable of interest.

Couples: Paired, sexually active, individuals with dissimilar sex supposed to be engaged or going to be engaged in penetrative sex.

Demographic determinants: Demographic characteristics that any individual pertains and anticipated to have a role in aggrandizing or aggravating the occurrence of the variable of interest.

Sero-concordant: Couples tested for HIV and have identical serum test result.

Sero-discordant: Couples or sexual partners tested for HIV and have mixed sero-status (one partner negative while the other is being positive)

#### **4.12-Data analysis**

The variables of the quantitative study were pre-coded and entered to the computer using SPSS version 12. Data cleaning was executed with the same software package by running frequency and cross tab. Summary tables, graphs and charts were used for descriptive purpose. Measures of central tendency and dispersion were used to describe various relevant findings. Multinomial logistics regression was used to uncover statistically significant associations between explanatory variables and discrete out come variable. Linear regression and correlation was used for continuous variables of interest. Enter method was used for variable selection to the regression model. EPI-Info version-6 was used to compute Chi-square for trend. All collected qualitative data was taped and transcribed. Translation, categorization and summarization of data were done subsequently.

#### **4.13-Data quality assurance**

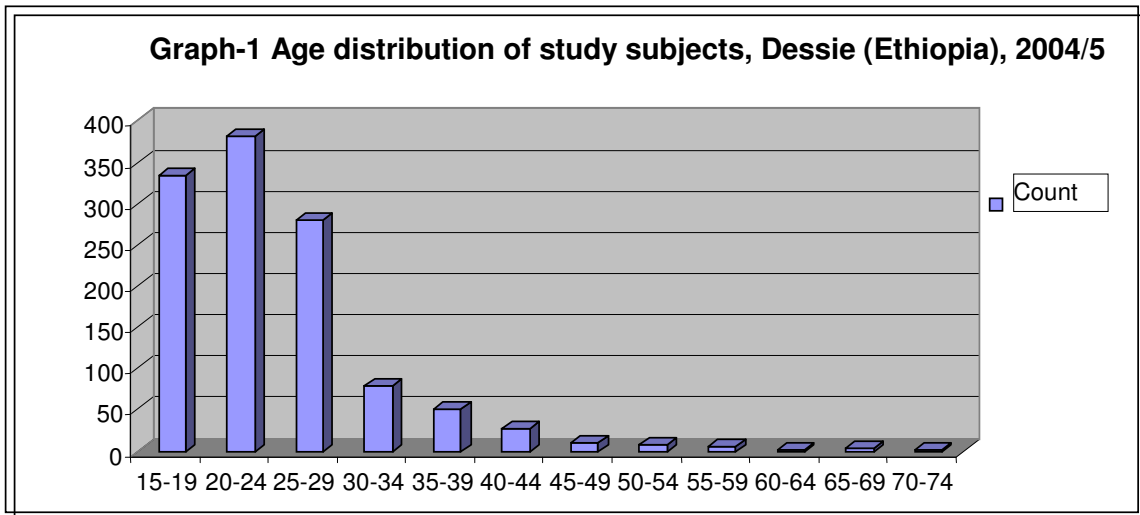
All the collected record sheets were thoroughly scrutinized every day at the end of data collection session by the principal investigator to ensure their compatibility with the inclusion criteria. Ten percent of the data was double entered to check any inconsistencies. The data was cleaned just preceded by entry.

## **5-Ethical consideration**

Ethical clearance was obtained from Community health department and Medical faculty ethical clearance committee. Official consent letter was issued from community health department for Amhara regional state health bureau and South Wollo zonal health desk. The zonal health desk and Dessie district health office had informed all eligible institutions with formal letter. Verbal consent was taken from the counselors and peer supervisors. Due emphasis was given for the confidentiality and privacy of the respondents (counselors) by interviewing each respondents in well confined private room. The idea forwarded by one counselor was not communicated with others in a manner which can shed light for them as to where the idea is emanated from. Name of respondents or study participants was not mentioned in one or another way. The quantitative data retrieved from Ethiopian standard VCT record format was entirely unlinked anonymous as it dose not bear any name or identification number to link certain test result with specific individual/couple.

## **Result (Quantitative)**

A total of 1202 client intake forms for 601 couples was collected from three institutions deployed in voluntary counseling testing activity. Out of 1202 standard client intake forms collected 22 (1.8%) were excluded during data entry and cleaning as they found to be incompatible to the inclusion criteria. Of all 1800 valid data 782(66.3%) was generated from non-governmental institution (FGAE) while the remaining 380(32.2%) and 18 (1.5%) was from governmental Health center and Hospital respectively. The mean age of study subjects was 24.1492 years with a range of 54 and SD  $\pm 7.3026$ .



Of all couple types premarital comprises the vast majority 83.6% followed by married and pre-sexual couples (12.1%, and 1.7%) respectively. Considerable number of clients 1175(99.6%) were self-referred. One thousand forty (88.1%) couples revealed that; they had no previous history of voluntary counseling and testing for HIV, where as the remaining 136(11.5%) were previously tested negative and 3 (0.3%) were previously tested positive.

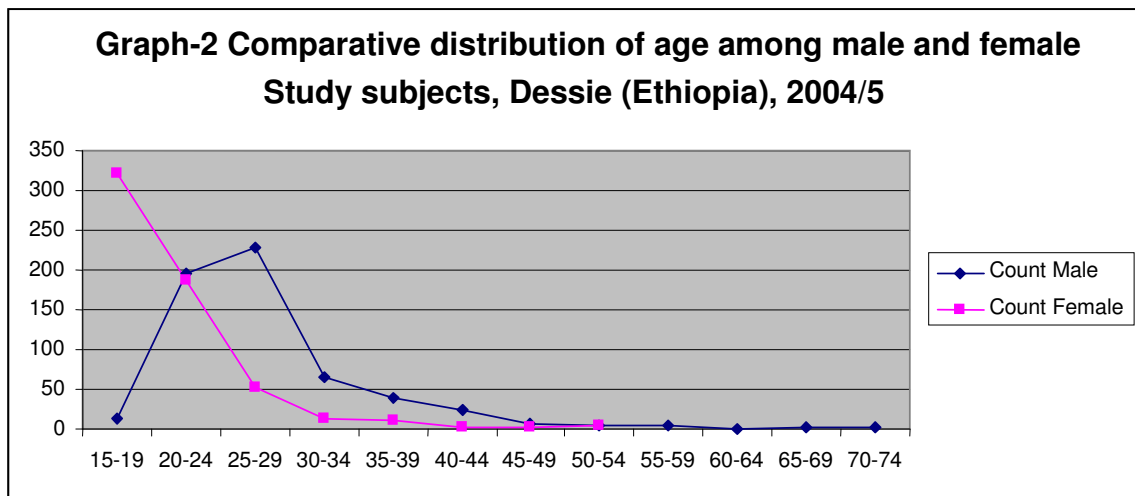
**Table-1 Socio-demographic description of study subjects, Dessie, 2006.**

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<b>Description</b>	<b>Frequency</b>	<b>Valid Percent</b>	<b>Cumulative percent</b>
<b>Couple type</b>			
Married	90	7.6	7.6
Premarital	1038	88.0	95.6
Pre sexual	20	1.7	97.3
Sex partner	15	1.3	98.6
Other	17	1.4	100.0
Total	1180	100	
<b>Marital status</b>			
Married	95	8.1	8.1
Never married	858	72.7	80.8
Separated	112	9.5	90.3
Divorced	101	8.6	98.8
Widowed	8	.7	99.5
Other	6	.5	100.0
Total	1180	100.0	
<b>Education</b>			
Illiterate	478	40.5	40.5
Able to read & write	136	11.5	52.0
Primary education	247	20.9	73.0
Secondary education	239	20.3	93.2
Tertiary education	39	3.3	96.5
Other	41	3.5	100
Total	1180	100	
<b>Employment</b>			
Employed	711	60.3	60.3
Unemployed	469	39.7	100
Total	1180	100.0	

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The mean age of Male and Female partners was found to be 27.6288 and 20.6695 while the range and SD was (53.00 and 34.00) and ( $\pm 7.6722$  and 4.8608) years respectively. The mean age and SD of couples tested in Hospital, Health center and FGAE was ( $28 \pm 6.8$ ), ( $23.8 \pm 6.7$ ) and ( $24.2 \pm 7.6$ ) respectively. Women regarded as never married and tested premarital were younger (mean age 19.4234 years; SD 2.4922) than their male partner (mean age 25.3608 years; SD 4.2028).



Totally 69 (5.8%) individuals were found to be sero positive while the prevalence among male and female partners was 5.7% and 5.9% respectively. Out of all 1180 study subjects tested 116 (9.8%) were found to be discordant while concordant positive and concordant negative account 11(0.93%) and 1041(88.3%) respectively. Thirteen (13.7%) of married couples were found to be discordant while the prevalence of sero discordance among never married were 53(6.2%). Relatively higher prevalence of discordant outcome was observed among separated and divorced partners 24(21.4%) and 22(21.8%) respectively. Discordant serum outcome was more prevalent among divorced, high-level educated and unemployed study subjects (Table-2).

Premarital was mentioned as primary reason to be tested in 90.2%, 86.1% and 50.0% of couples tested in FGAE, Health center and Hospital respectively. Primary reason to be tested attributed to ill symptoms was found to be 27%, 0.6% and 0.4% in the Hospital, Health center and FGAE respectively.

**Table-2 Prevalence of Serodiscordance across socio demographic characteristics, Dessie, 2006.**

Description	Frequency			Prevalence
	Discordant	Concordant	Total	
<b>Marital status</b>				
Married	13	82	95	13.7
Never married	53	805	858	6.2
Separated	24	88	112	21.4
Divorced	22	79	101	21.8
Widowed	1	7	8	12.5
Other	3	3	6	50
<b>Education</b>				
Illiterate	37	441	478	7.7
Able to read & write	13	123	136	9.6
Primary	27	220	247	10.9
Secondary	31	208	239	13
Tertiary	6	33	39	15.4
Other	2	39	41	4.9
<b>Employment</b>				
Employed	44	425	469	9.4
Unemployed	72	639	711	10.1

The prevalence of sero discordance was 7.4%, 14.2% and 22.2% in the non-governmental institution, Health center and Hospital respectively. The prevalence of HIV among couples voluntarily tested in FGAE, Health center and Hospital is; 4.6%, 7.1% and 33.3% respectively. Six hundred (50.8%) of all study subjects claim that; they ever had history of sexual intercourse while those who claim never comprises the remaining 49.2%. Out of 590 valid female partners 240(40.7%) claim ever having sex while 360(61%) of their male counter partners disclose ever having sex. Of all discordants 92(79.3%) disclosed ever having sex while 508(47.7 %) of concordant claimed so.

Three hundred seventy seven 31.9% individuals have no exposure while 450(38.1%) and 69(5.8%) individual have over six months and less than three months exposure respectively. Condom use in the past three months was reported in 38(3.2%) and 8(6.9%) of all and discordants respectively. One hundred five (8.9%) of all individuals and 14 (12.1%) of discordant individuals had used condom in their last sexual intercourse. History of sexual transmitted infection was reported in 46(3.9%) of all and 7(6.0%) of discordant individuals. Pretest result expectation of clients was found to be 654(55.4%), 469(39.7%) and 55(4.7%) negative, do not know and positive respectively. Out of 654 sero negative expectations 619(94.6%) correlates with their expected out come while it was 5 out of 55 (9.1%) sero positive correlates were found. Among discordant subpopulations out of 59 sero negative expectations 32(54.2%) negative correlates and 4 out of 10 (40%) sero positive correlates were found. As far as pretest partner notification plan was concerned vast majority of clients 1131 (95.8 %) all and 110(94.8%) agreed to notify, Out of which 1129 (99.8%) all and 109(99.0%) discordant individuals persisted on their notification plan in posttest session.

The proportion of men partners with STI among discordant couples (16.7%) was not significantly higher than concordant couples (11, 2%); OR=1.56; 95% CI, (.630, 4.003); P=327. The proportion of female partners with STI among discordant couples (10%) was not significantly lower than concordant couples (11.9%); OR= 0.856; 95% CI, (.102, 6.645); P=856.

**Table-3, Factors associated with discordant serum out come among couples, Dessie, 2006**

Description	Frequency		Crude OR	95% C.I.	Adjust. OR	95% C.I.
	Discordant	Concordant				
<b>Marital status</b>						
Married	13	82	2.41*	(1.26,4.60)	1.37	(1.26,4.60)
Never married	53	805	1 <sup>R</sup>		1 <sup>R</sup>	
Separated	24	88	4.14***	(1.32,4.29)	2.379**	(2.44,7.04)
Divorced	22	79	4.23***	(1.32,4.42)	2.410**	(2.45,7.32)
Widowed	1	7	2.17	(.15,10.37)	1.233	(.26,17.96)
<b>Education</b>						
Illiterate	37	441	1 <sup>R</sup>	-	1 <sup>R</sup>	-
Able to read and write	13	123	1.26	(.65,2.44)	1.23	(.62,2.44)
Primary	27	220	1.46	(.87,2.47)	1.45	(.85,2.48)
Secondary	31	208	1.78*	(1.07,2.9)	1.64	(.98,2.75)
Tertiary	6	33	2.17	(.85,5.51)	1.43	(.55,3.69)
Other	2	38	.63	(.15,2.70)	.39	(.09,1.74)
<b>Employment</b>						
Employed	72	639	1 <sup>R</sup>	-	1 <sup>R</sup>	-
Unemployed	44	425	.92	(.62,1.36)	1.18	(.78,1.78)

\*= (p<0.05), \*\*= (p=0.00n), \*\*\*= (p=0.000) Adjusted for Socio demographic & behavioral variables

Female discordant partners who used condom in the last sexual intercourse (17.4%) were not significantly lower than those who do not used condom, OR= .90; 95% CI, (.291, 2.776); P=.854. Male discordant partners who used condom in the last sexual intercourse were not significantly lower than those who do not used condom, OR=.810; 95% CI,(.386,1.697); P=.576. Married couples found to be significantly discordant than premarital couples, OR= 2.408; 95 % CI (1.26, 4.602); P=008. Divorced and Widowed couples are more prone to be discordant four and fifteen times (P<0.000 and P=0.001) respectively than never married. Couples regarded as secondary level education are 1.8 times significantly discordant than illiterates, 95% CI; P= 0.026. However when adjusted for socio demographic and behavioral variables there is no significant association, AOR= 1.638; 95% CI, (.975, 2.752); P=0.57.

Significant association was not detected in unemployed individuals with respect to discordant out come than the employed ones. Chi-square for linear trend was done to unearth possible linear association of sero discordance with respect to various age categories listed beneath; ultimately significant linear trend was observed  $X^2= 16.123$ ,  $P<0.001$ . Similarly significant trend was observed for sero prevalence of HIV with respect to age  $X^2=23.737$ ,  $P<0.000$ . However significant trend was not detected in case of education status versus serodiscordance and sero status ( $X^2=2.448$ ,  $P=0.1176$ ) and ( $X^2=0.116$ ,  $P=0.7339$ ) respectively.

**Table-4, The association of discordant serum out come with age categories, Dessie, 2006**

Age	Frequency		Crude OR	95% C.I.	Adjus. OR	95% C.I.
	Discordant	Concordant				
15-19	20	314	1 <sup>R</sup>	-	1 <sup>R</sup>	-
20-24	38	344	1.73	(.99,3.04)	1.48	(.81,2.69)
25-29	23	258	1.40	(.75,2.61)	1.07	(.55,2.07)
30-34	14	64	3.43**	(1.7,7.16)	2.16	(.98,4.76)
35-39	11	39	4.43***	(1.98,9.9)	2.41*	(1.02,5.7)
40-44	5	22	3.57*	(1.2,10.4)	1.68	(.55,5.09)
45-49	2	7	4.49	(.87,23.0)	2.25	(.42,12.1)
50-54	1	7	2.24	(.26,19.1)	1.31	(.15,11.7)
55-59	1	4	3.93	(.42,36.8)	1.94	(.20,18.7)
60-64		1	-	-	-	-
65-69	1	2	7.85	(.68,90.3)	3.48	(.29,40.7)
≥70		2	-	-	-	-

\*= ( $p<0.05$ ), \*\*= ( $p=0.00n$ ), \*\*\*= ( $p=0.000$ ) Adjusted for socio-demographic and behavioral variables

Pearson correlation coefficient was found to be +0.391 at level of significance 0.01 for age category versus sero prevalence. Recalculated non parametric correlation (Sperman's rho and Kendall's tau) was found to be +0.372 and +0.27 respectively at  $P=0.01$ . To determine the coefficient of linear association simple linear regression was done,  $\beta=0.723$ ,  $t=35.919$ ,  $P<0.001$ . The coefficient of prediction ( $R^2$ ) was 0.523, while adjusted  $R^2=0.522$ . Among age categories listed in Table-4 significant association of discordance was observed with in age category 35-39 years  $OR=4.428$ ; 95% CI;  $P<0.000$ ; When adjusted for socio demographic and behavioral variables  $AOR=2.209$ ; 95% CI;  $P=0.045$ .

Though significant association was detected for age categories 30-34 and 40-44 years, it became insignificant when adjusted for variables like, sex, STI and condom use. House wives and skilled laborers were found to be significantly discordant than farmers, (OR= 6.368; 95% CI; P < 0.000) and (OR=3.178; 95% CI; P=0.007) respectively. When adjusted for socio demographic and behavioral variables they have 3.145 and 2.886 times risk of discordance than farmers, with 95% CI; P= 0.007 and 0.046 respectively.

**Table-5, The association of occupation with discordant serum out come, Dessie, 2006.**

Occupation	Frequency		Crude OR	95% C.I.	Adj. OR	95% C.I.
	Discordant	Concordant				
Unskill. Lab.	24	258	1.02	(.51,2.07)	1.130	(.55,2.34)
Skilled labor.	13	45	3.18**	(1.4,7.35)	2.886*	(1.2,6.89)
House wife	11	19	6.37***	(2.5,16.2)	3.145*	(1.19,8.3)
Student	11	147	.82	(.36,1.90)	1.309	(.55,3.13)
Business M.	10	49	2.25	(.93,5.45)	1.934	(.78,4.80)
Professional	4	26	1.69	(.51,5.59)	1.344	(.39,4.54)
Other	28	335	.92	(.46,1.83)	1.112	(.55,2.25)
Farmer	13	143	1 <sup>R</sup>	.	1 <sup>R</sup>	.

\*= (p<0.05), \*\*= (p=0.00n), \*\*\*= (p=0.000) Adjusted for socio-demographic and behavioral variables

## **Result (Qualitative)**

### ***Sero discordant HIV test out come:***

Discordant serum out come was explained by almost all respondents as dissimilar (mixed) sero status of couples for Human Immuno Virus (HIV) anti body test. However, some of the respondents prefer to use the term only for couples who have had unprotected sexual intercourse. One respondent further emphasized history of unprotected sex ought to be not less than six month so as to label those couples as discordant. One counselor briefed discordant serum outcome as inconsistent test result among rapid test kits; especially when there is sero positive preliminary (Determen) test but negative confirmatory (Capilus).

*“...Whenever two partners have not similar HIV test result; they can be premarital, pre sexual or under marital union. I prefer to claim couples as sero discordant when they do have sexual contact though we used to label them as discordant as they appear in couple”*

### ***Post test reaction of Discordant couples:***

It was agreed that discordant serum out come is quite difficult to accept and cope with, especially for those couples under marital union. Though there is immediate emotional reaction to the extent of denying the test and seeking retest, it is not as such embarrassing for premarital couples who do have different sexual history. However, what bothers sero positive partners in premarital discordant couples is all family members and the community will be aware of the test result as the anticipated marriage failed. Common post test emotional reactions manifested by discordant couples are;

- *They quit out from counseling session especially those sero positive partners.*
- *Mistrusting the quality of test kits and failure to accept their serum outcome.*
- *Extreme anger, guilty feeling, laughing and sobbing.*

All respondents agreed that in depth counseling regarding the possible serum out comes will mitigate unfavorable posttest reactions by couples and it makes them ready to accept their serum result in a better way.

*“...it is quite difficult not only for discordant couples but also for us ...”*

*“...If we fail to make them aware about possible discordant out come during pretest session, they hardly accept the result as it is quite uncommon for engaged couples who do have unprotected coital but dissimilar test result”*

***Discord ant’s decision regarding future sexual relation ship:***

Premarital discordant couples usually decided to terminate their prospective engagement and relationship while those couples under marital union most of the time prefer to continue their intimate familial relationship except sexual intercourse. Despite their discordant sero status couples seldom intend to continue their sexual relationship, arguing they will not seroconvert in the future as they were not in the past. One counselor briefed that, young married discordant couples prefer to use condom rather than abstinence or divorce.

*“...premarital discordant couples usually claim to depart; they even get out of the room separately while those married couples mostly agree to stay together being abstained”*

***Perceived risk by counselors regarding discordant couples in the pretest risk assessment session:***

Obviously, those premarital discordant couples with different risk and exposure status are prone to end up with discordant sero status. Those couples who have frequent history of travel, short or long time departure from their partner and marital reunion are prone to discordant sero status. One respondent claims his observation that partner with history of STI, alcohol and substance abuse are liable to bear sero positive result and may result in discordant sero status.

*“...it is common among couples who appear for marital reunion as they have potentially dissimilar risk and exposure while they were separated”*

***Management options for discordant couples:***

Some respondents claim that there was only follow up counseling for all clients in need of it; otherwise, nothing special was delivered for them.

*“...there is nothing special for discordant couples it is just VCT that we are offering for”*

*“...we just open a floor for them to discuss freely then we usher them possible ways to decide”*

Most of the institutions were under staffed to render on going counseling service for discordant couples. Especially the voluntary counseling and testing center of the hospital was so poorly staffed and equipped it hardly meet the demand of clients. More over sero positive clients who are eligible to get ART need to pass through the hospital VCT center indiscriminate of their knowledge to wards their sero status, which in turn further aggravate the burden and the quality of service. In this institution, clients were appointed for three or more days to be counseled and tested.

*“...it is so astonishing that clients used to insult and quarrel with us due to the lengthy appointment we gave them; that is what happen to me a moment back”*

Most counselors suggested that the referral link among VCT centers and other related institutions like social and medical service providers should be strengthened. VCT centers should have independent unit which offers ongoing counseling for discordant couples; more over counselors have to be trained as to how to offer ongoing counseling.

*“... It is worth to have regular and independent unit for ongoing counseling”*

One respondent disclosed that their institution also offer family planning service (condom provision) for discordant couples though they seldom face shortage.

Few respondents revealed that for sero positive partners, referral letter will be issued based on their demand for medical and social support. One counselor briefed their institution appoint discordant couples for retest after three months in case the sero negative partners may sero convert being in window period, so that couples may decide about their fate based on their ultimate sero status.

***Discordant couples' response for the management strategies offered by counselors:***

Discordant couples (especially those who are sero positive) are emotionally disturbed just after disclosure of test result so they hardly accept management options forwarded by counselors. When counselors appoint them to come back after their immediate emotional storms settled they usually quit and get detached from ongoing counseling. Difference is perceived by counselors as far as need and adherence to post test management service is concerned. Among discordant couples those who are economically poor usually need referral service to social support agents and adhere better to follow up counseling; while those who are economically well to do, do not need referral or follow up service rather they prefer to make the issue secrete.

*"...they are not as such interested to get on going counseling or referral service fearing it will reveal their sero status to the public"*

***Couple counseling versus individual counseling:***

All counselors disclosed that they use a guide line and protocol similar to individual counseling sessions for couples. There is no universally agreed procedure among counselors as to how to counsel couples; some of them practice pretest counseling of couples together while some others strongly disagree doing so. Those who conduct pretest counseling individually stressed that couples will not freely utter out their risk and exposure during risk assessment because doing so in front of their partners will jeopardize their relationship.

Having this in mind partners used to refrain from disclosing their previous risk, this in turn misleads to inconvenient risk reduction plan development. More over if those individuals do not explore their risk thoroughly they hardly accept and cope with their sero status.

Some counselors claim that all the sessions; pretest, post test and result disclosure depends on the will of clients if they resist not to share their result it is up to them while other counselors emphasized that though most procedures in the pretest and post test session are expected to be performed by clients will, result sharing is mandatory as the session type is couple not individual. Few counselors prefer to disclose test result individually and facilitate those individuals to exchange their result.

*“...In pretest session they may be together or alone but it is obligatory to be together and share their result in post test session”*

One counselor revealed that few months back on training she learned the disadvantage of risk assessment out weighs its advantage on couple counseling, so now she used to avoid (considerably minimize) expending time on pretest risk assessment of couples. There is also procedural variation regarding result disclosure for discordant couples, some counselors prefer to tell the result of sero positive partners first while others prefer to tell first negative ones. The argument here is that after informing them the result is being discordant the sero positive will have extra time to internalize the result when we disclose the sero status of the negative partners first. Those who prefer to disclose first the positive result do not forwarded substantial reason as to why they prefer to do so; it is merely to address first the difficult result first. All counselors emphasized that there is no standard guideline as to how to counsel couples. They simply execute couple counseling using the protocol of individual counseling and their personal skill.

***Perceived difficulties of couple counseling:***

All counselors agreed that couple counseling is relatively difficult than individual counseling. Especially pretest risk assessment is quite difficult unless it is addressed individually. Female partners usually get embarrassed to disclose their risk or exposure in front of their male partners. Most counselors revealed that post test counseling of discordant couples is challenging than concordant couples. All counselors agreed that absence of standard counseling guide for couples and inability to address couple counseling thoroughly during preliminary VCT training further compromised their couple counseling session in their day to day practice.

*“...It is quite difficult, especially when we assess their risk. Some of them quit out in the middle of the counseling session.*

Most counselors have perceived deficiency to counsel couples especially discordant ones. They do not feel competent enough to counsel and address questions raised by some couples. Few counselors revealed that though couple counseling is a bit difficult than individual, they can safely carry out the session like that of individual counseling. All counselors emphasized that basic standard training on couple counseling is mandatory owing special emphasis to pretest risk assessment, Result disclosure, and possible reasons for incidence of discordant outcome, marriage counseling, marital disharmony and its possible solutions.

*“...I do feel some sort of incompetence when I counsel couples. What I got from the VCT training is too brief to mitigate the challenges I usually face”*

## **Discussion of quantitative out put**

The fact that 83.6 % of couples tested in this study are premarital signifies the increment of awareness level to wards premarital status consciousness among prospective brides. This finding is quit comparable with similar study in Uganda, which claims among couples coming for VCT 84% were planning a new marriage/relationship <sup>19</sup>. Unlike the other two institutions more clients tested in the Hospital; claim their primary reason to be tested is ill symptom of themselves or their partners. This may be due to the fact that the hospital is referral place for most of the neighboring health institutions, so that most clients are likely to have concomitant complaints beside to their VCT need.

The prevalence of sero discordance was found to be (9.8%) which is comparable with ~9% of discordance among all couples tested in Uganda in 2000. The prevalence of sero discordance among married couples in this study was 13.7%, which is relatively lower than similar study in Uganda 18%. The prevalence of discordance and sero positive out come is relatively high among couples tested in the Hospital 33.3% and 22.2% respectively. This can be attributed to the fact that most high-risk clients and those previously tested positive in other institutions prefer this institution to have easy access to ART. HIV sero prevalence in this study is 5.8 %, which is slightly lower than the 2003 national HIV prevalence 4.4 % <sup>10</sup>. This slight mismatch can be explained by the temporal difference between these two studies. Abstinence before marriage and delay of sexual debut is quite important behavior in preventing STIs including HIV. One hundred eighteen 26.2% of premarital females and 45.6% of premarital males in age category 15-24 years claim ever having sex, while female and male out of school youths in BSS are 29% and 35% respectively <sup>20</sup>.

One hundred thirty nine 11.8% of study subjects claim that they have previous history of voluntary counseling and testing which is relatively higher than 4.6% youths reported previously tested in Behavioral Surveillance Survey (BSS) <sup>20</sup>. This relatively high proportion of VCT history can be attributed to possible awareness level increment attained through time. Sero positive expectation in this study is 4.7%. This is slightly lower than the actual sero prevalence 5.8%. Though the difference seems not prominent, only 9.1 % of positive outcomes correlate with pretest positive expectation. In this study being unemployed has no statistically significant association with discordant serum outcome OR= .919, CI (0.619, 1.363) in contrast to similar study in Canada where significant association was found as per employment is concerned OR=2.0, CI (1.9, 4.4) <sup>22</sup>. This may be due to possible sexual behavior variation between those two different study subjects with respect to their employment status. The prevalence of sero positive women among discordant couples was 50%, which is slightly lower than similar study done at voluntary counseling and testing center in Kampala 59 % <sup>1</sup>. Female partners among discordant couples had median age of 20 and range of 32 years, while women study subjects in similar study had median age of 29 and range of 35 years. Male partners among discordant couples had median age of 28 and range of 45 years, while it was 35 and 50 years respectively in other similar study. Both findings claim female partners are younger than their male counter partners among discordant couples, though there is relative median age variation between these two studies <sup>1</sup>. Serodiscordance and HIV positive sero status was significantly high OR~(4 and 70) and P<(0.02 and 0.003) respectively among age categories 30-45 years; while significant difference was not detected in similar study done in Uganda<sup>1</sup>. However national prevalence figure across age categories claim high sero prevalence with in age category 30-39 years, which comparable with this study <sup>20</sup>.

In this study education status was not found to be significantly associated with sero status of study subjects, which is similar with a study conducted in Kampala <sup>1</sup>. In this study among all the occupation types listed House wives and skilled laborers were found to be significantly associated with serodiscordance OR=3.178 95%CI (1.374, 7.35) and OR=6.368, 95%CI (2.50, 16.22); while there was no significant association noticed in other study done in Uganda <sup>1</sup>. This can be explained by the fact that the referent value in the regression model is Farmer, which is emanated from less affected population segment as the national finding heralded <sup>10</sup>. As HIV transmission is propelled by behavioral factors theories about how individuals change their behavior have provided the foundation for most HIV prevention efforts worldwide <sup>22</sup>. History of STI among the study subjects was 3.9%, which is comparable with BSS finding claiming 4.7% prevalence of ever having STI symptoms among sexually active respondents <sup>20</sup>. In this study it was found that utilization of condom during last sexual intercourse among female partners was not significantly associated with couple sero status, OR=0.97, 95% CI (0.273, 3.467); while it is associated in a study done in Uganda OR, 2.4 95 % CI( 1.1-5.1)<sup>1</sup>. This difference can be attributable to high level of behavioral change and relatively persistent condom use prevailed in Uganda. In this study, history of STD was not significantly associated with couple sero status, similar study done in Uganda among couples voluntarily counseled and tested claims absence of significant association(1). An important component of HIV voluntary counseling and testing (VCT) programs is encouraging clients to inform partners of their serostatus. A study In Dar es Salaam claims, yet many clients do not disclose results to partners. It is found that, a serious barrier to disclosure for women is fear of a violent reaction by male partners and those HIV-infected women are at increased risk for partner violence <sup>23</sup>.

However, this study uncovered that 1131 (95.8 %) all couples and 110 (94.8%) discordant couples agree to notify their test out come to their respective partners at pretest session, Out of which 1129 (99.8%) all and 109(99.0%) discordant partners persist on their notification plan in post test session. This high-test result notification plan can be attributed to vast majority of couples in the study are pre-marital. Those premarital couples consider status notification as preliminary step for engagement and there will be less risk of violence from their partners, as they are not yet formally engaged.

## Discussion of Qualitative out put

Ethically people have a right to know their serostatus in order to protect themselves and others. And knowing their own serostatus and the options can motivate people to change higher risk behaviors. In addition, HIV testing and counseling may have an important social impact through people knowing their serostatus sharing it with others and laying the groundwork for changes in social norms about HIV and AIDS. A positive HIV result has also encouraged some people to give personal testimonies in community fore, a consequence that can have a powerful effect on individual attitudes, behaviors and social norms<sup>22</sup>. VCT clearly functions as ‘a form of technological solution’ to the problem of safer sex. While this may be a rational strategy for monogamous couples, it has nonetheless been argued on the basis of researches that VCT may be counterproductive in so far as individuals then proceed to have unprotected sex<sup>19</sup>. In 1991, in an extensive review of 50 testing and counseling studies in Africa, Australia, Europe and North America, Higgins et al found substantial risk reduction among heterosexual couples with one infected partner (Discordant partnership)<sup>22</sup>. One of the fears in couples who go for HIV testing is that their results may be different. The shock and surprise that this yields can throw a couple into a precarious position<sup>24</sup>. Discordant serum outcome is quite difficult to accept and cope with for most couples, especially for those married couples. A respondent in one discordant case study uttered out her emotion as beneath,

*“When we went in, the counselor said, "Who wants to go first?" I gave him my blue slip with my number and he looked it up and said, "Okay, you're negative." Mark gave him his blue slip, and he looked at me, looked at the result, looked at Mark, and said, "You're positive." Then he left the room. Mark was stunned. I started crying, immediate tears. I had Mark dead and buried and myself in black”<sup>24</sup>.*

In practice, couple or family counseling is often used because couples can help to solve their problems together. But the situation is usually more complicated when the couple has discordant HIV test results<sup>25</sup>. Individuals affected by HIV may be influenced by psychosocial stressors common to other chronic or life-threatening illnesses. These challenges include dealing with loss, fear of illness and death, perceived helplessness, uncertainty about the future, anxiety, sadness, anger, anticipatory grief, and frustration in navigating in the medical system, financial worries, and interpersonal stress. There are additional, unique stressors faced by those affected by HIV disease. First, there is the stigma associated with this disease, the routes of transmission, and those who have become infected. As a result, partners, family members and friends of HIV+ individuals may encounter discrimination or lack of support if they “go public.” If they decide not to disclose to others, they may be carrying burdens of shame, guilt, fear, or other emotional distress without assistance<sup>26</sup>. The fact that those positive partners in premarital discordant couples get worried signifies the presence of stigma and lack of confidentiality among those unmarried couples themselves. The probable reason for married discordant couples to sustain their relationship except intercourse is the likelihood of having socio economic ties like, having children in common and being economically dependant one on another. However this is not always the sole reason, emotional attachment and love could have a role in doing so. HIV-negative partners in positive-negative couples disclose a wide range of sexual behaviors. Some do not have sex with their partners, some have sex that does not involve penetration, and some have sex with penetration using condoms. Some positive-negative couples completely shut down their sexual lives, due to various reasons. In one negative-positive study couples disclosed that, when they tried to have sex, both of them have problems in maintaining erections.

*"I think it's his fear of transmitting the disease to me, and my fear of getting the disease from him," the negative partner said. "It's in the back of our heads and it kills the whole mood. We still consider ourselves lovers, but our sex life has died totally"* <sup>24</sup>.

Couples with one partner having a risky sexual behavior, substance addiction and history of frequent travel are used to end up with sero positive outcome leading to possible discordance. Sero negative partner in discordant partnership study disclosed her partner's risky behavior as follow,

*"My partner was in recovery from drug addiction when he decided to get tested because when he was using drugs he was also promiscuous"* <sup>24</sup>.

Sero discordant couples have various needs; to mention some important ones, reproductive need, ongoing counseling need, medical need, social support and other material needs. Careful preconception counseling of the risks involved and advice on how to time intercourse and considering washed intra-uterine insemination (IUI) and child adoption are worth to be considered for couples prepared to risk unprotected intercourse to have a child <sup>7</sup>. More over early detection of the virus in one partner enables referral for clinical care and psychosocial support <sup>22</sup>. Couple counseling is quite important strategy in preventing HIV transmission through changing high risk behavior and undesired social norms. A study to determine effect of partner involvement and couple counseling on uptake of interventions to prevent HIV-1 transmission showed prominent favoring association <sup>27</sup>. There are a number of factors that influence the effectiveness of VCT in African settings. One such factor would be whether the person being counseled or tested is a member of a couple that is either sero-concordant or sero-d discordant. Another factor would be whether these couples are tested together or individually <sup>19</sup>.

Though couple counseling has paramount importance in mitigating the propagation of HIV; it bears obvious challenges for counselors as they have to deal with two subjects, probably quite different, at a time. On top of that unless counselors have on going up to date training as to how to address emerging questions and problems from couples, it will further aggravate the situation.

## **Limitations and strengths of the study**

### **Limitation:**

- In this particular study as the source of data, for the quantitative study was secondary data to be retrieved from Ethiopian standard VCT record format, there was limitation to get well documented record formats in all institutions at all time. As a result of documentation problems, two institutions (one private and one non-governmental) were completely excluded from the quantitative data collection, while few valid data was collected from Hospital.
- The posttest reaction of couples with discordant serum out come was assessed through the counselors and peer supervisors; this had its own limitation on the quality and representative ness of the qualitative data.

### **Strength:**

- The fact that the study take in to account qualitative data collection had contribute a lot especially regarding some issues difficult to address with quantitative data only.
- As the quantitative data was collected retrospectively, it enabled to collect relatively large sample size with short period of time.
- Since all the data collectors were health professionals with special training on counseling they have prominent exposure to data collection instrument which enabled to generate better quality data with in short time.

## **Conclusion**

-The prime reason for most couples to be voluntarily counseled and tested for HIV was premarital; this shows the tendency of couples to be status conscious just before marriage is outpacing other reasons.

-Vast majority of couples appear to voluntary counseling and testing centers with self-motive. Though it is worth to see that couples seek counseling and testing by themselves; it can be considered as proxy indicator for the absence of referral or sensitization effort towards couple counseling and testing from other institutions.

-Few couples claim they had undergone through voluntary counseling and testing previously; of which most of them were sero negative. Quite few couples have claimed they have previous sero positive test result but they appear for retest this may show their sense of unreliability on the test kits as mentioned by one key informant.

-Sex specific sero prevalence of HIV was found to be comparable. The overall prevalence of the virus was not remarkably different from the national figure as those VCT centers in the town offer the service not only for urban dwellers but also for the neighboring rural inhabitants, which makes the study population roughly comparable with the national population mix.

-One tenth of couples voluntarily counseled and tested were found to be sero discordant, of which majority were premarital couples. This shows the risk of sero conversion among premarital couples if they were not tested.

-Though most of discordant couples were premarital, the proportion of discordance was by far prevalent among couples who were separated and those who had history of divorce in the past.

- Discordant serum out come was relatively prevalent among secondary level educated and unemployed clients.
- House-wives and skilled laborers were found to be significantly discordant making farmers as referent population.
- Chi square for linear trend showed significant association across age categories versus serodiscordance and HIV prevalence with in those age categories.
- The prevalence of discordance and human immuno virus was high among couples tested in the hospital than the remaining two institutions.
- Half of study subjects claim that they ever had sexual intercourse; of which male partners comprises high proportion.
- Proportion of individuals with more than six months exposure to HIV predisposing risk were high followed by no exposure and less than three months exposure.
- Though the proportion of clients who used condom was slightly high among discordant couples than concordants, over all condom usage claimed for the last sexual intercourse was low.
- The proportion of sexual transmitted infections history was high among discordant couples than concordant couples.
- Most couples' pretest result expectation was sero negative followed by I do not know, while those who expect positive out come were few.
- Of all clients who expect positive serum out come only one tenth were found to be sero positive, while forty percent positive expectation and result correlation was seen among discordants.

-Vast majority of clients had pretest result notification plan to their respective partner and almost all persist on their notification plan at posttest session.

-Posttest reaction of sero discordant couples was so grave psychosocial sequels and emotional reactions to the extent of denying the test outcome are common.

-The fate of premarital discordant couples is used to be separation while most married discordant couples prefer to stay together being abstained from intercourse.

-Marital reunion, substance addiction and long time departure from home was incriminated as possible risk for discordance.

-The management option for discordant couples was marginal on going counseling in few centers only.

-There was no uniform counseling protocol and approach towards couple counseling among counselors.

-Perceived need of further training on couple counseling was observed among counselors.

There was perceived difficulty to counsel couples in general and serodiscordants in particular by vast majority of counselors.

## **Recommendation**

- Efforts ought to be exerted to make premarital couples aware of their own and their partners' sero status before engagement.
- Couples under marital union should consider voluntary counseling and testing especially at times where one of the partners was away from home for long time.
- It is worth to under go through voluntary counseling and testing when couples intend for marital reunion, as discordant serum out come was found to be rampant among separated and divorced individuals.
- The prevalence of sero discordance was found to be high among married couples than never married, so further biomedical and immunologic study geared to wards discordant couples should be considered.
- Counselors deployed in VCT centers should get prominent preliminary training as to how to counsel couples owing especial emphasis on discordant out come, marital disharmony and over all marriage counseling.
- Voluntary counseling and testing centers should have independent unit, which offers ongoing counseling for sero positives and discordant couples who need the service.
- Up to date refreshment training for counselors is mandatory to familiarize them with the dynamic progress of counseling skill and HIV/AIDS science.
- Referral link among various institutions and organizations deployed in HIV mitigation should be strengthened, as there are many sero discordant and sero positive individuals in need of social and medical support.

-The referral hospital's VCT center is the only entry point for sero positive individuals to have access for anti retro viral therapy; however, it is so under staffed and sub structured it hardly meet clients' demand. So urgent intervention should be considered to enhance the structural and man power competency of this center.

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## Annex -1

### Dummy tables

Table-1 summary of data on couple type and serostatus

	Type of couple	Sero status	
		Discordant	Concordant
	Married		
	Premarital		
	Pre sexual		
	Sex partner		
	Other		

Table-2 summary of data on educational status and serostatus

	Education	Sero status	
		Discordant	Concordant
	Illiterate		
	Able to read		
	Primary		
	Secondary		
	Tertiary		
	Other		

Table-3 summary of data on condom use and serostatus

	Condom use last 3 months	Sero status	
		Discordant	Concordant
	Never		
	Always		
	Sometimes		

Table-4 summary of data on history of STI and serostatus

	History of STI	Sero status	
		Discordant	Concordant
	No		
	Yes		
	Do not know		

## Annex-2

*Guide questions for key informants interview; south Wollo zone, Dessie town- 2005*

**-Location (kebele) \_\_\_\_\_**

**-Type of institutions**

=Governmental

=Non-governmental

=Private

**3-Type of key informant**

=Counselor

=Supervisor

**4-Name of the interviewer \_\_\_\_\_**

*Beneath are general guiding questions for key informants*

**1-What does serodiscordant HIV test out come mean?**

**2-How does serodiscordant couple react when you tell them about their result during the posttest counseling session?**

**3-What is there decision regarding future sexual partnership?**

**4-Is there any special risk you perceived for those discordant couples in the pretest risk assessment session?**

**5-What was your management for those discordant couples?**

**6-What was their response for the management strategy you offered?**

**7-What do you suggest regarding the existing management strategy in your institution?**

**8-How do you counsel & test couples for HIV? Is there any different strategy/approach that you adhere?**

**9-Do you think that you are competent enough to counsel couples?**

**10-What is your opinion to wards the need of further training on couple counseling**

## Annex-5

*Reviewing format of Ethiopian HIV counseling and testing record in Dessie town VCT centers, 2005*

### 1=Description of the VCT center

-Site code \_\_\_\_\_

-Date of visit \_\_\_\_\_

**-Site type**

Free standing

Mobile

Primary Health care

Clinic

Other

**-Organizational type**

NGO

Governmental

Private

### 2=Socio demographic characteristics

Client code \_\_\_\_\_

Age \_\_\_\_\_

Sex	1	Male	
	2	Female	

Residence	1	Urban	
	2	Rural	
	3	Other	

Couple type	1	Married	
	2	Premarital	
	3	Pre sexual	
	4	Sex partner	
	5	Other	

Marital status	1	Married	
	2	Never married	
	3	Separated	
	4	Divorced	
	5	Widowed	
	6	Others	

Occupation	1	Legislators, managers	
	2	Professionals	
	3	Technicians	
	4	Clerks	
	5	Service, shop	
	6	Skilled Ag.	
	7	Crafts	
	8	Plant/machine	
	9	Elementary occup.	
	10	Student	
	11	Other	

Education	1	Illiterate	
	2	Able to read	
	3	Primary	
	4	Secondary	
	5	Tertiary	
6	Other		

Employed	1	No	
	2	Yes	

### 3=Information and access to the VCT center

Hear of the service	1	Radio	
	2	Out reach	
	3	Posters	
	4	Other clients	
	5	Newspapers	
	6	Health institution	
	7	Telephone hotline	
	8	Anti AIDS clubs	
	9	APLWH/A	
	10	Friends & family	
	11	CBO	
	12	TV	
	13	Others	

Primary reason here	1	Had risk	
	2	Partner had risk	
	3	Not trust partner	
	4	Ill/symptom	
	5	Premarital	
	6	Marital reunion	
	7	Family planning	
	8	Visa applicant	
	9	Referred	
	10	2 <sup>nd</sup> test/window/	
	11	Confirm positive result	
	12	Get results prev.test	
	13	Need counseling	
	14	Test before pregnant	

Client referred by	1	Self	
	2	Public health institution	
	3	Private health institution	
	4	Military health institution	
	5	Friend /relative	
	6	CBO	
	7	NGO	
	8	School	
	9	Religious inst.	
	10	Client	
	11	APLWH/A	
	12	Others	

#### 4=Sexual behavior of clients

Ever had sex	1	No	
	2	Yes	

Condom use last 3 months	1	Never	
	2	Always	
	3	Sometimes	
	4	Other	

Used condom last sex	1	No	
	2	Yes	
	3	Doesn't remember	
	4	Other	

Suspected exposure time	1	No exposure	
	2	<1 month	
	3	1-3 month	
	4	4-6 month	
	5	>6 month	
	6	Don't know	

Is client sex worker	1	No	
	2	Yes	
	3	Couns. believes so	
	4	Don't know	

Is client pregnant	1	No	
	2	Yes	
	3	Don't know	

History of STI	1	No	
	2	Yes	
	3	Don't know	
	4	Other	

Number of casual partners

Number of steady partners

### 5=Pretest result expectation and partner notification

Result client expect	1	Negative	
	2	Positive	
	3	Don't know	
	4	Other	

Pretest partner notification plan	1	Refused to notify	
	2	Agree to notify	
	3	Plan to notify	
	4	Unsure	
	5	Other	

### 6=Test result and discordance status

HIV result	1	Negative	
	2	Positive	
	3	Other	

Couple discordant	1	No	
	2	Yes	
	3	Other	

### 7=Post test partner notification and risk reduction plan

Refused result	1	No	
	2	Yes	
	3	Other	

Condom accepted	1	No	
	2	Yes	
	3	Not available	
	4	Other	

Risk reduction plan developed	1	No	
	2	Yes	
	3	Other	

Post test partner notification plan	1	Refused to notify	
	2	Agree to notify	
	3	Plan to notify	
	4	Unsure	
	5	Other	

Client referred to	1	Follow up counseling	
	2	Social service	
	3	TB clinic	
	4	Hospital	
	5	APLWH/A	
	6	STD clinic	
	7	Family planning	
	8	Post test club	
	9	Other	