



**INTENTION TO USE CONDOMS AND  
REMAINING FAITHFUL IN STUDENTS AT  
GONDAR UNIVERSITY**

**ETHIOPIAN PUBLIC HEALTH ASSOCIATION**

**JUNE 2006  
ADDIS ABABA  
ETHIOPIA**

This Publication is sponsored by the US Centers for Disease Control and Prevention (CDC) in accordance with EPHA-CDC Cooperative Agreement No. U22/CC UO 221179-03.

**Editors:**

Berhanu Legesse  
Gail Davey

**Formatting :**

Semira Wuhab

**Contact Address:**

Ethiopian Public Health Association (EPHA)

EPHA-CDC Project

Tel: (251-1) 115-538924

(251-1) 115-502946

Fax: (251-1) 115-514870

PO Box 7117 Addis Ababa Ethiopia

Email: [epha2@telecom.net.et](mailto:epha2@telecom.net.et)

## Table of Contents

Table of Contents	
List of Tables	i
List of Annexes	ii
List of Figures	ii
Abbreviations and acronyms	iii
Acknowledgments	iv
Message from the President	v
Executive Summary	vi
I. Background and Significance	1
II. Objectives	6
III. Methods	6
IV. Results	11
V. Discussion	26
VI. Study Limitations	29
VII. Conclusion	30
VIII. Recommendations	31
IX. References	32
X. Annexes	36
Annex 1: Reliability of constructs	36
Annex 2: Means and standard deviations of predictors	37
Annex 3: Data transformation schedule	38
Annex 4: Questionnaire	39

## List of Tables

<b>Table 1:</b>	Socio-demographic characteristics of students.	11
<b>Table 2:</b>	Distribution of sexual behavior of sexually active students	13
<b>Table 3:</b>	Sex distribution of students, by their lifetime AIDS Risk behavior indices.	15
<b>Table 4:</b>	Sex distribution of students by their knowledge and information source about HIV/AIDS.	16
<b>Table 5:</b>	Relationship between intention to remain faithful and knowledge and theoretical constructs of male students.	18
<b>Table 6:</b>	Relationship between intention to remain faithful and knowledge and theoretical constructs of female students.	20
<b>Table 7:</b>	Relationship between intention to use condoms and knowledge and theoretical constructs of male students.	22
<b>Table 8:</b>	Relationship between intention to use condoms and knowledge and theoretical constructs of female students.	23
<b>Table 9:</b>	Relationship between intention to remain faithful and knowledge and theoretical constructs of all students.	24
<b>Table 10:</b>	Relationship between intention to use condoms and knowledge and theoretical constructs of all students	25

## **List of Annexes**

<b>Annex I:</b>	Reliability of constructs derived from health behavior models for different safe sex behaviors and Intentions.	36
<b>Annex II:</b>	Means and standard deviations for all predictors derived from theoretical constructs by gender of student.	37
<b>Annex III:</b>	Data transformation schedule.	38
<b>Annex IV:</b>	Questionnaire.	39

## **List of Figures**

<b>Figure 1:</b>	Distribution of study subjects by department	12
<b>Figure 2:</b>	Distribution of age at first sexual experience	14
<b>Figure 3:</b>	Pattern of condom use among sexually active students	14

## **Abbreviations and acronyms**

<b>AIDS</b>	Acquired Immuno Deficiency Syndrome
<b>ARRM</b>	Aids Risk Reduction Model
<b>ART</b>	Anti retroviral drugs
<b>CI</b>	Confidence Interval
<b>CSW</b>	Commercial Sex Worker
<b>HBM</b>	Health Belief Model
<b>HIV</b>	Human Immune Deficiency Virus
<b>MANOVA</b>	Multivariate Analysis Of Variance
<b>MSP</b>	Multiple Sexual Partners
<b>OR</b>	Odds Ratio
<b>PLWHA</b>	People living with HIV/AIDS
<b>PPS</b>	Probability Proportional to Size
<b>SCT</b>	Social Cognitive Theory
<b>SD</b>	Standard Deviation
<b>STI</b>	Sexually Transmitted Infection
<b>TRA</b>	Theory of Reasoned Action
<b>UNAIDS</b>	Joint United Nations Program on HIV/AIDS
<b>WHO</b>	World Health Organization

## **Acknowledgments**

EPHA would like to acknowledge that Dr. Yonannes Fitaw conducted the study entitled “Intention to Use Condom and Remaining Faithful in Students at Gonder University”.

I would therefore like to recognize the diligence and professionalism demonstrated by Dr. Yohannis Fitaw and his team members in undertaking this important task, and once again EPHA congratulates them on their success.

EPHA also would like to thank the reviewers of the document Dr. Meseret Yazachew and Dr. Ashenafi Negash from Jimma University for their diligent work and unreserved efforts in enhancing the quality of the document.

Berhanu Legesse (MPH)

Evaluation & Research

Dissemination Officer, EPHA

## **Recognitions**

I would like to extend our appreciation to EPHA-CDC project for financing this study. I am highly indebted to the dedicated efforts of the supervisors. I acknowledge the University of Gondar for allowing its premises and all resources I was privileged to access. Finally, I would like to thank the participants of the study for giving me their precious time and genuinely responding to the questionnaire.

Yohannis Fitaw  
**Principal Investigator**

**Disclaimer:** This Publication is sponsored by the US Centers for Disease Control and Prevention (CDC) in accordance with the EPHA-CDC Cooperative Agree-

## **Message From the EPHA President**

This research summarizes into the predictors of safer sexual behavior among students at Gondar University. This group was selected for youth being documented to be at high risk in earlier studies.

The investigators have used models selected from the social science literature to examine psychological and socially-framed predictors of behavioral change. They have carefully drawn theories from the Health Beliefs Model, the Theory of Reasoned Action, the AIDS Risk Reduction Model and Social Cognitive Theory to provide a framework against which students' intentions to take on certain key behaviors (remaining faithful and use of condoms) are tested.

One should not be surprised to read that a quarter of students are sexually active (predominantly male students), and a substantial minority exhibit high risk sexual behavior. However, the good news is that four predictors (perceived benefit, self-efficacy, perceived behavioral control and normative belief) were associated with intention to remain faithful and use condoms, indicating ways in to altering behavior in this vulnerable group.

EPHA is grateful to the US-Centers for Disease Control and Prevention (CDC) for their technical and financial support for undertaking this operational study and the printing as well as disseminating to health professionals in remote areas widely. We would also like to congratulate the researcher for his important contribution.

Finally, Actors committed to influence behavioral change in young people are encouraged to absorb this valuable research and to use it in designing HIV behavioral change interventions in future.

Mengistu Asnake (MD,MPH)  
**EPHA-President**



## **Executive Summary**

Evidences suggest that many students fail to use knowledge as a basis for guiding their own sexual behavior. This implies that other variables such as attitude, beliefs, and personality characteristics should be studied in order to better understand why individuals do or do not engage in safe sex practices. The objectives of the study are to identify predictors of condom use and faithfulness using the constructs of the Health Belief Model, the Theory of Reasoned Action, the AIDS Risk Reduction Model, the Theory of Planned Behavior and Social Cognitive Theory. A cross sectional study design was applied using structured pre-tested questionnaire. 403 students were selected randomly from Gondar College of Medicine and Health Sciences. 401 students responded with response rate of 99.5%

The study revealed that one quarter of the study subjects reported being sexually active, of which 5.2% were females. The mean age at sexual onset was 17.5 ( $\pm 2.71$ ) years. 24.5% of the sexually active students had 2-5 lifetime partners and 15.3% more than 5. Only males reported more than one lifetime partner. The majority of the study participants (99.0%) knew a source of condoms but 326 (85.1%) reported either that they didn't know the cost of three condoms or wrongly reported the cost to be  $>0.50$  cents. About 38% didn't use a condom during the last sexual intercourse. Perceived benefit from practicing the intended behavior, self-efficacy in performing the intended behavior, perceived behavioral control and normative belief were significantly associated with condom use and remaining faithful on regression analysis.

Based on the study results, it can be concluded that early sexual onset and high-risk sexual activity were reported by the study subjects, who were unlikely to use condoms. Interventions and strategies targeted at increasing self-efficacy, perceived benefits, normative beliefs and perceived behavioral control are likely to bring about desired behavior among college students.

## **I Background and Rationale**

HIV/AIDS is the worst pandemic in human history. Never before did a single disease have such significance in terms of its impact on the social, economical, political and security aspects of individuals and communities. As for many other infectious diseases of serious public health importance, developing countries are disproportionately affected by HIV/AIDS. Ethiopia is one of the countries hardest hit by the pandemic. The country has tried to mount a national response to the challenge posed by HIV/AIDS (1).

The Human Immunodeficiency Virus (HIV) continues to spread around the world, insinuating itself into communities previously little affected by the epidemic and strengthening its grip on areas where AIDS is already the leading cause of death in adults (2). Estimates by the joint United Nations Program On HIV/AIDS (UNAIDS) and the World Health Organization (WHO), indicate that

by the end of 2003 over 42 million people were infected with HIV, and that 23 million people around the world have already lost their lives due to the disease (3).

Twenty years have passed since the HIV/AIDS epidemic started in Ethiopia. The estimated national adult prevalence in 2003 was 4.4%, (12.6% urban and 2.6% rural), indicating that the epidemic is a generalized one. The epidemic has affected all segments of society and no region or zone in Ethiopia is spared. The cumulative number of people living with HIV/AIDS is about 1.5 million, of which about 96,000 are children under 15 years. The estimated number of new AIDS cases in the adult population in 2003 was 98,000 (46% male, 54% female), while the number of people living with HIV/AIDS (PLWHA) who were in need of antiretroviral treatment (ART) in 2003 was estimated to be 245,000. An estimated 90,000 adults and 25,000 children had died of AIDS by 2003. There were an estimated 539,000 AIDS orphans in 2003(4). In countries where HIV prevalence

is high, young people become vulnerable to the sexual transmission of HIV, because potential partners are often already heavily infected (5). Studies have shown that in every setting, sexual activity begins during adolescence among many young people. Much of this activity is risky and contraceptive use is often erratic, so unwanted pregnancy and unsafe abortions are observed in many settings (6).

As there is no cure for HIV and life-prolonging anti-retroviral drugs cannot be widely available considering the socio-economic situation, control of the pandemic revolves around behavioral change. So the question is: how does behavior change occur? This question probably has as many answers as there are diverse population and cultures. Every HIV prevention program, however, is based on those answers as to why people change their behaviors. Those underlying principles may not be formally recognized as theories, but they focus HIV prevention efforts on the element be-

lieved to be essential for individuals to enact and sustain behavioral change (7).

Investigations should be based on theoretical formulations and models, which facilitate the development of both future investigations and effective interventions (8). One of these models is the Health Belief Model (HBM) which is a psychological model that attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individual. The key variables of the HBM are perceived threat, perceived benefits, perceived barriers, cues to action and other demographic and socio-psychological variables (9, 10).

In a literature review of all HBM studies published from 1974-1984, perceived barriers were found to be most influential variable for predicting and explaining health-related behavior. The other significant HBM dimensions were perceived benefits, and perceived susceptibility, with perceived severity identified as the least sig-

nificant variable (11). This model does not incorporate the influence of social norms and peer influence on people's decision regarding their health behavior (12).

The Theory of Reasoned Action (TRA) is based on the premise that human being is rational and that behaviors being explored are under volitional control. The theory provides a construct that links individual beliefs, attitudes, intentions, and behavior (13). The Theory of Reasoned Action is conceptually similar to the health belief model but adds the constructs of behavioral intention as a determinant of health.

The Theory of Reasoned Action specifically focuses on the role of personal intention in determining whether a behavior will occur. A person's intention is a function of two basic determinants, which are attitude (towards the behavior) and subjective norms i.e. social influence. Normative beliefs play a central role in the theory, and generally focus on what an individual

believes other people, especially influential people, would expect him or her to do (14).

The AIDS risk reduction model, developed in 1990 (13), uses constructs from the Health Belief Model, from Social Cognitive Theory and the Diffusion Theory, to describe the process individuals or groups pass through, while changing behaviors regarding HIV risk. The model identifies three stages involved in reducing risk for HIV transmission, including behavior labeling, commitment to change and taking action. In the first stage, knowledge about HIV transmission, perceived HIV susceptibility, and aversive emotions influence how people perceive AIDS. The commitment stage is shaped by four factors: perceptions of enjoyment, self-efficacy, social norms and aversive emotions. Programs that use the AIDS Risk Reduction Model focus on clients' risk assessment, influencing the decision to reduce risk through perceptions of enjoyment or self-efficacy, and client support to enact the change (access to condoms, social sup-

port)(14). The premise of the social cognitive or Social Learning Theory (SCT) states that new behaviors are learned either by modeling the behavior of others or by direct experience. Social Learning Theory focuses on the important roles played by vicarious, symbolic, and self-regulatory processes in psychological functioning and looks at human behavior as a continuous interaction between cognitive, behavioral and environmental determinants. Central tenets of the Social Cognitive Theory are self-efficacy - the belief in the ability to implement the necessary behavior (“I know I can insist on condom use with my partner”) and outcome expectancies - beliefs about outcomes such as the belief that using condoms correctly will prevent HIV infection (12,13).

Programs built on SCT integrate information and attitudinal change to enhance motivation and reinforcement of risk reduction skills and self-efficacy. Specifically, activities focus on the experience people have in talking to their partners about sex and condom use, the positive and negative beliefs about adopting condom use, and the types of environmental barriers to risk reduction.

A meta-analysis of HIV risk-reduction interventions that used SCT in controlled experimental trials found that 12 published interventions with mostly uninfected individuals all obtained positive changes in risk behavior, with a medium effect size meeting or exceeding effects of other theory-based behavioral change interventions (14).

### **Rationale for the study**

Evidence suggests that many students fail to use knowledge as a basis for guiding their own sexual behavior. This implies that other variables such as attitude, beliefs, and personality characteristics need to be accounted for in order to better understand why individual do or do not engage in safer sex practice. A number of studies have revealed high levels of knowledge about the methods of transmission among young people with a paradoxically high level of risky activity (15-18). A study was conducted among Gondar Medical College students in 2000. This showed high-risk sexual behavior among the students. Among the students who were sexually active, 7.8% had sex with commercial sex workers, the condom use rate in the last sexual encounter was 37.1%, and the consistent condom use rate was 6.4% (19).

This high-risk behavior has been seen consistently in the different studies done among students since 1993.

A study done in 1993 showed that, among Gondar Medical College students who were sexually active, 22% had sexual contact with high risk individuals and only 33% of them were using safe methods (17). A subsequent study done in 1997 among students of the same college revealed that of those who were sexually active, 47.9% had used condoms at least once in the six months preceding the survey. 33.3% said they had sex with commercial sex workers and were positive for at least one of the conventional sexually transmitted diseases. Among those who claimed not to have sexual contact with commercial sex workers, 36.5% used condoms (15). Considering the high risk sexual activities of college students, identifying factors deterring them from using preventive behaviors is of paramount importance. This study is intended to identify important predictors of faithfulness and condom use, which will help in the design of appropriate interventions.

## **II. Objectives**

### **General Objective:**

- To identify predictors of sexual risk behavior among students of Gondar College of Medicine and Health Sciences, University of Gondar using constructs of the Health belief Model (HBM), the Theory of Reasoned Action (TRA), Social Cognitive Theory (SCT), and the AIDS Risk Reduction Model (ARRM).

### **Specific Objectives:**

- To identify predictors of condom use using the theoretical frameworks of HBM, TRA, SCT, and ARRM.
- To identify predictors of faithfulness using the theoretical framework of HBM, TRA, SCT, and ARRM.

## **III Methods**

**Study area:** the study took place in Gondar College of Medicine and Health Sciences, one of the faculties of the University of Gondar. The University of Gondar was established in June 2004 taking the Gondar College of Medical Sciences as a nucleus. Gondar is situated 747 kms North West of the capital of Ethiopia, Addis Ababa. Gondar is found in North Gondar administrative Zone, in Amhara National Regional State.

**Study population:** Students of Gondar College of Medicine and Health Sciences including those studying medicine, public health (health officers), laboratory sciences, nursing, environmental health science , pharmacy, and anesthesia.

**Study period:** The training, pre-test and data collection took place between November 15 and 23, 2004. The data collection was completed over the period of 2 days.

**Study Design:** A quantitative study of cross-sectional design was applied. The data on the intention to use condoms, remain faithful or be abstinent (outcome variables) and the predictors of the intention to use condoms or remain faithful and all sexual behaviour (independent variables) data were collected at one point in time.

**Data Collection techniques and Instrument:** The instrument for data collection was a structured pre-tested questionnaire adapted from previous similar studies containing items to assess students' perceived benefit, perceived susceptibility, perceived barriers to condom use and perceived severity of HIV/AIDS and their ability to use condoms in a variety of situations (20). Several other questions derived from components of the models used to predict intention to remain faithful and condom use were included. Respondents rated their level of agreement with each of the statement using a Likert-scale ranging from "strongly disagree" (Scored 1) to "strongly

agree" (Scored 5). A pretest was done on similar students who were not included in the study. Questions on how to fill the responses were frequently asked and answers given accordingly. The data collection was done on self-administered basis using an Amharic questionnaire (official language of Ethiopia). One day of training was given to the supervisors who are medical doctors by profession with previous experience of supervision.

**Sample Size:** Calculation of the sample size was based on the following assumptions:

P=Prevalence of intention to use condom at next intercourse 50%

d= Margin of error 5%

Level of confidence= 95 %

Non-response Rate= 5%

$$N = \frac{Z_{\alpha/2}^2 P(1-P)}{d^2}$$

Based on the formula a sample size of 403 was calculated.

**Sampling Method:** Sample selection was by simple random sampling based on probability propor-



tional to size allocation (PPS). Study subjects were selected from different disciplines in Gondar College of Medicine and Health Sciences, University of Gondar. The University of Gondar currently has 5 faculties. This study focused on the Faculty of Medicine and Health Sciences as previous studies focused on these groups. The study participants were students from the Faculty of Medicine and Health Sciences, mainly: health officer, nursing, laboratory technology, environmental health, science, pharmacy and anesthesia professional disciplines:

Category	No (%)	Sample
Medicine	200 (22.7)	92
Health officer	160 (18.2)	74
Laboratory	100 (11.4)	46
Nursing	160 (18.2)	74
Env. Health	100 (11.4)	46
Pharmacy	120 (13.6)	55
Anesthesia	40 (4.5)	17
<b>Total</b>	<b>880</b>	<b>404</b>

**Measurement of variables and operational definition:**

*Independent variables*

*Socio-demographic characteristics:* age, sex, religion, ethnicity, marital status, department, educational and occupational status of both parents.

*Sexual risk behavior and AIDS preventive behavior:*

risk profile towards HIV/AIDS was assessed by asking the number of lifetime partners, frequency of condom use, history of genital symptoms of STI, sexual contact with high-risk partners and having sex after an alcohol bout. *A high-risk sexual partner was defined as one who was believed to have history of one or more of the following:* sexual contact with multiple sexual partners, sexual contact with a commercial sex worker, a casual partner (known for the respondent for less than 3 weeks) or partners who have a history of STIs. An AIDS risk behavior index, ranging from lower to higher risk of acquiring infection with HIV created by Walter et al, 1992 was

used for assessment of AIDS risk behavior (21).

**Source of AIDS information:** Whether the respondent had ever heard of HIV/AIDS and the source of information; whether the respondent got AIDS related information in the college; whether they knew an individual with HIV/AIDS.

**Constructs derived from the Health Belief Model, social cognitive theory, and AIDS Risk Reduction Model:** Items addressing perceived susceptibility, perceived threat and perceived severity of acquiring HIV/AIDS were included. Perceived benefits, perceived barriers, self-efficacy and relevant others in regard to engaging in AIDS-preventing behaviors (abstaining before marriage, only having one sexual partner and condom use at the next sexual intercourse) were evaluated. The number of items used and the internal consistency ( $\alpha$  coefficient) of these constructs are presented in annex I.

**Constructs derived from the Theory of Reasoned Action:**

Items addressing behavioral intention, attitudes and beliefs towards preventive behaviours, and items which assess subjective norms, were used in the study. Questions on evaluation of consequences, normative beliefs, and perceived behavioral control were included.

**AIDS related knowledge:** A total of 13 questions on transmission and prevention of HIV were included.

**Dependent variables**

**Behavioral intention:** Behavioral intention was measured using “Intend to ... (to abstain, limit sexual partner or use condom)”, each measured separately, using a five point Likert’s scale. The questions for the constructs derived from the health models were measured using a five-point measurement scale ranging from 1 (very certain/very likely/strongly agree) to 5 (very unlikely/strongly disagree). This scoring was subsequently reversed for the negatively stated statements, so that the higher the score, the stronger the positive construct (example, intention). The sums of

the scores for the items were used as summary statistics to measure the specific construct for the specific behavior. Behavioral intentions were taken as dependent (outcome) measures/variable while the other constructs (socio-demographic variables, source of AIDS information, AIDS related knowledge and past sexual behaviors, constructs taken from the models under consideration) were taken as independent variables.

**Data entry and Analysis:** For data entry, Microsoft Excel was used and data analysis was done in SPSS for Windows version 10.1. All the constructs were formed after transforming the raw data variables as shown in annex III. Summations of the score of the questions were used as summary statistics for the predictor. Various statistical tests were used, for example the Chi Squared test, and Odds Ratios were calculated to measure the strength of association of two variables (bivariate analysis). To identify any group differences (by for example, gender) in potential risk, predictor constructs and outcome indicator,

MANOVA (mean analysis of variance) was used. Binary multiple logistic regression analysis was performed to control the effect of confounders hence showing the individual contribution of potential predictors of intention to use condoms or remain faithful. In performing the binary multiple logistic regression, the predictors were dichotomized into top two-fifths and lower three-fifths. The upper two-fifths indicated exposure to the predictors while the lower three-fifths indicated absence of the predictor. In the logistic regression model all predictors with p value less than 0.25 and other important variables were entered.

#### **Ethical considerations**

Ethical clearance was given by the Research and Publication Office (RPO) of the University of Gondar. Participation in the study was voluntary. The consent form explained the purpose of the study and the participants' right not to answer the questionnaire partially or wholly. Anonymity and confidentiality was maintained.

#### IV Results

##### *Background information*

401 students responded giving a response rate of 99.5%. Of these, 87 (21.7%) were female and 314 (78.3%) male. About two-thirds of the students (66.8%) were aged between 20-24 years while 29.1% were below 20 years. Figure 1 shows respondents' departments..

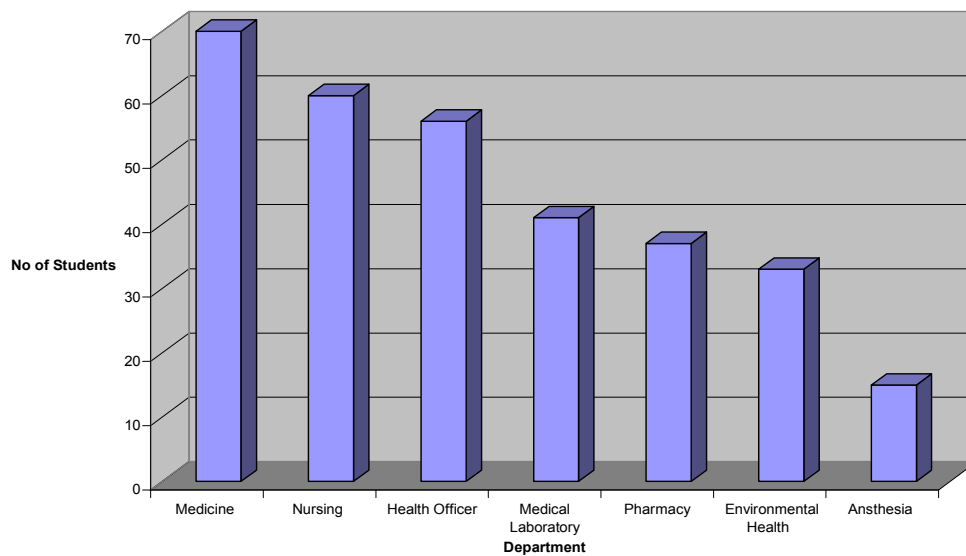
The mean ( $\pm$ SD) age of the study subjects was 20.5 ( $\pm$ 1.89) years with a median age of 20 years.

The majority of the students were orthodox Christians (250, 64.1%), Amhara by ethnicity (156, 40.0%) and unmarried (348, 91.3%). The fathers and mothers of 334 (85.5%) and 378 (94.3%), respectively, of participants were currently alive (Table 1).

**Table 1: Socio-demographic characteristics of students.**

Variable	Male	Female	Total (%)
<b>Sex</b>	314	87	401
<b>Religion</b>			
Orthodox	192	58	250 (64.1)
Protestant	59	16	75 (19.2)
Muslim	41	12	53 (13.6)
Other	11	1	12 (3.1)
<b>Ethnicity</b>			
Amhara	113	43	156 (40.0)
Oromo	111	15	126 (32.3)
Tigre	37	12	49 (12.6)
Other	44	1	59 (15.1)
<b>Currently married</b>			
Yes	25	8	33 (8.7)
No	273	75	348 (91.3)
<b>Father currently alive</b>			
Yes	268	76	344 (85.8)
No	46	11	57 (14.2)
<b>Mother currently alive</b>			
Yes	296	82	378 (94.3)
No	18	5	23 (5.7)

**Figure 1. Distribution of study subjects by department.**



*Sexual behavior of the study subjects*

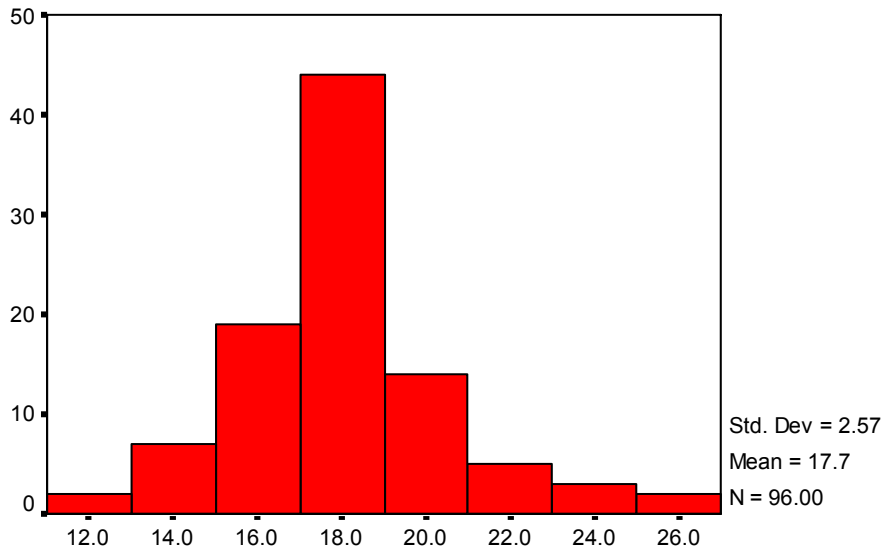
About one-fourth (25.3%) of the study subjects reported being sexually active, of whom 5.2% were females (Table 2). The proportion of males who had had sex in the past was significantly higher than for females  $X^2 = 20.7$ ,  $p < 0.001$ . The mean age at sexual onset was 17.7 ( $\pm 2.57$ ) years (Figure 2). One-fourth of the sexually active study partici-

pants (24.5%) had 2-5 lifetime partners and 15.3% more than 5. Only male students reported more than one lifetime partner (Table 2). Of the sexually active students, 39 (40.6%) had never used a condom and 24 (25.0%) used condoms occasionally (Figure 3). 12 (12.5%) had genital symptoms of STI and 18 (21.7%) reported having sex after an alcohol bout (Table 2).

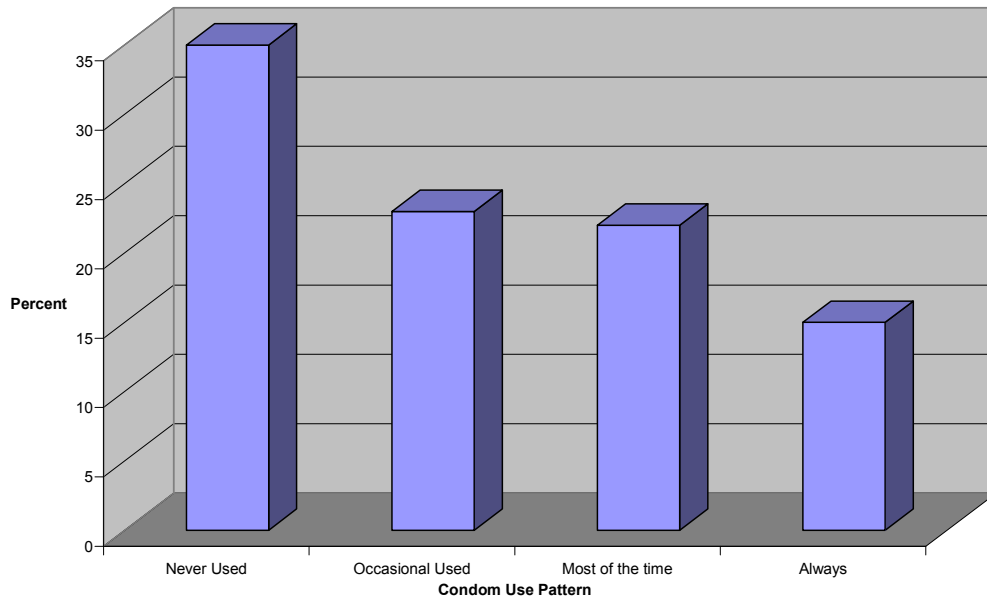
**Table 2: Distribution of sexual behavior of sexually active students.**

<b>Life time sexual behavior</b>	<b>Male</b>	<b>Female</b>	<b>Total (%)</b>
<b>Sexually active</b>			
Yes	91	5	96 (23.9)
No	204	77	281 (70.1)
Not willing to say	19	5	24 (5.9%)
<b>Lifetime sexual partner</b>			
One	53	6	59 (60.2)
2-5	24	0	24 (24.5)
>5	15	0	15 (15.3)
<b>Frequency of condom use</b>			
Never used	35	4	39 (38.6)
Occasionally	23	1	24 (23.8)
Most of the time	22	1	23 (22.8)
Always	15	0	15 (14.8)
<b>Had genital symptoms of STI</b>			
Yes	12	0	12 (12.5)
No	74	10	84 (87.5)
<b>Sexual contact with high-risk partner</b>			
Casual partner	25	0	25 (28.1)
Who had multiple partner	27	0	27 (30.3)
Who had STI	19	0	19 (21.3)
Who had contact with CSW	18	0	18 (20.2)
<b>Had sex after alcohol</b>			
Yes	18	0	18 (21.7)
No	65	4	69 (78.3)

**Figure 2. Distribution of age at first sexual experience.**



**Figure 3. Pattern of condom use among sexually active students.**



The majority of the study subjects (70.1%) reported never experiencing sex in the past. 36 (9.1%) participants had sexual intercourse with one low risk partner without or inconsistently using condoms while 27 (6.8%) participants had sexual intercourse with one or

more high risk partner without or inconsistently using condom. High-risk activity was mainly reported by male students. About 42.7 % of the sexually active students had sex in the past year (Table 3).

**Table 3: Sex distribution of students by their lifetime AIDS Risk behavior indices.**

	Male	Female	Total (%)
<b>Category 0:</b> Sexual abstinence	204	77	281 (74.5)
<b>Category 1:</b> Sexual intercourse consistently using condoms with one low risk partner	10	0	10 (2.7)
<b>Category 2:</b> Sexual intercourse consistently using condoms with two or more low risk partners	12	0	12 (3.1)
<b>Category 3:</b> Sexual intercourse with one low risk partner without or inconsistently using condoms	12	5	17 (4.2)
<b>Category 4:</b> Sexual intercourse with two or more low risk partners without or inconsistently using condoms	14	0	14 (3.7)
<b>Category 5:</b> Sexual intercourse consistently using condoms with one or more high risk partners	16	0	16 (4.2)
<b>Category 6:</b> Sexual intercourse with two or more high risk partners without or inconsistently using condoms	27	0	27 (8.5)



*Source of HIV/AIDS information* (49.6) study subjects said they almost all respondents (99.0%) had heard about HIV/AIDS. The major sources of information were TV (80.9%), radio (70.3%), newspaper (72.5%). The other sources included school, posters or pamphlets, friends and families. 199

(49.6) study subjects said they knew an individual with HIV/AIDS. Almost all (99.0%) knew a source of condoms but 326 (85.1%) reported either they didn't know the cost of three condoms or wrongly reported the cost to be >0.50 cents (Table 4).

**Table 4: Sex distribution of students by their knowledge and information source about HIV/AIDS.**

<b>Information/source</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Heard about HIV/AIDS	310	87	397 (99.0)
Source of HIV/AIDS information			
Family	62	184	246 (61.9)
Church/Mosque	38	143	181 (45.6)
Health institution	26	31	57 (14.4)
Neighbors	18	113	131 (32.9)
School	81	190	271 (68.3)
Theater/Cinema	14	99	113 (28.5)
Friends	42	212	254 (63.9)
Posters/pamphlets	50	212	262 (65.9)
Radio	58	221	279 (70.3)
Television	65	259	324 (80.9)
Newspaper	62	226	288 (72.5)
Taught at college about HIV/AIDS:	199	40	239 (59.6)
Know individual with HIV/AIDS:	147	52	199 (49.6)
Know source of condoms:	310	87	397 (99.0)
Reported cost of three condoms:			
Don't correctly know	97	51	148 (38.6)
<50 cents	5	0	5 (1.3)
0.50 to 1.00 Birr	44	11	55 (14.4)
>1Birr	152	23	175 (45.2)

***The effect of gender on risk factors:***

The age at sexual onset was not significantly different between females and males ( $F_{1, 92} = 0.086, p = 0.77$ ). The number of lifetime partners was also not significantly different ( $F_{1, 96} = 3.56, p = 0.06$ ). However, intention to use condoms did differ by gender ( $F_{1, 398} = 8.04, p < 0.005$ ), while the intention to limit to one partner did not.

There was a significant gender effect in limiting to one sexual partner and condom use. Motivation to comply ( $F_{1, 401} = 14.66, p < 0.001$ ), perceived susceptibility ( $F_{1, 401} = 11.06, p = 0.001$ ), perceived benefits ( $F_{1, 401} = 7.35, p = 0.007$ ), perceived behavioral control ( $F_{1, 401} = 4.54, p = 0.03$ ) and normative belief ( $F_{1, 401} = 3.65, p < 0.001$ ) had significant gender difference in determining limiting to one sexual partner. The effect of gender on motivation ( $F_{1, 401} = 14.66, p < 0.001$ ) to use condoms was significant. For this reason it was decided to analyze the effect of the predictors disaggregated by gender (Annex II).

***Intention to remain faithful:*** On bivariate analysis, a significant association was seen between intention to remain faithful and perceived benefit (OR 4.23, 95% CI 2.12 to 8.45  $p < 0.001$ ), motivation to comply (OR 2.13, 95% CI 1.00 to 4.63,  $p < 0.03$ ), perceived behavioral control (OR 13.2, 95% CI 6.39 to 27.5,  $p < 0.001$ ) among the male study subjects (Table 5). This implies that those students who perceive the benefits of remaining faithful are around four times more likely to intend to remain faithful. Those students who have motivation to comply with faithfulness are two times more likely to intend to remain faithful while those students with perceived behavioural control are 13 times more likely to intend to be faithful. On bivariate analysis, no association was observed between intention to remain faithful and knowledge of HIV/AIDS, perceived severity, perceived susceptibility, perceived barriers, normative belief, self-efficacy, history of STI, or contact with a high risk partner (Table 5).

**Table 5: Relationship between intention to remain faithful and knowledge and theoretical constructs of male students.**

\* P-value <0.05, \*\* P-value <0.01 \*\*\* P-value <0.001

	Intention to remain faithful		Unadjusted OR (95%CI)	Adjusted OR (95% CI)
	Yes	No		
Knowledge				
Yes	223	48	2.03 (0.71, 5.63)	2.12 (0.54, 8.33)
No	16	7	1	1
Motivation to comply				
Yes	83	11	2.13 (1.00, 4.63)	2.11 (0.87, 5.15s)
No	156	44	1	1
Perceived severity				
Yes	139	28	1.30 (0.69, 2.46)	1.49 (0.70, 3.21)
No	99	26	1	1
Perceived susceptibility				
Yes	131	27	1.26 (0.67, 2.36)	0.90 (0.42, 1.93)
No	108	28	1	1
Perceived barriers				
Yes	22	5	1.01 (0.34, 3.22)	1.14 (0.26, 5.05)
No	217	50	1	1
Perceived benefits				
Yes	194	29	<b>4.23 (2.12, 8.45)</b>	<b>3.97 (1.74, 9.05)</b>
No	38	24	1	1
Perceived behavioral control				
Yes	209	19	<b>13.20 (6.39,27.51)</b>	<b>13.95 (6.45, 30.15)</b>
No	30	36	1	1
Normative belief				
Yes	158	32	1.40 (0.74, 2.66)	1.19 (0.52, 2.68)
No	81	23	1	1
Self-efficacy				
Yes	59	20	0.58 (0.30, 1.13)	<b>4.25 (2.21, 8.17)</b>
No	179	35	1	1
History of STI				
Yes	64	25	1.83 (0.45, 7.27)	1.65 (0.25, 4.68)
No	7	5	1	1
Contact with a high risk partner				
Yes	68	24	<b>1.85 (1.05, 2.35)*</b>	0.70 (0.25, 2.34)
No	152	99	1	1

Before adjustment among the female students, intention to remain faithful was significantly associated with perceived behavioral control (OR 22.7, 95% CI 3.31 to 180.5,  $p < 0.001$ ) and ethnicity (Table 6).

There was no significant association between intention to remain faithful and knowledge of HIV/AIDS, motivation to comply, perceived severity, perceived susceptibility, perceived barriers, perceived benefits, normative belief, self-efficacy, history of STI, or contact with a high risk partner (Table 6). After entering the important confounders in the regression model, the effect of perceived benefit (OR 3.97, 95% CI 1.74 to 9.05,  $p < 0.001$ ) and perceived behavioral control (OR 15.06, 95% CI 7.26 to 32.81,  $p$ -value  $< 0.001$ ) persisted among the male participants (Table 5). Among the female participants normative belief (OR 3.97, 95% CI 1.74 to 9.05,  $p < 0.001$ ), perceived benefit (OR 4.01, 95% CI 1.70 to 8.25,

$p < 0.001$ ), and perceived behavioral control (OR 15.06, 95% CI 7.26 to 32.81,  $p < 0.001$ ) remained important predictors of intention to remain faithful after controlling for confounders (Table 6).

#### ***Intention to use condoms***

The proportion of consistent condom users was 14.8%. On bivariate analysis among male students, intention to use condoms was significantly associated with motivation to comply (OR 1.97, 95% CI 1.13 to 3.47,  $p < 0.01$ ), perceived benefit (OR 1.83, 95% CI 1.01 to 3.38,  $p < 0.05$ ), perceived behavioral control (OR 7.85, 95% CI 4.27 to 14.55,  $p < 0.001$ ), normative belief (OR 4.75, 95% CI 2.72 to 8.32,  $p < 0.001$ ) and self-efficacy (OR 7.37, 95% CI, 4.12 to 13.25,  $p < 0.001$ ). In the same group, there was no statistical significant association between intention to use condoms and knowledge on HIV/AIDS, perceived severity, perceived susceptibility, perceived barriers or history of STI.

**Table 6: Relationship between intention to remain faithful and knowledge and theoretical constructs of female students.**

\* P-value <0.05, \*\* P-value <0.01 \*\*\* P-value <0.001

	Intention to remain faithful		Unadjusted OR (95%CI)	Adjusted OR (95% CI)
	Yes	No		
Knowledge				
Yes	69	7	2.46 (0.0*, 30.89)	2.12 (0.54, 8.33)
No	4	1	1	1
Motivation to comply				
Yes	15	3	0.43 (0.08, 2.60)	2.11 (0.87, 5.15s)
No	58	5	1	1
Perceived severity				
Yes	40	5	0.73 (0.13, 3.18)	1.49 (0.70, 3.21)
No	33	3	1	1
Perceived susceptibility				
Yes	41	5	0.77 (0.13, 4.10)	0.90 (0.42, 1.93)
No	32	3	1	1
Perceived barriers				
Yes	4	1	0.41 (0.03, 10.90)	1.14 (0.26, 5.05)
No	69	7	1	1
Perceived benefits				
Yes	49	4	1.44 (0.17, 10.52)	<b>4.01 (1.70, 8.25)</b>
No	17	2	1	1
Perceived behavioral control				
Yes	68	3	<b>22.67 (3.31, 180.54)</b>	<b>15.06 (7.26, 32.81)</b>
No	5	5	1	1
Normative belief				
Yes	45	2	4.82 (0.79, 37.43)	<b>3.97 (1.74, 9.05)</b>
No	28	6	1	1
Self-efficacy				
Yes	10	2	0.48 (0.07, 3.97)	0.87 (0.04, 18.92)
No	63	6	1	1
History of STI				
Yes	2	3	4.80 (0.48, 42.83)	9.60 (0.55, 50.78)
No	10	72	1	1
Contact with a high risk partner				
Yes	2	3	5.41 (0.54, 49.26)	10.70 (0.23, 60.79)
No	9	73	1	1

barriers or history of STI. After controlling for confounders, perceived benefit (OR 4.23, 95% CI 1.35 to 10.05,  $p < 0.001$ ), perceived behavioral control (OR 8.26, 95% CI 5.54 to 32.41,  $p < 0.001$ ) and self-efficacy (OR 5.74, 95% CI 2.63 to 9.40,  $p < 0.001$ ) remained significant predictors of intention to use condoms (Table 7).

Among the female students, intention to use condoms was significantly associated with perceived behavioral control (OR 3.36, 95% CI 1.26 to 9.12,  $p < 0.001$ ), normative belief (OR 8.97, 95% CI 2.64 to 32.07  $p < 0.001$ ) and self-efficacy (OR 24.75, 95% CI 4.70 to 173.63,  $p < 0.001$ ) on bivariate analysis. There was no significant association with motivation to comply, perceived severity, perceived susceptibility, perceived barriers, perceived benefits, history of STI or contact with a high risk partner. After adjustment, perceived behavioral control (OR 4.33, 95% CI 2.24 to 8.39), normative belief (OR 3.07, 95% CI 1.62 to 5.80) and self-efficacy

(OR 6.28, 95% CI 3.51 to 9.72) remained important predictors of intention to use condoms (Table 8).

On combined bivariate analysis of both sexes, there was significant association between intention to remain faithful and perceived benefits (OR 3.48, 95% CI 1.85 to 6.55,  $p < 0.001$ ), and perceived behavioral control (OR 14.75, 95% CI 7.55 to 29.3,  $p < 0.001$ ), (Table 9). Similarly, there was a significant association between intention to use condoms and knowledge of HIV/AIDS (OR 2.93, 95% CI 1.64 to 5.23,  $p < 0.001$ ), motivation to comply (OR 1.68, 95% CI 1.04 to 2.73,  $p < 0.02$ ), perceived benefits (OR 1.63, 95% CI 0.98 to 2.71,  $p < 0.04$ ), perceived behavioral control (OR 5.06, 95% CI 3.17 to 8.08,  $p < 0.001$ ), normative belief (OR 5.44, 95% CI 3.30 to 8.99,  $p < 0.001$ ) and self-efficacy (OR 8.38, 95% CI 4.96 to 14.23,  $p < 0.001$ ), Table 10.

**Table 7: Relationship between intention to use condoms and knowledge and theoretical constructs of male students.**

\* P-value <0.05, \*\* P-value <0.01 \*\*\* P-value <0.001

	Intention to use condoms		Unadjusted OR (95%CI)	Adjusted OR (95% CI)
	Yes	No		
Knowledge				
Yes	174	111	1.25 (0.53, 2.96)	2.12 (0.54, 8.33)
No	15	12	1	1
Motivation to comply				
Yes	69	26	<b>1.97 (1.13, 3.47)**</b>	2.11 (0.87, 5.15)
No	117	87	1	1
Perceived severity				
Yes	107	68	1.02 (0.63, 1.65)	1.49 (0.70, 3.21)
No	82	53	1	1
Perceived susceptibility				
Yes	106	62	1.26 (0.78, 2.03)	0.90 (0.42, 1.93)
No	83	61	1	1
Perceived barriers				
Yes	33	29	0.58 (0.32, 1.06)	1.14 (0.26, 5.05)
No	155	79	1	1
Perceived benefits				
Yes	157	86	<b>1.83 (1.01, 3.38)*</b>	<b>4.23 (1.35, 10.05)*</b>
No	32	32	1	1
Perceived behavioral control				
Yes	123	20	<b>7.85 (4.27, 14.55)***</b>	<b>8.26 (5.54, 32.41)***</b>
No	65	83	1	1
Normative belief				
Yes	119	28	<b>4.75 (2.72, 8.32)***</b>	1.19 (0.52, 2.68)
No	68	76	1	1
Self-efficacy				
Yes	156	43	<b>7.37 (4.12, 13.25)***</b>	<b>5.74 (2.63, 9.40)***</b>
No	31	63	1	1
History of STI				
Yes	64	25	1.83 (0.45, 7.27)	1.76 (0.55, 7.65)
No	7	5	1	1
Contact with a high risk partner				
Yes	152	99	<b>0.54 (0.31, 0.95)*</b>	0.65 (0.45, 1.06)
No	68	24	1	1

**Table 8: Relationship between intention to use condoms and knowledge and theoretical constructs of female students.**

\* P-value <0.05, \*\* P-value <0.01 \*\*\* P-value <0.001

	Condom use		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Yes	No		
Knowledge				
Yes	28	5	<b>16.8 (4.51, 67.43)</b>	0.58 (0.17, 1.99)
No	10	30	1	1
Motivation to comply				
Yes	8	12	0.78 (0.25, 2.40)	1.87 (0.94, 3.70)
No	30	35	1	1
Perceived severity				
Yes	23	25	1.47 (0.57, 3.81)	1.19 (0.63, 2.25)
No	15	24	1	1
Perceived susceptibility				
Yes	23	25	1.47 (0.57, 3.81)	1.47 (0.79, 2.76)
No	15	24	1	1
Perceived barriers				
Yes	2	7	0.22 (0.03, 1.32)	0.65 (0.31, 1.34)
No	36	28	1	1
Perceived benefits				
Yes	28	33	1.02 (0.34, 3.03)	1.10 (0.52, 2.35)
No	10	12	1	1
Perceived behavioral control				
Yes	28	25	<b>3.36 (1.26, 9.12)</b>	<b>4.33 (2.24, 8.39)</b>
No	10	30	1	1
Normative belief				
Yes	25	6	<b>8.97 (2.64, 32.07)</b>	<b>3.07 (1.62, 5.80)</b>
No	13	28	1	1
Self-efficacy				
Yes	36	16	<b>24.75 (4.70, 173.63)</b>	<b>6.28 (3.51, 9.72)</b>
No	2	22	1	1
History of STI				
Yes	7	5	(0.14, 2.22)	0.53 (0.15, 2.11)
No	64	25	1	1
Contact with a high risk partner				
Yes	20	7	(0.44, 4.12)	1.23 (0.23, 2.22)
No	45	21	1	1



**Table 9: Relationship between intention to remain faithful and knowledge and theoretical constructs of all students.**

	Intention to remain faithful		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Yes	No		
Knowledge				
Yes	292	55	2.12 (0.81, 5.41)	1.56 (0.47, 5.16)
No	20	8	1	1
Motivation to comply				
Yes	98	14	1.60 (0.81, 3.20)	1.65 (0.73, 3.71)
No	214	49	1	1
Perceived severity				
Yes	179	32	1.23 (0.68, 2.21)	1.44 (0.71, 2.91)
No	132	29	1	1
Perceived susceptibility				
Yes	172	32	1.18 (0.66, 2.12)	0.91 (0.45, 1.83)
No	140	31	1	1
Perceived barriers				
Yes	26	6	0.86 (0.32, 2.46)	0.95 (0.26, 0.26)
No	286	57	1	1
Perceived benefits				
Yes	243	33	<b>3.48 (1.85, 6.55)</b>	1.35 (0.60, 3.04)
No	55	26	1	1
Perceived behavioral control				
Yes	277	22	<b>14.75 (7.55, 29.03)</b>	<b>14.75 (7.18, 30.32)</b>
No	35	41	1	1
Normative belief				
Yes	203	34	1.59 (0.89, 2.84)	1.34 (0.65, 2.79)
No	109	29	1	1
Self-efficacy				
Yes	69	22	0.53 (0.29, 0.99)	0.55 (0.26, 0.87)
No	242	41	1	1
History of STI				
Yes	58	301	0.50 (0.16, 1.68)	0.26 (0.07, 1.01)
No	5	13	1	1

**Table 10. Relationship between intention to use condoms and knowledge and theoretical constructs of all students.**

	Intention to use condoms		Unadjusted 95% CI		Adjusted 95% CI	
	Yes	No	OR	CI	OR	CI
Knowledge						
Yes	202	116	<b>2.93 (1.64, 5.23)</b>		0.41 (0.13, 1.34)	
No	25	42	1		1	
Motivation to comply						
Yes	77	38	<b>1.68 (1.04, 2.73)</b>		1.54 (1.1, 2.70)	
No	147	122	1		1	
Perceived severity						
Yes	130	93	1.11 (0.73, 1.69)		1.42 (0.77, 2.61)	
No	97	77	1		1	
Perceived susceptibility						
Yes	129	87	1.29 (0.85, 1.95)		1.64 (0.90, 2.99)	
No	98	85	1		1	
Perceived barriers						
Yes	35	36	0.54 (0.31, 0.95)		0.64 (0.30, 1.34)	
No	191	107	1		1	
Perceived benefits						
Yes	185	119	<b>1.63 (0.98, 2.71)</b>		<b>2.43 (1.17, 5.05)</b>	
No	42	44	1		1	
Perceived behavioral control						
Yes	151	45	<b>5.06 (3.17, 8.08)</b>		<b>5.02 (2.68, 9.44)</b>	
No	75	113	1		1	
Normative belief						
Yes	144	34	<b>5.44 (3.30, 8.99)</b>		<b>2.87 (1.57, 5.26)</b>	
No	81	104	1		1	
Self-efficacy						
Yes	192	59	<b>8.38 (4.96, 14.23)</b>		<b>4.86 (2.50, 9.45)</b>	
No	33	85	1		1	
History of STI						
Yes	169	213	1.41 (0.37, 5.26)		1.41 (0.37, 5.26)	
No	5	14	1		1	

## **V Discussion.**

Although the use of 403 students somewhat limits generalization of the findings to the larger college population, this study builds on previous research of safer sex practices among young adults and offers challenging implications. The response rate for this study was more than 99%. The proportion of female participants is low (21.7%) because female enrollment to the higher educational institutes in Ethiopia is markedly lower than male enrollment (22). More than 95% of the study subjects are adolescent (15-24 years).

Sexual activity begins for the majority of people during adolescence. In many countries, unmarried girls and boys are sexually active before the age of 15 years (23). In this study one-fourth of the students had started sexual activity at a mean and median age of 17.65 and 18 years respectively. An earlier study in Gondar indicated mean age at sexual onset to be 16.4 years ( $\pm 2.3$  SD) (7). A study done among Cambodian

university students showed mean age at sexual onset to be 20 years (24).

Multiple sexual partners were reported by about 40% of the students. A study done a few years back on students of same college showed that 38.6% had more than one partner (18, 25). This suggests no significant change with regard to multiple sexual partners. With respect to condom use, 63 (62.4%) had never used condoms or used condoms inconsistently. Similar studies among Gondar College of Medical Sciences students revealed that 47.8% had used a condom at least once in the past six months (7). Data for comparison with other universities in Ethiopia is lacking. A study on knowledge, attitudes and practices of university students regarding HIV infection, in Phnom Penh, Cambodia, found that among the male students, 44% had experienced a sexual relationship (95% CI: 31-52). During the first intercourse, 67% of male students used a condom (95% CI: 57-77), 73%

of the partners were a prostitute. During the most recent intercourse with a prostitute, 76% of male students had used a condom (95% CI: 66-87) (24). A study done among women college students in the US showed a condom use rate of 46% among sexually active university students (26). A study conducted among women college students in Sweden revealed condom use at first intercourse of 60%; condom use at first intercourse with a new partner was 56%(27). In comparison with other countries reviewed in this study, the condom use rate of Ethiopian university students is lower. As indicated in the various studies, university students start sex early, are more likely to have multiple partners and are less likely to use condoms.

The majority of young people have begun to have sexual intercourse before they leave their teens. Various studies have shown that preventive measures like condom use are more likely to be used the later sex is initiated. Education on these topics has been found to

modify patterns and appears to be more effective if given prior to first intercourse that is in adolescence or pre-adolescence (28).

This study showed almost all students have basic knowledge about HIV/AIDS. A range of studies have shown that college students possess relatively high levels of knowledge about HIV/AIDS, although some misperceptions persist (7, 18, 29). The source of HIV/AIDS information was multiple including TV, radio and newspaper. Other studies have also indicated multiple media channels as a source of AIDS information: mostly radio followed by other channels (30, 31).

In this study, males were found to have greater high-risk sexual behaviours than females. This finding is consistent with other studies. In northern Ethiopia (Gondar), males had more sexual partners (mean=2.2) than females (1.1) (7). A study in south-western Ethiopia (Jimma) found that 37.1% of males had multiple lifetime sexual

partners, compared to 24.1% of females (20). Lemma and Hass (1994) reported many adolescents being involved with more than one partner, 63.2% of males and 30% of females having had two or more sexual partners over the preceding twelve months (32).

Among males and females, perceived benefit and perceived behavioral control were independent predictors of intentions to remain faithful and to use condoms. A number of studies have attempted to assess AIDS prevention and safer sex practices of adolescents and college students based on the constructs of various models (33-35). Personal assessment of the feasibility and effectiveness of the recommendation to deal with the health threat is important in adopting or rejecting a new behavior.

The finding on perceived behavioral control (consistent with the theory of planned be-

havior) was also witnessed in a similar study conducted among high school students in Jimma and other studies elsewhere (20, 36, 37). A growing body of literature supports the importance of self-efficacy in helping to account for the initiation and maintenance of behaviors (35). Confidence to remain faithful or use condoms under a range of conditions is important in adopting the expected behavior.

Among the female study subjects, normative belief was a strong predictor of intention to remain faithful and use condoms. Other studies in Ethiopia and other countries have found normative belief to be an important independent predictor of intention to use condom or remain faithful to single partner (20, 38, 39, 40). Normative belief generally focuses on what an individual believes other people, especially influential people, would expect him or her to do. Perception of social or peer norms concerning the

acceptability of safer sex practices is an important determinant of HIV risk-taking behavior (41).

Self-efficacy, an element of social cognitive theory, was an independent predictor of intention to use condoms among males and females, as also found in other studies (20, 39, 42, 43). Belief in the ability to implement the necessary behavior is important to enhance motivation and reinforce risk-reduction skills (19). Interventions and strategies targeted at skills training like talking with partners about condom use and practicing condom use skills would have significant effect in bringing the desired behavior among college students.

Potential health belief model predictors (perceived susceptibility, perceived severity and perceived barriers) were not significantly associated with intention to use condoms or remain faithful. A study done in the US to test the efficacy of

the health belief model for predicting condom usage and risky sexual practices in university students also found similar results (44). The absence of a significant association between previous STI and the outcome variables (intention to remain faithful and condom use) could be due to the small number of students with previous history of STI which would be reflected in a lack of power to identify real associations.

## **VI Study Limitations**

The sensitive nature of the study may introduce social desirability bias.

The study was done on health science students, which might affect the generalizability of the findings.

The study used constructs taken from individual behavior models and did not attempt to identify ecological factors affecting the students' behavior.

## **VII Conclusion**

About one-quarter (25.3%) of

the study subjects reported being sexually active, while three-quarters had never experienced sexual intercourse. The sexually active students were involved in high-risk sexual behaviors like inconsistent condom use, history of STI and sexual intercourse with multiple sexual partners. There was no significant difference between females and males in relation to age at sexual onset and number of lifetime partners.

Almost all respondents had heard about HIV/AIDS, the major sources of HIV/AIDS information being TV, radio, newspaper, schools, posters/pamphlets, friends and families. 99% knew a source of condoms but 326 (85.1%) either did not know the cost of three condoms or reported the cost to be >0.50 cents.

Among the male participants, perceived benefit and perceived behavioral control were significant predictors of remaining

faithful. Among the female participants normative belief, perceived benefit, and perceived behavioral control appeared important predictors of intention to remain faithful even after controlling for confounders.

Among the male participants perceived benefit, perceived behavioral control and self-efficacy stood as significant predictors of intention to use condoms, while among the female participants, perceived behavioral control, normative belief and self-efficacy remained important predictors of intention to use condoms after controlling for confounding.

When data from male and female students were combined, perceived benefits and perceived behavioral control were significant predictors of intention to remain faithful after controlling for confounders. Perceived benefits, perceived behavioral control, normative belief, and self-efficacy all re-

mained significant predictors of intention to use condom after adjustment for confounders.

Motivation to comply, perceived severity, perceived susceptibility, perceived barriers, history of STI and contact with a high risk partner were not significant predictors of intention either to remain faithful or to use condoms.

### **VIII Recommendations**

- Interventions focusing on college students should give special emphasis to the males as the high-risk sexual activity is dominantly practiced by them.
- Skills training at improving self-efficacy towards remaining faithful and using condoms should be

strengthened.

- HIV/AIDS related messages would be more acceptable if presented to college students by people accepted and respected by the students like religious leaders and parents.
- HIV/AIDS messages should capitalize on the effect of perceived behavioral control and perceived benefit on practicing the desired behavior.
- A similar study at the university should be done in the future with consideration of ecological or contextual factors.



## IX References

1. MOH. Guidelines for the prevention and control of selected epidemic diseases in Ethiopia. Department of Disease Prevention and Control, MOH, Ethiopia; 71-81.
2. UNAIDS, HIV and AIDS: The Global Situation, June 1998:6-7.
3. UNAIDS, Reports on the global HIV/AIDS epidemic, June 2002.
4. MOH. AIDS in Ethiopia, Fifth report, Department of Disease Prevention and Control, MOH, Ethiopia; June 2004.
5. WHO, Sexual relations among young people in developing countries: Evidence from WHO case studies, World Health Organization, Geneva 2001.
6. Kebede D, Sanders E. Akililu M. The epidemiology of HIV/AIDS in Ethiopia: a Review Report Submitted to UNAIDS by the technical working Group on HIV/AIDS in Ethiopia, UNAIDS, March 2000.
7. Mahoney C. Thombs D, Ford O. Health belief and self-efficacy models: their utility in explaining college students' condom use. *AIDS Education and Prevention* 1995; 7(1): 32-49.
8. Brown L. Diclemente R, Reynolds L. HIV prevention for adolescence. Utility of the Health Belief Model. *AIDS Education and Prevention* 1991:3(1): 50-59.
9. Janz N. Becker M. The Health Belief Model: A decade later. *Health Education Quarterly* 1984:11(1): 1-47.
10. Bandura A. Perceived self-efficacy in the exercise of control over AIDS infection. *Primary Prevention of AIDS. Psychological Approach* 1989:128-141.
11. Rosenstock I. Strecher V. Becker M. The Health Belief Model and HIV Risk behavior change, *Preventing AIDS: Theories and Methods of Behavioral intervention* 1994:5-24.
12. Ajzen I, Fishbein M. *Understanding attitude and predicting social behavior* 1980; New Jersey: Prentice Hall Inc.

13. Catania J, Kegoles S, Coates T. Towards an understanding of risk behaviour; an AIDS risk reduction model (ARRM). *Health Education Quarterly* 1990; 17(1): 53-72.
14. UNAIDS. Sexual behavior change for HIV: where have the theories taken us? 1999; 60p.
15. Gebrekiban K, Azeze B. Survey of condom use among college students. *Ethiop. J. Health Dev* 1995; 9(1): 7-11.
16. Ishmail S, Bistuamlak H, Alemu K. High-risk sexual behaviors for STD/HIV, pregnancies and contraception among high-school students in a rural town. Northwestern Ethiopia, *Ethiop. J. Health Dev* 1997; 11(1): 29-36.
17. Teka T. AIDS related knowledge and behavior among college students, Gondar, Ethiopia. A comparative study. *Ethiop. Med. J*; 1997; 35:185-189.
18. Gallois C, Kashima Y, Hills R, et al. Preferred strategies for safe sex: Relation to past and actual behavior among sexually active men and women, Paper Presented at the VIth International Conference on AIDS, 1990 California.
19. Fitaw Y, Worku A. high-risk sexual behavior and pattern of condom utilization of the Gondar College of Medical Sciences (GCMS) students, North-West Ethiopia. *Eth. J Health Dev* 2002; 16(3): 335-338.
20. Lemma E. Predictors of HIV/AIDS related sexual behavior of high-school adolescents based on the classical health behavior models, Jimma town, South West Ethiopia, MPH thesis.
21. Walter J., Vaughan D., et al. Factors associated with AIDS risk behavior among high school students in an AIDS epicenter. *Am J Public Health* 1992; 82: 528-532.
22. Gondar University. Inauguration and Golden Jubilee Information Bulletin, June 2004.
23. UNAIDS. Young people and HIV/AIDS-Opportunity in Crisis; Why Focus on Young People, 2000; 54 P.
24. Glaziou P, Bodet C, Loy T, Vonthanak S, El-Kouby S, Flye F. Knowledge, attitudes and practices of university students regarding HIV infection, in Phnom Penh, Cambodia. *AIDS* 1999; 13(14):1982.

25. Ismail S, Bituamlak H, Alemu K. High-risk sexual behaviors for STD/HIV, pregnancies and contraception among high-school students in a rural town, North Western Ethiopia. *Eth. J. Health Dev* 1997; 11(1): 29-36.
26. Bryan A, Aiken L, West S. Increasing condom use: evaluation of a theory based intervention to prevent sexually transmitted diseases in young women. *Health Psychology* 1996; 15(5):371-82.
27. Tyden T, Bjorkelund C, Odland V, Olsson S. Increased use of condoms among female university students: a 5-year follow-up of sexual behavior. *Acta Obs Gyn Scan* 1996; 75 (6):579-84.
28. UNAIDS. Impact of HIV and sexual health education behavior of young people: a Review Update 1997; 64 P.
29. Mahoney C, Thombs D, Ford O. Health Belief and self-efficacy models: their utility in explaining college student condom use. *AIDS education and Prevention* 1995; 7(1): 32-49.
30. Bertrand T, Makani B, Hassig E, et al. AIDS related knowledge, sexual behavior and condom use among men and women in Kinshasa, Zaire. *Am J Public Health* 1991; 81 (1): 53-58.
31. Legarde E, Pison G., Enel C. Risk behavior and AIDS knowledge in a rural community of Senegal: Relationship with source of AIDS information. *Int J. Epid* 1998; 27:890-896.
32. Lemma E. Predictors of HIV/AIDS related sexual behaviour of high school adolescents based on the classical HBM Jimma –SW Ethiopia.
33. Lemma V.A. and Hass M.A. Knowledge of sexually transmitted diseases, HIV infection and AIDS among sexually active adolescents in Nairobi, Kenya and its relationship to their sexual behavior and contraception. *East African Medical Journal* 1994; 71(2): 122-128.
34. Hingson W., Strunin I., Berlin M., and Heeren T. belief about AIDS, use of alcohol and drugs, and unprotected sex among Massachusetts. *Am J Public Health* 1990; 80(3): 295-299.
35. Manning D.T., Balson, P.M., Barenberg N., & Moore, T. M (1989). Susceptibility to

- AIDS: What college students do and don't believe. *Journal of American College Health*, 38, 67-73.
36. Manning, D.T., Barenberg, N., Gallese, L., & Rice, J.C. (1989). College students' knowledge and health beliefs about AIDS: Implication for education and prevention. *Journal of American College Health*, 37, 254-259.
37. Rosenstock M, Stretcher J., and Becker H. Social Learning theory and Health Belief Model. *Health Education Quarterly* 1988; 15(2): 175-183.
38. Abraham C., and Sheeran P. Modeling and modifying young heterosexuals' HIV preventive behavior; a review of theories, findings and education implications. *Patient Education and Counseling* 1994; 23:173-186.
39. Walter J., Vaughan D., Glads, Ragin Kasen S., & Cohall T. factors associated with AIDS Risk Behaviour among high school students in an AIDS epicenter. *AM J. Public Health* 1992: 82:528-532.
40. Dennis J. Behavioral changes: a summary of four major theories. Internet document. AIDSCAP Behavioral Research Unit, August 1996.
41. Fisher A., Fisher D. and Rye J. Understanding and promoting AIDS preventive behavior: Insight from the theory of Reasoned Action *Health Psychology* 1999; 4(4): 497-506.
42. Fishbein M. and Ajzen I. (1975). *Beliefs, attitudes, intention and behavior: an introduction to theory and research*. Reading, MA: Addison. Wesley.
43. Mahoney A. Thombs L., and Ford J. health belief and self efficacy models: Their utility in explaining college students condom use. *AIDS Education & Prevention* 1995;7(1)L 32-49.
44. Lollis C, Johnson E, Antoni M. The efficacy of the health belief model for predicting condom usage and risky sexual practices in university students. *AIDS education and prevention* 1997; 9 (6):551-63.

## X Annexes

### Annex 1. Reliability of constructs derived from health behavior models for different safe sex behaviors and intentions.

CONSTRUCT	#Of	items		Mean
<b>HIV/AIDS infection</b>				
Knowledge	13	-	-	0.61
Motivation to comply	5	3.07	0.46	0.75
Perceived severity	2	3.47	0.05	0.42
Perceived susceptibility	3	3.40	2.02	0.32
<b>Limiting to one steady partner</b>				
Perceived Barrier	3	1.90	0.01	0.76
Perceived benefit	3	4.05	0.01	0.85
Perceived behavioral control	3	4.21	0.01	0.80
Normative belief	4	3.40	1.16	0.64
Outcome evaluation	6	5.22	12.29	0.64
Self-efficacy	4	2.69	0.14	0.58
<b>Intention to use condoms</b>				
Perceived Barrier	3	2.62	0.03	0.68
Perceived benefit	3	4.05	0.01	0.85
Perceived behavioral control	5	3.45	0.01	0.88
Normative belief	5	3.49	0.08	0.82
Outcome evaluation	6	6.57	51.15	0.67
Self-efficacy	2	3.75	0.01	0.52

## Annex 2 . Means and Standard Deviations of Predictors

Variable	Female		Male		F	Sig
	Mean	SD	Mean	SD		
<b>Limit to one sexual partner</b>						
Knowledge	53.89	5.86	53.43	6.37	0.365	0.55
Motivation	13.52	4.45	15.74	4.79	14.66	0.00
Perceived severity	6.67	2.28	6.95	2.29	1.01	0.32
“susceptibility	10.14	2.14	10.16	2.26	0.009	0.93
Perceived barriers	4.72	3.10	5.93	2.95	11.06	0.001
Perceived benefits	11.93	2.89	12.29	2.96	0.01	0.919
“behavioral control	13.26	2.14	12.39	2.71	7.35	0.007
Normative belief	12.74	4.14	13.68	3.42	4.54	0.03
Self-efficacy	8.86	3.96	11.08	3.65	23.81	0.00
<b>Condom use:</b>						
Knowledge	53.89	5.86	53.43	6.37	0.37	0.55
Motivation	13.52	4.45	15.74	4.79	14.66	0.00
Perceived severity	10.14	2.28	6.95	2.29	1.01	0.32
“susceptibility	6.67	2.14	10.14	2.26	0.009	0.93
Perceived barriers	7.29	2.67	7.91	3.09	2.52	0.11
Perceived benefits	12.09	2.75	12.06	3.01	0.99	0.32
“behavioral control	16.33	5.41	16.93	5.13	0.79	0.38
Normative belief	16.21	5.30	17.20	5.07	2.18	0.14
Self-efficacy	7.45	2.06	7.36	2.08	0.10	0.75

### **Annex 3. Data transformation schedule.**

Part one is socio-demographic data (Part1: 1-9)

The scoring for part three were transformed from 5 to 1 for positive statements and subsequently reversed for negative statements.

Scoring of constructs

- **General HIV/AIDS:**
  - Knowledge= S (2.1: 2.15)
  - Perceived susceptibility = S (2.20,2.23: 2.24,2.26)
  - Perceived severity= S(2.25,2.27)
  - Attitude = (3.3:3.10)
- **Condom use at the next sexual intercourse:**
  - Self-efficacy = S (4.33: 34)
  - Perceived benefit = S (4.35.1: 4.35.3)
  - Perceived barrier = S(4.36: 4.38)
  - Outcome evaluation (Desirable and undesirable) = S (4.12:4:14) and = S (4.39, 4.41, 4.42)
  - Normative Belief = S(4.44.1, 4.44.5)
  - Perceived behavioral control = S(4.45.1:4.45.6)
  - Intention = 4.48
- **Intend to remain fitful:**

#### **Annex 4. Questionnaire.**

### **STUDENT SELF-REPORTING QUESTIONNAIRE TO BE FILLED BY STUDENTS OF GONDAR COLLEGE OF MEDICINE & HEALTH SCIENCES, GONDAR UNIVERSITY**

November 2004

Dear student,

In ensuring the health of the youth the understanding of existing problems and related behaviors of this group of the population is important. In line with this a study was proposed to assess the health behaviors of college students and you are chosen to participate in this study. The choice was done randomly using a lottery type of approach.

The purpose of this study is to generate information on behavior of college students that can be used to design an appropriate intervention. The study will involve various intimate and private life questions. In order to effectively attain the goal we are asking you for your help. Here is a survey for you to complete. There is no need to put your name on the survey; no individual responses will be reported. It is your full right to refuse any or all of the questions. If you don't want to participate you can leave the format on the table (upside down). But you are requested to remain in your seat until others finish filling the format. Please take a few minutes to answer to the questions.

**Do you wish to participate in the study?**

YES, I want to participate in the study.

Please go to the next page)

NO, I don't want to participate in the study.

**Thank you very much!**



**Part One: General Information**

The following are general questions and statements for you.

1.1	Department	Medicine . . . . . 1 Health officer. . . . . 2 Laboratory tech. . . . . 3 Nursing . . . . . 4 Environmental health. . . 5 Pharmacy tech. . . . . 6 Anaesthesia . . . . . 7
1.2	Year of student	1 year. . . . . 1 2 year. . . . . 2 3 year. . . . . 3 4 year . . . . . 4
1.3	Age in year	_____
1.4	Sex	Male . . . . . 0 Female . . . . . 1
1.5	Marital status	Married . . . . . 1 Unmarried . . . . . 2
1.6	Religion	Orthodox . . . . . 1 Protestant. . . . . 2 Catholic. . . . . 3 Islam . . . . . 4 Others . . . . . 5
1.7	Ethnicity	Amhara. . . . . 1 Oromo . . . . . 2 Tigre. . . . . 3 Other specify. . . . . 4
1.8	Family size	_____
1.9	If the father is alive, educational status	Unable to read and write .1 Read and write. . . . . 2 Grade 1-4 . . . . . 3 Grade 5-8. . . . . 4 Grade 9-12 . . . . . 5 Grade above 12 . . . . . 6
1.10	Father's occupation	Unemployed.. . . . 1 Government employee. . 2 Privately employed. . . 3 Others specify _____ 4
1.11	If the mother is lives, educations status	Unable to read & write ....1 Read & write ..... 2 Grade 1—4..... 3 Grade 5—8..... 4 Grade 9—12 .....5 Grade above 12 .....6
1.12	Mother's & Occupation	Un employed .....1 Gov't..employee ..... 2 Privately employed ..... 3 Others specify ..... 4

**Part Two.**

As mentioned earlier, all the information you are giving will not be reported as individual responses. For this reason please don't write your name or ID number on the questionnaire. Your honest responses are requested.

	Questions	Choice
2.1	At what age (in years) was your first menses? (FOR FEMALE REpondENTS ONLY)	_____ YEARS
2.2	Have you ever had sexual intercourse in the past?	Yes . . . . . 1 No . . . . . 2

If your answer to question number 2.2 is NO, then skip to question number 2.18. but if your answer is YES answer the following question.

	Questions	Choice
2.3	At what age did you have your first sexual intercourse?	_____
2.4	How many different sexual partners have you had in the past?	Only one partner. . . . 1 Two to five partners. . . 2 More than five . . . . . 3
2.5	How frequently were you using condoms during your sexual intercourse episodes?	Never used . . . . . 1 Sometimes. . . . . 2 Most of the time . . . . 3 Always. . . . . 4
2.6	Have you ever had genital symptoms of STIs (ulceration around your genitalia and/ or discharge) in the past?	Yes . . . . . 1 No . . . . . 2
2.7	Have you ever had sex with the following individuals? ( <i>Mark your responses for all of the questions</i> )	
2.7.1	Person(s) you have known for a period of less than three weeks (casual partner)?	Yes . . . . . 1 No . . . . . 2
2.7.2	Person(s) who had (presumed) multiple sexual partners?	Yes . . . . . 1 No . . . . . 2
2.7.3	Person(s) who had (presumed) sexually transmitted infections (STIs)?	Yes . . . . . 1 No . . . . . 2
2.7.4	Commercial sex worker(s) or person(s) who had (presumed) sexual intercourse with CSWs?	Yes . . . . . 1 No . . . . . 2

2.8	Do you currently have a steady sexual partner/someone with whom you have been having sex for at least three months?	Yes . . . . . 1 No . . . . . 2
2.9	Have you ever discussed your sexual history with any of the following individuals? (mark all applicable)	Never discussed. . . . 1 Friends . . . . . 2 Parents . . . . . 3 Sexual partner(s). . . . 4 Teacher(s) . . . . . 5 Other person(s) . . . . 6
2.10	Have you ever had sex after having alcohol?	Yes . . . . . 1 No . . . . . 2
2.11	If yes, was a condom used?	Yes . . . . . 1 No . . . . . 2
2.12	For female students only: did you ever use any contraceptive other than condoms?	Yes . . . . . 1 No . . . . . 2
2.13	Have you had sexual intercourse in the past one-year (12 months)?	Yes . . . . . 1 No . . . . . 2

Now the following questions will continue to ask you about your sexual experience in the past one year. Please try to remember all the sexual encounters you had in the past twelve months

2.14	How many different sexual partners have you had in the past one-year (12 months)?	Only one partner. . . . 1 Two to five partners . . 2 More than five partners 3
2.15	How frequently were you using condoms during sexual intercourse in the past year?	Never used . . . . . 1 Sometimes. . . . . 2 Most of the time . . . . 3 Always. . . . . 4
2.16	The reasons you used condoms during sexual intercourse were (mark all your reasons)	I never used a condom. 1 To prevent pregnancy . . 2 didn't discuss about it with my partner. . . . . 3 To prevent HIV/AIDS . 4 Don't trust my sexual partner. . . . . 5 Don't know sexual partner well . . . . . 6 Other reason(s) . . . . 7

2.17	What were the reasons you did not use condoms during sexual intercourse? (Mark all your reasons)	I used condoms always.....1 Partner dislikes condoms.....2 Didn't discuss with sexual partner...3 Couldn't find condoms.....4 I am in love with my partner .....5 Condoms are expensive.....6 I trust my partner.....7 Didn't have reason to use.....8 Sure that my partner is disease free ...9 Partner didn't like condom.....10 Other reason(s).....11
2.18	From where have you heard about HIV/AIDS in the past? (Mark all applicable sources of information)	Family.....1 Church/Mosque.....2 Health Facility.....3 Neighbors .....4 Theater/Cinema.....5 School .....6 Friends .....7 Poster/Pamphlets .....8 Radio.....9 Television.....10 Newspaper .....11 Other .....12 Never heard.....13
2.19	Have you been taught about AIDS/HIV infection at school?	Yes.....1 No.....2
2.20	Did you know anyone who has/had HIV/AIDS?	Yes.....1 No.....2
2.21	Where do you think one can get condoms if necessary? (Mark all possible sources)	School.....1 Hotels/Bars.....2 Health facility .....3 Theater/Cinema .....4 Shops.....5 Pharmacy.....6 Church/Mosque.....7 Other place .....8 I don't know.....9
2.22	How much is the cost of three condoms?	Less than 50 cents.....1 50 cents to 1 Birr.....2 More than one Birr... ..3 I don't know.....4

**Part Three.**

The following are statements regarding HIV/AIDS and condoms. Make a tick (✓) in the boxes provided according to your degree of agreement to the statements. For example, for the statements you are sure are true mark strongly agree and for those you think are false, mark strongly disagree.

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3.1	An infected person who appears healthy can't transmit disease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	At present there is a cure for AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	There is a vaccine available to the public that protects a person from getting AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4	A person with multiple sexual partners has more risk of infection with HIV/AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5	Another source of getting HIV/AIDS infection could be injection with unsterile needles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.6	We can get AIDS by attending school with a child who has the AIDS virus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7	A mosquito that feed on an AIDS patient's blood can transmit the disease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.8	A pregnant woman who has AIDS virus can pass it to her baby.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.9	Eggs of hens that have licked a condom used by an AIDS patient can have the virus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.10	Having sex with only one faithful sexual partner reduces the risk of HIV infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.11	One can prevent HIV/AIDS by avoiding sex (that means no sex).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.12	By avoiding sex with multiple partners one can prevent HIV infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.13	Using condoms during sexual intercourse can reduce the risk of HIV infection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following statements are written to describe your behavior. Mark a tick (✓) in the boxes provided according to your degree of agreement to these statements. As you can see there is no need to write your name or ID in this study, all information will remain anonymous. Therefore, your honest answer is important to us.

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.1	With my current sexual behavior my chance of getting HIV/AIDS infection in the next five years is high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2	I feel it is likely for me to get HIV/AIDS if I have sexual intercourse with different partners.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3	I feel it is likely for me to get sexually transmitted infections if a condom is not used during sexual intercourse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4	If I get infected with AIDS virus I will die consequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5	I would rather have any other terminal illness than AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Here are statements regarding abstaining from sex before marriage. How true are these statements compared to your actual behavior? Mark a tick (✓) in the boxes provided according to your degree of agreement to these statements. If you are not sure mark in the box under “Neutral”.

4.6	'I am not sure that I would be able to say 'No' to having sexual intercourse'	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.6.1	With someone I have dated for a long time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.6.2	With someone who is pushing me to have sexual intercourse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.6.3	With someone after I have been drinking alcohol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7	'For me avoiding sex before marriage will protect me and my partner.....'	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.7.1	From having unwanted pregnancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7.2	From getting sexually transmitted diseases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7.3	From getting HIV/AIDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.8	Refusing sex with a casual partner will make it seem that I am sexually weak.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.9	I may lose my partner if I say no to sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.10	To get a better partner I must try several partners even with sexual intercourse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.11	Refusing sex with my steady partner will make it seem that he or she has AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	‘I very much want to .....’	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.12	Prevent myself/my lover from getting pregnant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.13	Protect myself from getting a sexually transmitted disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.14	Protect myself from getting AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.15	Show my lover that I care about his or her health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.16	<i>‘The following individuals would approve of my avoiding sex before marriage.’</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.16.1	My lover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.16.2	My close friend(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.16.3	My teacher(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.16.4	My parent(s)/relative(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.16.5	Religious leaders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.17	<i>‘I am certain that I would be able to avoid sex before marriage even if .....,’</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.17.1	I am drunk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.17.2	I am forced by my friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.17.3	I am told that a condom will be used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.17.4	I know I may lose my partner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.17.5	It is with a partner with whom I want to fall in love	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.18	‘From now on, I intend to avoid sex before marriage.’	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



The following statements are concerning limiting the number of sexual partners to only one. How true are these statements compared to your actual behavior? Show your agreement or disagreement by marking a tick (✓) in the boxes provided under your choice.

4.19	<i>'Remaining with one steady sexual partner'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.19.1	Will protect me from getting sexually transmitted diseases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.19.2	Protect myself from getting sexually transmitted disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.19.3	Show my lover that I care about his or her health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.20	Limiting my sexual desire to only one partner will reduce my sexual pleasure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.21	To avoid sex with partners other than my steady sexual partner will make me seem sexually weak.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.22	Refusing sex with a casual partner will make it seem that he/she has AIDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<i>'I very much fear.....'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.23	Suspecting my sexual partner of having AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.24	Losing my boy/girlfriend.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.25	Not finding appropriate sexual partner for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.26	'My best friend would make a fool out of me if I limit myself to only one steady sexual partner'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.27	'My teacher would approve of my limiting to only one steady sexual partner'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.28	'If I limit myself to only one steady sexual partner, my parents would approve my action.'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.29	'My religious leaders would approve of my limiting to only one steady sexual partner'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.30	<i>'I would like to do what ....'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.30.1	My sexual partner thinks that I should'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.30.2	My close friend(s) think (s) that I should'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.30.3	My teacher(s) think(s) that I should'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.30.4	My parent(s) think(s) that I should'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.30.5	My religious leader(s) think(s) that I should'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.31	<i>'I am certain that I would be able to avoid sex before marriage even if ....'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.31.1	I am told that a condom would be used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.31.2	I am pushed by my friends to have sex with a new partner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.31.3	I meet someone I have been very much thinking of.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.32	'From now onwards, I intend to limit my sexual contact to only one sexual partner.'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following are concerning condom use. How true are these statements compared to your actual behavior? Show your agreement or disagreement by marking a tick (✓) in the boxes provided under your choice.

	<i>'I am sure that I would be able to ....'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.33	Insist on using a condom during sex if my boyfriend or girlfriend refuses to use a condom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.34	Get the money to buy condoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.35	<i>'I think using a condom at the next sexual intercourse would .'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.35.1	Prevent my partner/me from becoming pregnant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.35.2	Protect me from getting a sexually transmitted disease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.35.3	Protect me from getting AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.36	Condoms are difficult for me to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.37	Condoms create doubt between sexual partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.38	Condoms are shameful for me to buy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>'I very much fear.....'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.39	Not being able to use a condom properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.40	Reduce my sexual desire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.41	Being uneasy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.42	Introducing feelings of distrust between my sexual partner and me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.43	Seeming sexually weak.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.44	<i>'The following people would approve of my using condoms at the next sexual intercourse.'</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.44.1	My sexual partner(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.44.2	My best friend(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.44.3	My teacher(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.44.4	My parent(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.44.5	My religious leaders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<i>'I am certain that I would be able to use condom at the next sexual intercourse even if: '</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
4.45.1	I am drunk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.45.2	I feel shy to discuss using condoms with my partner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.45.3	I feel embarrassed to buy condoms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.45.4	My sexual partner refuses to use a condom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.45.5	I have sexual intercourse with someone I have been very much thinking of.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.46	If my friend is not willing to use a condom, I am sure I can negotiate and convince him/her to use one.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.47	If I know that I cannot use a condom appropriately, I will ask for support from those who can teach me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.48	I intend to use a condom at the next sexual intercourse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part Five. Future Plan.**

5.1	Which of the following behavioural changes do you plan to use in the future to prevent yourself from becoming infected with HIV/AIDS? (Mark all your choices in the spaces provided)	Reduce number of sexual partners.....1 Select sexual partners carefully .....2 Abstain from sexual intercourse .....3 Have good food.....4 Avoid unsafe injections and /or sharp objects.....5 Look for symptoms of AIDS before any sexual intercourse.....6 Reduce frequency of sexual intercourse..... 7 Avoid sex with casual partners..... 8 Strictly remain with one regular partner.....9 Pray to God.....10 Do regular exercise.....11 Always use a condom during sex.....12 Other methods
5.2	Assume the test for HIV is available; would you be interested to be tested for HIV/AIDS?	Yes ..... 1 No.....0
5.3	Assume you are tested for HIV/AIDS; would you be willing to hear the results of your test?	Yes ..... 1 No.....0

This is the end of this questionnaire. As promised at the beginning, your individual responses will remain confidential and you are not requested to write your name or ID.

***Executive Board, EPHA***

1.	Dr. Mengistu Asnake	President
2.	Dr. Solomon Worku	Vice-President
3.	Dr. Mesganaw Fantahun	Member
4.	Dr. Yared Mekonnen	Member
5.	Dr. Yelma Melkamu	Member
6.	Ato Mirgisa Kaba	Member
7.	Dr. Abeba Bekele	Treasurer