Journal of Tropical Diseases

Sendekie and Worku, J Trop Dis 2019, 7:3
DOI: 10.4172/2329-891X.1000306

Research Article Open Access

A Case Study on Risky Sexual Behaviour of Undergraduate Students in Ethiopia

Desalegn B Sendekie[1,2] **and Netsanet Worku**[3*]

[1]*Bole Subcity, Addis Ababa, Ethiopia*

[2]*Department of Women's and Children's Health, Uppsala University, Uppsala, Sweden*

[3]*Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia*

[*]**Corresponding authors:** Netsanet Worku, Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia, Tel: +251911941866; E-mail: netsanet32000@yahoo.com

Received date: January 10, 2019; **Accepted date:** February 13, 2019; **Published date:** February 27, 2019

Abstract

Background: Studies across Ethiopia's public universities indicated the presence of risky sexual practice. But, there is limited data among students in private universities. This study was conducted to identify patterns and predisposing factors of risky sexual behavior, as well as analyze knowledge, risk perception and attitude to HIV infection.

Method: Cross-sectional survey was conducted using a self-administered questionnaire containing four sections of questions addressing the socio-economic-and-demographic characteristics; substance use and sexual practice of students in one of the randomly selected private universities in Addis Ababa. Statistical analysis was performed using SPSS (V.16) software.

Results: 502 questionnaires were distributed, 425 were completed (with 84.7% response rate). Among students who ever had sex: we found 45 (26.3%) with the early sexual debut, 71 (40.3%) with multiple lifetime partners and 14 (7.8%) had sex for money. In the last 12 months: 157 students were sexually active. 44 (28%) of them had multiple partners. Six male students had sex with other males; 18 males had sex with commercial sex workers. Four of five respondents (145; 81.9%) had ever used a condom. Two third of them used condom-at first or last sex and always with a new partner. The identified factors predisposing to risky sexual behavior were individual factors, social factors, living and cultural conditions. Students with high knowledge of HIV were observed to practice sex with low self-risk perception and HIV testing.

Conclusion: Risky sexual behavior exists among private university students. It is suggested that the academic institutions need to collaborate with local health organizations-to study further and mitigate the identified risks.

Keywords: Risky sexual behavior; Undergraduate students; HIV/AIDS; Private university, Ethiopia

Introduction

Ethiopia is one of the sub-Saharan African countries severely affected by HIV pandemic [1]. About 42% of the urban population in Ethiopia, age 15-34 years is at great risk of HIV infection [2]. According to the national statistical agency report in 2012, HIV prevalence was the second highest in Addis Ababa reaching 5.2%, which is next to the 6.5% prevalence recorded in Gambela region [2]. In Addis Ababa, comprehensive knowledge about HIV/AIDS is very low (31.8% in females and 43.7% in males) [2]. Comprehensive knowledge is defined as 1) knowing that both condom use and limiting the number of sex partner to one uninfected partner are HIV-prevention methods; 2) being aware that a healthy-looking person can have HIV; and 3) rejecting the two most common local misconceptions-that HIV/AIDS can be transmitted through mosquito bites and by sharing food [2].

The national survey also showed among all participants aged 15-24 years, more males were observed to have multiple sex partnerships than females. Among those reported to have multiple sex partnerships, nearly 47% used a condom at their last sex during the interview [2]. HIV prevalence increased in accordance with the number of lifetime sex partners. For instance, females with 5-9 partners encountered 8.7% prevalence. Similarly, males with more than 10 partners encountered 6.8% HIV prevalence [2]. High prevalence of HIV was also observed in men and women with secondary education and higher income [2]. University students are young and part of the educated society. Unless they get youth-friendly reproductive health services, they are at risk of STI/HIV infection, unplanned pregnancies, and associated complications [1]. These risks may be worsened if they use substances [1]. Substance use in general, Khat and alcohol use by the Ethiopian youth, ages between 15-24 years, in particular, were significantly associated with unprotected sex. This was found to be a challenge in the national prevention of HIV [3].

Despite the continuous effort of the Ethiopian government and donor agencies, the incidence of new HIV infections is still increasing-though at a slower pace [1]. Some studies in Ethiopia also indicated the presence of high-risk sexual behavior among students in public universities [4-10].

To the best of our knowledge, there were no available studies investigating the patterns of risky sexual behavior in private universities in Ethiopia. No information is available about the prevalence of sexual debut, multiple sex partnership, condom use, or other risky sexual behavior. Majority of undergraduate students are adolescents/young adults-a period associated with sexual experimentation. This fact, by itself, may put them at risk of unsafe sexual practices [11]. They are part of the educated society and so could have a high level of knowledge-about STI/HIV. In Nigeria and Uganda, studies (among university students) indicated that this knowledge might not be followed by the appropriate risk perception and safe sexual practices [12,13].

In Ethiopia, students in private higher institutions live in off-campus facilities-without school regulations. This may give them the freedom to partake in risky behaviors. In Ethiopia and Nigeria, high-risk sex was observed in studies among undergraduate students living off-campus [4,14]. Some of the students rent and live alone in a single room. This might give them freedom from parental supervision. In the youth age group, poor parental supervision was significantly associated with risky sexual practices in eight African countries [15]. Private university students are mostly under twenty-one and may be easily influenced by their peers. As they are likely to be from a high-income family, they may be capable of buying and using substances. Studies indicated this age group is easily influenced by peer pressure- to experience risky health behaviors (unprotected/unsafe sex, alcohol or khat or tobacco use) [3,4,8,16]. Unlike students in public universities, private university students need to pay tuition fees and associated expenses. Therefore, some may have financial problems and may try to solve these by partaking in transactional sex. For instance, in Ethiopia and Nigeria, studies reported university students engaging in unprotected sex for the benefit of money or gift [4,14,17].

In public universities, HIV Initiatives ("Modelling and Reinforcement to Combat HIV/AIDS, MARCH project in Addis Ababa University") exist to prevent and control the spread of HIV infection among students [18]. Students in private universities are so far not privileged to take part in similar programs. Such disadvantages may put them at great risk of unsafe sexual practices. Therefore, we tried to point out risky sexual practices and associated predisposing factors- among private university students. Since there is limited data, we hope to fill the gap. Besides, policymakers may use the study findings for addressing the observed risky behaviors. The results may be used in HIV prevention and control programs.

The general aim of the current study was to assess the patterns of risky sexual behavior among undergraduates in a private university, Addis Ababa, Ethiopia. Specifically, the project has tried to identify the patterns of risky sexual behavior among undergraduate students; identify predisposing factors to risky sexual behaviors (e.g. individual factors like age, sex, substance use) and analyze students' knowledge, risk perception and attitude to HIV infection.

Materials and Methods

Study area

The survey was conducted at Unity University-which is the first private university in Ethiopia [19,20]. The university provides four different programs: undergraduate, postgraduate, "Technical and Vocational Education and Training" (TVET), and distance and continuing education [20]. Besides its emphasis on teaching and research, the university used to participate in the city's environmental protection, HIV/AIDS awareness, and prevention programs [21].

Study design and study population

The study design was an institution based cross-sectional survey. Our source population was "students who were studying in the aforementioned programs (full-time or part-time)". The study target population comprised of undergraduate students.

Sampling procedure and sample size determination

The study was conducted in a randomly selected department. Hence, the department of accounting was chosen among eleven undergraduate programs. There were 890 undergraduate students registered in this department. The inclusion criterion was to be a full-time undergraduate student and to have grown up in Ethiopia. We excluded 355 students for they were studying part-time (students categorized as Extension/Advanced Standing). Most of these students had full-time work on weekdays; they used their weekends for their studies. They did not spend much time in the university environment. Unlike part-timers, regular students were younger and spent their weekdays around the university environment. Therefore, we included all regular students in accounting department-except two Ethiopians (who grew up in Yemen), two Somalis and one South Sudanese. We excluded them for they grew up in different cultures.

The sample size was calculated using a single proportion formula. Prevalence of risky sexual behavior among private university students (p) was not known; it was assumed to be 50% in order to get the maximum sample size. The sample size was then calculated to be 403, after allowing 5% for an expected margin of error (d) with a 95% confidence interval (z=1.96) and 5% non-response rate. The calculated sample size was near to the total number of students who study full-time and categorized as "Regular" (from freshman to a graduating class). Therefore, we included the whole regular students fulfilling the selection criteria (n=530).

Data collection instrument

A self-administered questionnaire modified from Ethiopia's DHS 2011 [2] and Ethiopia's HIV/AIDS Behavioral Surveillance Survey (BSS) 2005 [22] was used. The questionnaire was translated from English to Amharic, the national language of Ethiopia, by a professional translator. Pre-test of the questionnaire was done among ten students from another department. After we had discussed the ambiguous and sensitive questions with these students, some questions were reformulated to fit the study context in a clear way. The questionnaire consisted of four sections with variables addressing the objectives of the study. Socio-demographic and economic characteristics included: age, sex, year of study, religion, ethnicity, pocket money, marital status, history of participation in health or sports clubs, parents' income, educational status, and residence. Substance use included types of substances with their frequency of use. Sexual practice included: age at sexual debut, condom use, number of sexual partners, sex for the benefit of money/gift, sex after alcohol bout, homosexuality in male students, sexual contact with sex workers, and STI symptoms. Perception of students about HIV testing and risk to HIV infection included: risk perception, ways of HIV transmission, methods of HIV/AIDS prevention, and HIV testing.

Data collection, data management, and statistical analyses

Classrooms were identified with the help of students' council representative. Individual teachers were communicated to spare 15-20 minutes of their lecture time. Questionnaires were then distributed in classrooms (by the main investigator and research assistant), to selected students in the accounting department. Students were asked to sit far apart in order to avoid side talks. In the meantime, we tried to make the surrounding quiet. Participants were given enough time to ask questions or complete the questionnaire. We tried to find and include some of the absentees on the following day.

Data were manually checked for completeness. We discarded 77 questionnaires with incomplete data. The collected data was cleaned, translated back to English and coded before entry into statistical software (SPSS version 16.0 for Windows). Data consistency and completeness was rechecked using SPSS. Data findings were described using frequency tables and descriptive statistics. Crosstabs of independent variables with outcome variables were performed. Chi-Square test was applied to analyze statistical associations, where p-value<0.05 was considered as statistically significant. Binary logistic regression was also used to determine predisposing factors for risky sexual behaviors. This method was chosen for we have categorical dichotomous outcome variables. First independent variables with sexual behavior variables were analyzed. During the bivariate analysis, only variables with $p \leq 0.20$ values were chosen. Then Adjusted Odds Ration (AOR) was calculated once those variables were put together into the final regression model. Odds Ratio (OR) with its 95% Confidence Interval (CI) was used to express the strength of the association between independent and outcome variables (p-value <0.05, two-tailed, considered as significant).

Operational definitions

Risky sexual behavior included homosexuality in males, early sexual debut, sex without condom/inconsistent condom use, sexual contact with a sex worker, sex with a non-regular partner for the sake of money or gift, sex after an alcohol bout, and having multiple sexual partners. "Ever had sex" was to mean sexual experience in the past.

Ethical considerations

Though the private university had no ethical review board at the time of data collection, administrative officials found the study consistent with Unity University's regulation. They allowed the study to be conducted. Ethical issues, based on the declaration of Helsinki [23], were kept to the maximum. The voluntary nature of the study was orally explained to participants by the main investigator. Signed consent forms were then obtained from students willing to participate. Questionnaires were anonymous and collected in sealed envelopes. Their teachers were not around during data collection. Confidentiality of respondents was kept intact.

Results and Discussion

Of the 502 questionnaires distributed, a total of 425 questionnaires were included in the final analysis. This gave us a response rate of 84.7%.

Socio-demographic characteristics

Those study participants who were: females, Orthodox Christians, living with their parents, with less pocket money, and from highly educated parents comprised nearly two-thirds of all the participants (Table 1). More than ninety percent of students were less than 26 years of age. The age range was 17-34 years; the median age is 21 years for females and 22 years for males. Near fifty percent of participants had Amhara ethnicity and had never participated in health/sports clubs. 4 of 5 respondents were never married and had parents residing in Addis Ababa.

Characteristics	All Responses (n=425) No. (%)	Sex		Chi-Square Test p-value
		Female (n=272; 65.9%) No. (%)	Male (n=141; 34.1%) No. (%)	
Year of study				0.953
First year	129 (30.3)	83 (30.5)	41 (29.0)	
Second Year	183 (43.1)	118 (43.4)	62 (44.0)	
Third year	113 (26.6)	71 (26.1)	38 (27.0)	
Total	425 (100.0)	272 (100.0)	141 (100.0)	
Age in years				0.005
≤ 20	128 (31.6)	92 (35.6)	31 (22.8)	
21-25	239 (59.0)	148 (57.4)	85 (62.5)	
≥ 26	38 (9.4)	18 (7.0)	20 (14.7)	
Total	405 (100.0)	258 (100.0)	136 (100.0)	
History of marriage/union				0.486
Yes	87 (21.8)	59 (23.5)	27 (19.9)	
No	312 (78.2)	192 (76.5)	109 (80.1)	
Total	399 (100.0)	251 (100.0)	136 (100.0)	
Religion				0.124
Orthodox	296 (69.8)	199 (73.2)	91 (64.5)	
Protestant	73 (17.2)	45 (16.5)	24 (17.0)	
Muslim	37 (8.7)	19 (7.0)	17 (12.1)	
Others¥	18 (4.3)	9 (3.3)	9 (6.4)	
Total	424 (100.0)	272 (100.0)	141 (100.0)	
Ethnicity				0.305
Oromo	64 (15.6)	41 (15.5)	20 (14.7)	
Amhara	210 (51.2)	140 (52.8)	65 (47.8)	
Tigray	49 (12.0)	30 (11.3)	19 (14.0)	
SNNP*	69 (16.8)	46 (17.4)	22 (16.1)	
Others	18 (4.4)	8 (3.0)	10 (7.4)	
Total	410 (100.0)	265 (100.0)	136 (100.0)	
Parents' residence				0.574
Addis Ababa	340 (80.0)	214 (78.7)	115 (81.6)	

Other City/ Town	85 (20.0)	58 (21.3)	26 (18.4)	
Total	425 (100.0)	272 (100.0)	141 (100.0)	
Parents' education				0.071
High	288 (68.2)	191 (71.0)	87 (61.7)	
Low	134 (31.8)	78 (29.0)	54 (38.3)	
Total	422 (100.0)	269 (100.0)	141 (100.0)	
Parents' monthly income				1
High	183 (45.0)	117 (45.2)	62 (44.9)	
Low	224 (55.0)	142 (54.8)	76 (55.1)	
Total	407 (100.0)	259 (100.0)	138 (100.0)	
Pocket money				1
Less	277 (68.4)	173 (67.8)	93 (67.4)	
More	128 (31.6)	82 (22.2)	45 (32.6)	
Total	405 (100.0)	255 (100.0)	138 (100.0)	
Participation in health or sport clubs				0.001
No	222 (57.2)	157 (63.1)	57 (44.9)	
Yes	166 (42.8)	92 (36.9)	70 (55.1)	
Total	388 (100.0)	249 (100.0)	127 (100.0)	
Living with				0.817
Parents	284 (68.9)	178 (67.4)	94 (69.1)	
Others[≠]	128 (31.1)	86 (32.6)	42 (30.9)	
Total	412 (100.0)	264 (100.0)	136 (100.0)	
[¥]Catholic, Seventh Day Adventist, Traditional Belief, No Religion				
[*]SNNP denotes indigenous ethnic groups from Southern Nations, Nationalities, and People				
[≠]Others include those living with relatives, sibling, partner, friends or alone				

Table 1: Socio-demographic characteristics of study participants.

According to the current study, near half of the respondents (197; 48.2%) had already begun sexual intercourse. This finding is higher than the results of other studies in Ethiopia (16.7% to 39.6% in public universities) [4-10], China [24], India [25], and Nepal [26]. But, it is lower than the results of studies in other African countries [14,17,27-31]. The observed differences might be due to factors associated with socioeconomic/cultural situations.

Most students (80.7%) began sex with their boyfriend/girlfriend. More males mentioned curiosity as a reason for sex initiation while falling in love was the case in females. This finding is consistent with similar studies in Ethiopia's public universities [7,8]. We observed more male students (70.3%) with sexual experience than females (38.5%). This was similar to other studies across Ethiopia [4-9] and Africa [27,29,32]. The same pattern was also observed across Asia [24-26,33] and Latin America [34]. In Ethiopia: the cultural norm in females is to keep virginity till marriage. This might also be a reason for underreporting of sexual initiation in females.

More than sixty percent of students began sex and substance use before joining the university. Above eighty percent (84.6%) of whom did it during their high school time. This finding is consistent with studies across Ethiopia's public universities [4,5,7,8]. This might indicate the failure of abstinence promotion in HIV prevention programs. The result suggests there is an urgent need for safe sex education and practice during high school.

Patterns of sexual behavior

A quarter of respondents who had sexual experience had their first sex before they become 18 years of age. This finding is lower than the results of similar studies in Ethiopia [4,10] and other African countries [14,27]. Ethiopia's DHS indicated, late sexual debut in urban females (the highest median age in Addis Ababa). There, however, was no difference of median age at first sex (sexual debut) in males all over the country [2]. In our study, eighty percent of respondents had their parents in Addis Ababa. This might explain the low prevalence of early sexual debut among respondents. Although its prevalence is relatively low, early sexual debut has serious health consequences. Studies indicated significant associations of the early sexual debut with STI (including HIV) [35,36], invasive cervical carcinoma [37], substance use and difficulties in school work [38].

It has been observed that two out of five students (with sexual experience) reporting multiple lifetime partners. This finding is in line with similar studies at Jimma and Addis Ababa Universities in Ethiopia [5,9] and countries like Uganda [27]. Among students who already began sexual intercourse, ninety percent were sexually active in the last 12 months. This finding is higher than the result of a similar study in western Ethiopia (51%) [5]. But, it is lower than a study finding among Nigerian undergraduates (100%) [14], in our study, a quarter of those students who are sexually active had two or more sexual partners. This indicates the presence of a high percentage of high-risk sexual groups-which might worsen the spread of HIV among students. Besides, eighteen male students had a history of sexual contact with sex workers. These students might also bridge the STI transmission from the high-risk group (sex workers) to the student population.

It was also found that 14 students were paid for sex. These findings are lower than the results of similar studies in Ethiopia [4,7] and Botswana [9]. If a student is paid for sex, the power to negotiate safe sex might also be lost. Hence, it might put students at risk of STI/HIV infection. Results revealed there are significant associations ($p<0.05$) of "ever had sex" and "multiple lifetimes sexual partnership" with-cigarette smoking, khat chewing, heavy alcohol drinking and frequent use of a substance (Tables 2 and 3). Accordingly, twenty-five percent of students who had sexual experience had drunk alcohol on their latest sex. This finding is consistent with the result of a similar study in Uganda [27,39]. Studies also indicated a significant positive association of alcohol-use with unprotected casual sex [40,41].

Variables	**All responses (n=425) No. (%)**	**Sex**		**Chi-Square Test p-value**
		Female (n=272; 65.9%) No. (%)	**Male (n=141; 34.1%) No. (%)**	
Ever had sex				0

Yes	197 (48.2)	100 (38.5)	97 (70.3)	
No	212 (51.8)	160 (61.5)	41 (29.7)	
Total	409 (100.0)	260 (100.0)	138 (100.0)	
Age at first sex*				0.001
<18 years=Early	45 (26.3)	11 (13.9)	34 (37.0)	
≥ 18 years=Late	126 (73.7)	68 (86.1)	58 (63.0)	
Total	171 (100.0)	79 (100.0)	92 (100.0)	
Contraceptive used at first sexual experience*				0.017
No	60 (33.7)	36 (43.4)	24 (25.3)	
Yes	118 (66.3)	47 (56.6)	71 (74.7)	
Total	178 (100.0)	83 (100.0)	95 (100.0)	
No. of Lifetime sex partners*				0
<3=low	105 (59.7)	70 (84.3)	35 (37.6)	
≥ 3=high/multiple	71 (40.3)	13 (15.7)	58 (62.4)	
Total	176 (100.0)	83 (100.0)	93 (100.0)	
No. of current sex partners*				0
<2=low	132 (75.0)	79 (95.2)	53 (57.0)	
≥ 2=high/multiple	44 (25.0)	4 (4.8)	40 (43.0)	
Total	176 (100.0)	83 (100.0)	93 (100.0)	
Sexual contact with CSW*				
Yes	18 (20.7)	N/A	18 (20.7)	
No	69 (79.3)	N/A	69 (79.3)	
Total	87 (100.0)	N/A	87 (100.0)	
Sex for the benefit of money*				0.019
Yes	14 (7.8)	2 (2.3)	12 (12.9)	
No	165 (92.2)	84 (97.7)	81 (87.1)	
Total	179 (100.0)	86 (100.0)	93 (100.0)	
Alcohol use on latest sex*				0.164
Yes	44 (25.3)	16 (19.8)	28 (30.1)	
No	130 (74.7)	65 (80.2)	65 (69.9)	
Total	174 (100.0)	81 (100.0)	93 (100.0)	
Homosexuality (for males)*				
Yes	6 (6.6)	N/A	6 (6.6)	
No	85 (93.4)	N/A	85 (93.4)	
Total	91 (100.0)	N/A	91 (100.0)	
Current STI symptoms*				0.524
Yes	28 (20.9)	16 (23.9)	12 (17.9)	
No	106 (79.1)	51 (76.1)	55 (82.1)	
Total	134 (100.0)	67 (100.0)	67 (100.0)	
STI symptoms¥ (Multiple responses)				
Penile discharge	8 (11.8)	N/A	8 (11.8)	
Painful urination	8 (5.9)	5 (7.5)	3 (4.4)	
Abnormal vaginal discharge	8 (11.9)	8 (11.9)	N/A	
Genital ulcer/ Sore	1 (0.7)	1 (1.5)	0 (0.0)	
Groin swellings	1 (0.7)	0 (0.0)	1 (1.5)	
Genital itching	7 (5.2)	4 (6.0)	3 (4.4)	
STI treatment¥				0.516
Yes	10 (35.7)	6 (40.0)	4 (30.8)	
No	17 (60.7)	8 (53.3)	9 (69.2)	
Not sure	1 (3.6)	1 (6.7)	0 (0.0)	
Total	28 (100.0)	15 (100.0)	13 (100.0)	
At risk of HIV infection*				0.051
Yes	16 (8.9)	4 (4.3)	12 (13.8)	
No	163 (91.1)	88 (95.7)	75 (86.2)	
Total	179 (100.0)	92 (100.0)	87 (100.0)	

Among respondents who started sex, N/A: Not Applicable,

¥For those with STI symptoms

Table 2: Sexual Behavior among respondents.

Substances Used	Ever had sex			Multiple lifetime sex partners		
	N (%)	Total (%)*	p-value	N (%)	Total (%)*	p-value
Cigarette smoking						
Yes	48 (77.4)	62 (100.0)	0.032	32 (66.7)	48 (100.0)	0.051
No	49 (59.0)	83 (100.0)		20 (44.4)	45 (100.0)	
Khat chewer						
Yes	52 (78.8)	66 (100.0)	0.009	36 (72.0)	50 (100.0)	0.002
No	45 (57.0)	79 (100.0)		16 (37.2)	43 (100.0)	
Substance use frequency						
More	60 (75.9)	79 (100.0)	0.009	39 (68.4)	57 (100.0)	0.014
Less	35 (53.8)	65 (100.0)		13 (39.4)	33 (100.0)	
Heavy drinking						
More	47 (83.9)	56 (100.0)	0.001	33 (75.0)	44 (100.0)	0.001
Less	51 (56.0)	91 (100.0)		19 (38.8)	49 (100.0)	

*The total is for the substance used in each row, including those with and without the sexual behavior in the columns

Table 3: Cross-tabulation of sexual behavior with types and frequency of substance use among respondents.

Our findings also revealed that there were six male students who had sex with other males (MSM) (Tables 2 and 4). This finding is lower than the results of similar studies in Brazil [34] and China [42]. The observed difference might be due to cultural and religious influences. Besides, underreporting might be the main reason, for homosexuality is stigmatized and illegal in Ethiopia. In sub-Saharan Africa: studies among MSM revealed the presence of transactional sex and unprotected anal sex-with high HIV prevalence [42-45]. One in ten respondents who ever had sex reported STI symptoms. Among whom only one-third of them had sought for treatment. These findings revealed a vulnerable group of students, which need to be addressed in HIV prevention programs.

Variables	First Year No (%)	Second Year No (%)	Third Year No (%)	Total No (%)*	Chi-square p-value
Ever had sex					0.025
Yes	55 (27.9%)	78 (39.6%)	64 (32.5%)	197 (100.0%)	
No	66 (31.1%)	102 (48.1%)	44 (20.8%)	212 (100.0%)	
Sex with CSW≠					0.22
Yes	8 (44.4%)	3 (16.7%)	7 (38.9%)	18 (100.0%)	
No	13 (18.8%)	34 (49.3%)	22 (31.9%)	69 (100.0%)	

≠Only significant analyses are displayed. *No. (%) is for the row, ≠CSW for males having sex with the commercial sex worker

Table 4: Cross-tabulation of sexual behavior variables with a year of study among respondents.

According to the current study, eighty percent of students with sexual experience had ever used a condom at one time or another (Table 5). This finding is in line with similar studies in Addis Ababa [9], Nigeria [14] and Brazil [34]. The main reason for never using condom trusted a partner. This is similar to the findings of other studies in Ethiopia (among public universities) [45]. Among students who ever used a condom, sixty percent had reported condom use at first sex. A similar observation was reported in Jimma University (southwest Ethiopia) [5]. But, our finding is higher than the results of studies in other parts of Ethiopia [4,7], South Africa [29] and Nepal [26]. Since it is easy to remember recent condom use with a regular partner, it can be considered condom use on the latest sex as a measure of consistency. Accordingly, 66.4% of students who ever used condom reported consistent condom use. This finding is higher than the results of similar studies in Ethiopia [4,7] and other African countries [17,32]. But, our finding is lower than that of Ugandan students (82.7%) [27].

Three of five students who ever used a condom always used a condom with a new sex partner (non-regular one). This finding is in line with other studies in Ethiopia [4,5] and Uganda [27]. But, it was lower than the result of a study in Botswana [39]. Surprisingly a quarter of respondents with condom use experience were not confident about their correct use of a condom. In comparison, nearly forty percent of Malawian students reported they had confidence in the correct use of condom [32]. Our finding revealed the presence of an unsafe sense of protection-which might need attention by STI/HIV prevention programs. At the same time, forty percent of students who ever used condom had sex without condom use in the last 12 months. This is higher than the findings of similar studies in Ethiopia [4,7]. The differences might be due to variations in sample size.

Variables	All Responses (n=425) No. (%)	Sex		Chi-Square Test p-value
		Female (n=272, 65.9%) No. (%)	Male (n=141, 34.1%) No. (%)	
Ever used condom¥				0.001
Yes	145 (81.9)	61 (71.8)	84 (91.3)	
No	32 (18.1)	24 (28.2)	8 (8.7)	
Total	177 (100.0)	85 (100.0)	92 (100.0)	
Condom used at first Sex*				0.011
Yes	93 (65.0)	32 (52.5)	61 (74.4)	
No	50 (35.0)	29 (47.5)	21 (25.6)	
Total	143 (100.0)	61 (100.0)	82 (100.0)	
Condom used always with a new sex partner*				0.189
Yes	87 (64.9)	31 (57.4)	56 (70.0)	
No	47 (35.1)	23 (42.6)	24 (30.0)	
Total	134 (100.0)	54 (100.0)	80 (100.0)	
Correct condom use*				0.069
Yes	106 (75.2)	40 (66.7)	66 (81.5)	
No	35 (24.8)	20 (33.3)	15 (18.5)	
Total	141 (100.0)	60 (100.0)	81 (100.0)	
Condom used during latest sexual intercourse*				0.063
Consistent	91 (66.4)	31 (56.4)	60 (73.2)	
Inconsistent	46 (33.6)	24 (43.6)	22 (26.8)	
Total	137 (100.0)	55 (100.0)	82 (100.0)	
Current sex without condom*				0.024
Yes	56 (39.7)	30 (51.7)	26 (31.3)	
No	85 (60.3)	28 (48.3)	57 (68.7)	
Total	141 (100.0)	58 (100.0)	83 (100.0)	
Reasons for never using condom (Multiple responses)$				
Inaccessibility	1 (3.7)	0 (0.0)	1 (12.5)	
Not Comfortable	2 (7.4)	2 (10.5)	0 (0.0)	

Partner Disagree	3 (11.1)	1 (5.3)	2 (25.0)	
Sex in hurry	2 (7.4)	1 (5.3)	1 (12.5)	
Not Necessary	5 (18.5)	2 (10.5)	3 (37.5)	
Don't Like	4 (14.8)	3 (15.8)	1 (12.5)	
Trust partner	10 (37.0)	7 (36.8)	3 (37.5)	
Less Pleasure	1 (3.6)	0 (0.0)	1 (11.1)	
Both HIV negative	8 (29.6)	6 (31.6)	2 (25.0)	
Both HIV positive	1 (3.7)	0 (0.0)	1 (12.5)	

¥Analyzed only among students who started sex, *Analyzed among those who ever used a condom, $among students who never used a condom

Table 5: Condom use among study participants.

Our current results also showed ten percent of respondents who had sexual experiences had STI symptoms in the last 12 months. There might be underreporting for fear of stigmatization. With their current sexual behavior, sixteen students (8.9% of those with sexual initiation) considered themselves to be at risk of HIV (Table 2). This indirectly indicated the presence of sexually active students who are at the risk of STI/HIV infection. However, only one-third of who received medical help. This could be due to embarrassment to ask help or lack of money for treatment or may be due to lower health-seeking behavior. Ethiopia's DHS shows more prevalence of HIV among those with STI symptoms than those without STI [2]. There is a need to address health-seeking behaviors in order to reduce or avoid pooling of high-risk group across the student population.

Factors associated with sexual behavior

This study indicated the significant association of different factors with sexual behavior. When it comes to religion, Orthodox Christians and Protestants were less likely to have early sexual debut than Muslims or others (Table 6). Early marriage is common in Ethiopia, especially in Muslim societies. But, this might not be the explanation, for the number of married Muslims was small in our study. We did not see other significant association of ethnicity or religion with risky sexual behavior.

Variables	Ever Had Sex				Early Sexual Debut			
	No	Yes	p'	AOR† (95% CI)	No	Yes	p'	AOR† (95% CI)
Sex			0				0.001	
Female	160 (61.5)	100 (38.5)		1	68 (86.1)	11 (13.9)		1
Male	41 (29.7)	97 (70.3)		3.14*** (1.72,5.72)	58 (63.0)	34 (37.0)		3.88* (1.14,13.21)
Year of study			0.025				0.705	
First	66 (54.5)	55 (45.5)		1	30 (75.0)	10 (25.0)		N/A
Second	102 (56.7)	78 (43.3)		0.80 (0.41,1.58)	50 (70.4)	21 (29.6)		
Third	44 (40.7)	64 (59.3)		0.84 (0.36,1.96)	46 (76.7)	14 (23.3)		
Age in years			0				0.008	
≤ 20	80 (65.6)	42 (34.4)		1	15 (51.7)	14 (48.3)		1
21-25	114 (49.6)	116 (50.4)		1.91 (0.99,3.66)	88 (80.0)	22 (20.0)		0.22* (0.05,0.95)
≥ 26	7 (18.4)	31 (81.6		3.56* (1.11,11.41)	19 (70.4)	8 (29.6)		0.69 (0.11,4.26)
History of marriage			0				0.111	
Yes	21 (24.4)	65 (75.6)		1	43 (82.7)	9 (17.3)		1
No	172 (57.5)	127 (42.5)		0.23*** (0.11,0.47)	80 (69.6)	35 (30.4)		1.53 (0.39,6.01)
Religion			0.51				0	
Orthodox Christian	151 (53.2)	133 (46.8)		N/A	89 (77.4)	26 (22.6)		1
Protestant	31 (44.3)	39 (55.7)			30 (85.7)	5 (14.3)		0.82 (0.17,3.93)
Muslim	21 (56.8)	16 (43.2)			5 (41.7)	7 (58.3)		11.48* (1.65,79.96)
Others≠	8 (47.1)	9 (52.9)			2 (22.2)	77 (77.8)		16.11* (1.43,182.02)

Ethnicity			0.07				0.001	
Oromo	34 (54.8)	28 (45.2)		1	18 (75.0)	6 (25.0)		1
Amhara	107 (52.7)	96 (47.3)		1.66 (0.74,3.73)	64 (73.6)	23 (26.4)		0.49 (0.10,2.41)
Tigre	16 (33.3)	32 (66.7)		3.47* (1.19,10.15)	18 (69.2)	8 (30.8)		2.31 (0.39,13.70)
SNNP‡	38 (59.4)	26 (40.6)		1.04 (0.39,2.77)	21 (100.0)	0 (0.0)		0
Others	8 (44.4)	10 (55.6)		7.50* (1.40,40.01)	2 (25.0)	6 (75.0)		1.14 (0.09,13.72)
Living with			0				0.092	
Parents	165 (60.4)	108 (39.6)		1	78 (80.4)	19 (19.6)		1
Others±	42 (34.1)	81 (65.9)		2.99** (1.59,5.63)	46 (67.6)	22 (32.4)		0.24 (0.04,1.36)
Parents' Income			0.413				0.071	
Low	106 (49.5)	108 (50.5)		N/A	73 (80.2)	18 (19.8)		1
High	97 (54.2)	82 (45.8)			50 (66.7)	25 (33.3)		0.75 (0.21,2.61)
Parents' Education			0.162				0.492	
Low	61 (46.6)	70 (53.4)		1	41 (69.5)	18 (30.5)		N/A
High	150 (54.5)	125 (45.5)		1.06 (0.57,1.98)	84 (75.7)	27 (24.3)		
Parents' residence			0.002				0.164	
Addis Ababa	182 (55.8)	144 (44.2)		1	99 (76.7)	30 (23.3)		1
Other town/city	30 (36.1)	53 (63.9)		1.40 (0.55,3.56)	27 (64.3)	15 (35.7)		28.11** (3.87,204.48)
Pocket money			0.024				0.012	
Less	149 (56.4)	115 (43.6)		1	81 (81.0)	19 (19.0)		1
More	55 (43.7)	71 (56.3)		1.19 (0.66,2.16)	39 (61.9)	24 (38.1)		4.26* (1.37,13.18)
Participation in health/ sport club			0.057				0.527	
No	121 (57.1)	91 (42.9)		1	56 (70.9)	23 (29.1)		N/A
Yes	76 (46.6)	87 (53.4)		1.23 (0.69,2.16)	59 (76.6)	18 (23.4)		
Substance Use			0				0.063	
No	158 (63.5)	91 (36.5)		1	62 (67.4)	14 (18.7)		1
Yes	51 (33.3)	102 (66.7)		2.68** (1.48,4.83)	61 (81.3)	30 (32.6)		1.45 (0.42,5.06)

≠Others include Catholics, Adventists, Traditional believers, and non-believers. ‡SNNP for indigenous ethnic groups of Southern Nations, Nationalities, and Peoples. ±Others: relatives, siblings, partner, friend, or alone. N/A=Not Applicable in the multivariate analysis, n.s.=not significant (p-value ≥ 0.05,) p'=p-value for chi-square test. †AOR=Adjusted Odds Ratio (only variables with p ≤ 0.20 in the bivariate analysis were entered in the multivariate analysis). *p-value<0.05, **p-value<0.01, ***p<0.001

Table 6: Bivariate and multivariate analyses of socio-demographic characteristics with outcome variables (ever had sex and early sexual debut) among respondents.

Regarding the residence of parents, those students whose parents reside in Addis Ababa were less likely to have early sexual debut than those whose parents reside in another city/town (Table 5). This might be due to parents' control and guidance in postponing sexual debut. In support of this hypothesis, our findings also indicated that students who were not living with their parents were three times more likely to start sex as compared to those living with parents. They were also less likely to use a condom at first and last sexual exposures than students living with parents. In addition, they were 60% less likely to always use a condom with a new partner than students living with parents. It is true that when students are not living with their parents, it is difficult for parents to have direct supervision. This situation will allow students to experience the relative freedom to experiment with their sexual drive. Besides, they might also be influenced by their peers to take unnecessary risks.

Respondents coming from high-income families were also three times more likely to have multiple sexual partners than those from low-income families. Similarly, students with more pocket money were four times more likely to have early sexual debut (than those with less pocket money). This might be explained by the financial freedom which might encourage students to experiment a risky sexual practice.

In this study, it is obvious that unmarried students were 77% less likely to start sex than married ones. Besides, they were also 58% less likely to have sex without a condom in the last 12 months (Table 6). It was encouraging to see that one-third of respondents were observed to participate in health/sports clubs. However, their participation in these clubs had no significant impact on their risky sexual behavior.

Our findings also showed males were more likely to begin sexual intercourse and have an early sexual debut than females. Having multiple sex partners were more likely in males than in females. These findings are consistent with similar studies in Ethiopia [5,8] and other countries [30,31,34,46]. This might similarly be explained by cultural influence. In Ethiopia, females are advised to keep their virginity until marriage. But, men are socially accepted if they need to have sex-even with multiple partners. Male students were more likely to use a condom at first sex or another time compared to females. This might indicate the unplanned nature of female students' sexual act-as observed among college youth [47]. Males were also more likely to report correct condom use than females. These differences might be explained by the male dominant nature of the Ethiopian community. Females might have limited power to negotiate condom use. Difficulty in using a female condom might be another reason as indicated in Brazil [34]. Besides, females might have less intention to use condom-as shown in Madagascar [31]. In South Africa: a study indicated a significant association of condom use efficacy with an intention to use it and a history of condom use [29].

Older students (≥ 26 years) were three times more likely to start sex and six times more likely to have multiple sex partners in the last 12 months. This finding is consistent with a similar study in Ethiopia [5].

Substance users were more likely to begin sex than non-users. They were also more likely to have multiple sex partners than non-users (Table 7). Students with a history of substance use were less likely to always use a condom during casual sex. These might be explained by the risk-taking behavior associated with the effects of substances used. These findings are consistent with similar studies in Ethiopia [5,9]. We did not see any significant predicting association of the year of study with sexual behavior. This might indicate that education level might not affect students' sexual behavior.

Variables	All responses (n=425) No. (%)	Sex		Chi-Square Test (p-value)
		Female (n=272; 65.9%) No. (%)	Male (n=141; 34.1%) No. (%)	
Substance use				0
Yes	156 (37.5)	73 (27.4)	82 (59.4)	
No	260 (62.5)	193 (72.6)	56 (40.6)	
Total	416 (100.0)	266 (100.0)	138 (100.0)	
Substances used* (Multiple responses)				
Cigarettes	63 (42.6)	24 (34.8)	38 (48.7)	0.124
Alcohol	121 (81.8)	57 (82.6)	63 (80.8)	0.941
Khat	67 (45.3)	20 (29.0)	46 (59.0)	0
Hashish	23 (5.4)	8 (11.6)	14 (17.9)	0.397
Shisha	35 (23.6)	15 (21.7)	20 (25.6)	0.719
Morphine/ Diazepam	4 (2.7)	3 (4.3)	1 (1.3)	
Heroin/ Cocaine	2 (1.4)	1 (1.4)	1 (1.3)	
Substance used*				0
Less Frequent	66 (45.2)	43 (65.2)	23 (29.1)	
More Frequent	80 (54.8)	23 (34.8)	56 (70.9)	
Total	146 (100.0)	66 (100.0)	79 (100.0)	
Heavy Drinking*				0.003
More Frequent	56 (37.3)	16 (23.5)	39 (48.8)	
Less Frequent	94 (62.7)	52 (76.5)	41 (51.2)	
Total	150 (100.0)	68 (100.0)	80 (100.0)	
*Analyzed among substance users				

Table 7: Substance use among respondents.

Knowledge, risk perception, and attitude to HIV infection

According to Table 8, near two-thirds of participants were aware of university students' vulnerability to HIV. They were also aware of the possible presence of HIV in a healthy looking individual. Most students (95.1%) knew transmission of HIV by unprotected sex. They also mentioned condom use and abstinence to prevent HIV infection. Eighty percent of study participants considered HIV test for safe sex. Above fifty percent (to be exact, 54.7%) of participants were tested for HIV. These findings are consistent with the results of the health survey among Addis Ababa's youth [2]. The statistical analysis results also showed no significant difference between male and female students (in relation to knowledge, risk perception, and attitude).

Variables	All Responses (n=425) No. (%)	Sex		Chi-Square Test (p-value)
		Female (n=272, 65.9%) No. (%)	Male (n=141, 34.1%) No. (%)	
University students are at risk of HIV infection				
Yes	266 (65.4)	174 (67.2)	83 (61.0)	0.268
No	141 (34.6)	85 (32.8)	53 (39.0)	
Total	407 (100.0)	259 (100.0)	136 (100.0)	
Sources of HIV infection among students (Multiple responses)				

Students	199 (54.8)	121 (52.2)	68 (57.1)	0.439
Lecturers	111 (30.6)	78 (33.6)	27 (22.7)	0.046
Business man/woman	234 (64.5)	156 (67.2)	69 (58.0)	0.111
Commercial Sex workers	134 (36.9)	81 (34.9)	46 (38.7)	0.566
Street boy/girl	128 (35.3)	75 (32.3)	46 (38.7)	0.288
Ways of HIV transmission (Multiple responses)				
Sharing sharp materials	122 (31.3)	88 (35.6)	31 (23.7)	0.023
Sex without Condom	371 (95.1)	236 (95.5)	124 (94.7)	0.894
Blood transfusion	34 (8.7)	24 (9.7)	10 (7.6)	0.628
Mosquito bite	19 (4.9)	13 (5.3)	6 (4.6)	0.967
Sharing food	8 (2.1)	6 (2.4)	2 (1.5)	
Others¥	15 (3.8)	9 (3.6)	5 (3.8)	
Tested for HIV				0.573
Yes	220 (54.7)	138 (53.9)	77 (57.5)	
No	182 (45.3)	118 (46.1)	57 (42.5)	
Total	402 (100.0)	256 (100.0)	134 (100.0)	
Time of HIV test*				0.37
≤ 12 month=Recent	129 (62.3)	86 (64.7)	40 (57.1)	
>12 months=Late	78 (37.7)	47 (35.3)	30 (42.9)	
Total	207 (100.0)	133 (100.0)	70 (100.0)	
HIV test for safe sex				
Yes	280 (70.9)	184 (73.0)	91 (69.5)	0.54
No	115 (29.1)	68 (27.0)	40 (30.5)	
Total	395 (100.0)	252 (100.0)	131 (100.0)	
Allow HIV infected Student to continue the friendship				0.363
Yes	249 (63.5)	163 (65.5)	78 (59.5)	
No	46 (11.7)	25 (10.0)	19 (14.5)	
Not sure	97 (24.8)	61 (24.5)	34 (26.0)	
Total	392 (100.0)	249 (100.0)	131 (100.0)	
Keep it secret the fact that your classmate is infected with HIV				0.24
Yes	338 (84.7)	222 (86.7)	105 (80.1)	
No	14 (3.5)	8 (3.1)	6 (4.6)	
Not sure	47 (11.8)	26 (10.2)	20 (15.3)	
Total	399 (100.0)	256 (100.0)	131 (100.0)	
The healthy looking student can have an HIV infection				0.824
Yes	302 (75.9)	195 (76.8)	100 (75.8)	
No	96 (24.1)	59 (23.2)	32 (24.2)	
Total	398 (100.0)	254 (100.0)	132 (100.0)	
HIV prevention methods (Multiple responses)				
Condom use	273 (70.0)	170 (68.5)	96 (73.8)	0.341
Being mutually faithful	93 (23.8)	52 (21.0)	37 (28.5)	0.133
Abstaining till marriage	262 (67.2)	172 (69.4)	81 (62.3)	0.205
Not sharing sharp stuff	138 (35.4)	86 (34.7)	47 (36.2)	0.863
Male circumcision	16 (4.1)	5 (2.0)	11 (8.5)	0.007
¥Supernatural natural means like witchcraft, God's curse, *among students who had HIV test				

Table 8: Knowledge and Attitude to HIV/AIDS among respondents.

Despite good knowledge of safe sexual practices, we observed a statistically significant presence of risky sexual behavior. This finding is consistent with similar studies in Uganda [13] and Malawi [32], where high knowledge of STI prevention methods was not followed by the proper behavior. In Addis Ababa: a study indicated a significant presence of HIV infection among well-educated individuals [48]. This study shows the need to have a proper behavioral modification. The university has only one nurse to do first aid. Since more than half of participants did not start sex, availing youth-friendly HIV testing service might help to practice safe sexual behavior. It has already been stated less than 10% of students with sexual experience, considered they at risk of HIV. The low self-risk perception might also be the explanation for the observed risky sexual behaviors. Hence, there is an urgent need for HIV risk awareness programs in a similar setting.

Study Limitations

The survey was cross-sectional; we could not tell any cause and effect relationship. But, it has been tried to determine observed significant associations between socio-demographic characteristics and sexual behavior. The responses might also be affected by recall bias. We tried to minimize such effect-by including questions related to "one event/recent event". Though this might make it easy to remember an event, there might still be possible effects of recall bias. Some questions related to substance use and sexual behavior might also be quite sensitive. This might result misreporting, under- or over-reporting of similar other variable responses.

Conclusion

Even though it is not easy to infer these results into the general population, our study revealed the presence of risky sexual behaviors among the study groups. Though these students were considered more privileged than those in public universities, the findings showed

similar patterns of sexual behavior. Besides, there were similar predisposing factors to risky sexual behavior. Despite the high knowledge of HIV, there was low HIV risk perception and testing. Low health/treatment-seeking behavior was also observed among STI exposed or at-risk individuals. The study findings may be used to strengthen STI/HIV risk perception, prevention, testing, and treatment-seeking behaviors. It can be suggested that the university would benefit from collaborating with health organizations working on HIV/AIDS prevention programs. The student council may also be used as entry point-to deliver peer education, strengthen negotiation skills, and demonstrate correct use of condom/other proper behavioral modifications. In conclusion, in order to help policymakers and bring significant progress to the general population, it is highly suggested that larger studies including other departments/universities using a combination of additional qualitative and quantitative methods be done.

Data Availability

All the necessary data used to support the findings of this study are included in the article.

Funding Statement

There was no funding available to perform this study.

Competing Interests

The authors declare no competing interests.

Authors' Contributions

The author DS conceived the study topic, formulated and designed the study, collected the research data, conducted the statistical analysis, and wrote the manuscript. The author NW participated in the revision of the study topic and study design, supervised statistical analysis, and approved the final version of the manuscript to be published.

Acknowledgment

A special thanks to Carina Källestål (Associate professor) who contributed to the development of the research protocol in the Department of Women's and Children's Health, Uppsala University, Sweden. Great acknowledgments go back to all the study participants and staff members of Unity University, Addis Ababa, Ethiopia. Thanks to Zelalem Berihun for his unwavering support, Samuel Tilahun for printing questionnaires.

References

1. UNAIDS (2012) UNAIDS report on the global AIDS epidemic.
2. CSAEaI (2012) Ethiopia demographic and health survey Addis Ababa, Ethiopia. and Calverton. Central Statistical Agency and ICF International. Maryland, USA.
3. Kebede D, Alem A, Mitike G, Enquselassie F, Berhane F, et al. (2015) Khat and alcohol use and risky sex behavior among in-school and out-of-school youth in Ethiopia. BMC Public Health 5: 109.
4. Berhan YHD, Alano A (2011) Predictors of sexual-risk behavior and HIV-preventive practices among university students in Ethiopia. Afr J AIDS Res 10: 225-234.
5. Tura G, Alemseged F, Dejene S (2012) Risky sexual behavior and predisposing factors among students of Jimma University, Ethiopia. Ethiop J Health Sci 22: 170-180.
6. Belachew TJC, Mamo Y (2002) Knowledge, attitude and practice about HIV/AIDS and VCT among students of Jimma University. Ethiop J Health Scie 14: 43-53.
7. Dingeta T, Oljira L, Assefa N (2012) Patterns of sexual risk behavior among undergraduate university students in Ethiopia: A cross-sectional study. Pan Afr Med J 12: 33.
8. Dingeta T OL, Alemayehu T, Akililu A (2011) First sexual intercourse and risky sexual behaviors among undergraduate students at Haramaya University, Ethiopia. Ethiop J Repro Health 5: 22-30.
9. Regassa N, Kedir S (2011) Attitudes and practices on HIV preventions among students of higher education institutions in Ethiopia: The case of Addis Ababa University. East Afr J Public Health 8: 141-154.
10. Wasie B, Belyhun Y, Moges B, Amare B (2012). Effect of emergency oral contraceptive use on condom utilization and sexual risk taking behaviours among university students, Northwest Ethiopia: A cross-sectional study. BMC Res Notes 5: 501.
11. Organization WHO (2008) 10 facts on adolescent health.
12. Odu OO, Asekun-Olarinmoye EO, Bamidele JO, Egbewale BE, Amusan OA, et al. (2008) Knowledge, attitudes to HIV/AIDS and sexual behavior of students in a tertiary institution in south-western Nigeria. Europ J Contracep Repro Health Care 13: 90-96.
13. Sekirime WK, Tamale J, Lule JC, Wabwire-Mangen F (2001) Knowledge, attitude and practice about sexually transmitted diseases among university students in Kampala. Afr Health Scie 1: 16-22.
14. Okafor II, Obi SN (2005) Sexual risk behavior among undergraduate students in Enugu, Nigeria. J Obstet Gynaecol 25: 592-595.
15. Peltzer K (2010) Early sexual debut and associated factors among in-school adolescents in eight African countries. Acta paediat 99: 1242-1247.
16. Deressa W, Azazh A (2011) Substance use and its predictors among undergraduate medical students of Addis Ababa University in Ethiopia. BMC Public Health 11:660.
17. Imaledo JA, Peter-Kio OB, Asuquo EO (2012) Pattern of risky sexual behavior and associated factors among undergraduate students of the University of Port Harcourt, Rivers State, Nigeria. The Pan Afr Med J 12: 97.
18. Addis Ababa University (2013) HIV, STI, and TB prevention and control project.
19. Dahlgren GWM (2007) Policies and strategies to promote social equity in health. Background document to WHO-Strategy paper for Europe. WHO: Institute for Future Studies.
20. Group TMET (2012) Unity University.
21. Wikipedia TFE (2012) Unity University.
22. HIV/AIDS Behavioral Surveillance Survey (BSS) Round two (2005). Addis Ababa, Ethiopia.
23. WMA (2008) Declaration of Helsinki-ethical principles for research involving human subjects.
24. Sun X, Liu X, Shi Y, Wang Y, Wang P, et al. (2013) Determinants of risky sexual behavior and condom use among college students in China. AIDS care 25: 775-783.
25. Sujay R (2009) Premarital sexual behaviour among unmarried college students of Gujarat, India. Council NDP; health and population innovation fellowship programme working paper, No. 9.
26. Adhikari R (2010) Are Nepali students at risk of HIV? A cross-sectional study of condom use at first sexual intercourse among college students in Kathmandu. J Int AIDS Soc 13: 7.
27. Agardh A, Tumwine G, Ostergren PO (2011) The impact of socio-demographic and religious factors upon sexual behavior among Ugandan university students. PloS One 6: e23670.
28. Fawole AO, Ogunkan OV, Adegoke GS (2011) Sexual behavior and perception of HIV/AIDS in nigerian tertiary institutions: University of ilorin, a case study. Global J Hum Social Sci 11: 1.
29. Peltzer K (2000) Factors affecting condom use among South African university students. East Afr Med J 77: 46-52.

30. Reddy P, Frantz J (2011) HIV/AIDS knowledge, behaviour and beliefs among South African university students. Saharaj 8: 166-170.
31. Rahamefy OH, Rivard M, Ravaoarinoro M, Ranaivoharisoa L, Rasamindrakotroka AJ, et al. (2008) Sexual behaviour and condom use among university students in Madagascar. Saharaj 5: 28-35.
32. Ntata PR, Muula AS, Siziya S, Kayambazinthu EE (2008) Gender differences in university students' HIV/AIDS-related knowledge and sexual behaviours in Malawi: a pilot study. Saharaj 5: 201-205.
33. Golbasi Z, Kelleci M (2011) Sexual experience and risky sexual behaviours of Turkish university. Arch Gynecol Obstet 283: 531-537.
34. Caetano ME, Linhares IM, Pinotti JA, Maggio da Fonseca A, Wojitani MD, et al. (2010) Sexual behavior and knowledge of sexually transmitted infections among university students in Sao Paulo, Brazil. Int J Gynaecol Obstet 110: 43-46.
35. Stockl H, Kalra N, Jacobi J, Watts C (2013) Is early sexual debut a risk factor for HIV infection among women in sub-Saharan Africa? A systematic review. Am J Repro Immunol 69: 27-40.
36. Wand H, Ramjee G (2012) The relationship between age of coital debut and HIV seroprevalence among women in Durban, South Africa: a cohort study. BMJ Open 2: e000285.
37. Louie KS, de Sanjose S, Diaz M, Castellsague X, Herrero R, et al. (2009) Early age at first sexual intercourse and early pregnancy are risk factors for cervical cancer in developing countries. Br J Cancer 100: 1191-1197.
38. Makenzius M, Larsson M (2013) Early onset of sexual intercourse is an indicator for hazardous lifestyle and problematic life situation. Scandin J Caring Sci 27: 20-26.
39. Seloilwe ES (2005) Factors that influence the spread of HIV/AIDS among students of the University of Botswana. J Assoc Nurses AIDS Care 16: 3-10.
40. Brown JL, Vanable PA (2007) Alcohol use, partner type, and risky sexual behavior among college students: Findings from an event-level study. Addict Behaviors 32: 2940-2952.
41. Connor J, Gray A, Kypri K (2010) Drinking history, current drinking and problematic sexual experiences among university students. Aus New Zealand Journal Public Health 34: 487-494.
42. Cong L, Ono-Kihara M, Xu G, Ma Q, Pan X, et al. (2008) The characterisation of sexual behaviour in Chinese male university students who have sex with other men: a cross-sectional study. BMC Public Health 8: 250.
43. Gebreyesus SH, Mariam DH (2009) Assessment of HIV/AIDS related risks among men having sex with men (MSM) in Addis Ababa, Ethiopia. J Public Health Policy 30: 269-279.
44. Merrigan M, Azeez A, Afolabi B, Chabikuli ON, Onyekwena O, et al. (2011) HIV prevalence and risk behaviours among men having sex with men in Nigeria. Sex Transm Infect 87: 65-70.
45. Rispel LC, Metcalf CA, Cloete A, Reddy V, Lombard C (2011) HIV prevalence and risk practices among men who have sex with men in two South African cities. J Acquir Immune Defic Syndr 57: 69-76.
46. Pillon SC, O'Brien B, Piedra Chavez KA (2005) The relationship between drugs use and risk behaviors in Brazilian university students. Latin Am J Nurs13: 1169-1176.
47. Darling CA, Davidson JK, Sr Passarello LC (1992) The mystique of first intercourse among college youth: the role of partners, contraceptive practices, and psychological reactions. J Youth Adolesc 21: 97-117.
48. Seme AHD, Worku A (2005) The association between substance use and HIV infection among people visiting HIV counseling and testing centers in Addis Ababa, Ethiopia. Ethiop J Health Dev 19: 116-125.