



Full Length Research paper

Substance abuse and sexual HIV-risk behaviour among Dilla University students, Ethiopia

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ABSTRACT

In Ethiopia, substance use and risky sexual behaviour are common. High rates of substance use and unprotected sex have unintended health consequences for University students. The Objective of the research was assessment of substance abuse and sexual risk behavior. 611 students in Dilla University were interviewed in 2011. Data were collected and analyses were performed to examine demographic and sexual HIV-risk behaviour. Analysis was done using SPSS version 20 and necessary ethical issues were considered. Four hundred and thirty four (71.0 %) males and one hundred and seventy seven (29.0 %) females participated with 94.47% response rate. The mean age was 21.39 with SD of ± 1.69 years. Five hundred and seventy (93.3%) were single, two hundred and thirty six (38.6%) were first year. The prevalence of alcohol drinking, chewing khat, and cigarette smoking were 396(64.7%), 251(41.8%), and 117(19.17%) respectively. The most common substances used were Alcohol and Khat. Daily Khat intake was associated with unprotected sex: adjusted Odds Ratio= 2.28 at 95% CI (1.90-2.68). Alcohol use was also significantly associated with having three or more sexual partners as well as with having unprotected sex with a long-term partner when compared to those not using it: adjusted Odds Ratio= 3.0 at 95% CI(2.34-3.89). Among sexually active 27(5.8%); 6(1.3%) of them had 3 life time partners; and 25(5.4%) of them had 5, and more than 5 life time partners. Having multiple sexual partners is significantly associated ($\chi^2=23.371, df=7, p<0.001$). Substance use and risky sexual practices were significantly higher among study participants. Alcohol and Khat were found to be significant risk factors for HIV-risk behaviours. Government and other responsible bodies should design a strategy to control the use of substances like alcohol, khat, and Shisha. Further study to identify prevalence and role of substance in exposure to HIV infection is recommended.

Keywords: Substance, abuse, Sexual; HIV; Risk; behavior; Dilla; Ethiopia

INTRODUCTION

Substance abuse is the repeated use of a substance even with the knowledge of its negative health consequences (Francis, 2003). Drugs, that can be swallowed or inhaled, normally alter people's judgment and this leads to risky sexual behaviours, such as unprotected sex, having multiple sexual partners and prolonged and traumatic sex, which can also result in HIV transmission (UNAIDS, 1999).

History of Substance /drug abuse is as old as history of mankind (Annual conference of The Ethiopian public Health association, 2006). Today, there are estimated 190 million drug abusers around the globe, which accounts for 3.1% of the world population or 4.3% of the population

aged 15 years and above (Annual conference of The Ethiopian public Health association, 2006). The UN division of narcotic drugs reported that so many young people, even children, flirting with drugs. This is because the wide spreading drug use is depriving the today's youngsters with dignity, good health, and the chance to make substantial contribution to the future on their countries and the world (United Nations and drug abuse control; The extent of drug abuse: Regional evaluation: united nation publication, 1987; New York).

In developing countries, substance use is emerging as a big problem than expected (UNAIDS and WHO, 2008). Some studies associate alcohol use with reduced sexual

inhibitions, multiple partners, unprotected sex, sexual violence, and commercial sex encounters (Weiser et al., 2006). In other words, studies suggest that easily accessible substances such as *khat* and marijuana are commonly used and that multiple-substance use increases adverse behaviours (Barnwell and Earleywine, 2006).

Even though many African countries are on drug transit routes (Berkley, 1994), the extent of drug-related problems is not clear. In other words, though drug use does not appear to be a major public health problem (Berkley, 1994) for much of Africa, a number of hospital admissions for drug-associated problems have recently increased in some cities. For example, in Nigeria, heroin and cocaine related problems have been highlighted in a number of reports (Berkley, 1994). On the other hand, sexually transmitted diseases were identified to be higher among drinkers than non-drinkers in patients seen at Harare's primary health clinic (WHO, 1993). Similarly in the study conducted in Ethiopia, alcohol drinking was found to be associated with serum HIV positivity. Being male and having sex with commercial sex workers were also related to both alcohol drinking and khat chewing (Assefa et al., 2005). In addition, a study conducted in Ethiopia among out-of-school youth on substance abuse shows that Over 20% had unprotected sex during the 12-month period prior to interview compared to 1.4% of in-school youth. Daily Khat intake was also associated with unprotected sex: adjusted OR (95% CI) = 2.26 (1.92, 2.67). There was a significant and linear association between alcohol intake and unprotected sex, with those using alcohol daily having a threefold increased odds compared to those not using it: adj. OR (95% CI) = 3.05 (2.38, 3.91) (Derege et al., 2005).

Another study conducted in Ethiopia on substance abuse among college students revealed that 13.1 % life time prevalence rate of cigarette smoking and 26.7 % life time prevalence rate of khat chewing. The current prevalence of cigarette smoking was found to be 8.1 % and that of khat chewing 17.5 %. Forty six (31.7 %) of the life time smokers and 134 (45.6%) of the life time chewers started smoking and chewing while they were senior secondary school students (Yigzaw, 2002). This indicates that, substance use among college and university students remains an important area of research due to the implications of early substance dependence (Baldwin et al., 1991). For example in Kenya, among few studies conducted in Universities and colleges, high rates as high as 84% for alcohol use and 54.7% for tobacco use reported (Odek-Ogunde and Pande-Leak, 1999).

Therefore; since substances abuse may be legal or illicit and addiction plays a major role in substance abuse, behavioural addictions (sex addiction) can have social, public health, and medical consequences and may have unintended health consequences for University students; this indicates that data regarding substance use and sexual risk behavior among University Students is

important. Therefore, this study aimed at assessing the magnitude of substance use, sexual risk behavior and factors associated among students in Dilla University.

METHODOLOGY

Study design and study area

A cross sectional study design primarily with quantitative data was obtained from May 1, to July 30, 2011. Dilla University is one of the public Universities in Ethiopia and found 359 kms away from Addis Ababa. The University operates in three campuses with one college, one institute and 13 schools which offer 40 undergraduate and 7 post graduate programs with a student population of 17554 regular and continuing education program in 2011/12 academic year.

Population

All (9064) undergraduate regular students were taken as source population. Students who attended at least one semester were eligible for inclusion. Those students were selected by simple random sampling method was considered as study subjects. Students attending in non-regular program (continuing education program) were not included in the study since they were different from the regular ones with respect to their age, maturity and employment status. And, those students dismissed earlier or later than the specified time period or do not compatible for one or more reasons mentioned in the inclusion criteria will excluded. Sampling unit was department while study units were those randomly selected students.

Sample size and sampling techniques

The sample size for the quantitative data was computed based on the formula for single population proportion. The value of p is taken 59% as Khat chewing habit is possible risk behavior for HIV infection (Dawit et al., 2005). This 59% prevalence of khat was taken from the study since it was the largest prevalence from all other substances. A Z-value of 1.96 is used at 95% CI and margin of error is 5%. The expected non-response rate (10%) and design effect of 1.5 also considered. The determined 623 sample size for quantitative study was sampled from 6 schools which are selected randomly and then the calculated sample size was distributed into each of the recruited schools using probability proportional to their size (PPS). To do this, multi-stage sampling technique was preferred because it is difficult to manage more than 9064 regular undergraduate students. The sample size allocated to each school was distributed to each programs/departments found in the school based on proportional to their size. Eventually, the required number of respondents was selected from each year of study

based on proportional to their size and students were chosen random.

Instrument

To collect data, survey questionnaire was initially designed and developed in English and translated into Amharic and then back to English to check for consistency and clarity taking into account similar surveys that have been carried out previously (Likawunt and Mulugeta, 2012) and some questions were modified to suit the context of the study. The survey questionnaire was organized into four sections: which are Socio demographic information, sexual engagement and their use of condoms, risk perceptions and their behaviors, and finally, respondents' attitude and practice on HIV prevention activities. Before conducting the actual study, the questionnaire was piloted among 31 students. The pilot-test was used to revise its clarity, order of question, skip patterns, and its consistency. Based on the pilot-test feedback, some questions were rephrased, amended and the final questionnaire was prepared. It also helped to see the care that should be taken during actual data collection like sitting arrangements of the students while they fill the questionnaire in the class room. But, the result of this pilot study was not included in the main study or sample. Eight University students: 4 females and 4 males were recruited to serve as data collectors including one supervisor who supervised data collectors during the field work. The data collected was checked for completeness, consistently, and clarity by supervisor in each sites as well as principal investigator. Data collectors were given an orientation about how to collect data in the provided questionnaire.

Study Variables

Dependent variables: includes substances abuse; alcohol drinking; Khat chewing; Cigarettes smoking; and Illegal drug use

Independent variables: includes Socio- demographic characteristics such as sex, age, school grade, ethnic group, religious group, parent's educational status, and families' exposure to addictive substance.

Operational Definitions

The following operational definitions are set based on our study questions:

Sexual experience: Practiced penetrative penile vaginal sex at least once.

Risk behavior: Pattern of personality that predispose to conceive HIV infection.

Had ever had sexual intercourse: Practiced penetrative penile vaginal sex at least once.

Life time partner: People commit to one another for one reason or another. Some commit for love, some for money, some for influence, some for just plain good sex.

Drug: any chemical substance that alters body functions.

Substances: Any non-medical drugs used by study subjects such as alcohol, khat, Cannabis, heroin, cocaine, and marijuana to alter their mood or behavior.

Drug abuse: Persistent or sporadic excessive use of drugs inconsistent or unrelated to acceptable medical practice. **Substance abuse:** is a maladaptive pattern of substance use result repeated problems and adverse consequences. Or the use of any of these substances by study subjects at any time without medical prescription

Dependence: A cluster of physiological, behavioral and cognitive phenomena of variable intensity. In which the use of psychoactive drug takes on a high priority. Characterized by preoccupation with a desire to obtain and take the drug and persistent drug seeking behaviour.

Illicit (illegal) drugs: Drugs which are forbidden by law such as cocaine, heroine, and marijuana.

Licit drugs: Drugs which are permitted by law such as alcohol, cigarette and khat.

"Hard" drugs: Substances such as cocaine, heroin, etc, which are under the International control and produced, trafficked and consumed illicitly.

Khat: A central nervous system stimulating substance with alkaloid active ingredient, cathinone, and with effect similar to that of amphetamine

Poor family economic background: a family income less than 500 Birr per month

Medium family economic background: a family income between 500 and 1000 Birr per month

Rich family economic background: a family income more than 1000 Birr per month

Ethical Considerations

Ethical approval was granted by research ethics committee of Dilla University of school of health sciences. The purpose of the study was clarified for study subjects and identifiers were avoided to secure confidence. Finally questionnaire was distributed after informed consent and participants were asked to complete and drop in to box prepared.

Data analysis: the data analysis was done using SPSS version 20 and p-value <0.05 is considered as significant association between variables.

RESULT

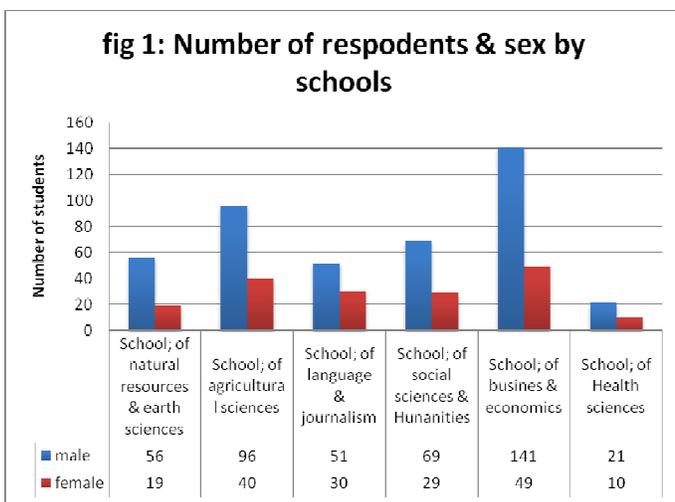
Socio-Demographic profile

A total of 623 students who met the criteria were invited to participate in the study; however, 12 questionnaires were excluded for gross incompleteness and inconsistency of

responses. This gives a response rate of 98.1% in which the final analysis was carried out. Seventy five(12.3%), 136(22.3%), 81(13.3%), 98(16.0%), 190(31.1%) and 31(5.0%) of the study participants were from school of natural resource and earth sciences, school of agricultural sciences, school of language and journalism, school of social science and humanities, school of business and economics and school of health sciences, respectively.

Out of the total 611 respondents, 434 (71.0 %) were males and 177 (29.0 %) were females. The mean age was 21.39 with a SD of ±1.69 years, in a range between 17 and 28 years. The majority 570(93.3%) were single. Two hundred thirty six (38.6%) of the respondents were first year, 169(23.3%) of them were second year,; and 206(33.7) of them were third year (fig.1).

fig 1: Number of respodents & sex by schools

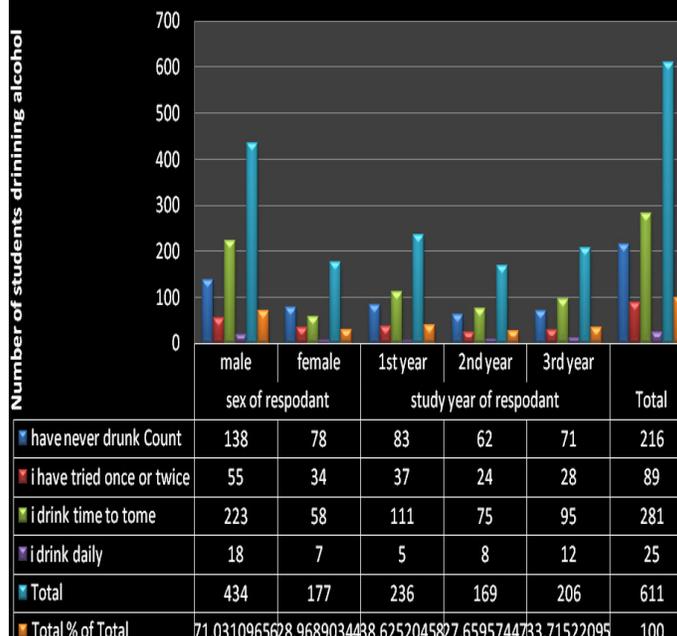


Majority of the study populations were Amhara, 297(48.6%) by ethnicity and the largest 379(62.0%) were orthodox Christians by religion. The highest respondents fathers' educational status was only be able to read and write 141(23.1%) followed by degree and above 131(21.4%) and also the highest mothers' educational status was only be able to read and write 140(22.9%) followed by grade 7 to 12 138(22.6%). Concerning family background of respondents, father's occupation was farmer 219(35.9%) followed by civil servant 184(30.1%) and also the mother's occupation was house wife 318(52.0%) followed by civil servant 117(19.1%). They also rated their family economic background as medium 389(63.7%) followed by rich 127(20.8%). Two hundred eleven (34.5%) students received pocket money and 400(65.5%) did not receive pocket money.

Substance use

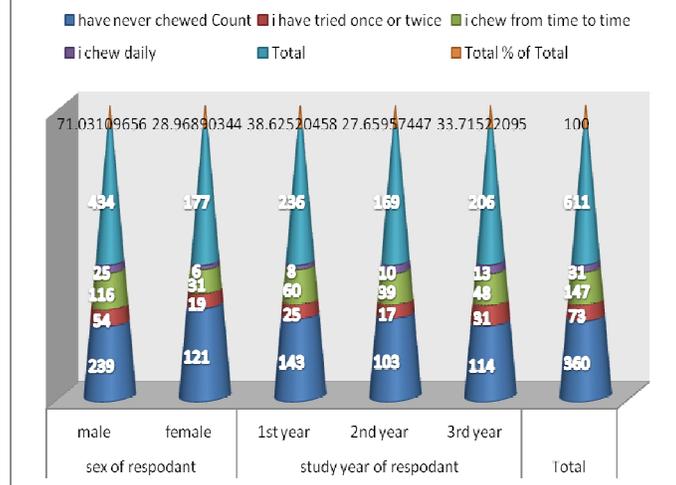
Overall prevalence and daily drinking of alcohol among students was 64.7% and 4.1%, respectively. The life time alcohol consumption among male and female students was 296(62.8%) and 99(55.9%), respectively; drinking once or twice, time to time, or daily (fig. 2).

figure 2: alcohol consumption among students versus sex and year of study in Dilla university, 2012



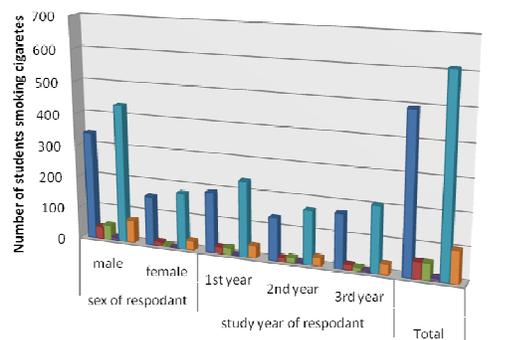
Overall prevalence and daily chewing of khat among students was 41.8% and 5.1%, respectively. The life time chewing of Khat among male and female students was 195(44.9%) and 56(31.6%), respectively (fig 3).

fig 3: Kaht chewing among students versus sex and year of study in Dilla University, 2012



Furthermore, overall prevalence and daily smoking of cigarette among students was 19.17% and 1.8%, respectively. The life time smoking of cigarette among male and female students was 95(21.9%) and 22(12.4%), respectively (fig 4).

fig 4: Cigarette smoking among students versus sex and year of study in Dilla University, 2012



	sex of respondent		study year of respondent			total
	male	female	1st year	2nd year	3rd year	
I have never smoked	339	155	190	134	170	494
I have tried once or twice	39	14	22	13	18	53
I smoke from time to time	47	6	23	17	13	53
I smoke daily	9	2	1	5	5	11
Total	434	177	236	169	206	611
Total % of Total	71.03	28.97	38.63	27.66	33.71	100

Sexual Characteristics

Sexual experience of students

Three hundred forty two male (78.8%) and 121 females (68.4%) of the students reported that they had practiced penetrative sex at least once in their life time. There was a statistically significant gender difference in the proportion of males and females ever having sexual experience ($\chi^2 = 7.466$, $df = 1$, $P < 0.006$). The mean age of first sexual debut was 18.9 years with the minimum age of being 12 years.

On the other hand, daily alcohol drinking, chewing khat, and cigarette smoking was 25(4.1%), 31(5.1%), and 11(1.8%); respectively. The most common substances used were alcohol and khat. Daily khat intake was associated with unprotected sex: adjusted AOR= 2.28; 95% CI (1.90-2.68). Alcohol use was also significantly associated with having three or more sexual partners as well as with having unprotected sex with a long-term partner when compared to those not using it: AOR= 3.00; 95% CI(2.34-3.89).

Being male is highly associated with sexual experience of students (OR=0.12, 95%CI (0.024- 0.946) With $P < 0.044$. Among the sexually active 463 (75.8%) students, 330/463 (71.3%) of them had one life time partner; 51(11%) had 2 life time partners; 27(5.8%) had 3 life time partners; 6(1.3%) had 5 life time partners; and

25(5.4%) had more than 5 life time partners. This is significantly associated with gender difference in the proportion of life time number of sexual partners among males and female students ($\chi^2=23.371$, $df=7$, $p<0.001$). The first reason for first time sex among the sexually active students, was fell in love 188/434 (43.3%) for males and 77/177(43.5); this is significantly associated in both sexes($\chi^2=12.314$, $df=5$, $p<0.031$). There is also significant association with gender difference in the proportion of number of sexual partners in the last 12 months among males and female students ($\chi^2=12.198$, $df=6$, $p<0.058$).

Condom use

Sixty nine (14.9%) of the sexually active students never used condoms while 333/463 (71.9%) always used condoms. Among the female sexually active students 17/177(9.6%) had never used condoms in their history of sexual contact. 290/463(62.6%) of the study participants had a history of STI. One hundred twenty four (20.3%) of the study participants had learned about HIV/AIDS from news papers, posters, and pamphlets. Sexual experience of students and their mother's occupation like being house wife is significantly associated($\chi^2=4.841$, $df=1$, $p<0.028$). Sexual experience of students and their family economic status like being very rich is also significantly associated($\chi^2=6.147$, $df=1$, $p<0.013$) and sexual experience of students and chewing khat is significantly associated($\chi^2=7.832$, $df=3$, $p<0.050$).

DISCUSSION

This study examined the relationships between substance use and risky sexual behaviors among Dilla University students in Ethiopia. The independent variables were derived from the literature, which identified substance use as one of the most predictive factors for sexual risk behaviors (Brown and Wells, 2006).

To my knowledge, my paper is one of the few studies that has exclusively examined sexual risk behaviors and substance use behaviors among University students. Several major observations emerged from this study. First, the findings indicate that substance use was significantly associated with unprotected sexual behaviors. In my study the prevalence of alcohol drinking, chewing khat, cigarette smoking were 396(64.7%), 251(41.8%), and 117(19.17%) respectively. The daily alcohol drinking, chewing khat, and cigarette smoking was 25(4.1%), 31(5.1%), and 11(1.8%) respectively. The most common substances used were Alcohol and Khat. Daily Khat intake was associated with unprotected sex: adjusted Odds Ratio= 2.28 at 95% CI (1.90-2.68). Alcohol use was also significantly associated with having three or more sexual partners as well as with having unprotected sex with a long-term partner when compared to those not

using it: adjusted Odds Ratio= 3.0 at 95% CI(2.34-3.89). Among sexually active 463(75.8%) students, 330/463(71.3%) of them had 1 partner; 51(11%) of them had 2 life time partners; 27(5.8%); 6(1.3%) of them had 3 life time partners; and 25(5.4%) of them had 5, and more than 5 life time partners. Having multiple sexual partners is significantly associated ($\chi^2=23.371$, $df=7$, $p<0.001$). Being male and having sex with commercial sex workers were also related to both alcohol drinking and khat chewing. Sexual experience of students is significantly associated with Chewing khat ($\chi^2=7.832$, $df=3$, $p<0.050$), whose mother's occupation is house wife ($\chi^2=4.841$, $df=1$, $p<0.028$); and whose family is very rich ($\chi^2=6.147$, $df=1$, $p<0.013$). These empirical data are consistent with the previous findings among college students in Ethiopia (Yigzaw, 2002). On the other hand, substance use was significantly associated with having multiple sexual partners. These findings support the literature that has repeatedly shown the relationship between substance use (tobacco, alcohol) and having multiple sexual partners (Wang et al., 2004).

Alcohol use appeared to be correlated with a high level of sexually risky behavior, particularly having multiple sexual partners. This finding is consistent with Santelli and colleagues, (Santelli et al., 1998) who found that as the number of reported alcohol-related behaviors increased,

Findings from our study also suggest that the patterns of engaging in sexual risk behaviors are different between male and female adolescents. A study conducted in South Africa (Simbayi et al., 2007) also demonstrated that greater alcohol use was associated with multiple sexual partners in the past month and other STD-/HIV-related sexual risk behaviors.

My study is also similar with the study conducted in Ethiopia among college students that showed Khat (27.7%) and Alcohol (21.7%) were the commonly used substances and having multiple sexual partners (47.6%), inconsistent condom use (20.0%) were common sexual risk behaviors for HIV transmission. Female [AOR=1.5], fresh students [OR=2.4] and alcohol users [OR=3.5] were more likely to engage in sexual risk practices (Likawunt and Mulugeta, 2012).

CONCLUSION

In this study substance use and risky sexual practices were significantly higher among study participants. Alcohol and Khat were found to be significant risk factors for HIV-risk behaviours. Practicing sex with multiple partners, inconsistent condom use and commencing sex with female commercial sex workers were highly risky sexual behaviors and were commonly practiced among study participants.

Limitations

My findings may not be generalizable to all university students who have been in Ethiopia. Response bias may have interfered with the reporting. By sample design, I recruited from one site, and therefore my results only pertain to students in Dilla University. However, despite these limitations, this study demonstrates that many students are vulnerable to HIV and therefore represent a population in need of HIV prevention interventions

RECOMMENDATIONS

Programs related to HIV/AIDS must address the whole student population rather than specific subgroups and create opportunity to work with students, promote their participation and equip them with life skills to put knowledge in to practice. Government and other responsible bodies should design a strategy to control the use of substances like alcohol, khat, and Shisha, which were found to be responsible for risky sexual behaviours. Further study to identify prevalence and role of substance in exposure to HIV infection is recommended.

Competing Interests: I declare that there is no conflict of interest.

Authors' Contributions: Moges Tadesse conceived the idea for the study, study design, data analysis, interpretation, and reporting stage of this manuscript, and have seen and approved the final version.

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