Determinants of alcohol drinking and its association with sexual practices among high school students in Addis Ababa, Ethiopia: Cross sectional study

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ABSTRACT

Introduction: Alcohol drinking and risky sexual practices have become serious public health problems among teenagers and young adults globally, including many developing countries. The available reports are sparse, especially there is a lack of recent and representative data for high school students in developing countries including Ethiopia. The aim of this study was to estimate the prevalence, identify determinants, and examine the association of alcohol drinking with sexual practices among high school students in Addis Ababa, capital city of Ethiopia. Methods: School-based cross sectional study was conducted from November to December 2010. Multivariate logistic regression analysis was used to determine the association between students’ background characteristics and alcohol use, and alcohol use and sexual practices. Results: Among 2551 students surveyed, lifetime and current (past month) alcohol drinking were reported by 1166 (45.7%) and 676 (26.5%) students, respectively. Having sexual intercourse at least once in their lifetime was reported by 412 (16.2%) with 151 (5.9%) of them being sexually active during a month prior to the survey. Having multiple sexual partners (52.5%), drinking alcohol before sexual intercourse (26.4%), and having sexual intercourse without the use of condom (47.3%) were also common among sexually active students. In adjusted logistic regression model, age (18 and 19 and older), living with 2 parents, getting pocket money, having alcohol drinking friends and attending general secondary school (grade 9 - 10) were positive predictors of current alcohol drinking. Negative predictors of current alcohol drinking were being Protestant Christian and living with relatives or siblings. Conclusion: Alcohol drinking before sexual intercourse was a major problem among high school students in Addis Ababa, Ethiopia. Male gender, older age and higher school grade, friends influence, religious affiliation, living with parents and getting pocket money were significant predictors of current alcohol drinking. Educating about substance use and risky sexual behaviors, engaging students in extracurricular activities and restricting access to alcohol to high school students may help in solution of these problems on a local scale.

Keywords: Alcohol; Sexual Practice; High School; Addis Ababa; Ethiopia

1. INTRODUCTION

Current young generation especially in developing countries including Ethiopia is confronting adulthood in a world vastly different from previous generations. HIV/AIDS, globalization, urbanization, electronic communication, migration, and economic challenges are among the few [1]. More than 1.75 billion of the world’s population is young, aged between 10 and 24 years, and often-times thought of as healthy group [2]. However, many risk behaviors such as physical inactivity, antisocial and criminal behavior, and hazardous drinking [3] are often initiated during early and late adolescence [4-7].

Harmful alcohol use is also one of the behaviours which departs from the norms, both social and legal, of the larger society and tends to elicit some form of social control responses such as social rejection or even incarceration [8]. Alcohol abuse is a major global contributing factor in many diseases including cancers, cardiovascular, and other chronic diseases. The public health impact is worsened when alcohol use is combined with other risk behaviors such as smoking, other substance use, and sexual risk behaviors [9]. The harmful use of alcohol is estimated to cause 2.5 million deaths per year and is also a leading cause of morbidity [10].
factor to death, disease, and injury to the drinker. It may also impact others (e.g. family) through the actions of alcohol abusers. Nearly 55% of the world’s population consumes alcohol and 2.5 million people die each year due to the harmful effects of alcohol abuse [5].

Other common problems among regular alcohol drinkers at early age are economic costs, violence, absenteeism (in the workplace and school), early initiation and unprotected sexual intercourse, multiple sexual partners, unwanted pregnancy, and drug experimentation [9-11]. These combined medical, economic, criminal, and social impacts of abuse and addiction to alcohol, nicotine, and illegal substances in US were estimated to be more than half a trillion dollars a year [12]. Similarly, more than 800 million euros was an estimated cost of hospitalization due to alcohol use in Ireland over the five years period (2000 to 2004) [13].

In Ethiopia, the reported prevalence of hazardous drinking and alcohol dependence was 3% and 1.5%, respectively [14]. Alcohol and khat, a stimulant drug derived from the shrub (*Catha edulis*) that is native to East Africa, were the most commonly used social drugs in all high school students in Addis Ababa [15]. Studies also reported initiation of alcohol and other drugs use [16,17] and an increase in frequency and quantity of substance use among teenagers and adolescents for both sexes [18,19]. These risk behaviors are often associated with increased risk of morbidity and mortality [3].

Overall, the type and preference of alcoholic beverages consumed, the amount and frequency of alcohol consumed per person and occasions vary greatly among different countries and cultures, among different population groups within a given country, and for each population over time [20,21]. Previous studies showed that schools, friends, families, communities, and religious affiliations are significant predictors of alcohol drinking among adolescents [22-27]. Since most high school students in Addis Ababa are within this (adolescent) age group, they are expected to share the same problems.

Therefore, the aim of this study was to estimate the prevalence, identify determinants, and examine association of alcohol drinking with sexual practice among high school students in Addis Ababa. The research findings would help to inform the most feasible and appropriate intervention targeted at adolescents in general and students in particular in order to minimize risks related to alcohol and drugs use.

2. METHODS

2.1. Study Area

This study was conducted in Addis Ababa high schools. At the time of the study, the projected total population of the city was 3,040,740 (1,448,904 male and 1,591,836 female) [28]. Nearly one third (27.5%) of the city population were young (aged 10 - 24) [29]. At the time of the survey, the city had 154 secondary schools (Grade 9 - 12) owned by government, public, private, religious organizations, non-governmental organizations (NGOs), and foreign communities. At 2010/2011 school year, 117,169 students were enrolled in all secondary schools (grade 9 - 12). Among these, 24.1% students were attending preparatory school (PPS) (grade 11 and 12) and the rest was attending General Secondary School (GSS) (grade 9 and 10) students [30].

2.2. Study Design and Sampling

School-based cross-sectional survey was conducted using a piloted self-administered anonymous questionnaire between November and December, 2010. The study population included all grade 10 and 12 regular students, who volunteered and consented to participation and available at the time of data collection in selected high schools. The European School Survey Project on Alcohol and other Drugs (ESPAD) recommends a minimum of 2400 students for school survey [31]. With the assumption of 85% response rate (15% none or inappropriate responses), of the sample included 2760 students selected using multistage cluster sampling. The participating schools were stratified into GSS and PPS based on the education level and then stratified based on ownership as government, private, public and mission owned schools. After that, the sample size of students for each level and type of school was determined based on proportions of the total students at each school. Finally, each school and class was selected using simple random sampling.

2.3. Data Collection

The survey questionnaire was prepared based on ESPAD 2007 student core questionnaire [31] and available literature [11,14,32]. It has 35 questions divided into three major categories: background characteristics, alcohol use, and sexual practices. The final questionnaire was prepared in Amharic language and piloted in a government and a private school, which were not included in the actual study. After pre-testing, all the necessary modifications were made and data were collected in each class.

2.4. Variables

While the dependent variables were alcohol, khat, cigarette, shisha and cannabis use, and sexual practice of high school students, the independent variables were age, sex, religious affiliations, pocket money, friends and family influence, school type and level, availability of alcohol, khat, tobacco, cannabis and availability of venues for using substances in nearby to the residence or...
school.

2.5. Data Analysis

Data were entered into Epi-Info 2008 version 3.5.1 and analyzed using SPSS version 16. Multivariate logistic regression model at 95% confidence interval was used to determine the association between dependent and independent variables.

2.6. Ethical Considerations

This study was reviewed and approved by Ethics Review Committee of the School of Pharmacy, Addis Ababa University. In addition, consent was also obtained from each school and the study participants.

3. RESULTS

3.1. Characteristics of the Study Participants

A total of 2760 students from 11 GSS (grade 9 - 10) and 4 PPS (grade 11 - 12) participated in the study. Completed 2551 (92.4%) questionnaires were used for data analyses. The mean age was 16.93 (SD ± 1.35) years ranging from 14 to 25 years old. Most of the students were females (54.8%), in the age group of 16 to 17 (54.2%), GSS students (76.1%), Orthodox Christian (75.3%), and living with both parents (57.8%) (Table 1).

3.2. Prevalence of Alcohol Drinking

Of surveyed 2551 students, 1155 (45.7%) reported drinking alcohol at least once in their lifetime (ever use); and 676 (26.4%) of them reported drinking alcohol 30 days (past month) prior to the survey (current users). Both lifetime (57.1% vs. 33.4%) and current prevalence (36.3% vs. 20.8%) rates of alcohol drinking were higher among males than females.

Among students, 2.6% and 1.1% were lifetime users and current user of all substances (alcohol, khat, tobacco and cannabis), respectively. Using alcohol and khat either concurrently or at different times were the highest among the students with lifetime (13.6%) and current (6.5%), followed by alcohol and cigarette (8.2% ever user vs. 4.9% current user) and alcohol, khat and cigarette use (7.6% ever user vs. 3.4% current user) (Table 2).

3.3. Alcohol Use History

As approximately 45% (1166) students reported ever use of alcohol. Of these, 42.9% started drinking while attending GSS. Starting alcohol drinking in JSS (35.7%), primary schools (≤ Grade 6) (15.9%) and PPS (5.5%) were reported. Beer/draft (37.2%), wine (28.8%), and local beer tella (26.9%) were the most commonly con-

| Variable | Gender | Marital Status | Live with | Class level of education |
|----------|--------|----------------|-----------|--------------------------|
| Alcohol, Cigarette, Khat, Shisha & Cannabis | 66 (2.6) | 28 (1.1) |
| Alcohol, Cigarette, Khat & Shisha | 113 (4.4) | 45 (1.7) |
| Alcohol, Cigarette, Khat & Cannabis | 83 (3.2) | 37 (1.4) |
| Alcohol, Cigarette & Khat | 195 (7.6) | 87 (3.4) |
| Alcohol & Cigarette | 265 (10.3) | 126 (4.9) |
| Alcohol & Khat | 349 (13.6) | 167 (6.5) |
| Alcohol & Shisha | 196 (7.5) | 109 (4.3) |
| Alcohol & Cannabis | 109 (4.3) | 64 (2.5) |
| Alcohol, Cigarette & Shisha | 126 (4.9) | 52 (2.0) |
| Alcohol, Cigarette & Cannabis | 97 (3.8) | 46 (1.8) |
sumed alcohol beverages. Consumption of other alcoholic beverages (7.1%) such as local drink tej, whisky, gin and local liquor areke were also reported. Higher proportions of males compared to females reported drinking of all kinds of alcoholic beverages except wine.

Holidays (42.7%) were the most common events/occasions for current alcohol drinkers. Drinking during the weekdays particularly in the evening (36.9%) and on weekends (13.3%) was also customary. In addition, 11.2% of current alcohol drinkers reported drinking alcohol regardless of a day or time as long as they have had the opportunity.

Among the current alcohol users (n = 676) during the last month, 84.8% drank on 1 to 5 days, 13.6% drank on 6 to 29 days, and 1.6% drank on all 30 days (daily). Most students reported drinking with their friends (42.9%), families (41.6%) and fiancé (6.2%). Interestingly, 0.1% students reported drinking alcohol with commercial sex workers (bar ladies) in a pub or a bar.

More than half of the students reported drinking in their friends’, relatives’ and own home (52.1%) while the rest reported drinking in bars (19%), kiosks (14%), restaurants (8%), other places (7%) such as party, school, or traditional drink shop tella bet. Relaxation (75.4%) was students’ main reason for drinking alcohol followed by family/friends influence (10%). Drinking alcohol to avoid stress (7.2%), after chewing khat, to promote health, for experimentation, being addicted, to facilitate digestion (after having a heavy meal), and to treat minor stomach ailments especially with local liquor areke (7.4%), were also common.

Nearly three fourth (74.8%) of students reported that after drinking alcohol they were taking rest at home while others hang out with friends (21.1%), smoked cigarettes (4%), or had sexual intercourse (3.8%). Other behaviors reported by some students (4.4%) were crying, quarrelling with peoples, and smoking cannabis.

### 3.4. Sexual Practice and Alcohol

Among students, 412 (16.2%) and 151 (5.9%) reported having been engaged in sexual intercourse at least once in their lifetime and during the past month, respectively. Students’ sexual experience varied with gender. More males than females reported having lifetime (26.3% vs. 8.9%) and current (7.7% vs. 3.4%) sexual intercourse. Unexpectedly, 12.7% of students reported having sexual intercourse at young age (≤ grade 6). Among the students who had sexual intercourse at least once (n = 412), more than half (52.5%) had more than one sexual partner. Almost half students (47.3%) reported having sex without using a condom at least once in their lifetime.

Of the currently sexually active students (n = 407), 26.4% drunk alcohol, 7.5% chewed khat, 4.4% smoked cigarettes, 1.8% smoked cannabis, and 1.3% smoked shisha before a sexual intercourse.

### 3.5. Determinants of Alcohol Use and Its Association with Sexual Practices

The odds of current alcohol use were more common among students aged 18 [AOR = 2.028; CI (1.157 - 3.557)] or 19 years or older [(AOR = 2.520; CI (1.339 - 4.743)] than those aged ≤ 15 years. GSS students were more likely to drink alcohol than PPS students [AOR = 1.811; CI (1.305 - 2.513)]. Getting pocket money [AOR = 1.457; CI (1.118 - 1.898)], having shisha smoking family members [AOR = 2.259; CI (1.194 - 4.274)] or friends [AOR = 1.857; CI (1.178 - 2.929)], having friends who drink alcohol [AOR = 1.724; CI (1.248 - 2.380)] were significant predictors of current alcohol use. Being current alcohol user was positively associated with current sexual practice among students [(AOR = 2.260; CI (1.282 - 3.985)].

Factors negatively associated with current alcohol use presented in Tables 3 and 4 were being Protestant Christian [AOR = 0.629; CI (0.432 - 0.918) and living with relatives/siblings [AOR = 0.466; CI (0.255 - 0.851)].

### 4. DISCUSSIONS

Our study is the newest among a few studies that reported lifetime and current prevalence of alcohol drinking, multiple substance use and sexual experiences among Addis Ababa high school students. In addition, we examined the association between socio-demographic variables and current alcohol drinking practices, and alcohol use and sexual practices. Although this study has several unique features, it has also some limitations. First, we did not address binge drinking behavior; second, self reported nature the survey might result in inaccurate reporting in culturally sensitive issues such as khat use, sexual intercourse/activity or substance use. The results of the study also cannot be generalized to all adolescents since those not attending school may differ from in-school adolescents.

The prevalence of current alcohol use documented in this study was higher than other similar studies conducted in Harar province in Ethiopia, Thailand and Zimbabwe, where the current prevalence reported were between 9.5% and 12.17% [33-35]. However; the prevalence was lower than in high school students in Georgia (40%), USA (44.9%), Japan (44.0%), Turkey (46%) and Nigeria (78.4%) [36-40]. The observed variation in prevalence estimates might be due to difference in culture, geographical location, alcohol use in general population, acceptance of alcohol use, and alcohol advertisement among the countries. Other causes of differences among studies could be related to methodology such as questionnaire used and sample selection and size. Nev-
**Table 3.** Association of 30 days alcohol use and selected socio-demographic characteristics of high school students in Addis Ababa, November 2010.

| Variable       | 30 days Alcohol use |          |          |
|----------------|---------------------|----------|----------|
|                | COR (95% CI)        | AOR (95% CI) |
| **Gender**     |                     |           |          |
| Male           | 1.058 (0.837 - 1.338) | 0.859 (0.659 - 1.118) |
| Female         | 1.00                | 1.00      |          |
| **Age**        |                     |           |          |
| ≤15            | 1.00                | 1.00      |          |
| 16              | 0.509 (0.309 - 0.843)  | 1.311 (0.789 - 2.178) |
| 17              | 0.746 (0.511 - 1.089)  | 1.342 (0.800 - 2.249) |
| 18              | 0.780 (0.537 - 1.132)  | 2.028* (1.157 - 3.557) |
| ≥19             | 0.978 (0.665 - 1.439)  | 2.520* (1.339 - 4.743) |
| **Religion**   |                     |           |          |
| Orthodox       | 1.00                | 1.00      |          |
| Muslim         | 0.893 (0.521 - 1.528)  | 0.720 (0.375 - 1.379) |
| Protestant     | 0.567 (0.333 - 0.965)  | 0.466* (0.255 - 0.851) |
| Others         | 0.996 (0.497 - 1.995)  | 1.133 (0.526 - 2.441) |
| **Students living with** | | | |
| Two parent     | 1.00                | 1.00      |          |
| Single parent  | 1.095 (0.822 - 1.459)  | 0.874 (0.637 - 1.198) |
| Relatives      | 0.738 (0.527 - 1.033)  | 0.629* (0.432 - 0.918) |
| Others         | 1.109 (0.667 - 1.843)  | 0.796 (0.452 - 1.401) |
| **Pocket Money** |                     |           |          |
| Yes            | 1.480 (1.163 - 1.884)  | 1.457* (1.118 - 1.898) |
| No             | 1.00                | 1.00      |          |
| **Academic status** |                 |           |          |
| 80% - 100%     | 1.00                | 1.00      |          |
| 60% - 79%      | 1.412 (1.063 - 1.876)  | 1.304 (0.956 - 1.778) |
| ≤59%           | 1.922 (1.129 - 3.271)  | 1.610 (0.904 - 2.865) |
| **School level** |                     |           |          |
| PPS            | 1.00                | 1.00      |          |
| GSS            | 1.058 (0.810 - 1.382)  | 1.800* (1.230 - 2.634) |
| **School Type ownership** | | | |
| Government     | 1.00                | 1.00      |          |
| Mission        | 0.621 (0.345 - 1.116)  | 0.749 (0.381 - 1.469) |
| Private        | 1.016 (0.762 - 1.355)  | 0.856 (0.610 - 1.201) |
| Public         | 1.270 (0.875 - 1.842)  | 1.173 (0.778 - 1.768) |

*P < 0.05, COR = Crude odds ratio; AOR = adjusted odds ratio; CI, confidence interval.

**Table 4.** Association of having substance using family and close friends with current alcohol drinking of high school students in Addis Ababa, November 2010.

| Variable       | 30 days Alcohol use |          |          |
|----------------|---------------------|----------|----------|
|                | COR (95% CI)        | AOR (95% CI) |
| **Alcohol drinking** |                     |           |          |
| Family Yes     | 1.334* (1.056 - 1.684)  | 1.088 (0.826 - 1.435) |
| No             | 1.00                | 1.00      |          |
| Close Friends  |                     |           |          |
| Family Yes     | 2.329* (1.836 - 2.954)  | 1.811* (1.305 - 2.513) |
| No             | 1.00                | 1.00      |          |
| Cigarette smoking |                     |           |          |
| Family Yes     | 1.255 (0.911 - 1.729)  | 1.115 (0.739 - 1.683) |
| No             | 1.00                | 1.00      |          |
| Khat chewing   |                     |           |          |
| Family Yes     | 1.986* (1.549 - 2.548)  | 1.045 (0.689 - 1.584) |
| No             | 1.00                | 1.00      |          |
| Shisha smoking |                     |           |          |
| Family Yes     | 2.167* (1.696 - 2.769)  | 1.017 (0.672 - 1.539) |
| No             | 1.00                | 1.00      |          |
| Cannabis smoking |                     |           |          |
| Family Yes     | 2.508* (1.547 - 4.067)  | 2.259* (1.194 - 4.274) |
| No             | 1.00                | 1.00      |          |

*P < 0.05, COR = Crude odds ratio; AOR = adjusted odds ratio; CI, confidence interval.

Nevertheless, the prevalence rates of alcohol use found in this study were consistent with WHO report that indicates relatively lower alcohol consumption among African high school students [5]. Lifetime (16.2%) and last-month (5.9%) prevalence of sexual intercourse found in our study is difficult to compare with other reports from African countries since not many studies have been reported. In a study conducted in Zambia, past year prevalence rate of sexual intercourse among in-school adolescents was 13.4% [41] which is comparable to our findings between with. The difference could be due to the variation in the interval of data collection period. In our study we asked for both, lifetime and 30 days recall period while study in Zambia used one year recall period. Cultural variation between two countries may also explain the difference in prevalence.
In this study we found an association initiation of alcohol drinking with sexual practices. Majority of students started drinking alcohol and practicing sexual intercourse at early age while attending GSS school (42.9% began drinking alcohol and 46.2% began sexual intercourse) and JSS (35.7% began drinking alcohol and 31.3% began sexual intercourse). According to the Ministry of Education of Ethiopia [42], the average age for alcohol drinking initiation for GSS and JSS students is 15 to 16 and 13 to 14 years, respectively. These ages are close to alcohol initiation age reported in Japan i.e. 13 years [37] but lower compared to high school students in Harar, Ethiopia (17.5 years) [33]. Wide cultural acceptance and availability of home brewed alcoholic beverages particularly during holidays might contribute for early alcohol exposure to sizable proportion of students. Studies also showed that early initiation of alcohol drinking and sexual exposure, and substance use prior to sexual intercourse and are likely cause of unintended pregnancy. Other consequences include involvement in risky sexual behavior such as unprotected vaginal sex, having multiple sexual partners, and increased risk for sexually transmitted disease including HIV/AIDS. Such risky behaviors might often continue through mid-adolescence and later [9,11,18].

We found that as reported in other studies [40,43], relaxation, influence of friends and family were the major motives for alcohol drinking. The common alcohol drinking after khat chewing often reported in this study might have reduced stimulation caused by cathinone from khat and allowed falling asleep especially at night. Similar behavior was reported by other studies [44,45].

The current alcohol drinking practice in all students was strongly associated with getting pocket money, and having close friends and family who are current substance users. Previous studies conducted in various settings also reported similar findings [35,46,47].

The GSS students were twice more likely than PPS students to be current alcohol drinkers. The transition from JSS to GSS usually requires attending a new school (especially in government-run school system) and adaptation to a new environment. These factors change might also contribute to either initiation of alcohol use or become a current alcohol drinker [48]. Maturity of students may have protective effect for PPS. Interesting finding that protestant faith followers were less likely to be current alcohol drinkers compared to orthodox Christians require further studies. Perhaps religions with more conservative view about alcohol use may have protective effect against risky behaviors as reported earlier [49].

5. CONCLUSION

Alcohol drinking among high school students in Addis Ababa is a major public health concern with lifetime and current prevalence of 45.7% and 26.5%, respectively. High-risk sexual behavior such as not using a condom, multiple sexual partners and substance use prior to sexual intercourse was also common. Current alcohol drinking was associated with age, religion, living with (cohabiting) type, school level, pocket money and having family and close friends who use substances. Educating the adverse outcomes of alcohol drinking and other substances through Medias and in schools curriculum is recommended. In addition, expanding safe recreational place, engaging students in extracurricular activity and regulating the sale of alcohol for the underage would be beneficial to minimize the risk of alcohol drinking.

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