

**PREVALENCE AND CONSEQUENCES OF SUBSTANCE USE AMONG HIGH SCHOOL AND COLLEGE STUDENTS IN ETHIOPIA: A REVIEW OF THE LITERATURE**

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**ABSTRACT**

This paper is an overview of mind-altering substance use among high school and college students in Ethiopia in the past two decades. Alcohol, khat and cigarettes were commonly used by both high school and college students in urban as well as rural areas. While the use patterns of the substances were related to the gender, education/age and religion of the users, no clear-cut patterns were observed in relation to several other factors including geographic locations. Further, cannabis was used in selected high schools, and its abuse prevalence was greater in urban private schools, as it was for alcohol and tobacco use. Students who used khat, alcohol or cigarettes also displayed increased violent behaviours towards women and enhanced sexual activity, with increased risks for negative consequences. However, as a limited number of studies have been reported in the literature, this review provides only limited information on such substance use. Nonetheless, despite this limitation, the review can be a useful source of information for designing future research directions and for considering actions directed towards tackling this important problem.

**Keywords:** alcohol, khat, tobacco, cannabis, students, Ethiopia

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**INTRODUCTION**

Substance use is recognized as a growing problem in Ethiopia and it appears to have greater impact on the younger generation, particularly in urban centres (Fekadu, Alem & Herris, 2007; Alem & Kebede, 2006). Thus, the issue of

substance use has become a serious concern of many professionals and individual citizens in Ethiopia. Accordingly, more recently increased efforts have been made to conduct studies assessing the use of mind-altering substances among various groups of the Ethiopian population. This paper is a brief overview of the reports on

substance use among high school and college students in Ethiopia during the past two decades.

Ethiopia is one of the oldest countries in the world, which is located in the Horn of Africa. According to the 2010 WHO report, it has a population of over 91 million, more than 80% living in rural areas (WHO, 2013). The economy of Ethiopia is largely based on agriculture and its main exports include coffee, hides, oil seeds and more recently khat and flowers (Embassy of US, 2012). The official language of Ethiopia is Amaregna (with its own written script) and the major religions are Christianity (mainly Orthodox) and Islam. The country is regarded as the origin of coffee and khat, besides being one of the earliest centers for alcoholic beverage production (Acuda, 1988).

Ethiopia is among the least developed countries in the world (Heritage Foundation, 2013). Many authorities agree that the political turbulences and the associated socioeconomic problems that have swept the country for a long time are the primary factors contributing to the country's stagnation in development. This situation, in the face of a rapidly changing outside world in terms of communication and trade is believed to create a fertile ground for increased psychoactive substances use in the country (Ethiopian Public Health Association, 2011; Fekadu et al., 2007).

As noted above, this overview was based on published peer-reviewed articles that assessed substance use among high school and college students in Ethiopia in the past two decades. Cross-sectional studies using structured self-administered questionnaires were employed for substance use assessment. While the volume of the literature on substance

use in Ethiopia is generally small, this is even smaller considering only aspects related to high school and college students. Moreover, the reports documented were also limited to only a small fraction of the country's student population and to only specific topics. Accordingly, the number of substances reported to be used by students and the scopes of the conditions under which they were used were not extensive.

### **OVERVIEW OF SUBSTANCE USE BY HIGH SCHOOL STUDENTS**

The prevalence of use of mind-altering substances by high school and college students, as reported in the literature during the past two decades is shown in Table 1. During the past two decades, only six research papers assessing mind-altering substance use among high school students in Ethiopia were published. Of these, only one study that was conducted in 1998, provided the most comprehensive information by collecting data using an open-ended questionnaire from public as well as private schools in central Ethiopia (Kassaye, Sherief, Fissehaye & Teklu, 1999). Out of 428 students surveyed, 142 students (33%) were engaged in the use of one or more substances and, of these, 58% were in urban private, 41% in rural public and 18% in urban public schools. Alcohol, khat, cigarettes and cannabis were more commonly used in private than in public schools in the same urban area, with prevalence rates of 58%, 36%, 49% and 31% vs 18%, 9%, 5% and 1%, respectively (Table 1). By comparison, while the use of khat in rural public school in central Ethiopia was about the same as that in urban private school in close

**Table 1.** Summary of prevalence (%) of mind-altering substance use among high school and college students in Ethiopia in the past two decades as reported for different geographic locations, settings and study years

Reference	Setting	Location	Study year	Duration of Use	Alcohol	Khat	Tobacco Product	Cannabis
<b>HIGH SCHOOL</b>								
Kassaye et al. (1999)	Urban private	Central	1998	Life-time	58	36	49	31
	Urban private	Central	1998	Life-time	18	9	5	1
	Rural Public	Central	1998	Life-time	18	31	6	3
Adugna et al. (1994)	Rural public	*SW	1991	30 days	—	65	—	--
Reda et al. (2012)	Semi-urban public	Eastern	2010	Life-time	—	24	—	—
Reda et al. (2012)	Semi-urban public	Eastern	2010	Life-time	22	—	—	—
Reda et al. (2012)	Semi-urban public	Eastern	2010	Life-time	—	—	12	—
Rudatsikira et al. (2007)	Urban public	Central	2003	Life-time	—	—	6	—
<b>COLLEGE</b>								
Kebede (2002)	Semi-urban public	*NW	2001	Life-time	—	27	13	—
Deressa and Azazh (2011)	Urban	Central	2009	12 months	22	7	9	—

\*SW= Southwestern

\*NW= Northwestern

proximity, the use prevalence of the other three substances was closer to that in the urban public school. The majority (292 or 68%) of the students in both urban and rural schools started to use substances at the ages of 12-16 and 8-19 years, respectively; however, those in the private school (73%) started at younger as well as older ages (6-22 years) (Table 1).

In an earlier study, Adugna, Jira & Molla (1994) focusing more on assessment of khat use by students in rural public high school in southwestern Ethiopia, found that the prevalence rate during the last 30 days was as high as 65%, among 248 respondents (Table 1). The majority of the khat users were males (73%) and Muslims (56%), and most (67%) of them belonged to the age group of 15-22 years, the median age being 15 years. The prevalence of chewing khat increased with the ages/grades of the students. While approximately half of the khat chewers were in

favor of using it, about 41% either opposed or were indifferent.

A more recent survey, Reda, Moges, Wondmagegn & Biadgilign (2012), also designed to assess khat use in another geographic location, reported that out of 1,721 public high school students in a semi-urban town in eastern Ethiopia, 24% admitted chewing the stimulant (Table 1). Of these, the majority were again males (71%). While the mean age was 15 years, the prevalence of khat abuse increased with age. More Muslim students chewed khat compared to any other religious group, followed by Orthodox Christians. In follow-up surveys (Reda, Moges, Mondmagegn & Biadgilign, 2012; Reda, Moges, Yazew & Biadgilign 2012) focusing on alcohol and tobacco, 22% and 12% of the participants responded consuming these substances, respectively (Table 1). The mean ages of the respondents were 17 and 15 years, respectively. In both cases,

the majority were males, and the use of the substances increased with the age of the consumers.

A study carried out in 2003 (Rudatsikira, Abdo & Mulla, 2007) to determine the prevalence of tobacco use among public high school students in an urban setting in Addis Ababa also revealed that among 1868 students, 112 (6%) responded being cigarette smokers, and the majority (75%) of these were males (Table 1). The vast majority (91%) of the respondents felt that smoking was harmful, and of these, 70% had the desire to quit.

### **SUBSTANCE USE BY COLLEGE STUDENTS**

Surprisingly, only two research papers were published in the past two decades focusing on mind-altering substances use assessment among college students in Ethiopia (Kebede, 2002; Deressa & Azazh, 2011). These papers contained information only on selected substances, without enabling respondents to list freely whatever they might have used.

In one of the papers, Kebede (2002) reported his findings of a survey conducted in 2001 evaluating the use of cigarette and khat among undergraduate students in four college campuses in semi-urban settings in northwestern Ethiopia (Table 1). Out 1103 students who participated in the study, 27% chewed khat and 13% smoked cigarettes. There were greater associations between the use of these substances and being male and/or Muslim. The use of these substances was reported to have been started when most of the students were seniors in high schools, and this practice increased with the years in college or age of the students. The

majority (82%) of the students mentioned lung diseases, including lung cancer, as a health risk of cigarette smoking. Most of these students expressed their desire to stop smoking.

Based on a recent survey performed in a medical school in Addis Ababa, Deressa & Azazh (2011) reported that among 622 undergraduates, 22%, 7% and 9% consumed alcohol, khat and cigarettes, respectively (Table 1). In all cases, the majority were males. Also, being an Orthodox Christian or a Muslim was strongly associated with alcohol or khat consumption, respectively. The use of khat, cigarettes and alcohol appeared to increase with the class year or age of the students.

In the literature reviewed, four types of mind-altering substances are reported to have been used by the high school and college students surveyed, although the prevalence of use documented was variable. Viewed from the perspective of the broader Ethiopian society, each substance can be considered as having its own unique social values and characteristics. Alcohol (ethanol) in Ethiopia is a socially accepted and widely used substance/drug. There is no law regulating the production, distribution and use of alcohol in the country. It is available as an industrial and traditional product for commercial as well as personal use. Khat (*Catha edulis*, Celastraceae) is a widely-grown and used green leafy plant whose fresh leaves are chewed for brain stimulation and other purposes. It is distributed and consumed without any regulatory oversight. Due to the financial benefits it can provide to a certain sector of the Ethiopian population and the government, the cultivation of khat has increased significantly in recent years. Similarly, the use of tobacco products in Ethiopia is widespread; products

are manufactured and made available to consumers with no restrictions of any sort. Most people consume tobacco by smoking as cigarettes. Cannabis is more commonly known as hashish in Ethiopia, referring to marijuana. Unlike alcohol and tobacco products, marijuana is illegal in Ethiopia. The cannabis plant is cultivated in several places in the country, but more widely in central, western and northwestern locations. A well-recognized place for its cultivation is the Shashemenee area in southern Ethiopia where Rastefarians of Jamaica origin live as a community (Fekadu et al., 2007). Cannabis is consumed as marijuana smoke, although it is not locally known by this name.

Comparison of mind-altering substance use in private and public high schools in an urban setting (Addis Ababa) at the same time indicates that students in private school were generally more frequent users (Kassaye et al., 1999). The substances used in both school types were khat, alcohol, cigarette and cannabis and each was used at a higher prevalence rate in private school. One likely reason for this could be the greater opportunity for the private school students to have financial access, based on the ability of their parents to send them to this type of school. Another possibility could be the existence of a more relaxed atmosphere in the private school to make it easier for the students to play a “dangerous” game with such potentially harmful substances. The observation that the use of tobacco products in the urban public school was similar to that in another study conducted about five years later (2003 vs 1998) in the same location also suggests that such time difference between studies should not necessarily be a factor to cause changes in the consumption rate of tobacco prod-

ucts (Kassaye et al., 1999; Rudatsikira et al., 2007) (Table 1). In this regard, it is assumed that the supply and affordability of tobacco products and students’ desire for consumption did not change over this range of time. This observation and the variations noted between urban private and public high schools regarding patterns of drug abuse should be given due considerations in future prevention and/or treatment programs.

When responses of students in urban public high school are compared to those in rural public school in close proximity in central Ethiopia, it is evident that the use prevalence rates of alcohol, tobacco and cannabis in both types of schools were close, while the prevalence of khat use were markedly different, being higher in the rural town school (Kassaye et al., 1999). In agreement with the khat data for the students in the rural town public school, similar results were documented for public high school students in a distant semi-urban town in eastern Ethiopia (Reda et al., 2012). In addition, even a higher prevalence rate of khat use was reported by students in another public school in rural setting in southwestern Ethiopia (Adugna et al., 1994). The reasons for the higher rates of khat consumption in public high schools in the above 3 rural/semi-urban locations relative to the urban school in central Ethiopia may be related to the intense khat cultivation and marketing in these regions, and the culture of khat chewing among the general population. It is also likely that, the prices of khat may be cheaper in these rural/semi-urban places to be affordable by students. In view of these observations, certain variations in geographic locations and time of data collection on khat abuse become less important. However, this

reasoning does not appear to apply when it comes to alcohol and tobacco use in a semi-urban setting, in which case the rate for each is higher than that in either urban or rural public high school (Reda et al., 2012; Reda et al., 2012; Rudatsikira et al., 2007). It is thus relevant to gather information on substance use specific to the place of interest under consideration.

Concerning college students, while most of those in Addis Ababa (an urban setting in central Ethiopia) reported using alcohol, followed by cigarette/tobacco products and then khat, the majority of the students in northwestern Ethiopia used khat and then cigarette (Kebede, 2002; Deressa & Azazh, 2011) (Table 1). Since the studies conducted in these places were specific to these items, there were no reports of use of other substances. It is likely that the variations in the prevalence of substance abuse between the two study groups with regard to khat and cigarette are related to environmental/cultural factors partly created by distance. It is also interesting to note that the pattern of substance use among college students in Addis Ababa was close to that of the students in public high school in the same location/setting (Kassaye et al., 1999). This may indicate that irrespective of level of education or age, environment plays a more important role in determining substance use pattern. Nonetheless, this argument may not provide a satisfactory explanation for what was observed regarding khat in public high schools in other regions of Ethiopia and in the colleges in north-west of the country, where, generally, higher prevalence rates, albeit variable, were observed in all cases (Kebede, 2002). This finding may, again, call for a case by case information gathering to achieve a more realistic outcome,

especially when variable influencing factors are involved. However, irrespective of the factors that might have played a role, the fact that college students were nearly equally vulnerable to substance use as the majority of the students in public high schools suggests the need for implementation of effective preventive and/or treatment programs for this student population group as well.

It should also be noted that although the literature reviewed in most cases indicated the use of individual substances separately, in other instances, the substances are consumed in combination or one immediately following another as pointed out earlier. As an illustration, Reda et al. (2012) among the khat chewers they interviewed, 33% and 44% were also reported consuming cigarettes and alcohol, respectively. In this case, khat was considered as a gate-way for cigarette and/or alcohol use. The consideration of such substance use practice can play a useful role in the delivery of appropriate prevention and/or treatment measures.

In the different studies reviewed it was described that khat chewing was generally more common among males than females in both high schools and colleges. This may be due to cultural restrictions imposed upon females for such a practice. Also, more Muslim students were reported to chew khat than Christians and others. The reason for the higher prevalence among the Muslim students could be their greater cultural attachment to khat, which may have part of its basis on religious grounds. By contrast, more Orthodox Christian followers were identified to consume alcohol. Culturally, restriction on alcohol consumption in Ethiopia is more relaxed in Orthodox Christian community than for Muslims. While most high

school and college students started using substances at relatively younger ages, the prevalence of abuse tended to increase with their grades/ages. This can be explained to be related to increased pressure/stress of studies. Despite continued use, however, some students were aware of the harmful effects of the substances they consumed, especially the effect of cigarette smoking to cause lung cancer (Kebede, 2002; Deressa & Azazh, 201). Such knowledge of students can facilitate the delivery of a more effective educational program.

Besides the documented demographic characteristics, the literature also provided variable information as to the factors that may be responsible for starting the use of substances and/or continuing using them. These factors included desire for relaxation, relief from stress, staying alert, curiosity, need for socialization, influences of other people, effects of use of substances, influence of advisement and cultural practices. These factors, together with the demographics noted, can serve as useful predictors of potential abuses; their understanding can thus be important for focusing attention on target issues for subsequent relevant actions.

### **SUBSTANCE USE AS A RISK FACTOR FOR SEXUALLY TRANSMITTED DISEASES (STD) AMONG HIGH SCHOOL AND COLLEGE STUDENTS**

Only 3 research papers were identified dealing with this topic and even these publications contained limited information mainly as a secondary issue to a broader problem.

In a study conducted in an urban setting in Addis Ababa, it was found that the

consumption of alcohol and khat by public high school students (15-24 years old) was associated with increased engagement in sexual activity (by 38% for alcohol and 44% for khat consumers) (Taffa, Klepp, Sundby & Bjune, 2002 ). As only 40% of the male responders indicated condom use intention, the use of substances was implied to enhance the risk of exposure to STD. Furthermore, the effects of alcohol and khat to enhance sexual activity was greater (by about 18%) when these substances were used by male students than by females.

In a semi-urban town in western Ethiopia, researchers also found that the use of alcohol and khat by high school students resulted in increased engaging in premarital sexual practice (by 30% for alcohol and 28% for khat) (Seme & Wirtu , 2008). In this practice, there was greater tendency for the students to have multiple sexual partners and running the risk of contracting STD, including HIV. Male students, generally, were more inclined to be engaged in such practices.

Similarly, Samuel and Angamo (Samuel & Angamo, 2012) reported that the use of both alcohol and khat by college students in a semi-urban setting in central Ethiopia was associated with increased risky sexual behaviours/practices of various types, although the association was not significant considering khat alone. In this context, risky behaviour was defined as a pattern of personality that exposes to HIV infection.

Since only the effects of khat and alcohol were described as potential risk factors for contracting STD, the roles of other mind-altering substances are not clear and remain to be studied. In all student groups, the use of both khat and alcohol increased risky sexual behaviours/

practices that may lead to contacting STD, including HIV. This conclusion was based on responses of participants who filled out questionnaires presented to them. Similar studies conducted in conjunction with laboratory tests for HIV infection in different groups of young Ethiopians have shown more tangible associations between risky sexual practices with the use of khat and/or alcohol (Abebe, Debella, Dejene, Degefa, Abebe, Urga & Ketema, 2005). Moreover, a combination of khat and alcohol was mentioned to have a greater effect for indulging in risky sexual activity than any one of the individual substances (Taffa et al., 2002; Seme & Wirtu, 2008). However, since these studies were not performed systematically (eg., most lacking appropriate controls), this claim requires further verification. Given the limited amount of information, the reports reviewed can serve only as preliminary findings to lead to further research.

### **SUBSTANCE USE AS A RISK FACTOR FOR VIOLENT BEHAVIOUR AMONG HIGH SCHOOL AND COLLEGE STUDENTS**

There are only a few reports addressing this particular issue in Ethiopia. Further, besides the limitations in details, these reports originated only from 2 study groups in different places.

A study conducted in semi-urban high schools in eastern Ethiopia demonstrated that in a sample of 764 female students (14-24 years old), the use of alcohol, khat and/or tobacco was associated with higher levels of sexual violence victimization (Bekele, Aken & Dubas, 2011). This behaviour was further increased when

both women and men used of these substances.

In a similar study performed in central Ethiopia it was shown that the prevalence of violent behaviour among 1,294 male undergraduate college students increased by 67%, 33% and 67% due to khat, alcohol and cigarettes consumption, respectively (Gelaye, Philpart, Goshu, Berhane, Fitzpatrick & Williams, 2008). Following this, the effects of alcohol and khat on violent behaviour directed against females were assessed in 1,378 male undergraduate students (Philpart, Goshu, Gelaye, Williams & Berhane, 2009). Both physical and sexual activities offensive to females were considered violent behaviours. While the use of alcohol and khat individually caused a two-fold increase in risk of committing an act of violence by male towards women, a combined use of the substances further increased the gender-based violence.

Additional research assessed the effects of substance use on prevalence of gender-based violence among 1,330 female college students (Arnold, Gelaye, Goshu, Berhane & Williams, 2008). Women who consumed cigarettes, khat and alcohol reported encountering greater gender-based violence. A combined use of alcohol and khat was mentioned to be even a greater risk factor for this experience than the individual substances.

In the reviewed reports, the effects of mind-altering substance use on violent behaviour were assessed as part of bigger studies involving various other factors, leaving many unanswered questions. However, collectively, the reports suggest that the use of khat, cigarette and/or alcohol by males and/or female students is associated with increased violent behaviour of males against females.



Geographical locations and educational levels of students appeared to have no significant effects on this conclusion. Also, while this observation was true whether the users were males or females, the expression of the behaviour became even greater if both sexes used the substances at the same time. In addition, the combined use of these substances was as a greater risk factor for violent behaviour than the individual substances. Despite the limitations of the studies, the results reported are in agreement with those of other studies on alcohol and cigarette use by different population groups (Champion, Foley, DuRant, Hensberry, Altman & Wolfson, 2004; Dibaba, 2007). The limitation of information on students' violent behaviours in this regard calls for further research efforts.

### **LIMITATIONS OF THIS REVIEW**

Given the size and diversity of the student population anticipated to be involved in the abuse of mind-altering substances in Ethiopia, only very limited studies have been reported in this regard during the past two decades. Thus, the reports reviewed hardly reflect the situation regarding the general student population. In addition, considering the individual reports, there are certain important shortcomings that are shared among most of them. These drawbacks include (1) the self-reporting of data by study subjects may be associated with recall bias, and under-reporting of substance use and related behaviours; (2) the use of close-ended questionnaire items in most of the studies limits the amount and type of information that could potentially be reported by respondents; (3) the

methodologies used for collecting data in some of the studies do not seem well defined and standardized with the possibility of reporting incomplete and inconsistent results; (4) feasible responses obtained using questionnaire-based studies were not shown to be supported by laboratory or clinical findings to further confirm their validity; (5) the cross-sectional nature of the studies reported did not establish trends and causalities between substance use and potential risk factors, etc.; and (6) some of the studies utilized small sample sizes that could contribute to wider confidence intervals with low accuracy.

Despite these limitations, however, the studies reviewed provide useful information on substance use patterns for designing future research directions and policies, and for considering other actions directed towards tackling this important problem. The consideration of the identified limitations in future research is highly relevant.

### **CONCLUSION AND RECOMMENDATIONS**

Although mind-altering substance use is recognized to be an emerging problem in Ethiopia, only limited information is available in the literature. In this paper is provided an overview of substance use among high school and college students in Ethiopia based on reports published in the past two decades. Alcohol, khat and tobacco/cigarettes were reported to be commonly used by both public and private high school students and college undergraduates in urban as well as rural areas located in widely-spread areas in the country. While there were certain variations in the prevalence of use of these

substances with geographic locations and the research methodologies utilized, there were clear-cut patterns of use in relation to the gender, educational level/age and religion of the users. In addition, cannabis (marijuana) was reported to be used by students in selected high schools, the proportion of which was higher in private school as it was the case for use of alcohol and tobacco. Students who used khat, alcohol or cigarettes were also reported to display increased violent behaviours towards women and enhanced sexual activity without precautionary measures for STD and other negative consequences. However, aside from being small in number, most of the available studies were associated with certain shortcomings, contributing to the inconsistencies observed. Despite this, the reports could provide relevant information that can at least indicate areas of weaknesses and certain useful aspects of substance use among high school and college students in Ethiopia. The information documented can thus be helpful for designing future research directions and policies and for considering practical measures against existing problem of substance use.

Along the lines described, the following specific actions are recommended to be considered in the fight against mind-altering substance use by high school and college students in Ethiopia: (1) a more systematic research is needed to obtain additional and more reliable information on substance use, covering greater geographical areas or communities that can better represent the general student population of the country, and (2) based on current knowledge, a number of other immediate actions need to be taken to mitigate/prevent existing substance use problems; these actions may include

(a) educating students about the health problems of harmful substance use, with greater focus on those identified in this review, (b) offering community education on the use harmful substances (involving parents, relatives and teachers and community leaders), (c) providing coping mechanisms to help victims of substance use, (d) minimizing the factors that contribute to or encourage such substance use, and (e) establishing novel and more relevant drug/substance use policies at institutional and/or governmental levels.

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