

Assessment of Substance Use and Associated Factors among Graduating Class Students of Adama Science and Technology University Adama, Ethiopia

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Abstract

Background: Substance use is becoming a serious ongoing public health problem. Globally, there were about 190 million substance users. In Ethiopia, as in many developing countries. Alcohol and Khat are the most frequent substances of use, followed by cannabis and solvents. Higher educational institutions are breeding grounds for substance use.

Objectives: To assess the magnitude of substance use and associated factors among graduating class students of Adama Science and Technology University.

Methods: Institution based cross-sectional study design was employed from May to August, 2018. 521 respondents were selected; data were collected by using a well-structured and self-administered questionnaire. Descriptive statistics was used besides a logistic regression analysis was employed in order to infer associations and predictions between dependent and independent variables. Statistical significance was declared at p-value less than 5%.

Result: A total of 493 individuals participated with response rate of 94.6% of total sample size (521). Magnitude of substance use 272 (55.2%) [95% CI: 51.1-59.4] whereas, 228(46.2%) used at least one substance in their lifetime. The most commonly used substances in descending order were alcohol (51.7%), Khat (23.7%), cigarettes (12.2%), and illicit drugs (7.1%). on sex, odds of substance use among male were 3 times more as compared to females [AOR = 3.27, 95%CI (1.92-5.58)]. Religion and income were significantly associated with substance use.

Conclusion and Recommendation: The overall life time extent of substance use is high. The most commonly used substances are alcohol, Khat and cigarette. Sex, religion and income were significantly associated factors. Therefore,

education and awareness creation of substance use are the most paramount action to be taken in the Universities to bring a considerable behavioral change, mainly among male university students.

Keywords: Substance use; Graduating class students; Adama Science; Technology University

Introduction

Substance use refers to the harmful or hazardous use of psychoactive substances, including alcohol, cannabis (marijuana), tobacco, hypnotics, sedatives, anxiolytics and stimulants such as cocaine, caffeine, amphetamine Khat (an evergreen plant with amphetamine like properties) and illicit drugs for non-medical purposes with the aim of producing a mind-altering effect in the user [1]. Alcohol consumption is important risk factor for morbidity and mortality and social harm in the world [2].

The substances use dependences are the main underlying conditions ultimately responsible for the largest proportion of the global burden of disease attributable to substance use [3]. Substance use and its associated problem are a global concern. It is becoming a serious ongoing public health and socio-economic problems; it affects almost every community and family to some extent. A recent World Health Organization estimate shows a burden of worldwide psychoactive substance use of around 2 billion alcohol users, 1.3 billion smokers and 185 million drug users. Out of these substance users, around 40 million serious illnesses or injuries were identified each year [3]. Tobacco, alcohol, cannabis and various allopathic drugs have been widely used by students for various reasons despite their known ill effects [4]. The student relationships with substance use and associated factors at Universities influence interactions, and this threatens the educational systems [5]. The higher educational institutions are potential breeding grounds for substance use and risky sexual behaviors due to the close proximity of a large number of youths at their peak years of sexual activity and experimentation devoid of supervision [6].

In Africa, the history of psychoactive substance use is relatively short apart from the reports on the use of traditional substances such as alcohol, cannabis and Khat. The introduction of prescription drugs to Africa significantly increased the availability and use of psychoactive substances. Alcohol, cannabis and khat still stay the most common used substances in Africa [7,8]. Existing literature on alcohol consumption among

adolescents in sub-Saharan Africa suggests that a substantial proportion of adolescents have consumed or currently consume alcohol [9].

In Ethiopia recent trends indicate that the use of substances have considerably increased particularly in Addis Ababa, Alcohol combined with Khat or tobacco, continues to claim the lives of many people [8]. Many young people in developing countries are suffering from lack of self-esteem and future hope, are victims of different forms of violence and use and obliged to live with harmful habits like smoking, drug use and alcoholism [10].

In a study of over 10,000 adults in Butajira, a higher prevalence of mental distress and suicide attempts was found in those using alcohol and khat [11]. Psychoactive substances when taken into the body have a major effect on the brain and can alter physical and psychological functioning [7].

Substance misuse is a growing problem in Ethiopia, as in many developing countries. Alcohol and khat are the most frequent used substances among the youth, followed by cannabis and solvents. Hard drugs such as heroin and cocaine are rarely used [12,13]. Although, substance use has become a common problem among university students in Ethiopia, only limited information is available about the magnitude of substance use and factors contributing for its use in this segment of the population. Furthermore, the effect of mental health status of students such as depression on substance use was not well explored. Therefore, the aim of this study was to assess the current magnitude of substance (alcohol, Khat, cigarette and illicit drugs) use, and identify its association factors among Adama Science and Technology University regular graduating students. The findings of this study would be used to initiate proper educational and intervention programs among university students.

Substance use is one of the most critical public health problems in this country. Students of higher educational institution are at higher risk of substance use. Although it has been known that this public health problem is a

pressing issue, the real extent and magnitude of drug abuse is not yet properly explored [6].

The young segment of the Ethiopian population, college and university students are at the highest risk of substance use. Joining university often leads to new opportunities, independence from family control, self-decision making, and peer-pressures to use or abuse alcohol or other drugs [8]. Substance use occurs in all segments of our societies.

Alcoholism, cigarette smoking, Khat chewing, etc are the day-to-day phenomena seen in our communities [14]. Substance misuse is associated with psychological distress, suicide attempts functional impairment, physical ill health and risk-taking behavior.

Khat (amphetamine) and alcohol are among those substances widely consumed among the youth of Ethiopia.

Accordingly, it is very important to measure the current magnitude of the problem to come up with effective interventions, therefore, this study was designed to assess the magnitude of substance use and associated factors which could lead to psychosocial problems among regular graduating students of Adama Science and Technology University [15].

Methods and Materials

Study Area

The study was conducted at Adama Science and Technology University (ASTU), in Adama city. The city is located 8.5644743°N and 39.29208°E. It is well known as a main tourist, commercial and industrial center in the country. The city has many modern and international hotels, recreation centers, small and heavy industries. It is also known for trafficking used substances and it is the most common practice in the city. Thus, such practice promotes the students to exercise these substances along with the community [16].

Finally, ASTU is located at distance of about 100 km East of Addis Ababa (Capital city of Ethiopia) in the Oromia Regional State, Ethiopia. ASTU is first established in 1993 as Nazareth Technical College (NTC), offering degree and diploma level education in technology fields. Currently Schools and departments include School of Applied Natural Sciences, School of Civil Engineering and Architecture, School of Electrical Engineering and

Computing and School of Mechanical, Chemical, and Materials Engineering Programs. Totally enrolled students in 2018 to ASTU were 9885, among these 7792 (78.8 %) and 2093 (21.2%) are males and females respectively. In 2018, 1875 students are expected to be graduated [17].

Study Design and Period

Institution based cross-sectional study design was employed. The study was carried out from May to August 2018, at ASTU.

Source Population

All regular graduating class students of 2018 at Adama Science and Technology University which were 1875 students. The study population was regular graduating class students who were satisfying inclusion and exclusion criteria and selected from the source population.

To determine the sample size, a single population proportion formula was used. Assuming that 44% prevalence adopted from previous study done and with further assumption of 95% confidence level, 5% margin of error, and 10% non-respondent rate, Since the exact number of source population of respondents is less than 10,000, to determine the final sample size, standard correction formula was used, then, final sample size multiplied by design effect of 1.5. Therefore, total sample size was 521 participants. During sampling a multistage sampling technique was employed for all graduating class regular students who fulfill the inclusion criteria were included in the study population. The university has four schools and 18 departments. Study participants were selected by systematic random sampling technique using the roster of the registrar as sampling frame. Therefore, the first respondent was selected by using lottery method and then, every 4th sampling interval students were selected till the sample size of 521 will be achieved.

A standardized and self-administered questionnaire was prepared and employed. The questionnaire was prepared in English version and then it was translated to Amharic version which is local language and again back to English version to confirm the correctness of the translation. In both cases the questionnaire was prepared as simple and user-friendly as possible. The questionnaire was developed after review of available scientific literatures of similar studies [18]. Accuracy and clarity of the data was checked by supervisors who are health professionals. Data collectors were trained; pretesting of

the questionnaire was done on (5%) to assure validity of the questionnaire.

The statistical analysis was done using Epi-Info version 7.1, and analysis was made by SPSS version 21 (SPSS inc., Chicago, 2011). Descriptive statistics analysis such as frequencies and percentage; mean and standard deviation were used.

Ethical Considerations

Letter of permission was obtained from Adama General Hospital & Medical College, Postgraduate Office. Before starting the data collection, the ethical consideration letter was given to ASTU. The aim and importance of the study was explained to the respondents in their mother tongue and also the need to answer each question honestly was explained. Consent format was provided to all participants for their willingness to participate on the study. Students were assured and confidentiality was granted for information collected by keeping the privacy of the respondents while filling the questionnaire and arranging a collection box to drop the response themselves then their response and the questionnaires were filled anonymously.

Result

Socio-demographic Characteristics

It was planned to include 521 study subjects for this particular study but from the total sample size 493 study participants participated; this means 94.6% of the total sample size was achieved. The mean age of participants was 23.05+1.06(SD) years old. In general, three fourth of respondents were male 365(74.0%) and 128(26%) were female. Around a quarter of the respondents, 130(26.4%) were less than or equal to 22 years old whereas about two thirds, 318(64.5%) were 23-24 and one tenth, 45(9.1%) were more than or equal to 25 age. Nearly half of the respondents, 238(48.3%) were Orthodox, about one third, 174(35.3%) were protestant and about one tenth were Muslim. Majority of the respondents, 352(71.4%) were from urban origin. Almost all, 476(96.6%) were never married.

About two fifth of the respondents, 190(38.5%) had monthly income from 500-999ETB. About one fifth, 103(20.9%) and 95(19.3%) had monthly income from 300-499ETB and 101-299 ETB respectively. Three fifth of the respondents, 295(59.9%) were from Oromo ethnic group and about a quarter were from Amhara (Table 1).

Variables		Frequency	Percent
	Male	365	74.00%
	Female	128	26.00%
	=< 22	130	26.40%
	23-24	318	64.50%
	=>25	45	9.10%
	Orthodox	238	48.30%
	Muslim	45	9.10%
	Protestant	174	35.30%
	Other*	36	7.30%
	Urban	352	71.40%
	Rural	141	28.60%
	Never Married	476	96.60%
	Ever Married	17	3.40%
	Public School	388	78.70%
	Nonpublic School	105	21.30%
	<= 100	33	6.70%
	101-299	95	19.30%
	300-499	103	20.90%
	500-999	190	38.50%
	=> 1000	72	14.60%
	Oromo	295	59.90%
	Amhara	116	23.50%

Ethnicity	Tigre	26	5.30%
	Woliyita	13	2.60%
	Gurage	16	3.20%
	Others**	27	5.50%

Table 1: Socio-background of graduating class students of Adama science and technology university, Adama, Ethiopia, 2018.

Other* = Catholic, Wakefata, Bahula,

Other** = Tigre, Somale, Walayita, Cambata, Hadiya

Magnitude of Substance Use

Slightly more than half of the respondents, 272 (55.2%) [95% CI: 51.1-59.4] used at least one substance in their lifetime and 228(46.2%) used substances over the last 30 days prior to the study. This study found that 117 (23.7%) of the graduate students ever chewed khat at least once in their lifetime and the current use of khat is 91 (18.5%). Concerning alcohol drinking habits, 255(51.7%) reported that they drank alcohol at least once in their lifetime while

207 (42%) were currently drinking alcohol. The study revealed that 60 (12.2%) of the respondents smoked cigarettes at least once in their lifetime whereas 40 (8.1%) of the respondents have smoked cigarettes in the past 30 days. Regarding the illicit drug, 35(7.1%) of the study participants used illicit drugs like hashish at least once in their lifetime. Twenty five (5.1%) of the respondents have used illicit drugs in the last 30 days (Table 2).

Substances		Sex		Total (%)
		Male (%)	Female (%)	
	Yes	215(58.9)	57(44.5)	272(55.2)
	No	100(41.1)	71(55.5)	221(44.8)
	Yes	104(28.5)	13(10.2)	117(23.7)
	No	261(71.5)	115(89.8)	376(76.3)
	Yes	201(55.1)	54(42.2)	255(51.7)
	No	164(44.9)	74(57.8)	238(48.3)
	Yes	55(15.1)	5(3.9)	60(12.2)
	No	310(84.9)	123(96.1)	433(87.8)
	Yes	31(8.5)	4(3.1)	35(7.1)
	No	334(91.5)	124(96.9)	458(92.9)
	Yes	179(49.0)	49(38.3)	228(46.2)
	No	186(51.0)	79(61.7)	265(53.8)
	Yes	84(23.0)	7(5.5)	91(18.5)
	No	281(77.0)	121(94.5)	402(81.5)
	Yes	161(44.1)	46(35.9)	207(42.0)
	No	204(55.9)	82(64.1)	286(58.0)
	Yes	38(10.4)	2(1.6)	40(8.1)
	No	327(89.6)	126(98.4)	453(91.9)
	Yes	22(6.0)	3(2.3)	25(5.1)
	No	343(94.0)	125(97.7)	468(94.9)

Table 2: Life time and current use of different substances by sex among graduating class students of Adama science and technology university, Adama, Ethiopia, from May 1-30, 2018.

The most commonly used substances in descending order were alcohol (51.7%), Khat (23.7%), cigarette (12.2%), and illicit drugs (7.1%) (Figure 1).

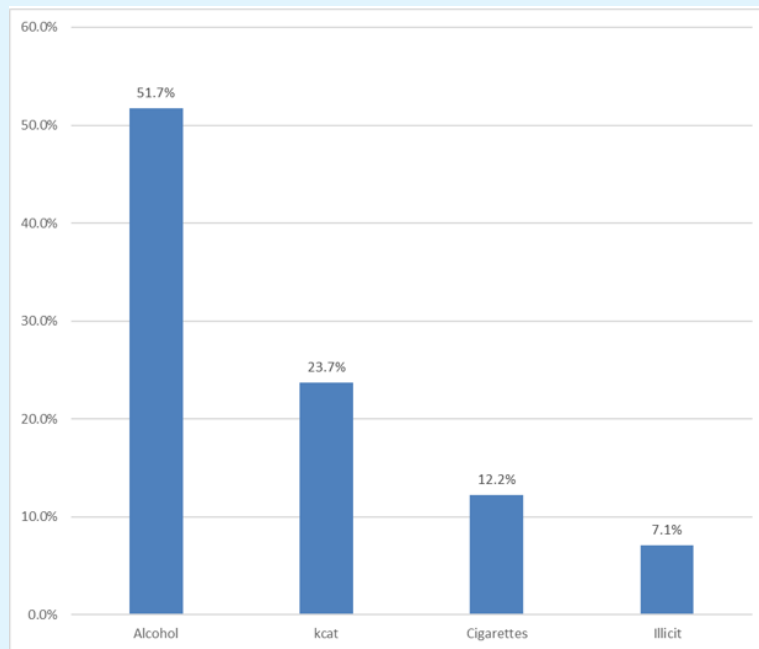


Figure 1: The commonly used substance among graduating class students of Adama science and technology university, Adama, Ethiopia, 2018.

Time to Start Substance Use

Out of those who have chewed khat at least once in their life time, three fifth of respondents, 71 (60.7%) started to chew khat after joining university and the rest 46 (39.3%) before joining university. Of those who drank alcohol, more than half of the respondents, 133 (52.2%)

started to drink before joining university and the rest 122 (47.8%) after joining university. Around three fifth of the students, 37 (61.7%) who smoked cigarettes once in their life time started to smoke after joining university. A majority of the students, 30 (85.7%) started to use illicit drugs after joining university (Table 3).

Substance	Time since start to use	Frequency	Number (%)
	Before joining the university	46	39.3
	After joining the university	71	60.7
	Total	117	100
	Before joining university	133	52.2
	After joining university	122	47.8
	Total	255	100
	Before joining university	23	38.3
	After joining the university	37	61.7
	Total	60	100
	Before joining university	5	14.3
	After joining the university	30	85.7
	Total	35	100

Table 3: Time since started using substance among graduating class students of Adama science and technology university, Adama, Ethiopia, 2018.

Reasons for Substance Use

The major reasons for starting to use substances a desire to be were due to sociable 32.0%, to get personal pleasure 31.2 %, due to peer pressure 25.4% and to get relief from tension 16.6%. Also, they have used

substances for the reasons such as to stay awake (15.6%), to increase pleasure during sex (12.0%), due to academic dissatisfaction (6.3%), and to increase academic performance (5.7%) (Figure 2).

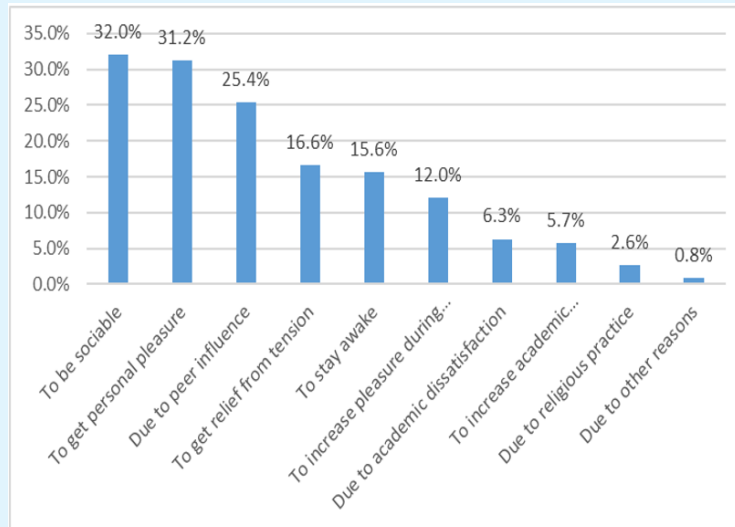


Figure 2: Reason to start substance use among graduating class students of Adama science and technology university, Adama, Ethiopia, 2018.

Factors Associated with Substance Use

Bivariate and multivariate analyses were conducted to establish the association of variables with the outcome variable. At bivariate level sex, age category, religion, Origin of residence, type of high school, income category were significantly associated (p -value < 0.05) factors with substance use. All of the variables with p -value < 0.25 at bivariate analysis were incorporated in the final multivariable logistic regression model.

After controlling for the effects of potentially confounding variables using multivariate logistic regression model, sex, religion, income category were

significantly associated (p -value < 0.05) factors with substance use (Table 4).

Odds of substance use among male were 3 times more likely as compared to female [AOR = 3.27, 95%CI (1.92-5.58)]. Respondents from Muslims were 58% less likely substance use when compared with those from Orthodox [AOR= 0.42, 95%CI (0.20-0.88)]. Respondents from Protestants were 84% less likely to use substance when compared with those from Orthodox [AOR= 0.16, 95%CI (0.10-0.26)]. Odds of to use substance among those who had monthly income more than or equal to 1000 ETB were 3.66 times higher as compared to those had income less than or equal to 100 ETB [AOR=3.66, 95%CI (2.38-5.93)] (Table 4).

Variable	Category	Substance use		COR (95%CI)	AOR (95%CI)	P-Value
		Yes (%)	No (%)			
	Male	215(58.9)	150(41.1)	1.79(1.19-2.68)*	3.27(1.92-5.58)**	0.001
	Female	57(44.5)	71(55.5)	1	1	
	≤ 22	78(60.0)	52(40.0)	2.25(1.13-4.5)*	1.77(0.68-4.57)	0.240
	23-24	176(55.3)	142(44.7)	1.86(0.99-3.51)	1.30(0.57-2.97)	0.525

	=>25	18(40.0)	27(60.0)	1	1	
	Orthodox	163(68.5)	75(31.5)	1	1	
	Muslim	22(48.9)	23(51.1)	0.44(0.23-0.84)*	0.42(0.20-0.88)**	0.022
	Protestant	56(32.2)	118(67.8)	0.22(0.14-0.33)*	0.16(0.10-0.26)**	0.001
	Other	31(86.1)	5(13.9)	2.85(1.07-7.63)*	2.31(0.80-6.63)	0.122
	Urban	212(60.2)	140(39.8)	1	1	
	Rural	60(42.6)	81(57.4)	0.49(0.33-0.73)*	0.75(0.43-1.33)	0.326
	Public School	203(52.3)	185(47.7)	1	1	
	Nonpublic School	69(65.7)	36(34.3)	1.75(1.11-2.74)*	1.67(0.94-2.94)	0.075
	Never Married	260(54.6)	216(45.4)	1	1	
	Ever Married	12(70.6)	5(29.4)	1.99(0.69-5.75)	1.86(0.51-6.74)	0.345
	<= 100	16(48.5)	17(51.5)	1	1	
	101-299	41(43.2)	54(56.8)	0.81(0.37-1.79)	1.08(0.42-2.77)	0.867
	300-499	49(47.6)	54(52.4)	0.96(0.44-2.11)	1.13(0.45-2.86)	0.792
	500-999	110(57.9)	80(42.1)	1.46(0.70-3.07)	1.43(0.59-3.45)	0.431
	=> 1000	56(77.8)	16(22.2)	3.72(1.54-8.97)*	3.66(1.28-10.43)**	0.015

Table 4: Bivariate and multivariate analysis to assess associated factors with substance use at least once in life time among graduating class students of Adama science and technology university, Adama, Ethiopia, 2018.

Note that '**Bold ***' indicated significantly associated at bivariate level and '**Bold ****' significantly associated at multivariate level

Discussion

Findings of this study showed that, overall magnitude of substance use for at least one substance among graduate students of ASTU was 55.2% [95% CI: 51.1-59.4]. The most commonly used substances in descending order were alcohol (51.7%), Khat (23.7%), cigarette (12.2%), and illicit drugs (7.1%). Sex, religion, and income were significantly associated factors with substance use.

The overall magnitude of substance use for at least one substance was 55.2%. This is higher than the study result reported from Iran which was 36.2% from students of Jahrom universities who experienced at least one episode of substance usage [19] and a study in Axum University, Northern Ethiopia, where the life time prevalence of substance use was 45.9% [20]. But it is slightly lower than a similar study conducted in Kenyan universities which was 69.8% [21] and study from Ethiopia, Haramaya University (62.4%) [22]. The difference is might be due to a different study area, culture, religion and the accessibility of khat and alcohol is high at some parts of the country (Haramaya University) whereas lower accessibility at other part of the country (Axum University).

The magnitude of lifetime alcohol use in this study was 51.7%, which is concordance with a study conducted in Kenya and in Ethiopia, (Haramaya University) which were

51.9% (26) [23] and 50.2% (22) [22] respectively. But it is much higher than study conducted at Addis Ababa University medical students 31.4% [24]. The difference from the Addis Ababa University may be due to the fact that the study was entirely conducted by involving only medical students, in contrast to this study in which we have selected participants from all categories of graduate students.

The lifetime magnitude of khat chewing was 23.7%. This finding is similar to that of study conducted among high school students in Eastern Ethiopia 24.3% [25] and study done in college students in North West Ethiopia 26.7% [26], and in Jazan district of Saudi Arabia 21.4% [23]. But this result is lower than the result of study done among Haramaya University in Eastern Ethiopia 41% [22]. This might be because of the Eastern part of the country or Haramaya University is located in the major khat producer communities in the country for domestic consumption and foreign export, so that, students would have easy access to khat even with cheap costs.

This study revealed that the life time magnitude of cigarette smoking was 12.2%. This finding is similar to that of study result reported from Saudi University students 14.5% [27] and study from Axum University 9.3% [28]. However, it is lower than study result reported from Haramaya University 22% [29] and lower than a study reported in Kenya 42.8% [15]. This discrepancy might be

due to the high use of khat among students in our study than those studies, as there is relationship between khat chewing and cigarette smoking. The disparity in the result with Kenya might be because of the differences in study setting, culture and other differences.

The life time magnitude of illicit drug use in this study is 7.1%, which was the least substance used by the graduate students. This result lower than study from Haramaya University which was 17.4% [22]. This discrepancy may be due to the high use of khat and among students in our study than those studies, as there is a relationship between khat chewing and using illicit drug. At the same time, it might be due to the fact that students did not get these illicit drugs easily, and the possession and use of these drugs results in penalty under the law of the country.

This study showed that substance use in males 3.27 times higher than in female students [AOR = 3.27, 95%CI (1.92-5.58)]. This is consistent with similar study done in Haramaya University [29], Debremarkos Poly Technique College, Northern Ethiopia [18] and Iran [19]. This might be due to the fact that in male students the level of substance exposure is high and peer pressure is more common than female students. Moreover, many of the substances such as khat, tobacco, and alcohol are socially acceptable if practiced among males.

This study found out that students who are followers of Muslim [AOR= 0.42, 95%CI (0.20-0.88)] and protestant [AOR= 0.16, 95%CI (0.10-0.26)] religions were shown to have less odds of having substance use as compared to Orthodox Christians. This study finding was concordance with studies from Haramaya university [22] and contrast to a study in Axum University, Northern Ethiopia [20]. The difference with Muslim religion might be due to the fact that Muslims commonly use khat than other substances which hide the overall substance use in this population as they do not usually use other substances. This might be due to the fact that khat growing and the practice of chewing have traditionally been confined to some places where Muslim populations were found.

This study also found out that odds of substance use among those who had monthly income more than or equal to 1000 ETB were 3.66 times higher as compared to those had income less than or equal to 100 ETB [AOR=3.66, 95%CI (2.38-5.93)]. This finding is not significantly associated with a study conducted among students of both Haramaya University [22] and Aksum

University [20]. This might be due to the fact that substance like khat and alcohol are more affordable for students who have monthly income more than 1000ETB.

Conclusion and Recommendation

In this study the magnitude of substance use among university students is high when compared with other similar studies. The most commonly used substances among students are alcohol, khat and cigarette. From these conclusions the following recommendations are made, ASTU should work on substance use ban in the university as well as in Adama city along with concerned bodies: Adama Town Health department, East Shoa Health department, Oromia regional Health Bureau and NGOs who are working on the areas of Health and Health related. ASTU shall take preventive measures such as peer education and Information, Education and Communication (IEC) activities. Intervention activities to bring about behavioral changes among the students on the danger of use of Khat, alcohol and other drugs are recommended. Families of University students shall be advised about utilization of allocated money as well as to avoid excess pocket money for the students.

Conflict of Interest

There are no competing interests.

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