

Factors Associated with Khat Chewing among High School Students in Jimma Town Southwest Ethiopia

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Abstract

Background: Khat is a large green shrub grown in Eastern to Southern Africa and extends to Arabian Peninsula. Khat has its own impact on mental and physical health of the chewers. Studies revealed that khat chewing was associated with frequent absenteeism from class and poor academic performance among students. Although khat has harmful consequences, little is known about factors associated with khat chewing among high school students in Ethiopia.

Methods: A cross-sectional study design was conducted on 296 high school students in Jimma city using a structured questionnaire. Khat and risky sexual behavior were assessed using the questionnaire. A structured self-reported questionnaire (SRQ-20) which was developed by the World Health Organization (WHO) was used to assess mental distress. The questionnaire was translated into local language was used to assess khat chewing pattern. Logistic regression analysis was used to determine associations between independent variables and khat chewing. Variables with p-value of less than 0.05 in multivariate logistic regression were declared to have statistically significant association with the outcome variable.

Result: The life time prevalence of khat chewing among Jimma city high school students was nearly 16%. The current prevalence of khat chewing among these students was 14.2%. Out of this, 71.4% and 28.6% of them were male and females respectively. Out of the students who had mental distress, 22.2% of them were khat chewers. Being in an age group between 19-23 years ((AOR 4.42, 95% CI=1.25, 15.67), being male (AOR 3.76, 95% CI=1.57, 9.02), having suicidal ideation (AOR 3.65, 95% CI=1.3-10.20) and having ever had a sexual contact (AOR, 13.42, 95% CI=2.76-65.16) were positively associated with khat chewing.

Conclusion: In this study there was high prevalence of khat chewing which was associated with risky sexual behavior and suicidal ideation that needs necessary action to tackle the problems.

Keywords: Khat chewing; Mental distress; High school students; Ethiopia

Introduction

Khat is a plant with a large green shrub that grows at high altitudes between 1,500-2,000 meters above sea level in areas extending from east Africa to the Arabian Peninsula. It contains an amphetamine like substances of which the main psychoactive constituent is cathinone along with a less psychoactive cathine [1]. Its use dates to thousands of years back and widely used in areas where it is mainly cultivated and people use this substance for relaxation, for feeling of well-being, to achieve a sense of euphoria, to get excited, to increase alertness, improvement in self-esteem and for the sake of concentration [1-4]. A large number of students consume khat for effective reading, enjoyment and to get rid of sleepiness [5]. Khat which is commonly used for social cohesion, alertness, to spent time and for religious purposes, is the second widely used substance next to alcohol in Ethiopia [6].

Even though the magnitude varies among nations, significantly high number of people uses khat. For example, in Yemen about 90% of adult males and 50% of females and 20% of young children below the age of 12 uses khat on a daily basis [4].

The life time prevalence of khat use among high school students of Ethiopia was indicated 15.4% in Northern Shewa Ethiopia, Northwest Ethiopia (19.6%), Southeast Ethiopia (23.6%) and eastern Ethiopia (24.2%) [7-10]. A higher (64.9%) prevalence rate of khat chewing was shown by a study conducted before 20 years in Southwest Ethiopia [11]. From the study findings, it seemed a remarkable proportion of students

used khat where it is more available. A recent community based study in Southwest Ethiopia showed that youths were more accustomed to chew khat than other group of populations [12]. Even though chewers in general and students in particular use khat to increase their concentration during studying, it was reported that students who use khat have less academic performance than non-users and chewing khat also encourage school absenteeism [13,14]. Despite its popularity, there are sufficient evidences of adverse effects on physical and mental health as well as social well-being. It causes serious adverse neurological, psychiatric, cardiovascular, dental, gastrointestinal and genitourinary health problems [15-17]. It has been also linked with the use of other drugs and behaviors such as smoking, alcohol use and risky sexual behavior [18,19].

Even though, some studies were done in Southwest Ethiopia, some of them were too old that they do not reflect the current population of high school students [11]. Earlier, high school students used to

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comprise grades 9 to 11. Nowadays, in Ethiopia, because of changes in curriculum content, high school students comprise grades 9 and 10. In addition, little is known about the association between khat use and mental distress, risky sexual behaviors and the use of substances other than khat. Moreover, the prevalence of khat use among high school students in Jimma town, Southwest Ethiopia has not been assessed. Therefore, this study aimed to assess to the prevalence of khat use and its association with factors like mental distress, risky sexual behaviors and other substances among high school students of Jimma town. By doing so we want to update new and recent information to stakeholders, decision and policymakers and help them, in order to use the information from this research in their efforts to recognize and take necessary intervention related to khat use among these group of population.

Methods

Study area

A cross-sectional study was conducted in November 2014 among Jimma town high school students. Jimma town is located in Oromia regional state 352 km Southwest of Addis Ababa, the capital city of Ethiopia. The town has three public and six private high schools. A total of 5841 students were registered for grade 9 and 10 in the academic year of 2014/15. Of these, 4755 were from public and 1086 were from private schools.

Sample size determination and sampling procedure

The sample was calculated by taking prevalence of khat chewing among high school student of Eastern Ethiopia which was 24.5% [10] assuming any particular outcome to be with a 5% margin of error and 95% confidence interval of certainty ($\alpha = 0.05$) and 10% non-response rate. Based on these assumptions the sample size of the study was calculated using single proportion formula and the final sample size was 296.

All schools were stratified into public and private high schools; then a simple random sampling method was used to select schools from both public and private high schools. After that, sampling frames from registration book of the selected schools was used to draw study participants. To draw the respective students from each class we have used proportional allocation method and 241 students from public school and 55 students from private school were drawn using simple random sampling technique.

Instruments

Dependent variables: Khat use

A structured, self-administered questionnaire was used to assess the pattern of khat use, frequency and reasons for starting using khat. In this study, life time khat use was defined as using khat at least once in their life and current khat use was defined as using khat during the month prior to the data collection.

Factors associated with khat use

A structured questionnaire was used to assess socio demographic and economic factors (age, sex, ethnicity, religion, marital status, educational level, residence, living condition, income). In addition, students were asked whether they use other substances like alcohol, cigarette, or cannabis. For those using substances other than khat, the frequencies of using the substances were assessed.

Psychological factors

Self-reported questionnaire (SRQ-20) which was developed by WHO was used to assess mental distress [20]. We have used 11/12 cut-off point to screen mental distress [20]. Students who scored more than 11 on SRQ-20 were classified as having mental distress. The Amharic version of SRQ-20 was validated in Ethiopia and it has sensitivity and specificity of 93% and 95% at cut of point of >11 respectively [20]. Students were also asked whether they had suicidal ideation/attempt or not.

Risky sexual behavior

A structured questionnaire was used to assess sexual practice and risky sexual behavior of the students. Students who have history of sexual practice were asked whether they had used condom or not.

Data collection procedures

Data were collected from both public and private high schools (grade 9 and 10) through self-administered questionnaires. The data collection was supervised by four health officers and two BSc nurses after one-day training on administration of the study instruments. Data collection was carried out after the questionnaires had been pretested on a sample (5% of the total sample) of high school students. Students who had participated in pretest were not included in the actual data collection.

Data analysis

After double entry verification, data were exported from Epi-data (version 3.1) and analyzed using Statistical Package for Social Science (SPSS) version 21 for windows. Descriptive statistics like frequency, mean and standard deviation were calculated. In addition, the outcome variable and explanatory variables were entered into bivariate logistic regression analysis one by one to detect the association between the dependent and independent variables. All variables associated with khat use in the bivariate logistic regression with a P-value of less than 0.25 were entered together into multivariate logistic regression by default (enter method) in order to control for potential confounders. Variables with *p*-value of less than 0.05 were declared to be associated with khat chewing in the final fitting model.

Ethical consideration

Ethical clearance was obtained from ethical review board of College of Health Sciences, Jimma University. Written informed consent was obtained from each student before data collection. The anonymity of the study participants was kept at all stages of data processing and analysis.

Results

Participants' characteristics

A total of 296 students were approached to participate in this study. Of these, all of them agreed to participate in this study with 100% response rate. More than half (53.7%, $n=159$) of the students were from grade 9. The rest, 46.30% ($n=137$) were from grade 10. The mean age of the students was 16.05 ± 1.47 SD years, ranging from 13 to 23 years. Majority (93.9%, $n=278$) of the students were aged between 13 and 18 years. More than half (56.8%, $n=168$) of the students were females. Of the study participants, 41.9% ($n=124$) and 36.1% ($n=107$) of them were Orthodox Christians and Muslims by religion respectively. Amongst the students who participated in this study, most of them (95.6%, $n=283$) were single. More than half (53.0%, $n=157$) of the study participants

were Oromo in ethnicity. Majority, 96.3% (n=285) were living with their parents (Table 1).

Prevalence of khat chewing

The life time prevalence of khat chewing among Jimma town high school students was 15.9% (n= 47). Of these, 74.5% (n=35) and 25.5% (n=12) of them were male and females respectively. The current prevalence of khat chewing was 14.2% (n=42). Amongst current khat chewers, 71.4% (n=30) of them were males and 28.6% (n=12) were females. Out of the students who were current chewers of khat, 57.1% (n=24), 14.3% (n=6) and 11.9% (n=5) reported that, they were chewing it once a week, twice a week and three times a week respectively. Similarly, 16% (n=7) of them reported having chewed khat four and more times a week. The mean time spent for khat chewing among these students was 2.4 ± 1.48 SD hours. Amongst current khat chewers, 69% (n=29), 19% (n=8) and 11.9% (n=5) of them said that, they were chewing khat for reading, to increase their concentration and for planning different activities respectively. However, 47.6% (n=20) of them reported that, they were using khat in order to alleviate their feeling of hunger. Among current khat chewers, 45.2% (n=19), 26.2% (n=11) and 2.4% (n=1) reported that, they started khat chewing for the sake of recreation, because of peer pressure and for socialization purpose respectively. However, the rest 26.2% (n=11) of them were chewing khat in order to alleviate the symptoms of mental distress.

Variable	Category	Frequency	Percent (%)
Age	13-18	278	93.9
	19-23	18	6.1
Sex	Male	128	43.2
	Female	168	56.8
Level of education	Grade 9	159	53.7
	Grade 10	137	46.3
Religion	Orthodox	124	41.9
	Islam	107	36.1
	Protestant	57	19.3
	Catholic	4	1.4
	Other	4	1.4
Marital status	Married	13	4.4
	Single	283	95.6
Ethnicity	Oromo	157	53
	Amhara	55	18.6
	Tigre	10	3.4
	Dawro	28	9.5
	Wolyita	5	1.7
	Gurage	25	8.4
	Other	16	5.4
	Living condition	With family	285
With relatives		11	3.7

Others religion: Waaqeffataa, Jehovah's witnesses, Adventist Other ethnicity: Kefa, Yem, Kembata, Hadya

Table 1: Socio-demographic characteristics of high school students in Jimma town (n=296), 2015.

Factors associated with khat chewing

The prevalence of mental distress among the study participants was found to be 12.2% (n=36). Of this, 30.6% (n=11) and 69.4% (n=25) were males and females respectively. Among the students who have mental distress, 91.7% (n=33) of them were in the age group of 13-18 years. Out of the students with mental distress, 22.2% (n=8) of them were chewing khat. Amongst students who participated in this study, 6.1% (n=18) said that they had sexual contact after khat chewing. Of these, 66.7% (n=12) reported that they did not use condom.

After adjusting for potential confounders by using multivariate analysis in which enter method was used, age group between 19-23 years (AOR 4.42, 95% CI=1.25, 15.67), male gender (AOR 3.76, 95% CI=1.57, 9.02), having sexual contact (AOR, 13.42, 95% CI=2.76-65.16) and suicidal ideation (AOR 3.65, 95% CI=1.3, 10.20) were associated with khat chewing (Table 2). Students who reported to have suicidal ideation were immediately referred to psychiatry clinic of Jimma University Teaching Hospital for further evaluation and treatment.

The odds having sexual contact among students who had chewed khat was more than 13 times higher than that of students who were free of khat chewing (AOR 13.42, 95% CI= 2.76, 65.16). Similarly, suicidal ideation was nearly four times higher among students who chewed khat compared to their counterparts who did not chew khat (AOR 3.65, 95% CI=1.3, 10.20) (Table 2).

However, not using condom during sexual contact (AOR 0.23, 95% CI=0.02, 2.81), current use of alcohol (AOR 1.69, 95% CI=0.69, 4.19), smoking cannabis (AOR 1.98, 95% CI=1.16, 24.51) and mental distress (AOR 1.43, 95% CI=0.42, 4.85) were not significantly associated with khat chewing.

Discussion

In this cross-section survey of khat chewing among high school students in Jimma town, the prevalence of current and life time khat chewing were 14.2% and 15.9% respectively. This is similar with the study conducted in Northwest Ethiopia where the prevalence of current khat chewing was 13.9% and life time prevalence of khat chewing 17.9% [21]. Similarly, the prevalence of current and life time khat chewing found in our study were in agreement with the study finding from Ataye secondary school Northern Showa, Ethiopia where the current and life time prevalence of khat chewing were 13.25% and 15.36% respectively [7]. However, the life time (15.9%) and current (14.2%) prevalence of khat chewing found in our study was higher than the study findings from the University of Gondar, Northwest Ethiopia (9.6% life time and 6.95% current khat chewing) [22]. The difference might be due to the fact that availability of khat is low in northern part of Ethiopia compared to eastern and southwestern part of Ethiopia. In addition, the discrepancy may be due to the difference between study participants (high school vs University students) but it needs further investigation.

The current prevalence of khat chewing found in our study (14.2%) was lower than findings of a similar study done in Harar (24.2%) and Agaro secondary schools (64.9%) in Ethiopia respectively [10,11]. The discrepancy may be due to recent increased awareness of the effect of khat on social, psychological and physical wellbeing among parents and school communities including students but further investigation is necessary.

The life time prevalence of khat chewing in our study (15.9%) was higher than the finding of study done in Addis Ababa University among under graduate medical students (14%) [23]. The probable reason

Variables		Current Khat user	Non-user	p-value	AOR (95% CI)
		N (%)	N (%)		
Age	13-18	31 (11.2)	247 (88.8)		Reference
	19-23	11 (61.1)	7 (38.9)	0.021	4.42 (1.25-15.67)
Sex	Male	30 (23.4)	98 (76.6)	0.003	3.76 (1.57-9.02)
	Female	12 (7.1)	156 (92.9)		Reference
Ethnicity	Oromo	23 (14.3)	138 (85.7)	0.47	Reference
	Amhara	6 (9.2)	59 (90.8)	0.52	0.70 (0.23-2.10)
	Dawro	5 (16.7)	25 (83.3)	0.85	0.88 (0.24-3.26)
	Gurage	6 (24.0)	19 (76.0)	0.13	2.53 (0.75-8.55)
	Others	2 (13.3)	13 (86.7)	0.99	0.99 (0.16-6.20)
Sexual contact	Yes	12 (66.7)	6 (33.3)	0.001	13.42 (2.76-65.16)
	No	30 (10.8)	248 (89.2)		Reference
Using condom during sexual contact	Yes	3 (42.9)	4 (57.1)		Reference
	No	39 (72.7)	250 (27.3)	0.25	0.23 (0.02-2.81)
Current use of alcohol	Yes	15 (21.7)	54 (78.3)	0.25	1.69 (0.69-4.19)
	No	27 (11.9)	200 (88.1)		Reference
Smoking cannabis	Yes	5 (55.6)	4 (44.4)	0.6	1.98 (0.16-24.51)
	No	37 (12.9)	250 (87.1)		Reference
Suicidal ideation	Yes	13 (31.0)	29 (69.0)	0.001	3.65 (1.3-10.20)
	No	29 (11.4)	254 (85.6)		Reference
Mental distress	Yes	8 (22.2)	28 (77.8)	0.57	1.43 (0.42-4.85)
	No	34 (13.1)	226 (86.9)		Reference

Others ethnicity: Kefa, Yem, Kembata, Hadya

Table 2: Multivariate logistic regression for the factors associated with khat chewing among high school students in Jimma town (n=296), 2015.

might be because medical students may have increased awareness about the harmful effects of khat than high school students but further investigation is needed. In addition, easily availability of khat in Southwest part of Ethiopia, including Jimma city might contribute to the difference between the two studies.

In our study male gender was associated with khat chewing which was similar with the study findings done in Harar and Agaro secondary schools and Addis Ababa University Ethiopia [5,10,11].

In this study, chewing khat was not associated with mental distress which was consistent with study done among Haramaya University students [23]. However, our finding was inconsistent with studies done among University students in Ethiopia [21,24]. In addition, a community based study done in Southwest Ethiopia found that mental distress was associated with khat chewing [25]. The discrepancy might be due to the difference in age group and because of using of different cut-off points (11/12 vs 7/8). However, it needs further investigation.

In this study, age group between 19-23 years was associated with khat chewing, which was consistent with a similar study done in Harar Ethiopia and Jazon Saudi Arabia [10,26]. On the other hand, having sexual contact was associated with khat chewing, which was consistent with a community based study done in Ethiopia [27]. However, from the nature of design in our study, it is difficult to conclude that sexual contact was increased by khat chewing. Future researchers may address this gap by designing the research differently. Moreover, suicidal

ideation was associated with khat chewing. This could be due to the fact that khat chewing was associated with mental distress [25]. On the other hand, students might have become khat users in order to get relief from symptoms such as suicidal ideation. Therefore, future longitudinal studies may indentify whether khat use has a cause effect relationship with suicidal ideation.

It is essential to consider the potential limitations of the current study while interpreting the findings. Generally, social desirability bias could be possible limitation of this study because students might minimize their khat chewing or describe themselves as abstainer. In addition, extension students were not included in the study and family income was not assessed. We didn't assess the difference between private and public schools. Future studies may utilize large sample to conduct separate analyses using the type of school and specific ages of the students. The study was school based; therefore, precludes generalization to all youths in Ethiopia indicating the need for further study using a more representative sample of youths in the country. Even though the prevalence of khat chewing was high, mental distress was not associated with khat chewing which needs further investigation. We did not assess khat dependence and withdrawal symptoms in the current study. Hence, future researches may address this gap.

Conclusions

The result of this study showed that the prevalence of khat chewing among high school students is high. So it needs immediate intervention

to decrease the high prevalence of khat chewing and associated factors. Being male, having suicidal ideation and having sexual contact were positively associated with khat chewing. Students in the age group of 19-23 years were more likely to chew khat than the students in the age group of 13-18 years. Therefore, strategies to decrease khat chewing among high school students should be designed in order to halt further consequences of this substance. The strategies may include developing peer education programs, creating awareness among high school students and keeping away khat houses from school. Moreover, preparing laws and regulations that limit students not to chew khat is crucial to reduce the number of users and further consequence of khat. This study has also generated a hypothesis which requires research about the cause and effect relationship between khat use and suicidal ideation.

Competing interests

The authors declare that they have no competing interests

Authors' Contributions

ED contributed to the design, conduct and analyses of the research and in the manuscript preparation. MS contributed to the design, conduct and analyses of the research and in the review of the manuscript. HK contributed to the design, conduct and analyses of the research and in the review of the manuscript. GTF contributed to the design, conduct and analyses of the research and in the review of the manuscript.

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