Research Article

Khat use and Its Determinants among University students in Northwest Ethiopia: A multivariable analysis

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Received September 18, 2014. Accepted November 4, 2014.

Abstract

Background: Khat (*Catha edulis*) chewing is becoming a significant public health problem, and it becomes a common practice among high school, college, and university students.

Objective: This study was conducted to assess the prevalence and determinants of khat chewing among Gondar University students in Northwest Ethiopia.

Materials and Methods: The study was conducted among 872 randomly selected students in April 2014. A structured self-administered questionnaire was used to collect the data. Descriptive statistics and logistic regression were performed to examine the prevalence and predictors of current use of khat.

Results: The lifetime and current prevalence of khat chewing among respondents was 17.9% (95% CI: 15.3–20.5) and 13.6% (95% CI: 11.4–15.9), respectively. Mental distress (adjusted odds ratio (AOR): 1.66 (95% CI: 1.05–2.61)), having friends who chewed khat (AOR: 3.9 (95% CI: 1.65–5.21)), cigarette smoking (AOR: 18 (95% CI: 9.5–18)), increased classwork load (AOR: 1.9 (95% CI: 1.12–3.2)), and religious practice (AOR: 0.4 (95% CI: 0.24–0.71)) were found to be independent predictors of chewing.

Conclusion: The current prevalence of khat chewing was found to be high. Actions targeting those determinants are essential to effectively reduce khat use among university students.

KEY WORDS: Current prevalence, khat use, University of Gondar

Introduction

Khat (*Catha edulis*) is a flowering green shrub typically ingested by chewing the leaves or may be brewed as tea to bring the desired effect.[1,2] Khat is also called African salad, Abyssinian tea, and African tea.[1–3] It is native to Ethiopia and now grows in Somalia, Yemen, Madagascar, Kenya, Malawi, Uganda, Tanzania, the Congo, Zambia, Zimbabwe, and Afghanistan.[1–4] Nowadays khat has also spread to other African countries and to Europe, Australia and the United States, and is used by the immigrants from Yemen, Somalia, and Ethiopia.[5,6]

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2015.1809201460	

Evidence documented that fresh khat leaves contain more than 40 chemicals.[7] However, most of the stimulant effect of *khat* is thought to come from the chemicals cathinone, cathine, and norephedrine.[3,7] Fresh khat contains an average of 36 mg cathinone, 120 mg cathine, and 8 mg norephedrine per 100 g of leaves.[7] Cathinone plasma level reached peak 1.5–3.5 h after khat chewing.[8]

In Ethiopia, khat is commonly used for social and religious purposes.[9] Khat users explained that they take it because it increases sprits, sharpens thinking, and boost energy.[2,10]

Several studies documented that khat chewing is becoming a significant public health problem. A study in Yemen stated that at least one lifetime episode of khat use was reported in 81.6% men and 43.3% women.[11] A study in the south-western Uganda showed that the consumption of khat is increasing especially among youths, with 32% had experience with chewing khat and 20% were still using it.[12] Studies documented that in Ethiopia the number of khat chewers has significantly increased from time to time and now it has become popular in all segments of the Ethiopian population.[13] For example, the prevalence of chat chewing in community-based

study in Ethiopian was 55.7% and the prevalence of current use was 50%.[14]

Khat chewing has become a common practice among high school, college, and university students. A study carried out among high school students in Dire Dawa showed the prevalence of lifetime and current chewing of khat was 18.4% and 10.9%, respectively.[15] A study in Axum University in Northern Ethiopia also revealed that the prevalence of lifetime and current khat chewing was 28.7% and 27.9%, respectively.[16] Students consumed khat to remain alert and wakeful at night, especially during examination periods. However, chronic (i.e., daily) use of khat is associated with increased blood pressure/hypertension, development of gastrointestinal tract problems, cytotoxic effects on liver and kidneys, and keratotic lesions at the site of chewing.[17,18] Moreover, khat chewing has many different effects on the body. The major effects are seen on the orogastrointestinal system and on the nervous system. Constipation, urine retention, and acute cardiovascular effects may be regarded as autonomic (peripheral) nervous system effects; increased alertness, dependence, tolerance and psychiatric symptoms as effects on the central nervous system.[3]

The other long-term effects of khat use include malnutrition, psychotic reactions after chronic use, depressive reactions, irrigative disorders of the upper gastrointestinal tract (gastritis, enteritis), cardiovascular disorders, hemorrhoids, impaired male sexual function, spermatorrhea, impotence, periodontal disease, and mucosal lesions (keratosis).[3]

Khat has also economical implication at household and country level. The household income that could have been used for nutritious food, home improvement, education, or other family needs is diverted to purchase khat, which causes financial problem and family breakdown.[19,20] Khat chewing also affects time. Much time is spent on chewing khat leaves, which affects working hours and time with family,[10] hence has a negative impact on family and social life.[21,22] It might also lead to domestic conflict[23] and may act as a factor that exacerbates family disruption.[24]

Studies revealed that khat chewing was significantly associated with gender, age, religion (Muslim), habit of family and other relatives, and peer influence.[15,25]

In spite of its serious consequences, khat chewing is still a common practice among youths and adults in Ethiopia. However, there are only few studies that have investigated its use in different segments of the community, especially among university students in Northwest Ethiopia. So this study was aimed to determine the current prevalence of khat use and its associated factors among University of Gondar students, Northwest Ethiopia. The results of this study will help university administrators and policy-makers in their effort to reduce khat use among students.

Materials and Methods

Study Setting

The study was conducted at the University of Gondar, which is one of the 31 public universities in Ethiopia. The university is located 748 km away from the capital city of Ethiopia (Addis Ababa), in the Northwest direction. The university had approximately 15,000 regular undergraduate students at the time of the study. Khat chewing in the university campus is prohibited.

Study Design

A cross-sectional study was conducted in April 2014 among regular undergraduate students.

Sample Size and Sampling Technique

Sample size was determined for estimating prevalence and factors associated with khat chewing. Hence, 872 students were included in the study. The required sample was then allocated to departments proportionally. Then, study participants were selected by a simple random sampling procedure using the student list.

Data Collection Tools and Procedures

Data were collected using a pretested structured self-administered English version questionnaire, which was designed by reviewing different literatures in such a way that it includes all the relevant variables to meet the objectives of the study. The reliability of the tool was also checked using Cronbach's a reliability test with a score of 0.86. Mental distress was measured using a self-reporting questionnaire (SRQ-20). In this study, lifetime prevalence of khat use was defined as the proportion of students who had ever used khat at least once in their lifetime, and current prevalence of khat use was defined as the proportion of students who used khat at least once in the last one month preceding the study.

Data Analysis

The data were double-entered and cleaned using EPI Info 3.5.3 statistical software. The cleaned data were then transferred to SPSS version 20 for analysis. Binary and multivariable logistic regressions were used to identify sociodemographic factors and other substance-use-related factors that are associated with khat use. Variables with *P*-value <0.2 were further entered in the multivariable logistic regression analysis. Those variables with *P*-value <0.05 in multivariable logistic regression analysis were identified as having a significant association with khat use. The variables were entered into a multivariate model using the backward stepwise regression method. The Hosmer and Lemeshow goodness-of-fit test was checked (0.74).

Ethics Statement

The study was approved by the institute review board of the University of Gondar. Written informed consent was obtained from each participant; the participation was fully voluntary. Information obtained for the study was kept confidential.

Results

A total of 872 students were invited to participate in the study, of which 836 students filled and returned the self-administered questionnaire with a response rate of 95.8%. The lifetime and current prevalence of khat chewing among study participants was found to be 17.9% (95% CI: 15.3–20.5) and 13.6% (95% CI: 11.4–15.9), respectively. Of the current khat users 79 (69.3%) were males and 77 (67.5%) were from urban area (Table 1).

Factors Independently Associated with current Khat Chewing

The multivariate logistic regression analysis showed that current khat chewing was more likely to be practiced among students who had friends who chewed khat (adjusted odds ratio (AOR): 3.9 (95% CI: 1.65–5.21)), having mental distress (AOR: 1.66 (95% CI: 1.05–2.61)), who smoked cigarette (AOR: 18 (95% CI: 9.5–18)), who missed too many class (AOR: 3.36 (95% CI: 1.9–5.92)), and students with increased classwork load (AOR: 1.9 (95% CI: 1.12–3.2)). However, students who were involved in religious programs, irrespective of their religion, were less likely to chew khat (AOR: 0.4 (95% CI: 0.24–0.71)) [Table 2].

Table 1: Distribution of the current prevalence of khat chewing by sociodemographic characteristics among respondents from University of Gondar, Northwest Ethiopia, April 2014 (n = 836).

Variables	Current user	
	Yes(%)	No(%)
Sex		
Male	79 (14.7)	459 (85.3)
Female	35 (11.7)	263 (88.3)
Total	114 (13.6)	722 (86.4)
Age (years)		
<19	19 (11.9)	141 (%)
20–24	92 (14.0)	566 (%)
>25	3 (16.7)	15(83.3)
Total	114 (13.6)	722(86.4)
Residence		
Urban	77 (14.2)	467(85.8)
Rural	37 (12.7)	255(87.7)
Religion		
Orthodox Christian	80 (12.9)	538(87.1)
Muslim	16 (20.5)	62(79.5)
Protestant	15 (12.1)	109(87.9)
Catholic	2 (18.2)	9(81.9)
Other*	1 (20)	4(80)
Year of study		
1st	30 (10.5)	256(89.5)
2nd	35 (14.0)	215(86.0)
3rd and above	49 (16.3)	251(83.7)
Pocket money		
Yes	71 (13.6)	450(86.4)
No	43 (13.7)	272(86.3)
Having boy/girlfriend		
Yes	49 (14.5)	290(85.5)
No	65 (13.1)	432 (86.9)

*2 Jubah witness, 1 waqfata, and 2 no religion

Discussion

The findings of this study reveal that 13.6% (95% CI: 11.4–15.9) of the students were current khat chewers. The prevalence is lower than that seen among college students in Bahir Dar town, Ethiopia, which revealed that 19.6% of students were current khat chewers.[26] The current prevalence is also lower when compared to that of the study conducted in Axum University in which 27.9% of students were found to be current khat chewers.[14] However, the prevalence is higher as compared to that reported in studies carried out among the students of Debre Markos Polytechnique College[27] and Addis Ababa University in Ethiopia,[28] which revealed 7.8% and 4% prevalence. This could be due to the difference in study setting, study population, sample size, access to khat, and factors outside the university environment.

In this study, current khat chewing was more likely to be practiced among students who had friends who chewed khat. Those students who had friends who chewed khat were nearly four times more likely to use khat as compared to those who do not have (AOR: 3.9 (95% CI: 1.65–5.21)). The finding is in line with that of other studies conducted in Ethiopia.[14,25–28]

The odds of current khat chewing by the respondents with increased classwork load were nearly two times higher as compared to those who do not have classwork load (AOR: 1.9 (95% CI: 1.12–3.2)). This is because students with increased classwork load were found to be under higher stress and consumed khat to remain alert and wakeful at night as well as to reduce stress. Similarly, students who had mental distress were more likely to use khat as compared with to those who did not have mental distress (AOR: 1.66 (95% CI: 1.05–2.61)).

In this study, it was found that students who smoked cigarette were more likely to use khat (AOR: 18 (95% CI: 9.5–18)). This study is in agreement with a study conducted among high school students in eastern Ethiopia. This indicates there is a clustering of substance use behavior among students with khat chewing habit.[25]

The study found that religious practice was found to be a preventive factor for khat chewing. Students who were involved in religious program, irrespective of their religion, were less likely to chew khat (AOR: 0.4 (95% CI: 0.24–0.71)). Even if there is no study that supports this finding in Ethiopia, this could be because substance use is prohibited by religious teaching. Although the current study does not show any significant association between sex and current use of khat, other studies identified that males are more likely to use khat as compared to females.[14,26]

Table 2: Logistic regression model estimates of risk factors for current khat chewing among University of Gondar students, Northwest Ethiopia (n = 836)[#]

Variable	Current use of khat		OR (95% CI)		*P*-value
	Yes	No	Crude	Adjusted	
Sex					
Male	79	459	1.29(1.05–1.98)	1.13(0.84–1.8)	0.2*
Female	35	263	1	1	
Having friends who chewed Khat					
Yes	78	242	4.05 (1.9–6.2)	39(1.65–521)	<0.001
No	38	478	1		
Religious practice					
Yes	83	631	0.38 (0.24–0.6)	0.4(0.24–0.7)	0.001
No	31	91	1	1	
Mental distress					
Yes	63	279	1.96 (1.3–2.9)	1.66 (1.05–2.6)	0.02
No	51	443	1	1	
Cigarette smoking					<0.001
Yes	36	19	17 (9.3–26)	16 (9.5–24)	
No	78	703	1	1	
Increased class load					
Yes	84	481	1.4 (0.8–2.1)	1.9 (1.12–3.2)	0.01
No	30	241	1	1	
Missing class					
Yes	31	67	3.6 (2.2–5.9)	3.36 (1.9–5.9)	<0.001
No	83	655	1	1	

[#]No multicollinearity was detected in the model, the mean variance inflation factor (VIF) was 2.01, and no variable had a VIF of more than 10.
* Variables that were not significant in the multivariate analysis.

Limitation of the Study

This study had some limitations; first, it was based on a self-reported questionnaire that may be prone to reporting bias. Second, the cross-sectional nature of the study design does not confirm definitive cause-and-effect relationship. Finally, social desirability bias is a potential limitation of this study. However, we believed that this risk is minimized because we used a self-administered questionnaire to gather data, which provided a good level of privacy during data collection.

Conclusion

The prevalence of khat chewing in this study was still high. Current use of khat was significantly associated with mental distress, having friends who chewed khat, cigarette smoking, missing too many class, increased classwork load, and religious practice. Therefore, actions targeting those determinants are essential to effectively reduce khat use among university students.

Acknowledgments

We acknowledge the support of University of Gondar for reviewing the ethics. We also thank facilitators and the study participants for their dedicated cooperation.

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How to cite this article: Dachew BA, Bifftu BB, Tiruneh BT. Khat use and its determinants among university students in northwest Ethiopia: a multivariable analysis. Int J Med Sci Public Health 2015;4:319-323

Source of Support: Nil, **Conflict of Interest:** None declared.