

Research Article

Prevalence of Khat abuse and associated factors among undergraduate students of Jimma University, Ethiopia

Deribachew Hailemariam Wazema¹, Kanchi. Madhavi^{2*}

¹Department of Nursing, College of Medical and Health Sciences, Adigrat University, Adigrat, Ethiopia

²Department of Psychology, College of Social sciences and Humanities, Adigrat University, Adigrat, Ethiopia

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*Correspondence:

Kanchi. Madhavi

Email: kanchi.madhavi444@gmail.com

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ABSTRACT

Background: Khat is one of the shrub plants with an amphetamine-like stimulant effect. Khat use occurs in all segments of all societies, which results in decreased work and school performance, and absenteeism. This study therefore is aimed to determine the prevalence of Khat abuse and identifying their associated factors among Jimma University.

Method: Sample size is 620 students. The study was done by using a multistage sampling technique.

Results: Out of 620 students, 150 (24.2 %) males and 15 (2.4 %) females were ever chewer. Of which 129 (20.8 %) males and 13 (2.1) of females had chewed in the last 12month. From the total of 142 students who chewed in the last 12 month, low risk chewer and dependent were 24 (3.9 %) and 7 (1.1 %) respectively. Out of 111 Khat abusers 21 (50 %), 25 (59.5 %), 7 (16.7 %) and 2 (4.8 %) of them had used cigarette, Alcohol, Shisha and Hashish respectively. Among Khat abusers, 51 (45.9 %) were chewing on daily base, 40 (36.1 %) weekly, 10 (9 %) monthly, 7 (6.3 %) occasionally and 3 (2.7 %) others. The amount of Khat chewed at a time was estimated per cost in birr, and 87 (78.4 %) of the abusers chewed Khat that costs more than 20 birr per ceremony. Different reasons for chewing Khat were mentioned by Khat abusers. The major reason mentioned was to get concentration 50 (50.5 %) followed by relaxation 32 (29.9%).

Discussion: Khat abuse is prevalent among undergraduate students of Jimma University. Khat abuse is significantly associated with male gender, pocket money, faculty Khat use habit among family members. Most students use Khat to get concentration.

Keywords: Prevalence, Khat, Abuse

INTRODUCTION

Khat use occurs in all segments of all societies, which results in decreased work and school performance, and absenteeism.¹ Presently, the worldwide consumption of khat can be estimated at some 5-10 million people per day, though it is nearly completely limited to East Africa

and south western Arabia.² Khat use is prevalent in three countries of the Region, namely Djibouti, Somalia and Yemen. It is variously estimated that in these countries, about 60 % – 80 % of the adults consume Khat on a daily basis. Its use is rising in reputation, with extensive social and economic effects such as shifting of crop patterns in favor of Khat growth.³ From a total of Khat chewers who lives in three towns in south-western Uganda, The secondary school and the college student's account 9.2 %

which constitute a critical period of lifetime age (15–25 years).⁴



Figure 1: Khat is one of the highly available substance for which the people in Ethiopia are addicted.

The habit of chewing Khat is spreading at an alarming rate among the younger generation of Ethiopian, especially in high schools and higher institutions, where academic activity is intense. A large survey in rural adults of Ethiopia reported that 55.7 % of the sample had used Khat at some time in their lives, and that 50 % were current users.⁵ Students in colleges and universities usually use Khat, by considering that it maximize their academic performance. The study which was conducted among college students in North West Ethiopia revealed that life time and current prevalence rate of Khat chewing were 26.7 % and 17.5 % respectively.⁶ Despite they chew for the sake of academic performance the outcome is scoring of poor Cumulative Grade Point Average (CGPA). This is mainly due to two reasons, first they spent their time searching for Khat while the others are attending the class and the other is for chewing. This had negative impact on teaching learning process by coasting the country unnecessarily.⁷ Khat chewing can encourage two types of psychotic manifestation. First, a manic illness with grandiose delusions and second, a paranoid or Schizophreniform psychosis with persecutory delusions associated with mainly auditory hallucinations, fear and anxiety, resembling amphetamine psychosis.⁸ Case control Study done in Somalia showed that on average, cases with psychotic symptoms had started to use Khat earlier in life than matched controls and had been using Khat 8.6 years before positive symptoms emerged. It also witnessed that significant correlation between variables of Khat consumption and clinical scales and between the age of onset of Khat chewing and symptom onset.³ Long-term use of Khat can precipitate the following effects: negative impact on liver function, permanent tooth darkening (of a greenish tinge), susceptibility to ulcers, oral cancer and diminished sex drive.⁹ Cathinone has been found to produce coronary vasoconstriction due to the nor ephedrine metabolite activity upon ingestion. Therefore, Khat chewers have been found to have an increase incidence of myocardial infarction, possibly arising from vasospasms.¹⁰

Background and significance of the study

Khat is one of the shrub plants with an amphetamine-like stimulant effect and is called *Catha edulis*. There are several names for the plant, depending on its origin: chat, qat, qaad, jaad, miraa, mairungi, cat and Catha.^{11,12} It is mainly grown in Ethiopia, Kenya, Yemen, Somalia, Sudan, South Africa and Madagascar. In most of the Western literature, it is referred to as Khat. The leaves are elliptic to oblong, pendulous, leathery, bright green and shiny above, paler below with an evenly toothed margin.²

The effect of chewing Khat is thought to be a result from two phenylalkylamines. The psychoactive agents contained in the Khat leaves include cathinone (amino propiophenone), cathine (nor pseudoephedrine) and nor ephedrine. Cathinone resembles amphetamine in chemical structure as well as biochemical and behavioral effects, its content may vary from 30 200 mg per 100 g fresh leaves; up to 90 % of it is extracted by mastication.¹³



Figure 2: Khat chewing.

Chewing Khat has a number of important psychological as well as physical Consequences. ‘Khat-related’ psychosis is very similar to that seen following use of amphetamines. In a Khat chewing session, initially there is an atmosphere of cheerfulness, optimism and a general sense of well-being. These effects were reached maximum between 1.5–3.5 hours after starting to chew and they were progressively replaced by mild dysphoria, anxiety, reactive depression, insomnia and anorexia. Chewers tend to leave the session feeling exhausted.¹

Khat chewing is a serious public health problem affecting millions of People in East Africa and Yemen. Khat chewing issued at young age group in Ethiopia. However, as far as the researcher’s knowledge little is known about the magnitude of Khat abusing and their associated factors among university students in Ethiopia. This study therefore is aimed to determine the prevalence of Khat abuse and identifying their associated factors among Jimma University.

So, the results may be used as base-line data in the formulation of policies aimed at addressing associated

factors affecting undergraduate students in residing in the Jimma University or other similar settings. It is hoped that relevant interventions would then be designed based on the study finding with the view of reducing the incidence of Khat abuse in students. It will also contribute much for policymakers, program planners and implementers for the success of their ongoing control of Khat abuse. In addition, the result of this study may serve as for those who will be interested to study on the same or related topic in other places.

METHODS

Study design

University based cross-sectional study design was utilized.

Population

Study population

The study populations were all undergraduate regular students from the selected departments and who were above first year.

Inclusion & exclusion criteria

Inclusion criteria

Regular undergraduate students who were included in the study

Exclusion criteria

- ✓ Those students who are unable to respond due to different health problems
- ✓ First year students were excluded from the study because, if they were included prior to adapting the environment and before they started chewing the result might be decreased

Sample size and sampling technique

Sample size is 620 students

Sampling technique

The study was done by using a multistage sampling technique.

Measurements and variables

Instrument

A self-administered questionnaire was prepared in English to assess Khat abuse. It was adopted from Drug Abuse screening test which contains 10 items. The test was developed to screen deferent drugs including amphetamine which is similar in chemical structure as

well as biochemical effect with Khat, and the test is valid (70-85 %) and Reliability (.71).³⁶

Variables

Dependent variable

Khat abuse

Independent variable

- A. Demographic factors: age, sex, religion, ethnicity, faculty, pocket money and previous residence
- B. Socio-cultural factors include Family history of Khat-chewing, peer pressure and Khat chewing society
- C. Substance use other than Khat
- D. Reason for Khat chewing

Data collection and quality management

Data quality control

Four data collection facilitators and 1 supervisor were trained for one day on the details of the Questionnaire, purpose of the study, importance of privacy, and insuring confidentiality of the respondents. The questionnaire was prepared in English. After data collection started, daily close supervision was made. At the end of every data collection, the questionnaire was reviewed and checked for, accuracy and consistency by data collection facilitator, supervisor and principal investigator to take immediate corrective measures

Pre-test of the tool

Pre-testing was undertaken on 5 % of the sample CAVM College. Data collection facilitators were exposed to practical situation before the start of actual data collection, and both principal investigator and supervisor were assess clarity, understandability, flow and completeness of questions and the time needed to fill them. This is useful in correcting systematic errors, ensuring consistency in flow of questions, and estimating the time taken to answer each questionnaire.

Data collection

A structured self-administered questionnaire was used, which has three different sub-sections: a socio-demographic questionnaire, questionnaire to assess Khat abuse and questionnaire to assess family background. Khat abuse was measured using the Drug Abuse Screening Test (DAST-10), which has already been validated for amphetamine.³⁶ The DAST-10 scale has 10-items asking about abuse, dependence and low risk substance use in the last 12 months. The internal consistency of the DAST-10 scale was (Cronbach α =0.71) and at a cut-off point of 1-2 for low risk use, 3-5 for Khat abuse and ≥ 6 for dependence the DAST-10 has the validity of 70-

85 %.³⁶ The questionnaires were prepared in English. Data collection was facilitated by four B.Sc. nurse with the help of class representatives from the selected departments, through self-reported assessment and monitoring of the students for any missing questions.

Data Processing and Analysis

Data was entered using Epi-data version 3.1 programs. This was exported to statistical analysis system program (SPSS) version 16. Descriptive analysis was made to assess inconsistencies, outliers and missing values and data is presented by tables. A variable with p values below 0.25 in the bivariate analysis is considered as candidate variable for multivariate logistic regression. In the final model, variables having p value < 0.05 is considered as independently associated factors. Binary logistic regression analysis was used for both bivariate and multivariate analysis. Strength of association of the variable is described using odds ratio and 95 % confidence level.

RESULTS

Six hundred thirty-four students were intended to be involved in this study. A total of 620 students were included in the study with a response rate of 97.9 %. Out of the respondents 523 (84.4 %) were males. Nearly all of the respondents 572 (92.6 %) were in the age range of 20-24 years, mean age was found to be 21.53 ± 1.43 years. More than half of the students 391 (63 %) were from the rural area. The participants were from different colleges of which social science and law students account 247 (39.8 %), followed by college of natural science 191 (30.8 %) and the rest were from business and economics 182 (29.4 %). Concerning cumulative grade point average of the study subjects, the Preponderance of the students 265 (43 %) scored between 3 to 3.5; mean CGPA was found to be 3.06 ± 0.37 . Orthodox Christian followers were predominantly accounts 299 (48.2 %), followed by protestant religion followers 159 (25.6 %).

Khat abuse

Out of 620 students, 150 (24.2 %) males and 15 (2.4 %) females were ever chewer. Of which 129 (20.8 %) males and 13 (2.1 %) of females had chewed in the last 12 months. From the total of 142 students who chewed in the last 12 months, low risk chewer and dependent were 24 (3.9 %) and 7 (1.1 %) respectively. Out of 111 Khat abusers 21 (50 %), 25 (59.5 %), 7 (16.7 %) and 2 (4.8 %) of them had used cigarette, Alcohol, Shisha and Hashish respectively. Among Khat abusers, 51 (45.9 %) were chewing on daily base, 40 (36.1 %) weekly, 10 (9 %) monthly, 7 (6.3 %) occasionally and 3 (2.7 %) others. The amount of Khat chewed at a time was estimated per cost in birr, and 87 (78.4 %) of the abusers chewed Khat that costs more than 20 birr per ceremony. More than half of khat abusers 60 (54.1 %) spent 2-4 hours per each session; mean hour was found to be 3.5 ± 1.38 .

Different reasons for chewing Khat were mentioned by Khat abusers. The major reason mentioned was to get concentration 50 (50.5 %) followed by relaxation 32 (29.9 %).

Table 1: Reasons for Khat abuse among Undergraduate students of Jimma University, Ethiopia, 2012.

| Reason | Male (n=107) | | Female (n=4) | | Total (n=111) | |
|----------------------|--------------|------|--------------|-----|---------------|------|
| | No. | (%) | No. | (%) | No. | (%) |
| To get concentration | 54 | 50.5 | 2 | 50 | 56 | 50.5 |
| Because of culture | 13 | 12.1 | 0 | 0 | 13 | 11.7 |
| Because friends use | 13 | 12.1 | 0 | 0 | 13 | 11.7 |
| For relaxation | 32 | 29.9 | 3 | 75 | 35 | 31.5 |
| Others ** | 3 | 2.8 | 0 | 0 | 3 | 2.7 |

Out of 111 Khat abusers, 49 (44.1 %) experienced one or more symptoms of withdrawal of which 25 (51 %) had weakness followed by depression, which account 15 (30.6%).

Table 2: Withdrawal symptoms of Khat abuse among Undergraduate students of Jimma University, Ethiopia, 2012.

| Withdrawal symptoms (49) | No. | % |
|--------------------------|-----|------|
| Weakness | 25 | 51 |
| Dysphoria | 15 | 30.6 |
| Frightening dreams | 8 | 16.3 |
| Loss of appetite | 8 | 16.3 |

Socio-Demographic characteristics of respondents and family associated with Khat Abuse

To explore the association between dependent variable and independent variables the data was dichotomized into abuse ($\geq 3/10$ on DAST-10) and non-abuse ($< 3/10$ on DAST-10) (36). According to the analysis being Male is 6.41 times more likely to be Khat abuser when compared with being female [OR=6.41; 95 % CI (2.31, 17.81)] as well as those who were from College of natural science are 0.2 times less likely to be Khat abuser when compared with those from college of social science and law. Being Muslim follower was 10.54 times more

likely to be Khat abuser [OR=10.54; 95 % CI (6.41, 17.33)] when compared with Orthodox Christian. Those whose monthly pocket money was in the range 300-500 birr were 4.8 times more likely to be khat abuser when compared with those whose pocket money was between 101-299 birr. Similarly earning pocket money above 500 birr increased the risk of Khat abuse by 6.25 [OR= 6.25; 95 % CI (3.33, 11.72)]. In addition, those whose family members chew Khat were 5.99 times more likely to be khat abuser as well, when compared with those whose family member did not chew Khat [OR=11.89; 95% CI (3.305,10.847)]

Independently associated factors of Khat abuse

Multivariate logistic regression was done to investigate the final predictors of Khat abuse. To perform this all of the variables which were indicated in the binary logistic regression these were Sex, Religion, Faculty, Pocket money, Family use of Khat, father educational status and mother educational were included in the final model. Those who were Muslim were 7.59 (4.1, 14.064) times more likely to be Khat abuser when compared with Orthodox Christian followers. This final model also investigated family use of substance particularly Khat in relation to Khat abuse of the student. So those students whose family member chewed Khat were 2.9 (1.42, 6.01) times more likely to be Khat abuser.

DISCUSSION

Despite there are attremondes amount of researches which were conducted among college and high school students, There is still little information on Khat abuse among college and university regular students because due attention doesn't seem to be given to the issue by researchers. Therefore, the current study is the first of its kind since the last 24 years in Ethiopia and particularly in Jimma University. The 17.9 % prevalence of Khat abuse in our study is closer to the findings of the study conducted in Western Kenya, whose aim was to determine factors related to Khat abuse among students of secondary school 23.1 %.¹⁴ However, our result is a bit higher with similar Kenyan study on the extent and panacea for drug abuse and indiscipline in Kenyan schools was 12.4%.¹⁵ The reason for difference could be there is cultural difference, the previous study was conducted among high school students, and the other possible reason is that easily accessibility of Khat here in Jimma. This finding is comparable with the study which was conducted 24 years ago on Poly drug abuse among Ethiopian university students with particular reference to khat was 22.3 %.¹⁶ Likewise, according to this finding the prevalence of Khat abuse is diminished by more than half when compared with the finding which was done about the life time prevalence of substance abuse and mental distress among homicide offenders in Jimma Prison, Ethiopia was 44 %.¹⁷ Possible difference could be due to the reason that the previous study was conducted among participants who were nearly from the same zone, where

the accessibility of Khat was high and the habit of Khat chewing is not condemned and also it could be as a result of a difference in educational status.

Religion is one of the factors which are associated with the abuse of Khat. In this study Khat chewing has shown significant association with religion and being Muslim were found to be Khat chewers 7.59 (4.1, 14.064) as compared with Orthodox religion followers. The likely justification could be for the reason that the habit of Khat chewing is not culturally condemned among Muslim communities. This finding is supported by a community based study conducted on Khat Chewing and mental distress in Jimma City, South Western Ethiopia.¹⁸ Related study which was conducted among high school students in Dire Dawa¹⁹ confirmed that Khat chewing is strongly associated being Muslim.

Faculty has significant association with Khat abuse. Those students from college of natural science were found to be less abuser 0.272 (0.121, 0.608) followed by College of Business and Economics 0.406 (0.210, 0.785) as compared with students from college of social science and law.

In this study Khat abuse has a strong association with monthly pocket money. Those who have higher pocket money are more likely to be Khat abuser compared to those with lower income. This might be due to having higher pocket money enhances students to build up mal behaviour like Khat abuse. This result is similar with the study which was conducted about substance use among high school students in Dire Dawa, Ethiopia. Again this is in line with the study which was conducted about effect of substance use on academic achievement of Health Officer and Medical Students of Jimma University, Southwest Ethiopia.²⁰

According to this finding educational status of the mothers has association with Khat abuse. Those students, whose mothers educational status > 12th were 3.2 times more likely to be Khat abuser. This might be due to that when the mothers are educated they are no more strict for their children or they are high likely to give freedom for their children. Perhaps this makes the students prone to develop new behaviour like Khat chewing.

According to this study the high prevalence of Khat abuse among students from families where another member of the family was also abusing drug particularly Khat and alcohol correlates well with previous studies that found a Similar correlation between parental use and abuse of Khat and Khat abuse patterns among their children.²¹ Also our result is in agreement with the findings among High School Students in Eastern Ethiopia.²²

Limitations

DAST is not validated as screening instrument for Khat, which belongs to a class of stimulant drugs known as amphetamines, so we believe that the instrument may under or overestimate the real prevalence Khat abuse. On the other hand the student might not remember the important part of the problem, like for how long they have chewed and when did they start chewing. Likewise those students from the area where Khat chewing is condemned might not respond appropriately, rather they might respond in a way which is acceptable by the community.

Strengths

Sample was relatively high.

CONCLUSION

Khat abuse is prevalent among undergraduate students of Jimma University. Khat abuse is significantly associated with male gender, pocket money, faculty Khat use habit among family members. Most students use Khat to get concentration.

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Conflict of interest: None declared

Ethical considerations:

Ethical approval was obtained from ethical review board of JU Collage of Public Health and Medical Science. The objective of the study was discussed/ explained to respondents and Participation of respondents was strictly on voluntary basis and written informed consent was obtained from the participants.

The respect, dignity and freedom of each student who were participating in the study were assured. Also confidentiality of the respondents' were maintained at all level through declaring to the respondents that the anonymity of the self- administered questionnaire and no University community was allowed to observe questionnaire which is filled by respondent. Finally, the respondents themselves give their anonymous responses in the collection boxes.

Ethical approval: Not required

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