

Khat chewing and its associated factor among College students in Bahir Dar town, Ethiopia

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Abstract: *Background:* - Khat is a large green shrub that grows at high altitude in the region extending from eastern to southern Africa, as well as on the Arabian Peninsula. Khat is widely consumed among the youth of Ethiopia; especially among high school, College and University students. Khat chewing is the risk of frequently absenteeism from class and poor academic performance of the students. Moreover, it has serious health, social and economic consequence. However, information on prevalence and its associated factor is scarce in the study area. This study was conducted with the objective of assessing the prevalence of khat chewing and its associated factor among College students in Bahir Dar town, Ethiopia. *Methods:* - School based cross-sectional survey was conducted in May 2012 among 754 College students in Bahir Dar town, Ethiopia. Data were collected using pre-tested structured facilitator guided self administered questionnaire. Multi stage sampling technique was used to select students for the survey. The collected data were cleaned, coded and entered on to Epi-Info version 3.5.2 Statistical package software. Data were exported to SPSS version 16 program for analysis. The proportion of youth reported khat chewing was computed. Logistic regression model was used to identify factors associated with khat chewing. *Result-* the overall prevalence of khat chewing in College students was 146 (19.6%). The factors associated with khat chewing were being male [Adjusted OR =5.88, 95% CI = (3.18, 10.87)], having pocket money [Adjusted OR =3.42, 95% CI = (2.04, 5.76)], urban residence [Adjusted OR =4.09, 95% CI =(2.38, 7.01)], peer pressure [Adjusted OR =13.16, 95% CI =(6.89, 25.17)], and parental model [Adjusted OR =4.28, 95% CI =(1.96, 9.35)]. *Conclusion* -The prevalence of khat chewing was high among College students in the study area. Factors that significantly affect the habit of khat chewing were identified. Colleges and health Bureau should design and implement audience specific behavioral change communication about consequence of khat chewing to prevent and avert students khat chewing practice.

Keywords: Khat, Youth, College Students, Ethiopia

1. Introduction

Khat (*Catha edulis*) is a large green shrub that grows at high altitude in the region extending from eastern to Southern Africa, as well as on the Arabian Peninsula; mainly in Ethiopia, Somalia, Kenya, Malawi, Uganda, Tanzania, Congo, Zambia, Zimbabwe, Afghanistan, Yemen and Madagascar (1, 2). Khat leaves mainly contain naturally occurring alkaloid amphetamines (cathinone and cathine) (3). These alkaloid amphetamines are responsible for its stimulant action. The leaves of khat are chewed by the people for its pleasurable stimulant action (3, 4).

In Ethiopia, khat chewing has deep rooted history as early as fourteenth century (2). Khat is commonly used for social and religious purposes (5). Furthermore, it considered as a recreational substance (6). Recently, khat chewing

becomes a common practice among high school, College and University students. Students have consumed khat to be alert and wakeful at night; especially during examination periods. Moreover, they used it as a recreational substance. Among undergraduate medical students of Addis Ababa University; 14% of the participants chewed khat (7). In Dire Dawa high school 18.4% of students chewed khat (8). In a similar manner other sections of the community; such as, laborers, truck drivers, craftsmen, teachers and farmers have chewed khat in order to reduce fatigue, increase performance and to suppress appetite. In Jimma town 37.8% of the communities reported khat chewing practice (9).

Khat chewing has major effect on the gastro-intestinal system, central nervous system, cardiovascular system and urinary system. Central nervous system effects of khat chewing are alertness, dependence, tolerance, anxiety,

depression, manic, delusion and insomnia (4, 9-11). Gastro-intestinal system effects of khat chewing are dental problem, stomach ulcer, constipation, oral and esophageal cancer (3, 12). On cardiovascular system habitual use of khat causes hypertension, arrhythmia, myocardial infarction, stroke and death (13, 14). On urinary system habitual use of khat causes urinary retention(4).

Khat has implication on economical of the country and at house hold level; replacement of coffee and other crops for khat would be detrimental to the economy by draining foreign investment(5). At the house hold level, khat divert household income that could have been used for nutritious food, home improvement, education or other family needs to purchase khat that causes financial problem and family breakdown (11, 12).

Socially, Khat chewers spent long hours to chewing and then recovering from chewing; this causes absenteeism from work, a barrier to obtaining employment and lack of integration of khat-consuming communities(6, 13). Furthermore, it has implication on use of drugs and/or alcohol, smoking cigarette and sexual risk behaviors(14). Khat chewing is the risk of frequently absenteeism from class and poor academic performance of the students(15, 16).

Khat chewers had significantly higher mortality rate due to chronic illness; such as, heart disease and stroke compared with non-khat chewers. Khat chewers with chronic illness need more drug management than non chewers(17).

Many studies revealed the presence of positive association between khat chewing and gender of users; males are more likely to chew khat than females (17, 18). Other substance use and viewing pornographic materials are important predictors of khat chewing; more number of khat chewers used other substance like alcohol and cigarette than non users; more number of khat chewers observed pornographic films than non users (16).

In spite of its serious consequences khat chewing is highly prevalent in Bahir Dar town. Even though khat chewing is the common practice study on its magnitude and predictors is scarce in the study area. Therefore, this study was conducted with the objective of assessing the extent of khat chewing and factors that might be associated with among College students in Bahir Dar town.

2. Methods

School based cross-sectional survey was conducted among College students in May 2012. The study was done in Bahir Dar town, Amhara National Regional State, Ethiopia. Cultivation of khat is the major source of revenue for the community living around Bahir Dar town. In Bahir Dar town there are five private and two public Colleges with a total of 4642 students.

The required sample size was calculated by single population proportion formula to address both magnitude and associated factors at confidence interval of 95%,

marginal error of 5%, prevalence of 31% (from one study done in Jimma University) (19), non response rate of 15% and design effect two. The final sample size was 754 students.

Sample students were selected in a multi stage sampling technique. The required sample was allocated for each College by proportional to size allocation. Sections were selected randomly using simple random sampling technique (lottery method) from all Colleges after obtaining the list of sections from each College. Representative students from each selected section were again selected by lottery method from list of students.

Data were collected from selected students using pretested structured facilitator guided self administered questioner. The questionnaires were developed in English then translated in to Amharic (local language) and back to English. Data were collected from all students selected from one College simultaneously in one day to prevent information contamination. Data collection facilitators and supervisors were recruited and trained. They helped in seating students in the classrooms designated for completing the survey and provided explanation on the study procedures and tool. They also ensured complete privacy during completing the questionnaire.

The dependent variable was khat chewing. While the independent variables were socio-demographic characteristics of respondents, school related, parental and environmental factors. Peer pressure in this study is presence of peers who used khat and encourage students to used khat. Parental and sibling model in this study is presence of parent who used khat and sibling who used khat respectively.

Data were cleaned, coded and entered on to Epi-Info version 3.5.2 Statistical package soft ware to minimize error. Data were exported to SPSS version 16 program for analysis. The proportion of reported khat chewing was computed and then comparison was made between those reported having chewing khat and those not to identify factors that significantly differ between the groups. Logistic regression was used to control confounding effects. P values ≤ 0.2 were taken a cut-off point for selecting variables for the logistic regression model. A p-value of 0.05 was considered to determine statistical significant.

The study was conducted after securing approval of Institutional Review Committee of Bahir Dar Health Science College. Written permission to conduct the study in the selected schools was obtained from the Regional Education Bureau. An informed consent was secured from each participant. The confidentiality was maintained throughout the study by not including personal identifiers from the data collection form.

3. Result

A total of 754 students were participated in the study. Of these 745 of them filled the questionnaires fairly completed. The response rate was 98.8%. The mean age of students was

20.95 \pm 2.36 SD years and 411 (55.2%) of respondents were Females. The majorities of participants were Orthodox Christian followers 703(94.4%) and from Amhara ethnic group 657 (88.2%). One third 265 (35.6%) of the respondents were nurse students. Nearly half 335(45%) of students were from third year and 318(42.7%) of respondents had some amount of pocket money. (See Table 1)

Table1. Socio-demographic characteristics of respondents in Bahir Dar town, May, 2012

variable	Frequency(n=745)	Percentage
Sex		
male	334	44.8
female	411	55.2
Age		
15-19 years	186	25.0
20-24years	505	67.8
25-32years	54	7.2
Level of education		
1 st year	218	29.2
2 nd year	192	25.8
3 rd year	335	45.0
Religion		
Orthodox	657	88.2
Protestant	66	8.9
Muslim	22	3.0
Ethnicity		
Amhara	703	94.4
Oromo	18	2.4
Agew	18	2.4
Gurage/Tigrie	6	0.8
Pocket money		
Yes	318	42.7
no	427	57.3
Amount of pocket money(318)		
< 100 birr	25	7.9
100-200 birr	56	17.6
201-300 birr	170	53.2
>300 birr	68	21.3
Place of residence		
rural	404	54.2
urban	341	45.8

The overall prevalence of khat chewing in students was 146 (19.6%).Of these 92(63%) were male students. Ninety six (12.9%) of students were currently chewing khat. Of these 62(64.6%) were male students. Among khat chewers 80 (54.8%) were from third year and 100(68.5%) of students parent were from urban area. More than three fourth 116 (79.4%) of khat chewers were chewing khat occasionally. The amount of khat consumed at a time was estimated per cost in birr and 36(24.7%) of the chewers consumed khat

that costs \geq 25 birr per ceremony. The mean hour spent for a single khat ceremony was 4 hours. (See Table 2)

Table2. Prevalence of khat users among respondents in Bahir Dar town, May, 2012

Variable	Frequency (N=146)	Percentage (%)
Life time khat users		
Male	92	63.0
female	54	37.0
Current khat users		
Male	62	64.6
female	34	35.4
Level of education		
1 st year	22	15.1
2 nd year	44	30.1
3 rd year	80	54.8
Age		
15-19 years	43	29.5
20-24years	88	60.2
25-32year	15	10.3
Religion		
Orthodox	124	84.9
Protestant	12	8.2
Muslim	10	6.9
Residence		
Urban	100	68.5
rural	46	31.5
Duration of khat chewing		
\leq 2hours	78	53.4
3-4hours	36	24.7
\geq 4hours	32	21.9
Money expense to buy khat		
<15birr	76	52.0
16-25birr	34	23.3
>25birr	36	24.7
Frequency of khat chewing		
Daily	10	6.8
>3 times/week	12	8.2
1-3times/week	8	5.6
Occasionally	116	79.4

Multiple logistic regression analysis revealed that khat chewing was more likely to occur among male students [Adjusted OR =5.88, 95% CI = (3.18, 10.87)], those had some amount of pocket money [Adjusted OR =3.42, 95% CI = (2.04, 5.76)] ,those their families from urban area [Adjusted OR =4.09, 95% CI =(2.38,7.01)], those have peer pressure [Adjusted OR =13.16, 95% CI =(6.89,25.17)], parental model [Adjusted OR =4.28, 95% CI =(1.96,9.35)] and siblings model [Adjusted OR = 5.22, 95% CI =(2.05,13.28)]. (Table 3)

Table3. Multiple regression analysis of khat chewing among respondents in Bahir Dar town, May, 2012

Factor	Khat chewing		COR (95%C/I)	AOR (95%C/I)
	Yes (%)	No (%)		
sex				
Male	92(27.5)	242(72.5)	2.51(1.73,3.65)	5.88(3.18,10.87)
female	54(13.1)	357(86.9)	1.00	1.00
Pocket money				
Yes	100(31.5)	218(68.5)	3.79(2.58,5.59)	3.42(2.04,5.76)
No	46(10.8)	381(89.2)	1.00	1.00
Residence				
Urban	100(29.3)	241(70.7)	3.22(2.19,4.74)	4.09(2.38,7.01)
rural	46(11.4)	358(88.6)	1.00	1.00
siblings model				
Ye	16(38.1)	26(61.9)	2.71(1.41,5.20)	5.22(2.05,13.28)
No	130(18.5)	573(81.6)	1.00	1.00
peer pressure				
Ye	58(58.0)	42(42.0)	8.74(5.53,13.79)	13.16(6.89,25.17)
No	88(13.6)	557(86.4)	1.00	1.00
Parental model				
Ye	30(48.4)	32(51.6)	4.58(2.67,7.83)	4.28(1.96,9.35)
No	116(17)	567(83)	1.00	1.00

4. Discussion

In spite of its serious health, economic and social consequence of khat chewing (3, 10, 20); in Ethiopia, the habit of khat chewing is increased from time to time (9, 21). Khat is widely cultivated and used by the community in the study area. In this study, 19.6% of students admitted to have chewed khat. This finding was almost in line with previous study findings in Dire Dawa High School Students, Addis Ababa University undergraduate medical students and Saudi Arabia College and secondary (high) school students of Jazan region (7, 8, 22).

On the other hand, this finding was lower than study findings in Jimma city, southwestern Ethiopia, Eastern Ethiopia high school, Asendabo town, South Western Ethiopian youth and Axum University students (9, 18, 23, 24). This difference may be because of students' place of residence; in this study majority of students were from rural area which is an important protective factor. The second reason might be due to religion of students; in this study nearly all of respondents (94.4 %) were orthodox Christian followers; due to religion prohibition orthodox Christian followers are not used khat than Muslim and other religions (25-27).

Gender has statistically significant and strong association with khat chewing; males were six times more likely to chewing khat than females [Adjusted OR =5.88, 95% CI = (3.18, 10.87)]. This finding was supported by similar study findings in Southern, Ethiopia, Axum University, College and secondary (high) school students of Jazan region, Saudi Arabia and Somali-Australians (18, 22, 28-30). This may be due to cultural restriction; meaning females are more culturally restricted from exposure to khat chewing than males (26).

Peer pressure has statistically significant association with khat chewing; Youth who had peer used khat were thirteen times more likely to use khat than their counterparts [AOR=13.16, 95%CI= (6.89, 25.17)].This finding is in agreement with previous study findings in eastern Ethiopia, Axum University, Ethiopia and Jazan, Saudi Arabia (18, 23, 31).This is a well established fact that youth directly persuade their friends to conform to their behavior; therefore khat chewer encourage their inexperienced peers to chew khat (32).

Family model has statistically significant and strong positive association with khat chewing practice; students with parental model (parents used khat) were more than three times prone to khat chewing than their counter parts [Adjusted OR =3.28, 95% CI = (6.89, 25.17)] and those with siblings model(siblings used khat) were five times more likely to use khat than their counter parts [Adjusted OR =6.58, 95% CI = (2.05, 13.28)].this finding was in agreement with a previous study findings in Axum University, Ethiopia and Jazan, Saudi Arabia (18, 31). This is because young people tend to imitate and exercise what they observe from their siblings and parents. In addition, youth used khat to socialize with their family members(13).

Pocket money had significant association with khat chewing; Youth who had some amount of pocket money were more than three times prone to use khat than those don't have [Adjusted OR =3.42, 95% CI =(2.04,5.76)].This finding was in line with study finding in Seychelles (33).The reason may be, students those have pocket money can purchase the substance that they want to use; they feel independent and used it as a means to increase social interaction(20).

Place of residence had also association with khat chewing. Students from urban parents residence were four times more likely to use khat than those their parents from rural area

[Adjusted OR = 4.09, 95% CI = (2.38, 7.01). This finding was opposite with the study finding among Students of Higher Education in Jazan Region, Saudi Arabia (16) ; this may be due to the more liberal life styles in urban areas compared to cultural conservatism in rural areas and may also be attributed to easiness of reporting chewing khat by urban adolescents than rural residents (26) .

5. Strength of the Study

High response rate, large sample size, appropriate sampling procedure and analysis methods utilized were appropriate to the study and considered as the strength of the study. The study provides useful information that will inform policy makers to design a strategy to reduce the prevalence of khat chewing habit and its adverse social and health consequences.

Limitations of the Study

This study was based on cross-sectional survey; causality cannot be inferred from our findings. Relies on self response for sensitive issues can invite social desirability bias and therefore underestimate utilization of khat chewing. The study was school based; therefore precludes generalization to all youths in Ethiopia indicating a need for further study using a more representative sample of youths in the country.

6. Conclusions

In the study area significant numbers of College students were chewing khat. The predominant factors associated with khat chewing were being male, families from urban area, peer pressure, parental and sibling model. The findings suggest the need to have audience specific behavioral change communication to avert and prevent khat chewing practice. Colleges and health bureau should design education about consequence of khat chewing for students, their parents and the community at large to bring behavioral change.

Competing Interests

The author declare that she has no competing interest

Author Contributions

The author participated in the design, coordination of the study, data collection, statistical analysis, development and approval of manuscript.

Author Information

The author has BSC and MPH; currently working in Bahir Dar University, College of Medicine and Health Sciences, Public health department.

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