

Khat chewing and its socio-demographic correlates among the staff of Jimma University

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Abstract

Background: Khat (*Catha edulis* forsk) contains a psychoactive substance called cathinone, which produces central stimulation analogous to amphetamine. It is widely abused in East Africa in general and in Ethiopia in particular for various purposes. Habitual use of khat renders certain influence on the physical, psychological and economical well being of the community.

Objective: The aim of this study is to determine the prevalence and socio-demographic profile of khat chewing and other associated factors relating to the technical staff of Jimma hospital and the academic staff of Jimma University (JU).

Methods: A cross-sectional survey on 400 JU staff was conducted using a self-administered structured questionnaire in JU, Jimma town, Southwest Ethiopia, from Jan. to Feb 2003.

Results: The current prevalence of khat chewing was 30.8%. More males (33.0%) than females, Muslims (49.0%) than other religious groups, Tigres (42.9%) than other ethnic groups, Technical (33.8%) than Academic staff, married (32.4%) than singles, age group 18-24 years (34.4%) than other age groups, and general practitioners (40.5%) than other professional groups were found to be khat chewers. About 50.4% of the khat chewers have one or more times missed their regular work at JU because of chewing, and 54.5% of the chewers used to come late chewing khat or leave their work early to chew khat. Male sex ($\chi^2=4.01$, $P=0.0319$) being Muslim ($\chi^2=19.839$, $P=0.0005$) were significantly associated with khat chewing. Smoking and alcohol intake also showed a statistically significant association with the habit of khat chewing.

Conclusion: A fairly large proportion of Jimma University staff, which are assumed to be models for the rest of the population, chew khat and this has a strong negative impact on service delivery and the teaching-learning process as they miss their regular work because of the practice. [*Ethiop.J.Health Dev.* 2004;18(3):179-184]

Introduction

Khat (*catha edulis*) is a natural stimulant from the *Catha edulis* plant, found in the flowering evergreen tree or large shrub of Celastraceae family, which grows mainly in Ethiopia, Kenya, and Yemen and at high altitude areas in South Africa and Madagascar (1). The plant is known by different names in different countries: Khat in Ethiopia, Qat in Yemen, Mirra in Kenya and Qaad or Jaad in Somalia, but in most of the literature it is known as Khat. In khat growing countries, the chewing of khat leaves for social and psychological reasons has been practiced for many centuries and its use has been gradually expanded to many countries worldwide (1,2).

Modern users report that chewing khat gives increased energy levels, alertness and confidence, a sense of happiness, better thinking capacity and creativity, facilitation of communication ability, enhanced imaginative ability and the capacity to associate ideas. For some, chewing khat is a method of increasing energy and elevating mood in order to improve their work performance (3).

The active ingredient of khat responsible for its psycho stimulant effect is an alkaloid chemical known as

cathinone, which is structurally and chemically similar to d-amphetamine, and cathine, a milder form of cathinone. Cathinone is a highly potent stimulant, which produces sympathomimetic and central nervous system stimulation analogous to the effect of amphetamine. Fresh leaves contain both ingredients; those left unrefrigerated beyond 48 hours would contain only cathine, which explains users' preference for fresh leaves. Khat loses its potency after 48 hours. The results of various *in vivo* and *in vitro* experiments indicate that the substance could be considered as a "natural amphetamine" (1,4).

In Ethiopia, khat is commonly used for social recreation. Occupational groups such as motor vehicle drivers, truck drivers, who chew khat during long distance driving, to keep awake, also use it under a variety of other conditions. A significant number of students chew khat to be alert especially during examination periods. There is also specific usage of khat by the special sections of the community: craftsmen and farmers use khat to reduce physical fatigue and traditional healers to heal ailments (5,6).

Although khat has an extreme social nature (individual feelings of sociability in social gatherings), it influences

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physical and psychological functions. Its psychic influence depends on its active ingredients that have a stimulating and euphoric effect. And the medical and psychosocial effects of khat chewing depend on its capacity to lead to dependency (addiction) and to specific physical and behavioral effects, including socio-economic consequences for individuals and the community (7).

A common effect of khat use is insomnia, a condition that the users sometimes try to overcome with sedatives or alcohol. The withdrawal symptoms after prolonged khat use seem to be limited, however, to lethargy, mild depression, slight trembling and recurrent bad dreams. An important consideration is that, khat use may endanger health in that the resulting anorexia leads to malnutrition and thereby to increased susceptibility to infectious diseases (5).

The recent sharp increase in khat consumption may not only affect the health of individuals but could also have serious socio-economic consequences for the countries involved. The potential adverse effect is diversion of income for the purchase of khat, resulting in neglect of the needs of the family, leading to family discord and divorce. Furthermore, in countries where its use is substantial, it may negatively affect the economy since productivity is reduced in quantity and quality as the result of absenteeism and after-effects of the drug (8).

Prevention of drug/substance abuse presents a complex problem to educators, public health authorities and law enforcement agencies in Ethiopia. Lack of awareness of the problem of drug/substance abuse on the part of lawmakers who could enforce preventive measures seems at the root of the difficulties in dealing with it. To assist policy formation for coping with all forms of drug abuse in specific risk groups and the general population of Ethiopia, epidemiological studies are needed to identify risk groups and patterns of drug use behavior (9).

The present study was thus under taken to determine the prevalence and socio-demographic picture of khat chewing and its correlates among the staff of technical in Jimma Hospital and the academic staff of Jimma University so that it can be used as a baseline for subsequent study in teaching institutions.

Methods

A cross-sectional study was conducted in Jimma University (JU), from January to February 2003, which is located in Jimma town, 335 Kms Southwest of Addis Ababa. The university has two campuses: the main campus (the former Jimm Institute of Health Sciences) and College of Agriculture (JCA), which is, located about 5 kms from the main campus. The university has 151 technical staff for the hospital and 440 academic staff. But only 490 staff were available during the study

period and all were included in the study. A structured self-administered questionnaire was employed for data collection. The variables included were socio-demographic characteristics, use of khat/cigarettes, motivating factors that initiate people to use khat, drinking alcohol after the use of khat, reasons why people use khat, health hazards of khat chewing, opinion about the cost of khat and attitude towards khat use.

Ethical clearance and permission were obtained from the Research Program office of the Community Based Education (CBE) of JU and before starting the data collection, Permission was also obtained from the relevant officials of the university, the deans of the respective colleges/faculties or heads of schools/departments by explaining the purpose of the study. Individuals were informed that information collected would be kept anonymous and participation was totally voluntary.

The operational definitions used:-(a) Non-user: Person, who has never used khat in any form, (b) Lifetime prevalence of chewing: the proportion of the study population who had ever chewed khat in their lifetime, (c) Current prevalence of chewing: The proportion of the study population who were chewing khat with in 30 days preceding the study, (d) Ever chewer: An individual is considered an ever chewer even if he/she had chewed only once in his/her lifetime.

Frequency tables were used for data presentation and chi-square tests were applied to compare inter-group distribution. Data was analyzed using SPSS version 11.

Results

Four hundred ninety subjects were included in the study and the overall response rate was 412(84.1%). The questionnaires filled by 12 respondents was rejected during data screening because of their incompleteness. About 330(82.5%) of the respondents were males, 142 (35.5%) Amharas, 234 (58.5%) were Orthodox by religion and 208(52.0%) were single. One hundred fifty four (38.5%) were in the age group 25-34 years and 107(26.8%) were diploma holders, and 263(66.8%) were academic staff. More males (33.0%) than females, Muslims (49.0%) than Christians, Tigrians (42.9%) than other ethnic groups, technical hospital staff (33.8%) than academic staff, married (32.4%) than singles, age group 18-24 years (34.4%) than other age groups and general practitioners (40.5%) than other professional groups were found to be khat chewers (Table 1). Male sex ($\chi^2=4.01$, $P=0.0319$) and being Muslim ($\chi^2=19.839$, $P=0.0005$) were significantly associated with khat chewing.

The lifetime prevalence of khat chewing was found to be 46% while the current prevalence of chewing was 30.8%. The frequency among males (33.0%) was higher compared to females (20.0%).

Table 1: Socio-demographic characteristics of khat chewers among the technical staff of Jimma hospital and the academic staff of Jimma University, Ethiopia, 2003.

Variables	Population (n= 400)		Khat chewers		Non-chewers		X ²	P-value
	n	%	No	%	No	%		
Sex								
Male	330	82.5	109	33.0	221	67.0	4.01	0.0319
Female	70	17.5	14	20.0	56	80.0		
Age							4.826	0.185
18-24	90	22.5	31	34.4	59	65.6		
25-34	154	38.5	42	27.3	112	72.7		
35-44	117	29.3	42	27.3	75	64.1		
≥45	39	9.3	8	20.5	31	79.5		
Religion							19.839	0.0005
Orthodox	234	58.5	76	32.5	158	34.6		
Muslim	49	12.3	24	49.0	25	51.0		
Catholic	94	23.5	14	14.9	80	85.1		
Protestant	13	3.3	5	38.5	8	61.5		
Others	10	2.5	4	40.0	6	60.0		
Ethnicity							4.478	0.2142
Amhara	142	35.5	37	26.1	105	73.9		
Oromo	118	29.5	38	32.2	80	67.8		
Tigris	42	10.5	18	42.9	24	57.1		
Other	98	24.5	30	30.6	68	69.4		
Educational level							5.583	0.3489
12 th complete and 12+1	33	8.3	8	24.2	25	75.8		
Diploma	107	26.8	34	31.8	73	68.2		
Degree (BA, BSc.)	81	20.3	21	25.9	60	74.1		
General Practitioners (MD)	74	18.5	30	40.5	44	59.5		
MD+ Specialty	33	8.3	8	24.2	25	75.8		
MSc/MPH/MA+	72	18.0	22	30.6	50	69.4		
Occupation							0.538	0.4633
Tech. Hospital	137	34.3	45	32.9	88	64.2		
Academic	263	66.8	78	29.7	185	70.3		
Marital Status							0.417	0.8119
Single	208	52.0	62	29.8	146	70.2		
Married	170	42.5	55	32.4	115	67.7		
Divorced	22	5.5	6	27.3	16	72.7		

Among khat chewers, 34(27.6%) were chewing 2-3 times per week. Seventy-four (40.2%) have started khat chewing before four years. The amount of khat consumed at a time was estimated per cost in birr, and fifty one (41.5%) of the chewers consumed khat that costs 3-5 birr per ceremony (Table 2). The mean hour spent for a single khat ceremony was found to be 2.5 hours for academic staff and three hours for technical hospital staff. The majority (61.9%) of the chewers reported that the cost of khat is fair while 26.2% said it was cheap and the rest (11.9%) reported that khat was expensive. Most (72.1%) of the chewers chew khat with friends, 13.6% chew alone, 13.6% chew with spouse and 0.7% chew with their parents.

Various reasons for chewing khat were given by current chewers. The main reason mentioned was to increase performance (58.5%) followed by relaxation (39.8%) and socialization (18.7%)(Table 3).

Forty per cent of the chewers started chewing while they were in college or University, 20.7% as government employees, 17.4% at senior secondary school, 14.2% at elementary school, 3.9% at Junior high school and 3.9% of them started during childhood. Some of the respondents 27 (6.8%) reported that they like to see their friends or families or students /colleagues chew khat.

Twenty two (81.5%)of these believe that chewing khat facilitates work and communication and hence peaceful relationships, and 34(8.5%) of the respondents reported that their children also chew khat. Of these, 22(64.7%) reported that 10-15 years is the age when children start chewing.

Majority of the current chewers 112 (91.1%) believed they could stop chewing in the future and out of these, 22(19.6%) would when they get the position (rank) they want, 13(11.6%) when they get sick of chewing, 12(10.7%) when they get married, 10(8.9%) when they leave Jimma University, 8(7.1%) after retiring and 47(42.0%) don't know when to stop.

Fifty one per cent of the respondents were found to have negative attitudes towards khat chewing. Nearly one third of them 42(35.5%) were indifferent and 16(4.0%) of them were found to have positive attitudes.

Thirty eight (30.9%) of the chewers smoke cigarettes while chewing khat and the habits of khat chewing and cigarette smoking were found to have a statistically significant association ($P < 0.005$). Fifty two (42.3%) of the chewers drink coffee while chewing but no statistically significant association was found between khat chewing and drinking coffee ($P > 0.05$), and

Table 2: Pattern of khat chewing among the technical staff of Jimma hospital and the academic staff of Jimma University, Ethiopia, 2003.

Chewing patterns	Male		Female		Total	
	No	%	No	%	No	%
Chewing frequency currently (n=109)						
Daily	30	24.4	2	1.6	32	26.0
Once a week	19	15.5	5	4.1	24	19.5
2-3 times a week	29	23.6	5	4.1	34	27.6
Occasionally	31	25.2	2	1.6	33	26.8
Duration of chewing (n=167)						
<6 months	37	20.1	3	1.6	40	21.7
6-12 months	7	3.8	0	0	7	3.8
1-2 years	25	13.6	4	2.2	29	15.8
2-4 years	30	16.3	4	2.2	34	18.5
>4 years	68	37.0	6	3.3	74	40.2
Amount chewed (n=109)						
<3 birr	24	19.5	9	7.3	33	26.8
3-5 birr	50	40.7	1	0.8	51	41.5
5-10 birr	32	26.0	4	3.3	36	29.3
>10 birr	3	2.4	0	0	3	2.4
Smoking during chewing (n=123)						
Yes	38	30.9	0	0	38	30.9
No	85	69.1	0	0	85	69.1
Coffee use during chewing (n=109)						
Yes	44	35.8	8	6.5	52	42.3
No	65	52.9	6	4.9	71	57.7
Alcohol intake after Chewing (n=109)						
Yes	69	56.1	4	3.3	73	59.4
No	40	32.5	10	8.1	50	40.7

73(59.4%) took alcohol after khat chewing ($P<0.05$) to avoid insomnia (59.5%), depression/ or unpleasant feelings (59.5%), to increase happiness (21.6%) and (14.9) to inhibit excitation (Table 3). A majority (71.4%) of the respondents who smoke during chewing reported that smoking enhances the effect of khat chewing; 18.4% said that smoking suppresses the effect of khat and the rest (10.2%) reported that smoking has no effect on khat chewing.

Table 3: Reasons given for starting khat chewing Jimma University, Ethiopia, 2003

Reason	Khat chewing	
	No	%*
To increase performance	72	58.5
For relaxation	49	39.8
To avoid unpleasant feelings/ depression	38	31.2
For socialization	23	18.7
Peer pressure	18	14.6
To kill extra time	17	13.8

* The percentages do not add up to 100.0% because one respondent can give more than one answer.

Sixty two (50.4%) reported that they have ever missed their regular work at Jimma University for the purpose of chewing. They did this occasionally, in 38(61.3%) of cases, twice weekly in 11(17.7%), once a week in 8(12.9%) and twice a week in 5(8.1%). A majority 67(54.5%) of the chewers said that they used to become late chewing khat or left work early to chew khat and 82.3% of the cases did this occasionally.

Discussion

In this study the current prevalence of khat chewing was found to be 30.75%, which is almost similar to the one that is reported for Jimma town (30.6%). This could be due to the fact that both studies were conducted in the same locality. The prevalence of khat chewing determined in this study is also comparable to the one that is reported for Adamitulu (31.7%), but lower than that reported for Butajira (50%). This could be due to the preponderance of Muslims in Butajira where they account for 90% of the population, whereas the proportion of Muslims in Jimma University is 12.3% as the present study indicates. Moreover the present study was institution-based unlike the study in Butajira which was community based (10,11,12).

Similar studies among Moqadishu inhabitants in Somalia [6], and among students of Gondar College of Medical Sciences [11], found the prevalence of 18.3% and 22.3% respectively. The relatively greater distances between these places and khat-growing areas might explain the lower prevalence in those studies conducted in Somalia and Gondar College of Medical Sciences.

According to this study, there is a statistically significant association ($P<0.001$) between khat chewing habit and the Muslim religion compared to other religions. This finding is in line with other studies (10,11,13). This might be due to the fact that khat growing and the practice of chewing have traditionally been confined to the lowland areas of Ethiopia, where the Muslim

population predominates and the habit is socially accepted and could be easily passed from generation to generation (10).

In the current study khat chewing was found to be more prevalent among males than females ($P < 0.05$) and this is consistent with other reports (10,11). This may be because females are more culturally restricted from exposure to khat chewing than males.

In this study, the peak age of khat chewing was found to be between 18 and 44 years. This finding is closer to the results of similar studies done in Butajira and Moqadishu which reported that the peak age of khat chewing was 21-44 and 20-40 years respectively (4,10). About 8.5% of the respondents reported that their small children chewed khat with their parents. Most of these people (36.4%) reported that the age of onset of khat chewing is 10-15 years. The median age of onset reported from Agaro and Gondar were 14.6 and 16.4 years respectively (12,13). This indicates that the more educated groups who represent the most productive sections of the society are affected by the khat chewing habit.

In the present study, no association was found between khat chewing and membership of specific ethnic group, age group, marital status and educational level. A statistically significant association was found between educational level and khat chewing in other studies which were conducted on the general population which is comprised of illiterates and literates, but the study population in the present study were all educated (at least 12th grade complete) and who are employees at higher institutions, where people are engaged in mental activities where alertness, concentration, high imaginative capacity and social interaction are required and hence they prefer to chew khat. This fact is supplemented by the present study which showed that 17.42% of the chewers started chewing from their senior secondary school, levels 40% of them at college or university, and 20.65% as government employees.

The reasons given by the study population for chewing khat were to increase performance, for relaxation and to avoid unpleasant feelings. This finding is similar to previous reports and it indicates that khat has similar effect on users as that of amphetamine and other psychostimulants (3,10,12).

The statistically significant association ($P < 0.005$) between khat chewing and cigarette smoking in this study is in line with findings from other studies done in Butajira, Jimma town, and Somali (4,10). A study done in Gondar has also showed that smoking was common and accompanied drug use including khat (7). Traditionally, cigarette smoking and coffee drinking accompany khat chewing in order to get maximum excitement, but no association was found between chewing and coffee drinking in this study ($P > 0.05$).

Khat chewers are believed to take alcohol to break the stimulating effect of khat after long hours of stimulation by the central inhibitory effect of alcohol. The expression used for such a practice in one of the Ethiopian languages, "Mirkana chabsi", connotes breaking the effect, and it was found in the present study that a significantly higher ($P < 0.05$) number of khat chewers (59.4%) take alcohol usually after chewing to avoid insomnia (59.5%), depression/unpleasant feelings (59.5%), to increase happiness (21.6%) and to inhibit excitation (14.9%) contrary to other studies (10). This could be due to the fact that staffs of higher institutions are more or less aware of the central inhibitory effect of alcohol taken after chewing. Moreover they are in a position to afford the cost for alcohol ingestion compared to other community members.

Nearly half of the chewers (50.4%) reported that they have missed their regular work at Jimma University just for chewing purposes and they did this on occasional basis in 61.3% of cases, and twice a week in 17.7% of the cases. A majority of the chewers (54.5%) reported that they have ever become late chewing khat or left their work early to chew khat at least on occasional bases. This might, in one way or another, have a negative effect on service delivery and the teaching-learning process and finally affect the development of the country since productivity is reduced in quantity and quality as the result of absenteeism and the after-effect of the drug.

In conclusion, khat chewing habit and cigarette smoking affects a fairly large proportion of the staff of JU academic and technical hospital staff of which Muslims, and males are affected most. Besides, the habit of khat chewing reinforces the development of other habits like cigarette smoking, and alcohol intake, leads to unnecessary expenses and wastes productive time of citizens, and nearly half of the chewers have ever missed their regular work in JU for chewing purposes. Based on these findings it is recommended that the University should prepare open forums, regular workshops and conferences to create understanding on the ill effects of khat chewing in collaboration with psychiatrists and psychologists.

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References

1. Weir, S. Qat in Yemen: Consumption and social changes 1985.
2. Nencini P. Grassi MC. Botan AA. Asseyr AF. Paoli E. Khat chewing spread to the Somali Community.
3. Kalix P. Khat: Scientific knowledge and policy issues. *Br.J Addict* 1987; 82: 47-53.

4. Elmi AS. Khat consumption and problems in Somalia: Proceedings of an international conference on khat, Jan. 17-21, 1983, Antananarivo, Madagascar.
5. Kalix P. The pharmacology of khat. International symposium, Addis Ababa, 1984:69-73.
6. Mekasha A. Clinical aspects of khat (*Catha edulis* forsk): In: Proceedings of the International Symposium on khat 1983; 77-83.
7. Zein A. Polydrug abuse among Ethiopian university students with particular reference to khat. In: International symposium on khat 1984: 85-89.
8. Pantelis C, Hindler CG, & Taylor JC. Use and abuse of khat (*Catha edulis*). A review of the distribution, pharmacology, side effects and a description of psychosis attributed to khat chewing. *J psychology Med* 1989; 19: 657-668.
9. Seyoum G, et al. Rapid assessment of the situation of drug and substance abuse in selected urban areas in Ethiopia, Addis Ababa, AAU, Nov. 1995: 9-55.
10. Alem A, Kebede D, Kullgren G. The prevalence and socio-demographic correlates of khat chewing in Butajira, Ethiopia. *Acta Psychiatrica Scand* 1999; 100:840-91.
11. Mossie A. The prevalence and socio-demographic characteristics of khat chewing in Jimma town, Southwest Ethiopia. *Ethiop. J Health Sci.* 2002; 12(2): 69-80.
12. Kebede Y. Cigarette smoking and khat chewing among college students in Northwest Ethiopia. *Ethiop. J. Health Dev.* 2002; 16(1): 9-17.
13. Fekade A, Challi J, Tadesse M. Khat chewing among Agaro secondary school students. *Ethiop Med J.* 1994; 32: 161-166.