East African Medical Journal Vol. 81 No. 9 September 2004
USE AND PERCEPTION OF THE PSYCHOSTIMULANT, KHAT *(CATHA EDULIS)* AMONG THREE OCCUPATIONAL GROUPS IN SOUTH WESTERN UGANDA
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A. O. IHUNWO, F. I. B. KAYANJA and U. B. AMADI-IHUNWO

ABSTRACT

Objective: **To examine the use of and perception of the psychostimulant, khat *(catha edulis)* in three towns in south-western Uganda.**
Design: **Cross-sectional survey.**
Settings: **Mbarara, Kabale and Fort Portal.**
Subjects: **Three categories of respondents prone to khat chewing habit were selected; One hundred and thirty students, thirty five law enforcement officials and sixteen transporters.**
Main outcome measures: **Khat chewers existed within the sampled population. The relationship between tobacco smoking, drinking alcoholic beverages and the khat chewing habit was established.**
Results: **Out of 181 respondents, 164(90.6%) had heard of khat, 126(69.6%) had seen it and 57(31.5%) had chewed khat before. As at the time of this study, 37(20.4%) still chewed khat. Within the three categories of subjects, the use of khat was highest among law enforcement officials (97.1%), followed by transporters (68.8%) and students (9.2%). The majority of khat chewers were in the age range of 16-25 years. There was a clear correlation between khat chewing and the use of stimulants such as alcoholic beverages and tobacco smoking. Those who smoked cigarettes were twenty-eight times more likely to chew khat (OR=28.95% Cl=9.6,83.7). Euphoria, suppressed sleep and increased sexual desire were the most predominant effects experienced by khat chewers.**
Conclusion: **The knowledge of khat is widespread and its consumption is on the increase among students, law enforcement officials and transporters in south-western Uganda. This calls for attention considering the public health implications.**

INTRODUCTION

Khat is a natural stimulant from the *catha edulis* plant found in the flowering evergreen tree or large shrub which grows in East Africa and southern Arabia. The fresh leaves are crimson-brown and glossy and also emit a strong smell. It is usually wrapped in banana leaves to retain moisture and freshness as it starts to lose its potency after 48 hours(1). The exudate is swallowed and produces a stimulating and euphrogenic as well as sympathomimetic effects. The principal psychoactive alkaloid, and aminopropiophenone from the leaves is called cathinone(2). It is structurally and chemically similar to d-amphetamine. The principal features of the 'khat experience' are described as increased levels of alertness, ability to concentrate, confidence, friendliness, contentment and flow of ideas(3,4).

Several million people are estimated to be frequent users of khat. This has a deep-rooted social and cultural tradition(5) and consumption is increasing(3). Khat usage originated in Ethiopia and spread through Kenya, Somalia, Djibouti, Uganda, Tanzania, Zimbabwe, Zambia, South Africa and Yemen. There is evidence to suggest that the habit may be spreading(6,7). Khat chewing is increasing in frequency among immigrant groups from these regions(8). It has been suggested that knowledge about the pharmacology of the active principle cathinone should prompt close attention to the khat habit, in particular with regard to its epidemiological and public health aspects(9). Psychotic reactions to khat have also been reported(10-14). Recently, khat chewing has been suspected in physical and mental distress(15-16), oral squamous cell carcinoma(17), haemorrhoidal disease(18), and myocardial infarction(19).

The aim of this study was to use rapid assessment to obtain a situational analysis of the use and perception of khat among three different occupational groups in southwestern Uganda and its possible public health implications

MATERIALS AND METHODS

Questionnaire administration: This study was designed as a cross-sectional sample survey. According to Selassie and Gebre(22), rapid assessment is used to obtain insights into the nature, magnitude and seriousness of the problem of substance abuse as a basis for formulating preventive and control-oriented policies and programmes. This tool gives a qualitative analysis of social and behavioural science data without excluding the use of quantitative indicator.

A questionnaire on the 'use and perception of khat' was designed and administered to three different categories of respondents. The questionnaire structure consisted of four sections namely, biographical parameters of the respondent, information on knowledge and use of khat, effects experienced after khat consumption and possible medical reason for the khat chewing habit.

The questionnaire was self-administered to first year students attending a course in Anatomy (80 students) and in Communication Skills (100 students) in the Faculties of Medicine and Development Studies respectively. Research Assistants knowledgeable in the local language were employed in obtaining information from law enforcement officials and transporters. The law enforcement officials were recruited from the main Police station in Fort Portal town and drivers with some assistants from the main bus terminal for long distance drivers in Kabale town. Fifty questionnaires were administered to the law enforcement officials and 30 to transporters. Returned questionnaires with conflicting information were discarded before analysis. One hundred and eighty-one respondents from the age range of 10-15 years and above were analysed in this study consisting of one hundred and thirty Mbarara University students, thirty five law enforcement officials from Fort Portal town and sixteen transporters from Kabale town.

Data analysis: Information obtained from completed questionnaires was statistically analysed for frequencies, frequencies table, chi-square tests and logistic regression using a computer-based programme, Statistical Package for Social Scientist (SPSS, version 10). Chi square test and P-values were used to establish association between variables, and logistic regression to analyse how one variable predicts another.

RESULTS

Questionnaire Outcome

Age: Majority of the respondents, 94(51.9%) were in the age range 21-25 years followed by 61(33.7%) in the 16-20 years range. The least number was one (0.6%) in the 10-15 years age group. This respondent happens to be an assistant to a driver. Of the 57 respondents that had chewed khat, 20 (35.1%) were in the 21-25 years age group followed by 18 (31.6%) in the 16-20 years age group. Eight (14.0%) were in the 36-40 years age range, four (7.0%) in the 26-36 years and three (5.3%) each in the 31-35 and 40 years and above groups. One (1.8%) khat chewer was in the 10-15 years age group (Table 1).

Gender and marital status: One hundred and twenty-seven (70.9%) were males while 52(29.1%) were females. One hundred and fifty one (83 .4%) were single, 24(13.3%) were married, four (2.2%) were separated or divorced and one (0.6%) was widowed. Twenty (13.8%) of the respondents had between one and nine children. Forty five (78.9%) of khat chewers were males and 33 (59.6%) were single (Table 1).

Religion: One hundred and forty five (80.1%) were Christians and 26(14.4%) Muslims. Ten (5.5%) respondents were neither Christians nor Muslims (Table 1). Thirty five (56.1%) Christians constituted the majority of khat chewers.

Smoking and drinking status: Thirty eight (21.0%) of the respondents did smoke tobacco as against 143 (79.0%) that did not. Seventy nine (43.6%) drank alcoholic beverages such as beer, waragi and local brews while 102(55.4%) did not (Table 2). Except when compared with khat chewers, this data did not present any statistical significance on its own.

Knowledge and use of khat: One hundred and sixty four (90.6%) of the respondents had heard of khat, 126 (69.6%) had seen it and 57(31.5%) had chewed khat leaves. As at the time of this investigation, 37(20.4%) still chewed khat (Table 2). These parameters were statistically significant ($P<0.001$). The frequency of khat chewing varied from once to thrice per day. Fifteen (27.8%) of khat chewers consumed the substance once, 20(37.0%) twice and 19(35.2%) thrice daily. This was statistically significant ($P>0.05$). On the number of wraps per day, 28(70%) of khat chewers consumed one to three wraps while 12(30%) chewed between four to nine wraps.

Relationship between khat chewing, cigarette and alcohol consumption: Thirty three (57.9%) of khat chewers did smoke cigarette while 35 (44.3%) consumed alcoholic beverages such a beer, refined gin *(waragi)* and local brews. Logistic regression was used to analyse how drinking and smoking predicts khat chewing. On how drinking predicts khat chewing, respondents who drink alcohol are three times more likely to use khat compared to those who do not drink (OR = 3, 95% CI = 1.5, 5.8). On how smoking predicts khat chewing, those who smoke cigarettes are thirty two times more likely to chew khat than those who do not smoke (OR = 32, 95% CI = 11.5, 92.3). To explore the effect of each after adjusting for the effect of the factor, both smoking and drinking were analysed simultaneously. Those who smoke cigarettes are twenty eight times more likely to chew khat (OR = 28, 95% CI = 9.6, 83.7).

Table 1

Biographical parameter of respondents and khat chewers

Characteristic	Respondents (n=181) No. (%)	Khat Chewers (n=57) No. (%)
Occupation		
Students	130 (71.8)	12 (21.0)
Law Enforcement Officials	35 (19.3)	34 (59.7)
Transporters	16 (8.9)	11 (19.3)
Age range (years)		
10-15	1 (0.6)	1 (1.8)
16-20	61 (33.7)	18 (31.6)
21-25	94 (51.9)	20 (30.1)
26-30	8 (4.4)	4 (7.0)
31-35	4 (2.2)	3 (5.3)
36-40	8 (4.4)	8 (14.0)
41 and above	5 (2.8)	3 (5.0)
Gender		
Male	127 (70.2)	45 (78.9)
Female	52 (28.2)	12 (21.1)
Marital Status		
Single	151 (83.4)	33 (59.6)
Married	24 (13.3)	19 (33.3)
Separated/Divorced	4 (2.2)	3 (5.3)
Widowed	1 (0.6)	1 (1.8)
Religion		
Christianity	145 (80.1)	32 (56.1)
Muslim	26 (14.4)	18 (31.6)
Others	10 (5.5)	7 (12.3)

Table 2

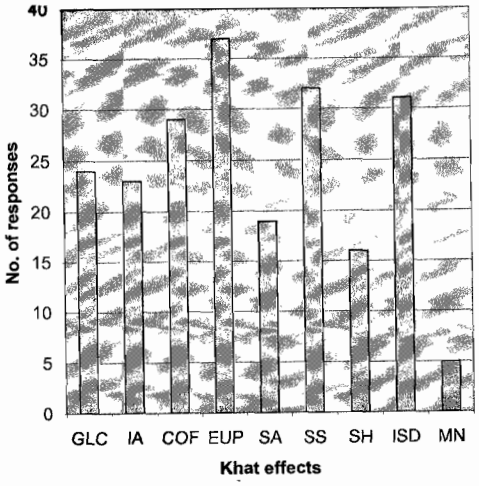
Knowledge and use of cigarettes, alcohol and khat

Characteristic	Students (n=130) No. (%)	Law enforcement officials (n=35) No. (%)	Transporters (n=16) No. (%)	Total (n=181) No. (%)
Smokers	8 (6.1)	23 (65.7)	7 (43.8)	38 (21)
Yes	122 (93.9)	12 (34.3)	9 (56.2)	143 (79)
No				
Alcohol Drinkers				
Yes	51 (39.2)	19 (54.2)	9 (56.2)	79 (43.6)
No	79 (60.8)	16 (42.9)	7 (43.8)	101 (56.4)
Heard of Khat				
Yes	115 (89.2)	35 (100)	14 (87.5)	164 (91.1)
No	14 (10.9)	- -	2 (12.5)	16 (8.9)
Seen khat				
Yes	79 (60.8)	34 (97.1)	14 (87.5)	126 (69.6)
No	51 (39.2)	1 (2.9)	5 (12.5)	57 (30.4)
Chewed khat				
Yes	12 (9.2)	34 (97.1)	11 (68.8)	57 (31.5)
No	118 (90.2)	1 (2.9)	5 (31.2)	124 (68.5)
Still chew khat				
Yes	1 (0.8)	30 (96.8)	6 (37.5)	37 (20.9)
No	129 (99.2)	4 (3.2)	10 (62.5)	140 (79.1)
Frequency				
Once	4 (33.3)	10 (32.3)	1 (9.1)	15 (27.8)
Twice	7 (58.3)	8 (25.8)	5 (45.5)	20 (37)
Thrice	1 (8.3)	13 (41.9)	5 (45.5)	19 (35.2)
Quantity chewed daily (Wraps)				
1-3	-	22 (70.8)	6 (66.6)	28 (70)
4-9	-	9 (29.2)	3 (33.3)	12 (30)

Chi square test analysis of these characteristics within the three groups showed a statistical significance $P<0.001$ for those who have heard, seen and chewed khat.

Figure 1

Effects experienced after chewing khat (n=57)



GLC = Good Level of Concentration, IA = Increased Alertness, COF = Confidence, EUP = Euphoria, SA = Ability to Socialise with others, SS = Suppressed Sleep, SH = Suppressed Hunger, ISD = Increased Sexual Desire and MN = Nightmares

Effects experienced after chewing khat: Among the 57 khat chewers, the effect with the highest response was euphoria which was defined as feeling high and energetic. This was followed, in descending order, by suppressed sleep, increased sexual desire, confidence, good level of concentration, increased alertness, ability to socialise and communicate easily with others, suppressed hunger and nightmares. Figure I is a representation of the effects as experienced among the khat chewers.

Medical reasons for khat chewing: The highest medical reason for the use of khat was its analgesic property (11) followed by depression(7) and stress(5). Other conditions were in the treatment of intestinal infection, high blood pressure, asthma and diarrhoea. It was observed that some of the 'medical reasons' given by some of the respondents were related to the 'khat experience' already analysed in the previous section.

DISCUSSION

In this study, the khat chewing habit has been established among students, law enforcement officials and transporters in south-western Uganda. Our findings showed that substance abuse involving khat cuts across all ages. Youths and young adults between the ages of 16-25 years constituted the majority in khat consumption. This corresponds to observations in the capital city of Kampala(21) and in the neighbouring countries of Tanzania(23), Kenya(24) and Ethiopia(20,24). According to "The Other Voice" (21), the drugs and substance abused among youths due to peer pressure range from cocaine, alcohol, opium, *marijuana*, heroine, narcotics, tar, petrol, madrax and *mairungi* (khat). The youth claimed that these substances make them "fearless, relaxed, not lonely, bored, or feel neglected". It also helps them forget their problems especially those stemming from poverty. Others claim the substances ease their minds and make them acquire sexual prowess especially the boys.

Most socio-demographic parameters on khat chewers have been from muslim dominated areas which associate the khat chewing habit with the religion(4,5,24). In this study, Christians constituted the majority of khat chewers, a reflection of the predominant religion. Invariably, a religious connotation might not be appropriate in describing khat abuse. Understandably, the southern Arabia penninsula is inhabited mainly by muslims. While previous studies associate khat usage with an islamic background, this study has shown that khat usage is not restricted to persons having this background.

The abuse of central nervous system (CNS) stimulants especially among students is for staying awake for prolonged periods(25) and while preparing for important examinations as it is believed to sharpen the mind and senses(20). From this study, students did use khat to suppress sleep, but also for euphoria, confidence, increased sexual desire, increase alertness and to suppress hunger, in that order. Unfortunately, academic performance does not appear to be improved with CNS stimulants(26), even though there could be some gains in psychological test(27). No difference was noticed in academic performance when a placebo was compared with stimulants in under-achieving children(28).

Law enforcement officials used khat basically for euphoria, a good level of concentration, increased sexual desire, confidence and ability to socialise and communicate with others. Transporters used khat for increased alertness, confidence, euphoria and to suppress sleep. These correlate with Selassie and Gebre's(20) findings that most of the reasons given for substance abuse were associated with the situation of the abuser. In a standard aviation medical examination, Khattab and Amer(29) reported an adverse effect of khat chewing on perceptual-visual memory and decision speed. Hence, the reported increased alertness, especially among transporters might not be risk-free.

By and large, euphoria, which was interpreted as feeling high and energetic, suppressed sleep and increased sexual desire were the predominant effects observed among khat chewers in this study. Hassan *et al*(30) reported that khat chewing did result in functional mood disorder which might exacerbate symptoms in patients with preexisting psychiatric disease. The euphoria and insomnia may predispose to psychosis that has been reported in some khat chewers and especially immigrant communities in the west(6,11,12). Although increased sexual desire was observed in our study, there is a report of possible association of long-term use of khat and abnormal seminal fluid analysis profile in

males of allegedly infertile Ethiopian couples(31). This raises the question of desire and performance.

The use of khat and other social stimulants were also noted. Tobacco smoking presented the higher risk factor for forming a khat chewing habit by thirty two times against three times by drinking of alcoholic beverages. Conversely, khat chewing often lead to abuse of illicit substances(20). In Mbarara, each wrap of khat, is sold at 1000 Uganda shillings (equivalent of about 0.54 US cents) which translates to about US$1.50 for a daily consumption of three wraps. Invariably, that will be quiet a lot of money. The implication of this is that some resource is spent on khat chewing habit even though poverty was implicated as one of the reasons for khat consumption(21).

Regulation of khat consumption does not present a very good approach to its prevention in the population. At present there seem to be no clear indication on the legal status of khat in Uganda. According to Mutali(32), khat usage is illegal in Uganda while Kimani(23) reported that it is legal in both Kenya and Uganda. This uncertainty was experienced in the course of data collection as an air of apprehension was visible during the request for consent from respondents. This might be a limitation to the question of obtaining current usage within the population.

Claims by some khat chewers on its usefulness as an analgesic seem to correlate with findings of Connor *et al*(33) that khat, like amphetamine and ibuprofen, can relieve pain. This area will require added investigation. In the light of concerns that khat usage may be spreading, its consideration as a public health issue should attract more attention.

In conclusion, this report has established that the knowledge of khat is becoming widespread among students, law enforcement officials and transporters. Its consumption is on the increase especially among the youths and young adults and this may pose some health risk in the population if preventive measures are not considered and put in place.

ACKNOWLEDGEMENTS

The authors are grateful to the two research assistants, Ms Joy Kabasindi and Akimanzi Augustine who assisted in the collection of data from Fort Portal and Kabale. Many thanks to Dr. Francis Bajumire for statistical analysis and Dr. Elizabeth Cantor-Graae for the initial review of this manuscript. Support for this work was partly provided by the Faculty of Medicine Research Grant to AOI.

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