

PATTERN OF KHAT ABUSE AND ACADEMIC PERFORMANCE AMONG SECONDARY SCHOOL AND COLLEGE STUDENTS IN JAZAN REGION, KINGDOM OF SAUDI ARABIA (KSA)

Rashad M. Al-Sanosy, MD, ABFM

Department of Psychiatry, King Fahad Central Hospital, Jizan, Saudi Arabia

مقدمة: القات مادة منشطة للجهاز العصبي ، ويكثر استخدامه في شرق أفريقيا واليمن والجزء الجنوبي من المملكة العربية السعودية خاصة منطقة جازان .ومع ذلك فان أنماط استخدامه وتأثيراته على التحصيل الدراسي لم تدرس جيدا .

أهداف الدراسة: تهدف الدراسة إلى التعرف على أنماط استخدام القات بين طلاب وطالبات المدارس الثانوية والكليات بجازان وتأثيره على تحصيلهم الدراسي .

طريقة الدراسة: أجريت دراسة مقطعية على طلاب وطالبات المدارس الثانوية والكليات بمنطقة جازان وذلك في شهر مايو 2006م وتم تصميم استبانة ذاتية التعبئة وتطبيقها على عينة تم اختيارها بطريقة العينة المنظمة وكان تحليل المعلومات باستخدام البرنامج الإحصائي للعلوم الاجتماعية .

نتائج الدراسة: اغلب الطلاب يستخدمون القات بمنزلهم أو منازل أصدقائهم (43,8% - 37,0%) على التوالي.معدل الوقت الذي يقضى في الجلسة الواحدة 6.1 زائدا أو ناقصا 3,13 ساعات، كما أن (5,5%) من المستخدمين يقضون 12- 18 ساعة. كما أن وقت الاستخدام يكون عادة في نهاية الأسبوع (48.4%) والوقت المفضل لدى (69.8%) بعد الساعة 8 مساء .

وتبين أن (78.4%) مدخنين أيضا . كما أن نسبة (39.4%) درجاتهم الدراسية منخفضة وأن (40.9%) يكثر غيابهم عن الحصص والمحاضرات و (39.6%) لديهم إندارات نتيجة لغيابهم .

الخلاصة: غالبا ما يستخدم الطلاب القات في نهاية الاسبوع وبمعدل 6 ساعات للجلسة الواحدة وبطريقة جماعية ويكون ذلك عادة بعد الساعة 8 مساء . وكذلك يزيد انتشار استخدام التبغ وهناك ارتباط بين استخدام القات والمشكلات الدراسية . وبناء على ذلك توصي الدراسة ببعض السياسات والتدخلات المبكرة ومنها توفير بدائل من الأنشطة الترفيهية للشباب والعوائل خاصة في عطلات نهاية الأسبوع والاجازات .

الكلمات المرجعية: القات – انماط الاستخدام – جازان - السعودية

Background: Khat is a widely-abused psychoactive substance in East African countries, Yemen and Southwestern areas of the Kingdom of Saudia Arabia (KSA), especially in Jazan region. However, patterns of Khat consumption as well as its adverse consequences on academic work are not well studied.

Objective: The study was conducted to assess the pattern of Khat abuse and its associated academic effect on Secondary School and College students in Jazan region, KSA.

Methods: A cross-sectional study was conducted in May 2006, in Secondary Schools and Colleges in Jazan region, KSA. Students in each class were selected by systematic random sampling technique. Self-administered questionnaire was used for data collection. Data was processed and analyzed using the Statistical Package for Social Sciences (SPSS).

Results: Most Khat sessions were conducted in homes (43.8%) and friend's houses (37.0%). The mean duration of a Khat session is 6.1 ± 3.13 hours and 5.5% chew Khat for 12-18 hours. Most Khat sessions take place at the weekends (48.4%) usually after 8 p.m (69.8%).

Seventy-eight percent of those who chewed Khat were also smokers. The academic performance of those who chewed Khat was low: 39.40% had poor grades, 41% were frequently absent from classes and 39.60% were on probation as a result of poor grades.

Conclusion: Most chewing sessions took place at weekends usually in social gatherings after 8 p.m. with an average duration of about 6 hours. Smoking and educational problems were more

Correspondence to:

Dr. Rashad Al-Sanosy, Faculty of Medicine, Jazan University, P.O. Box 8300, Jizan, Saudi Arabia

E-mail: rshad100@yahoo.com

prevalent among Khat chewers. Strong preventive and control measures including early interventions and increase of awareness need to be implemented. Recreational alternatives for young people and families especially at weekends and holidays have to be found.

Key Words: *Khat, Pattern, Jazan, Kingdom of Saudi Arabia.*

J Fam Community Med 2009;16(3):89-95.

INTRODUCTION

The habit of chewing Khat (*Catha edulis*) is highly prevalent in East Africa and Southwestern Arabian Peninsula. The fresh leaves and twigs of the Khat shrub have a stimulating amphetamine-like and euphoric effect when chewed.¹ Khat consumption has substantially increased in decades. This is reflected in the recent issue of the World Drug Report (2001) which reported an increase of Khat chewing in five countries.²

The habit of chewing Khat is spreading at an alarming rate among the younger generation, especially in high schools and higher institutions, where academic activity is intense. Students in colleges and universities usually use Khat, claiming that it improves their academic performance although studies have shown significant difference between the mean Cumulative Grade Point Average (CGPA) of Khat users and those who do not chew Khat in favor of the later. This indicates that Khat chewing may not improve academic performance.³ Khat is usually chewed at special social gatherings, but is also used frequently during work by laborers, craftsmen, farmers and students to help them keep alert and reduce physical fatigue.⁴ Because of its stimulating effect, it has been traditionally used as a medicine by students preparing for examinations.⁵

The traditional habit of Khat consumption was highly regulated socially: adult males (more seldom females) would gather and chew Khat together at a 'Khat party', usually at weekends and afternoons until the time of the evening prayer. Current habits, however, involve adolescents, who chew Khat in cafés which open throughout the day.^{3,6}

The overall picture of the use of Khat from local communities indicated that its use was regulated in terms of frequency and length of the sessions as well as the amount chewed. It was also considered a purely social activity. However, a small number of people said they used Khat every day and/or for very long periods. Some felt that their use of Khat was out of control.⁷ Khat is now being chewed by

the unemployed loitering on the streets in Europe. There was a clear correlation between Khat chewing and the use of tobacco smoking. Those who smoked cigarettes were twenty-eight times more likely to chew Khat (OR=28.95% CI=9.6, 83.7).⁸

New patterns of use, which were not previously described in academic literature, have been observed in Somalia and Ethiopia called 'jabane' or 'igabana' ('eye opener'). This consumption in early morning hours was previously known only among khat farmers. However, new patterns of consumption, distinct from the former traditional use, and their health consequences are neither understood or well studied.⁹

The Province of Jazan lies in the south-west region of KSA. It has a population of approximately 1.5 million of some 4,000 villages and towns, covering an area of 40,000 sq km. It has been reported that Khat trees are being cultivated in the Southern region of the KSA adjacent to the Yemen border, and that Khat leaves are being chewed in Jazan region.¹⁰

The current prevalence rates of Khat chewing among college and secondary schools both male and female revealed that 37.7 % of boys 3.7 % of girls are current Khat users.¹¹ But no study has been conducted to evaluate the patterns of its use in the region and the possible academic effect on students.

The objective of this study was to assess the pattern of Khat consumption and its impact on the academic work of College and Secondary School students in Jazan region, KSA. This study sought to answer the following questions: (1) What is the pattern of Khat chewing among Secondary Schools and College students? (2) Does Khat chewing affect learning and the academic achievement of students?

MATERIAL AND METHODS

This cross-sectional study was conducted in May 2006. The study was in secondary schools and all 11 colleges in the region. The Community College

and Health Institutes train students in different disciplines of allied medical professionals at the diploma level. The Teachers' Colleges is a four-year educational training program. The total number of students enrolled in the 11 colleges in 2005-2006 academic years, was 18243 (12383 females and 5860 males). There are 2 administrative education sectors for boy's education in Jazan region: Jizan and Sabiya Education Sectors. The total number of boy schools is 54 in Jizan and 48 in Sabiya making a total of 25120 students. There is one Directorate for Girls Education administering 105 Girls Schools with 21640 girls in the Jazan region.

The required sample size was calculated as 20% of the students in the colleges and schools. Twenty percent of the schools were selected randomly from the list of schools provided. Systematic random sampling technique was used to select students in each educational institution (a college or a school). Students from each year of study in the College or a school were selected by systemic random sampling. A pre-tested self-administered questionnaire, was used to collect data. The independent variables included were, class level, sex, age, grades, and socioeconomic status of the parents. The main dependent variables were history of Khat chewing. The Jazan Khat study questionnaire was an adaptation of the WHO Global Youth Tobacco Survey (GYTS) model questionnaire to provide a wide range of socioeconomic indicators not only at the regional level in Jazan but also at the district level in both urban and rural settings and by gender. The modified GYTS model questionnaire, English version, was translated into Arabic and adapted to the Jazan situation. Before the distribution of the questionnaire, students gave their consent and were informed that participation was voluntary and the information collected would be kept anonymous and confidential. The questionnaire was pre-tested and based on the results of the pre-test; modifications were made to the wording and translation of the questionnaires. The study team consisted of 24 trained interviewers (School Teachers, psychologist and social workers) and two Technical Supervisors (Consultants). There were regular coordination meetings at all phases of the survey. The questionnaires were checked by field supervisors at the end of each day for omissions or lack of completeness. Responses were then coded. The questionnaire was distributed to the selected students in the classrooms and collected on the same day.

Ethical clearance and permission was obtained from the local authorities (His Highness Jazan Region Amir, The Governor) and Deanship of Research in Jazan University. Before the data collection began, permission was also obtained from the deans of the respective colleges and the Directorate of Education Sectors in Jizan and Sabiya. Data was processed and analyzed using the statistical package for Social Sciences (SPSS). Descriptive frequencies was used to test the association between different variables. The data entry was centralized at the Faculty of Medicine, Jazan University. The data was entered weekly, and analysis was performed using Statistical Package for the Social Sciences (SPSS).

RESULTS

Out of the 10000 questionnaires distributed, 8965 were returned giving a response rate of 89.7%.

Table 1: Khat chewing habits

Habit	No. (%)
Smoking	
Yes	863 (78.4)
No	901 (13.0)
How many times did you chew khat in last 30 days?	
1-2 days	539 (30.0)
3-5 days	331 (18.4)
6-9 days	298 (16.6)
10-19 days	233 (13.1)
20-29 days	176 (9.8)
40 days	218 (12.1)
Where do you usually chew khat?	
Home	718 (43.8)
Friend's house	606 (37.0)
School/college	23 (1.4)
Social occasions	150 (9.2)
Public places	141 (8.6)
When do you chew khat?*	
After Dahr	161 (8.9)
After Aser	265 (14.6)
After Magrib	122 (6.7)
After Isha	1271 (69.8)
How often do you chew khat?	
Daily	250 (13.8)
Most of week days	322 (17.8)
Weekends	765 (42.4)
Occasionally	468 (25.9)
With whom do you chew khat?	
Father	159 (8.8)
Relatives	325 (18.1)
Friends	1138 (63.0)
Alone	143 (10.1)
Duration of khat session:	
<6 hours	848 (48.2)
6-<12 hours	788 (45.0)
12 - <18 hours	97 (5.5)
18-24 hours	18 (1.3)

*In Jazan Fajer, Zhur, Aser, Magreb and Isha prayers are performed approximately at 5 am, 12 Noon, 4 pm and 8 pm respectively.

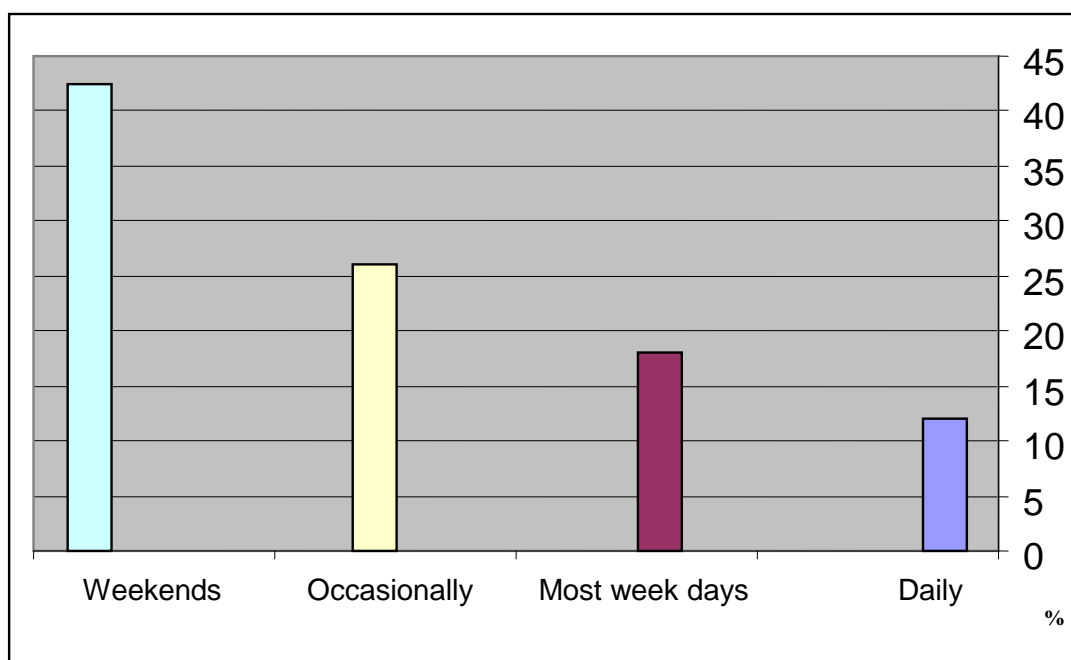


Figure 1: Khat chewing frequency

Table 2: Khat chewing and education

Factor	Total	Khat chewing No. (%)
Grades		
Excellent	2344	279 (11.9)
Very good	3997	863 (21.6)
Good	1752	552 (31.5)
Pass	244	90 (36.9)
Poor	104	41 (39.4)
Absent from classes		
None	3765	667 (17.7)
Rare	2949	651 (22.1)
Few	1336	345 (25.8)
A lot	308	126 (34.5)
Probation in last term		
Yes	980	388 (39.6)
None	7435	1416 (19.0)
Do you think that khat affects academic achievement?		
Yes	5598	708 (12.6)
No	1246	746 (59.9)
Do not know	1486	341 (22.9)

College students were 2466 (27.5%) and secondary schools 6499 (72.5%). There were 4639 male students and 4326 female students. About 69.5% of the students were between 15-20 years. The mean age of the respondents was 18.9 years (SD=2.58).

Khat is frequently chewed over the weekends (Figure 1). The Khat chewing habits are shown in Table 1. Most Khat sessions took place in own homes (43.8%) and friends' homes (37.0%). The sessions were mainly after Isha prayer at 8 PM (69.8%), and after the Aser Prayer at 4 PM

(14.6%), after Zhur Prayer at 12 Noon (8.9%), and 6.5% after Maghreb Prayer at 6 PM. Khat was chewed in the following situations: in the company of friends 63%, relatives 18.1%, father 8.8%, and 10.1% chewed Khat on their own. The sessions typically took place within a single gender group of about ten individuals with a range of 2 to 30 people.

The mean duration of a Khat session was 6.1±3.13 hours and 5.5% of the students chewed Khat for 12-18 hours. 78.4% of khat chewers were also smokers.

Table 3: Factors associated with khat chewing

Factor	Khat Chewer		p-value	OR	95% CI for OR	
	Yes	No			Lower	Upper
Age group						
>15	4	19	0.001	-	-	-
15 - >20	112	4374	0.722	1.216	0.413	3.582
20-25	541	2007	0.450	1.517	0.514	4.476
Grades						
Excellent	279	2065	0.000	0.208	0.137	0.314
Very Good	863	3134	0.000	0.423	0.284	0.632
Good	552	1200	0.094	0.707	0.471	1.061
Pass	90	154	0.655	0.898	0.56	1.439
Poor	41	63	-	-	-	-
Probation for low grades						
Yes	388	1416	0.000	2.786	2.431	3.206
No	592	6019	-	-	-	-
Smoking						
Yes	863	901	0.000	24.19	20.62	28.37
No	238	6011	-	1.0	1.0	9.0

Table 2 shows Khat chewing and its impact on education since the academic performance of Khat users was low, 39.4% of whom had poor grades, 40.9% were frequently absent from class and 39.6% were on probation as a result of their poor grades. Thirteen percent of Khat chewers claimed that chewing had an effect on their academic performance, but 59.8% thought that chewing Khat had no effect on their academic performance.

Associated risk factors are shown in Table 3. An examination of the academic grades of students with excellent and very good grades and those of the users of Khat showed that the risk of poor academic performance was high among khat chewers. There was a significant negative association between being on probation for low grades and khat chewing with an odds ratio (2.78%) Smoking also had a significant association with khat chewing with an odds ratio (24.2%) (Table 3).

DISCUSSION

The present study revealed that 42.4% used Khat at the weekends, 12.1% used it daily and 30% had used it at least one day in the previous month. This is in agreement with other studies in two English cities where the average frequency of Khat use among Somali immigrants was three days a week and mostly at week ends.^{7,12} The study is inconsistent to another recent Yemeni study which showed that 80% of Yemenis used khat on a daily basis. The possible explanation could be that of more availability, social acceptance and different population characteristics.¹³ Many studies showed that Khat

use was for enjoyment and fun rather than increased productivity and energy.^{4,5,14}

In the present study, 48.2% khat users spent a session of less than 6 hours, 45% had a session of 6-12 hours of khat chewing and 6.8% could exceed 12 hours. This is comparable to other studies^{7,12} where khat chewing sessions lasted for an average of six hours, ranging from one to twenty hours. In addition to wasting time, the fact that khat leaves are chewed daily for several hours may have an impact on social, economic and the health of the population, the most common of which is frictional keratosis which is usually found in those who chew khat.¹³

The majority of Khat users in the present study (69.8%) usually started chewing after 8 pm. This is consistent with Griffiths (1998) who reported that khat-chewing was found to be a predominantly evening activity, 64% used Khat after 6 pm, and 34% in the afternoon (12 noon). In fact, traditionally, khat chewing used to be an afternoon activity (2-4 pm) but it seems that a new trend has emerged in different countries. This could be due to the profound social and cultural changes that took place in the last century.⁵ The consequences of this pattern of abuse is the lack of sleep for most of the night jeopardizing the next day's activity. One should bear in mind the stimulant and depressive effects of khat as stated in many reports.^{1,2,8,14}

Khat is usually chewed in company, either with friends (63%), relatives (18.1%), or a father (8.8%). Only 10.1% of the chewers mentioned that they chewed khat on their own. The sessions typically took place within a group of the same gender with an average of ten individuals, and a

range of 2 to 30 people. These findings are supported by other studies which indicate that Khat chewing still tends to be a socially structured activity in which khat consumption is only one component of the interaction.⁴

It has been suggested that the function of Khat in this context is to provide a basis for a gathering of high social significance rather than provide pleasurable effects for the individual. The social preference of Khat chewing has also been described in other countries where it was reported that "The traditional way of consumption was socially highly regulated."¹⁵ Accordingly it seems that a successful khat preventive program, should address the social factors. However, a study in Sweden showed that khat was consumed less in a social context, frequently by individuals, who were alone or while on a walk. Therefore, it can be assumed that in those countries, the psychosocial benefits of its consumption were secondary to the pharmacological action which it induces.⁹

It was shown that in the case of women (44% versus 19% of men), the chewing of khat was in groups of fewer than six people. Moreover, a higher proportion of the female Khat users reported using Khat alone, which is in agreement with other studies.^{4,16} This, could be due to the more restricted female lifestyle and the fact that the habit was less socially accepted.

In the present study, 78.4% of Khat chewers smoked cigarettes as against 13% of non-chewers who smoked, which is in agreement with other studies in England, Yemen and Ethiopia.^{12,16,17} In a recent study, it was found that those who smoked cigarettes were twenty-eight times more likely to chew khat. Furthermore, in that study, when asked about the effect of chewing Khat on smoking, some chewers (61%) said they were much more likely to smoke when they chewed Khat, and 23% said they were more likely to chew it when smoking.³ This association is very alarming, as the serious health consequences of smoking are well known, and even the non-smoking chewers became passive smokers in khat-chewing sessions.⁵

This study revealed that the risk of poor academic performance was high among khat chewers: 39.4% had poor grades, 40.9% were frequently absent from class and 39.6% were on probation as a result of poor grades with strong negative association Odds Ratio (2.8%). Similar

findings were also reported in two other Ethiopian studies where khat chewing among secondary school and university students was studied and the mean cumulative grade point average (CGPA) of non-chewers was found to be significantly higher ($p < 0.001$) than that of chewers. This revealed a clear negative association between Khat chewing and academic performance.^{3,18} This could be due to the long time wasted in Khat sessions, insomnia, absence from school, and impaired activity on the morning following the khat session.^{1,2,19}

CONCLUSIONS

With students, khat chewing sessions took place mostly at weekends rather than daily and lasting for about 6 hours on the average, usually in a social gathering after 8 pm. Smoking was highly associated with Khat chewing. Finally, deterioration of competence in education was more significant among chewers.

These findings support the need for health education and promotion programs to increase the awareness of the problem in the population. Positive long term lifestyle changes, including physical exercise should be established early in life since khat and smoking habits tend to start in childhood and progress into adulthood. Policies and programs to deal with the problem of khat abuse should include the provision of recreational facilities for young people and families especially at weekends. Health education programs disseminated by the mass media to raise awareness in the public should focus on the real impact of the habit on students and the misconception that Khat enhanced productivity and achievement. More studies are needed to explore other social and educational perspectives so that more comprehensive preventive strategies could be established.

A limitation of this study is that response was less than 100%, a shortcoming of self-administered questionnaires.²⁰ Another limitation is that the students might not all have given genuine answers to the questions they were asked, thus producing false information on their pattern of Khat chewing.

ACKNOWLEDGMENTS

The investigator would like to express his sincere thanks to the College of Medicine and Health Directorate in Jazan. He gratefully acknowledges

as well, the help and support given by the administration and staff of the Jazan Directorates of Education, Directorate of Health, Jazan and Khat Awareness Society, Jazan. He would like to express his sincere appreciation to the teachers, the psychologist, social workers and staff of the Faculty of Medicine for their hard work.

REFERENCES

1. Nezar N, Al-Hebshi NN. Nils Skaug Khat - An updated review, *Addiction. Biology.* 2005;10:299 – 307.
2. Cathinone KP. A natural amphetamine. *Pharmacol Toxicol.* 1992. 70: 77–86.
3. Ayana AM, Mekonen Z. Khat (*Catha edulis* Forsk) chewing, sociodemographic description and its effect on academic performance, Jimma University students. *Ethiop Med J.* 2004;42(2):125-36.
4. Kennedy JG (1987c) A short history of qat and its use., *The flower of paradise: the institutionalized use of the drug qat in North Yemen.*, pp. 60 – 78. Dordrecht: D. Reidel.
5. Dhaifalah I, Santavy J. Khat habit and its health effect, A natural amphetamine. *Biomed Papers* 2004; 148(1):11–5.
6. Dalu A. The impact of long Term consumption of khat on public health. *The Sidama Concern* 2000;5(4):15-6. www.sidamaconcern.com
7. Patel SL, Wright S, Gammampila A. Khat use among Somalis in four English cities. 2005. home office (Online Report 47/05).
8. Ihunwo aokayanja FI, Amadi- Ihunwo UB. Use and perception of the psycho stimulant, khat (*catha edulis*) among three occupational groups in south western Uganda. *East African Medical Journal* 2004.81(9):468-73,
9. Klein A. Khat and the informal globalisation of a psychoactive commodity. *INCB Annual Report.* 2006. Vienec Summer Institute 2008:1-13.
10. Ageely HMA. Health and socio-economic hazards associated with khat consumption. *J Fam Community* 2008; 15(1):3-11.
11. Milaat WAA, Salih MA, Bani IA, Ageely HM. Assessment of Health Risk Factors and Social Problems Associated with Khat Use in Jazan Region - Final Report - Project No: (636/425) 2006, Faculty of Medicine- Jazan, King Abdulaziz University, Saudi Arabia.
12. Griffiths P. Qat use in London: a study of qat use among a sample of Somalis living in London. For the Central Drugs Prevention Unit Home Office. 1998 (101 pages). <http://drugs.homeoffice.gov.uk/publication-search/diversity/QAT-london2835.pdf?view=Binary>. Last accessed June 2009.
13. Al-Hebshi NN, Skaug N. Effect of khat chewing on 14 selected periodontal bacteria in sub- and supragingival plaque of a young male population. *Oral Microbiol Immunol.* 2005;20: 141–6.
14. Ihunwo AO, Kayanja FI. Use and perception of the psychostimulant, khat (*catha edulis*) among three occupational groups in south western Uganda. *East Afr Med J.* 2004;81(9):468-73.
15. Odenwald M , Neuner F. Khat use as risk factor for psychotic disorders: A cross-sectional and case-control study in Somalia. *B M C Medicine.* 2005;1186/1741:7015-35.
16. Basunaid S, Van Dongen M, Cleophas TJ. Khat abuse in Yemen: A population-based survey. *Clinical Research and Regulatory Affairs.* 2008; 25(2):87– 92.
17. 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.
18. Adugn F. Khat chewing among agaro secondary school student , Agaro Southern Ethiopia. *Etiop Mat J.* 1994 32(3):161-6.
19. Kennedy JG, Teague J, Fairbanks L. Qat use in north yemen and the problem of addiction: a study in medical anthropology. *Cult Med Psychiatry.* 1980;4:311–44.
20. Groves RM, Fowlers FJ, Couper MP, Lepkowski, Singer E, Tourangeau. *Survey Methodology.* Willey Inter-science: 140, 2004.