



DESCRIPTION OF THE CHARACTERISTICS OF ADULTS WHO CHEW KHAT IN JAZAN REGION

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ABSTRACT

Background: Khat (*Catha edulis*) is a leaf cultivated in Kenya, Yemen, Ethiopia, and the southern region of Saudi Arabia. Khat contains the alkaloids cathine and cathinone, which have amphetamine-like properties and have been used for centuries in many African countries for their euphoric effects and as a sanctioned cultural practice. **Objective:** The main aim of this study was to describe the characteristics of khat chewers among adults in the Jazan region. **Methods:** This descriptive cross-sectional study was conducted in the Jazan region, where 347 khat users were selected. For this study, three hospitals were selected, and all khat chewers who visited these centers during the study period were included. A standardized, well-developed questionnaire was used to collect the data. Collected data was analyzed using the IBM SPSS Statistics Version 24 software program, where descriptive and analytical statistical tests were conducted. **Results:** The study indicated that 83% of participants were males, while 17% were females. The age of participants ranged from 23 to 41 years old, with a mean of 32 years and a standard deviation of 9 years. About 74% used khat for more than five years, and more than 60% of participants chewed khat more than twice per week. Most khat users spend more than two hours per session, and 94% say a single khat consumption costs more than 50 SRs. About 88% of participants consumed different types of drinks during khat chewing sessions. The preferred drinks during the chewing session were tobacco, mainly cigarettes or shisha, soft drinks, coffee, or a combination. The common reasons for chewing khat, as mentioned by participants, were summarized as increasing concentration, relieving different problems, passing the time, or getting personal pleasure. About three-quarters of participants (76%) were suffering from some sort of psychological problem as a result of using khat. Finally, there was a statistically significant relationship between gender and suffering from psychological problems due to Khat use. **Conclusion:** This study found that the majority of khat users started khat chewing at an early age, easily obtained it from different sources, and a considerable magnitude of adverse health effects are possible, so available regulations should be activated to minimize the accessibility to khat, and different health education interventions should be conducted in a continuous way to reduce the prevalence of the habit and its unfavorable social and health consequences and to help khat users quit it.

KEYWORDS: Khat chewing, Health problems, Jazan region, Saudi Arabia.

LITERATURE REVIEW

Khat is a green leaf plant described first by Sweden botanist "forskal".^[1] It is a psychoactive substance that enhances the mood and it gives the feeling of euphoria.^[2] Chewing and cultivation of khat is common in the East African countries and Arabian Peninsula.^[3] It is also practiced in the Southern region in Saudi Arabia, particularly in Jazan, as it is prevalent among the population.^[4] Khat is chewed daily by a

high proportion of the adult population in Jazan for its mild stimulant effects as the active ingredients cathine and cathinone is in fresh khat leaves are structurally related and pharmacologically similar to amphetamine. Chewers suggest that it improves their performance, helps them stay active, and increases their energy.^[5] Khat chewing is widespread in the Jazan region, even with governmental sanctions on khat chewers.^[6] Most of users consider this a

traditional activity.^[6] The neurotoxic effects of khat are attributed to the release of dopamine from presynaptic storage sites.^[6] Khat use may be associated with psychological symptoms.^[7] Users have reported some complications the next day after using khat, which include loss of appetite, sleeping disturbance, mood disturbance, and even depression.^[8]

Whatever the many reasons may be for using khat, its pleasure-inducing and stimulating effects seem to have a strong influence on the social and cultural life of the communities who indulge in its use. The average khat session generally takes place between 2:00 to 7:00 pm. Nowadays, it may be continued to late in the evening according to the purpose. Although it is predominantly consumed in a social setting, a khat session may accompany studying, working, writing poetry or only enjoying time. Smoking tobacco and cigarettes and drinking cola, black tea or just cold water greatly enhances the pleasure of this habit.^[9] In some cultures, khat is mixed with sugared menthol or pieces of sugar to improve the bitter taste.^[9]

Few studies among Arab populations have been conducted to assess the impact of khat use on psychological symptoms. One study conducted among Yemeni adults, concluded that there was no association between psychological symptoms and khat chewing.^[10] Kassim and colleagues measured the level of khat dependence among 204 Yemeni residents living in the UK, using a khat Severity Dependence Scale (khat-SDS). They reported that 32% of the participants had scores suggestive of psychological dependence on khat.^[11]

In Saudi Arabia, the prevalence of khat use among adult residents of Jazan region was reported at 28.7%.^[12] In the region of Jazan, not only is khat chewed by adults, but it is also chewed by adolescents. In 2009, Ageely reported that the prevalence of khat chewing was 15.2% among college students, while it was 21.5% among high school students.^[13] The estimate reported by Ageely was close to what was reported among college students in 2013 by Alsanosy and colleagues (23.1%).^[14] They also estimated the prevalence of khat use among middle and high school students (ages 10 to 21), which was 16.2% and 23.7%, respectively.^[14] Like any other substance, the prevalence was higher among male (33.1%), compared to female (4.3%) students.^[14] In that same study, having a family member or a friend significantly increased the odds for chewing khat. Additionally, smoking cigarettes, increased the odds for chewing khat by 14 times.^[14] The high prevalence of khat use in this region is concerning, because other Saudi studies suggested that chronic khat use may have negative effects on neuro-psychological functioning.^[3] They also suggested that it may negatively affect the school and educational performance.^[3]

METHODS AND MATERIALS

Study Design

This descriptive cross-sectional study was conducted among khat chewer adults at Jazan region from October 2019 to January 2020.

Sample population and study setting

The target population of this study were adults who regularly chewing khat at Jazan region. For the purpose of this study about 347 subjects who visited three hospitals such as Altowal hospital, Baish hospital and King Fahad Hospital were selected.

Sample size

According to the previous study conducted in Jazan region by Mahfouz et al.^[12], the prevalence of khat chewing was 33%.^[38] Therefore, accordingly, the sample size was calculated with following equation: $n = \frac{z^2pq}{m^2}$

where:

z = z value (1.96 for 95% confidence level), p = assumed proportion = 33%

q = $1-p$ (complementary) = 67%, m = margin of error = 0.05, n = sample size so the calculated sample size was = $(1.96)^2 * 0.64 * 0.36 / (0.05)^2 = 340$

Inclusion criteria

Because I only intended to include khat chewers in this study, my inclusion criteria were adults ages 20 and older, who reported chewing khat, and who resided in Jazan region and visited any of selected health centers during study period.

Data collection tools and Study Variables

Data Collection

The data collection process was conducted from October to December 2019, where all visitors of selected primary healthcare centers were oriented to the purpose of this study and then, I asked the visitor if he or she chewed khat. If the answer was yes, I took their verbal consent to be involved in the study, and they then completed the questionnaire. The questionnaire contained two parts; part one represented demographic measures, while part two represented measures related to characteristics of participants and the prevalence of psychological symptoms among khat chewers. If the person was not a khat chewer, or they were younger than 20 years of age, they were excluded from the study.

Ethical Considerations

The study proposal was approved from by King Saud University College of Medicine Research Center Institutional Review Board. All participants provided a written consent form prior to beginning the questionnaire. The informed consent was clear and indicated the purpose of the study and why they were chosen for the study. There was no obligation to

participate and they had the right to withdraw at any time. No personal identifiers were collected, and all data were dealt with strict confidentiality.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics Version 26 Version 24. We estimated frequencies for the personal characteristics, and mean and standard deviation for the age. We also calculated frequencies for all other variables (that are all categorical), for which we reported count and percentages. We conducted chi-square test to compare the frequency of reporting psychological symptoms

between men and women. We set the alpha level to 0.05.

RESULTS

Descriptive characteristics of participants

A total of 347 adults agreed to participate in this study, where 83% were males and 17% were females. The age of participants ranged from 23 to 41 years, with a mean of 32 years (sd=9). Most of the participants were married (55.9%), completed university education (47.0%), and were employed (59.9%) (Table 1).

Table 1. Demographic characteristics of the participants (N=347).

Characteristic	Count (%)
Gender	
<i>Male</i>	288 (38.0%)
<i>Female</i>	59 (17.0%)
Marital status	
<i>Single</i>	141 (40.6%)
<i>Married</i>	194 (55.9%)
<i>Divorced/widowed</i>	7 (2.0%)
Education level	
<i>Less than primary</i>	4 (1.2%)
<i>Completed primary school</i>	11 (3.2%)
<i>Completed high school</i>	112 (32.3%)
<i>Completed diploma or certificate</i>	48 (13.8%)
<i>Completed university education</i>	163 (47.0%)
<i>Completed graduate education</i>	5 (1.4%)
Employment status	
<i>Employed</i>	208 (59.9%)
<i>Unemployed</i>	52 (15.0%)
<i>Student</i>	48 (13.8%)
<i>Retired</i>	25 (7.2%)
Monthly income	
<i>Less than SAR 2000</i>	54 (15.6%)
<i>From SAR 2000 to SAR 5000</i>	47 (13.5%)
<i>More than SAR 5000</i>	62 (17.9%)

Pattern and behavior of khat use

Only 14.1% of the participants reported using khat daily, while the rest reported using it less frequently. Most of the participants reported “getting khat from a friend” as their main source for khat (45.5%). Approximately 74.1% of the participants have been chewing khat for more than five years. The average khat session seemed long for most individuals, as 79.8% reported their session lasts from 90 to 120 minutes. Additionally, many seem to spend a lot of money to purchase khat, as 94.2% of the participants reported spending more than SAR 50 on a single khat consumption. Furthermore, consuming khat with a mixture of drinks and tobacco seemed to be common practice among the individuals in this study (62.8%) (Table 2).

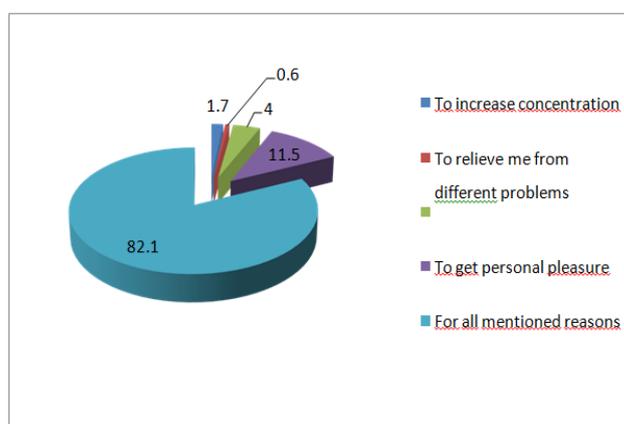
Table 2. Patterns and behaviors of khat use (N=347).

Khat use feature	Count (%)
Frequency of khat use	
<i>Daily</i>	49 (14.1%)
<i>Once per week</i>	61 (17.6%)
<i>Twice per week</i>	64 (18.4%)
<i>Three times per week</i>	93 (26.8%)
<i>Occasionally</i>	80 (23.1%)
Source of the first khat	
<i>Bought it themselves</i>	96 (27.7%)
<i>From a friend</i>	158 (45.5%)
<i>From a family member</i>	88 (25.4%)
<i>Other</i>	5 (1.4%)
Years since khat chewing was initiated	
<i>Less than one year</i>	12 (3.5%)
<i>1 -3 years</i>	45 (13.0%)
<i>4 -5 years</i>	33 (9.5%)
<i>More than 5 years</i>	257 (74.1%)
Duration of one khat session	
<i>Not more than 15 minutes</i>	11 (3.2%)
<i>From 15 to 60 minutes</i>	20 (5.8%)
<i>From 60 to 90 minutes</i>	22 (6.3%)
<i>From 90 to 120 minutes</i>	277 (79.8%)
<i>More than 120 minutes</i>	17 (4.9%)
Cost of a single khat consumption	
<i>Less than SAR 10</i>	1 (0.3%)
<i>From SAR 11 to SAR 20</i>	2 (0.6%)
<i>From SAR 21 to SAR 50</i>	17 (4.9%)
<i>More than SAR 50</i>	327 (94.2%)
Consumption of other substances with khat	
<i>Yes</i>	305 (87.9%)
<i>No</i>	42 (12.1%)
Substances consumed while chewing khat	
<i>None</i>	42 (12.1%)
<i>Tobacco only</i>	44 (14.4%)
<i>Soft drinks only</i>	54 (17.6%)
<i>A mixture of soft drinks, coffee and tobacco</i>	192 (62.8%)
<i>Other</i>	15 (5.2%)

Reasons for khat use

When participants were asked to selected the main reasons for using khat, most of them (82.1%) selected

all of the following reasons: to increase concentration, to relieve from different problems, to pass time and to get personal pleasure (Figure 1).

**Figure 1. Reaosns for khat use.**

Participants perception about psychological symptoms

When participants were asked if they suffer from any psychological symptoms as a result of khat use, 262 participants (75.5%) responded "yes". When this was compared between men and women, a significantly greater number of men reported suffering from psychological symptoms (81.3 %) compared to women (18.7%), ($X^2 =$, $df=1$, p -value=0.017).

DISCUSSION

In this study I explored the patterns and behavior of khat use among a sample of 347 adults in Jazan region. The main findings can be summarized to the following points. First, the majority of the users were male, married, with a university degree and were employed. Second, most of the individuals initiated the use 5 or more years ago, and they spend an average of 90 minutes to 120 minutes of a session. Third, using khat while consuming other substances (such as coffee, tea, and tobacco) seemed to be common practice among the participants. Fourth, people used khat for a variety of reasons, and only few people pinpointed one specific reason for use. Fifth, 75.5% of participants believed that they experience psychological symptoms in relation to khat use, and this was more frequently reported among men compared to women.

Our findings agree with the notion that khat chewing in Jazan is a common and traditional habit among the individuals. This may be due to the location and cultivation of khat plants in the mountains area of Jazan. This behaviour is deeply rooted in the socio-cultural traditions of all segments of the Jazan region.^[13]

Our findings were similar to different studies conducted in Jazan region during the last 10 years, which reported that people chewed Khat in their homes, friends or bought Khat directly from sellers as well as most of previous studies support the fact that khat is available anywhere and it is easy to obtain it.^[14,15,16,17]

Regarding to the common reasons for chewing khat, participants in our study mentioned they used khat mostly to increase concentration, to relive from different problems, and to pass time orto get personal pleasure. Similar claims of positive physiological aspects to khat chewing and strong energizing effects have been reported elsewhere.^[21,22] These findings are in line with other studies that mentioned the different underlining factors for the use of khat like for social recreation and occasionally as a medicine, or as a stimulant as used by students for examinations and by drivers of motor vehicles especially on long-distance journeys.^[21,22]

Our study also revealed that about three quarters of participants (76%) were suffering from some sort of

health problems as the result of using khat and there was statistically significant relationship between gender and Suffering any psychological problems as result of khat use, P value < 0.05 . These indications were concise with many similar studies that approved the regular long-term khat chewing has related with different health impacts such as oesophagitis, gastritis, duodenal ulcer, hepatic cirrhosis, autoimmune hepatitis, migraine, cerebral haemorrhage, pulmonary oedema, and myocardial infarction^[23,24,25], in addition psychological, i.e. euphoria, increased confidence, and enhanced alertness. Frequent khat use in the long-term has been associated with various health effects, including oesophagitis, gastritis, duodenal ulcer, hepatic cirrhosis, autoimmune hepatitis, migraine, cerebral haemorrhage, pulmonary oedema, and myocardial infarction.^[24,25,26] With regard to psychotropic effects, i.e depression, anxiety, mood instability, and mania.^[23,26,28] Furthermore, the use of khat by individuals with a prior history of exposure to trauma has been associated with an increased risk of developing psychotic symptoms.^[12] Another similar study conducted in jazan region in 2016 conclude that the khat has psychological dependence effect even in low dose and they recommended that a cohort studies needed to follow up the long term effect, this study has limitation that represented in a small sample size.^[13] Finally this study indicated that there was no statistically significant relationship between age group, educational level, employment status and Chewing khat, (p - value > 0.05), but there was statistically significant relationship between gender and Chewing khat.^[15]

Strengths and limitations

The main strength points for this study was cooperation of health authorities at selected healthcare units and the good commitment of the university, mainly the supervisor and other teaching staff for their valuable comments and directions. The limitations, include time limitation and difficulties to interview the selected peoples.

CONCLUSIONS

This study found that majority of khat users strated khat chewing at an early age, and easily obtained it from different sources. Additionally, a considerable magnitude of adverse health effects are possible, so available regulations should be activated to minimize the accessibility to khat and different health education interventions should be conducted in continuous way to reduce the prevalence of the habit and its unfavorable social and health consequences and to helpkhat users quitting it.

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