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Khat Use in Persons with Mental Illness in Southwest Ethiopia: A Cross-Sectional Study

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Introduction

Khat is a natural psychoactive substance, which has been chewed for many years in Ethiopia, East Africa, and the southern Arabian Peninsula [1-3]. With the recent globalization, khat chewing has spread with African and Arabian immigrants to various Asian [4] and European [5-9] countries, and to Australia [10-12], as well as to the United States [13]. The users of khat in these new countries are predominantly immigrants from the khat chewing countries [9]. Evidence shows that fresh khat leaves contain more than 40 chemicals [15]. However, most of the stimulant effect of khat is thought to come from the chemicals cathinone, cathine, and norephedrine [14,15]. Khat users report increased levels of energy, alertness, sensations of elation, self-esteem, enhanced imaginative ability, capacity to associate ideas when using and an increase in libido [16,17]. Khat use is also associated with increased blood pressure/hypertension, development of gastrointestinal tract problems, cytotoxic effects on liver and kidneys, and keratotic lesions at the site of using [18,19].

A hospital based study in Yemen of 304 study participants stated that at least one lifetime episode of khat use was reported in 81.6% men and 43.3% women [20]. Study in the south- western Uganda documented that the consumption of khat is increasing especially among youths, with 32% had experience with chewing khat and 20% were still using it [21]. Studies showed that in Ethiopia the number of khat users has significantly increased from time to time and now it has become common in all segments of the Ethiopian population [22]. For instance, the prevalence of current khat use in community-based study in Ethiopia was 50% [23].

In general terms, there were sporadic case reports on a possible association between khat use and the occurrence of mental disorders, such as manic-like psychosis, incidence of psychotic symptoms increased with excessive use of khat and delusional disorder [24-27]. The psychiatric patients are more vulnerable populations to substance abuse when compared to the general populations. As a result, the high prevalence of substance abuse among persons with psychiatric disorders calls for more effective Substance use assessment in psychiatric settings [28].

Even though the prevalence of khat use and its physiological, social and psychological effects have been studied in diverse populations and areas of Ethiopia, there is little known about the prevalence of khat use in psychiatric outpatients and factors associated with khat use in this population. So, the current study is aimed to determine the prevalence of khat use and to identify factors associated with khat use among psychiatric outpatients. The results of this study will help health professionals, hospital administrators and policy-makers in their effort to reduce khat use among persons with mental illness by designing interventions based on the study findings.

Materials and Methods

Study area and period

A cross-sectional study was conducted in Jimma University Specialized Hospital (JUSH) which is located in the south west of Ethiopia which is 355 km far from Addis Ababa. JUSH is one of the oldest public hospitals in the country. It was established in 1937 during Italian occupation for the service of their soldiers. The hospital provides specialized health services for approximately 9,000 inpatient admissions and 80,000 outpatient attendances per year, serving a catchment population of about 15 million people. An outpatient psychiatry clinic at Jimma Hospital was established in 1988 and there are 50 patients on daily follow up services and a total of 3952 patients on follow up. In Ethiopia JUSH is one of the hospitals that have psychiatric inpatient service next to Amanuel mental Hospital and officially there are only 26 beds for inpatient services. The research was conducted in August, 2013.

Inclusion criteria

All adult psychiatric outpatients were included.

Sample size and sampling technique

An institution based cross-sectional study was implemented. The sample size was determined using single population proportion formula with the assumption of 95% confidence level, 5% marginal error, 10% non-response rate and the proportion of khat use to be 50%. The weekly patient load in the outpatient department of psychiatry clinic was 250.Therefore, to get the sample size of 385; we needed to collect the data for the duration of two weeks consecutively. All patients who met the inclusion criteria coming to JUSH psychiatry clinic during the data collection period were included.

Sampling procedures

All eligible adult attendees of the psychiatric clinic at JUSH during the study period were invited consecutively to participate in the study.

Instruments

Dependent variable: Khat use: A structured questionnaire was used to assess the pattern of khat use, including frequency and the amount of khat. In this study, prevalence of current khat chewing is the proportion of patients who are chewing khat within 30 days preceding the study. A structured questionnaire was used to assess

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the demographic characteristics, socio-economic ,mental illness and other substance use related status of participants (age, sex, marital status, educational status, occupation, ethnicity, religion, frequency of going to worship place, income, living arrangement ,family history of alcoholism, family history of mental illness, patients' psychiatric diagnosis, cigarette smoking , using shisha and alcohol use disorders).

Mental illness and other substance use related characteristics: Data regarding the patients' psychiatric diagnosis were extracted from patients' medical records. The WHO's Alcohol Use Disorder Identification Test (AUDIT) was used to measure alcohol use disorders (AUDs) [29]. A study participant who scored eight or more on the AUDIT was categorized as having an AUD. An interviewer administered questionnaire was used to assess self-reported cigarette smoking (current smoker/non-smoker and the number and frequency of cigarettes smoked).

Data collection procedures: A structured questionnaire was prepared for data collection and data were collected by interviewing all psychiatric outpatients coming for treatment at JUSH and the patients' diagnosis was extracted from the chart. Before the data collection, a two-days training was given for the data collectors and one day training for the supervisors. The structured questionnaire was discussed in detail going through every question, with clarification of each doubt.

Data quality assurance: The data collectors and supervisors were trained. Data collection was carried out after the questionnaires were pretested on 5% of the total sample of psychiatric outpatients at Mizan Hospital which is 298 km away from Jimma town. The supervisor monitored data quality and checked all questionnaires for completeness. Incomplete and unclear questionnaires were returned to the data collectors for correction.

Data analysis: The dependent and explanatory variables were entered into a bivariate logistic regression analysis, one at a time, in order to estimate the strength of association using Odds Ratios (OR) by using SPSS version 20. All variables associated with khat use in the bivariate logistic regression with a p-value ≤ 0.25 were entered together into a multivariate logistic regression by using enter method in order to control for potential confounders. Only variables with p-value lower than 0.05 in the multivariate analysis remained in the final model.

Ethical considerations

Ethical clearance and permission was obtained from the Ethical Review Committee of Jimma University, College of Public Health and Medical Sciences. The study participants were free to enroll in the study and withdraw from it at any time. All the interviews with participants were made with strict privacy after getting informed consent from the participants and assuring confidentiality. Patients with khat use were referred to mental health professional specialists and psychologists for further evaluation and management.

Results

Study participant characteristics

A total of 385 psychiatric outpatients were approached for enrolment in the study. Of the total Study sample 365 agreed to participate making the response rate 94.8%. The majority 267 (73.2%) of the respondents were males, Oromo 214 (58.6%) by ethnicity and followers of Muslim religion 196 (53.7%) followed by Orthodox Church followers 137(37.5%). The age of the respondents mainly fall between 25-34 years 139 (38.1%). With regards to educational status, 143 (39.2%) had attended primary school at the level of grade 1 and above and 211 (57.8%) reported mean family income of less than 1201 birr. At the time of the study, 180 (49.3%) of the respondents were married followed by singles 166 (45.5%) and 201 (55.1%) of the overall respondents were unemployed. The vast majority 315 (86.3%) of them were living with their family (Table 1).

Frequency of khat use

The prevalence of current khat use was 235(64.4%) of the sample. The prevalence of khat use in Oromo and Amhara ethnicity were 74.3% and 49.3% respectively. Regarding religion 82.1% of Muslims and 48.2% of Orthodox Christians reported khat use.

Khat use and its associated factors

Khat use was present in 75.3 %(n = 201) of males and 34.7% (n = 34) of females (crude odds ratio (COR):5.73(95% CI = 3.48, 9.46)). In

Variables	N (%)	
Sex		
	Male	267(73.2)
	Female	98(26.8)
Age in years		
	18-24	85(23.3)
	25-34	139(38.1)
	35-44	89(24.4)
	45-70	52(14.2)
Ethnicity		
	Oromo	214(58.6)
	Amhara	67(18.4)
	Guragie	32(8.8)
	Others	52(14.2)
Religion		
	Orthodox	137(37.5)
	Muslim	196(53.7)
	Others	32(8.8)
Frequency of going To worship place		
	Never	37(10.1)
	Sometimes	220(60.3)
	Frequently	107(29.3)
Educational Status		
	Illiterate	56(15.3)
	Primary	143(39.2)
	Secondary	103(28.2)
	College/University	63(17.3)
Occupation		
	Unemployed	201(55.1)
	Gov't Employed	74(20.3)
	Others	90(24.7)
Mean Family monthly income		
	≤1201 Birr	211(63.6)
	>1201 Birr	121(36.4)
Marital Status		
	Single	166(45.5)
	Married	180(49.3)
	Others	19(5.2)
Living arrangement		
	Alone	34(9.3)
	With family	315(86.3)
	With relatives	16(4.4)

Table 1: Socio-economic and demographic characteristics of current khat use in persons with mental illness in Jimma University Specialized Hospital (n = 365).

the bivariate analyses, current khat use was significantly and positively associated with male gender, being a follower of Islam, frequency of going to worship place, current cigarette smoking and schizophrenia (Table 2). In the multivariate analysis by using enter method, males were six times the odds of using khat when compared to females (AOR:5.81(95%CI= 2.96, 11.40)). The odds of individuals who were Muslims to use khat was four times higher as compared to Orthodox Christians (AOR: 4.3 (95% CI=1.54, 11.96)). The likelihood of using khat among cigarette smokers was 3 times higher when compared to non-smokers (AOR: 3.04(95% CI = 1.33, 6.94)).In the final model there was no statistically significant difference between current khat use and ethnicity, frequency of going to worship place, occupation, marital status, major depressive disorder and schizophrenia (See Table 2).

Mental illness and other substance use related characteristics of study participants

Based on patients' medical records, the most common primary psychiatric diagnosis was schizophrenia 131 (35.9%), followed by major depressive disorder 104(28.5%), other Psychiatric disorders mentioned were brief psychotic disorder, Postpartum psychosis, schizoaffective disorder, depressive disorder not otherwise specified_ totally accounting for 77 (21.1%), bipolar I disorder 45(12.3%), and anxiety disorders 30 (8.2%). The frequency of khat use in major depressive disorder, bipolar I disorder, anxiety disorders, schizophrenia and other psychiatric disorders were 55.8%,66.7%,73.3%,74% and 59.7% respectively. Khat use in persons with alcohol use disorders (67.6%), cigarette smokers (82.7%) and shisha users (80%) (Table 3).

Discussions

In this cross-sectional study among psychiatric outpatients of Jimma University Specialized Hospital, the prevalence of current khat use was 64.4%. In our study, khat use is highly prevalent in males than females. The possible explanation for the observed gender differences in khat use could be due to the cultural restrictions on the use of khat in females although a higher percentage of females with mental illness were using khat in our study.

The prevalence of khat use found in our study was higher than that found in a previous hospital based study in Jimma (23%), An institution based study in Dilla (41.8%), A School based study in Bale (48%) and an institution based study inAksum (27.9%), Ethiopia [30-33] as well as a hospital based study done in Yemen (58.2%) [34]. This discrepancy may be due to the difference between study populations. Our study participants were recruited from outpatient psychiatry department of JUSH. Since our study participants were persons

Variables		Khat use		COR(95% CI)	AOR(95% CI)	P- value
		No N (%)	Yes N (%)			
Gender						
	Male	66(24.7)	201(75.3)	5.73(3.48,9.46)	5.81(2.96,11.40)	0.001*
	Female	64(65.3)	34(34.7)	Reference	Reference	
Ethnicity						
	Oromo	55(25.7)	159(74.3)	4.62(2.45,8.75)	1.19(0.48,2.97)	0.705
	Amhara	34(50.7)	33(49.3)	Reference	Reference	
	Guragie	9(28.1)	23(71.9)	1.55 (0.74,3.24)	0.91(0.36,2.29)	0.838
	Others	32(61.5)	20(38.5)	4.09 (1.58,10.59)	1.26(0.38,4.18)	0.705
Religion						
	Orthodox	71(51.8)	66(48.2)	Reference	Reference	
	Muslim	35(17.9)	161(82.1)	4.95(3.01,8.13)	4.30(1.54,11.96)	0.005*
	Others	24(75)	8(25)	0.36(0.15,0.85)	26.81(8.65,83.10)	0.001*
Frequency of going to worship places						
	Never	6(16.2)	31(83.8)	3.61 (1.39,9.38)	2.88(0.97,8.57)	0.057
	Sometimes	79(35.9)	141(64.1)	Reference	Reference	
	Frequently	44(41.1)	63(58.9)	1.25 (0.78,2.00)	1.07(0.57,2.02)	0.824
Occupation						
	Unemployed	64(31.8)	137(68.2)	1.64 (0.98,2.73)	1.18(0.59,2.37)	0.646
	Gov't Employed	27(36.5)	47(63.5)	Reference	Reference	
	Others	39(43.3)	51(56.7)	1.33 (0.71,2.50)	1.31(0.54,3.21)	0.548
Marital Status						
	Single	53(31.9)	113(68.1)	2.37 (0.91,6.17)	1.60(0.41,6.18)	0.497
	Married	67(37.2)	113(62.8)	Reference	Reference	
	Others	10(52.6)	9(47.4)	1.87 (0.73,4.85)	1.46(0.39,5.45)	0.571
Cigarette Smoking						
	No	117(40.3)	173(59.7)	Reference	Reference	
	Yes	13(17.3)	62(82.7)	3.23 (1.70,6.13)	3.04(1.33, 6.94)	0.008*
Major depressive disorder						
	No	84(32.2)	177(67.8)	Reference	Reference	
	Yes	46(44.2)	58(55.8)	0.60 (0.38,0.95)	1.43(0.74,2.77)	0.291
Schizophrenia						
	No	96(41)	138(59)	Reference	Reference	
	Yes	34(26)	97(74)	1.99(1.24,3.17)	0.87(0.45,1.68)	

NB: - * Variables that were significant in the multivariate analysis.

Table 2: Logistic regression model estimates of risk factors for current khat use in persons with mental illness in Jimma University specialized hospital (n=365).

Variables	N (%)	
Alcohol use disorders		
	No	223(61.1)
	Yes	142(38.9)
Cigarette Smoking		
	No	290(79.5)
	Yes	75(20.5)
Using Shisha		
	No	360(98.6)
	Yes	5(1.4)
Family history of Alcoholism		
	No	297(81.4)
	Yes	68(18.6)
Family history of mental illness		
	No	305(83.6)
	Yes	60(16.4)
Patients' psychiatric diagnosis Major depressive disorder		
	No	261(71.5)
	Yes	104(28.5)
Bipolar disorder		
	No	320(87.7)
	Yes	45(12.3)
Anxiety disorder		
	No	335(91.8)
	Yes	30(8.2)
Schizophrenia		
	No	234(64.1)
	Yes	131(35.9)
Other psychiatric disorder		
	No	288(78.9)
	Yes	77(21.1)

Table 3: Mental illness and other substance use related characteristics of current khat use in persons with mental illness in Jimma University specialized hospital (n=365).

with mental illness they may highly use khat to cope up the adverse effects (sedation, hypnotic, fatigue, lethargy and so on) caused by psychotropic medications. However, our study findings were nearly similar with findings from ahospital based study carried out in Dessie, northeast Ethiopia (66.94%) [35]. Khat use was more prevalent among male patients than female patients (75.3% vs.34.7%), which is in line with the previous Ethiopian studies from Gondar, Jimma, Ataye and Dilla [30,31,36,37].

Muslims had 4.3 times more likely to use khat when compared to Orthodox Christians which is consistent with a facility based study carried out in Jimma, Ethiopia [30]. The odds of using khat in males were 5.8 times higher as compared with females. The findings in our study were comparable with a school and college based study conducted in Ataye and Bahirdar, Ethiopia [37,38].

In this study, schizophrenia (74%) was found to be the most common comorbid disorder with khat use followed by anxiety disorder (73.3%) among primary psychiatric disorders whereas the least comorbid disorder with khat use was major depressive disorder (55.8%). However, in this study the association between khat use and mental disorders was not statistically significant, which is contrary to a review of khat use in different countries [24-27]. Cigarette smokers were 3 times more likely to use khat when compared to nonsmokers which is consistent with studies from Jimma and Gondar, Ethiopia [30,36].

The cross-sectional nature of the study design does not confirm definitive cause-and-effect relationship. Social desirability bias is a potential limitation of this study as persons who use khat and other substances tend to under-report or deny their use when questionnaires are administered by interviewers. Finally, the study was hospital based; therefore precludes generalization to all patients in Ethiopia indicating a need for further study using a more representative sample of patients in the country.

In conclusion, the prevalence of current khat use in this study was high. Current use of khat was significantly and positively associated with male gender and Muslims. Therefore, actions targeting those factors are essential to effectively reduce khat use among psychiatric outpatients.

Authors' Contributions

YZ contributed to the design, conduct and analyses of the research and in the manuscript preparation. GTF and WK contributed to the design, conduct and analyses of the research and in the review of the manuscript. All authors read and approved the manuscript.

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Abbreviations

AOR: Adjusted odds ratios; AUDs: Alcohol use disorders; AUDIT: Alcohol Use Disorders Identification Test; COR: Crude odds ratios; JUSH: Jimma University specialized hospital; OPD: Outpatient department; SPSS: Statistical package for social sciences; WHO: World health organization

Competing Interests

We declare that we have no competing interests.

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