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Magnitude and Factors Associated with Khat Chewing Among Kessem Sugar Factory Project Employees, Afar Regional State, Ethiopia

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Abstract

Back ground*:* Khat is significantly associated with higher risk of cardiogenic shock, stroke and death in patients presenting with acute coronary syndrome. Regular users of khat suffer from higher rates of mental distress. Therefore, the aim of this study was to assess the magnitude and factors associated to Khat chewing among Kessem Sugar Factory Project employees.

Methods: A cross sectional study was conducted from May to July, 2018. A total of 333 participants were selected using systematic sampling techniques. Data were entered into a computer and statistical analysis was done using EPI INFO version 7.2.2.6 and SPSS version 20 statistical software. Descriptive analysis was conducted to describe the study population. Bivariate and multivariate analysis logistic regression model were used. Adjusted odds ratio (AOR) applied to identify the important factors. Significance was declared at $p \leq 0.05$.

Results: The magnitude of chewing khat among Kessem sugar factory project employees was 50.3% [95% CI: (45.0-55.9)]. Being a male sex [AOR =2.45, 95%CI (1.01-5.94)], diploma level [AOR= 3.98, 95%CI (1.87-8.49)], degree level [AOR= 2.36, 95%CI (1.09-5.14)], having friends chew khat [AOR= 3.17, 95%CI (1.29-7.79)], experienced cigarette smoking [AOR= 2.71, 95%CI (1.32-5.57)] and ever smoking Shisha [AOR= 7.03, 95%CI (3.71-13.33)] were factors associated with chewing Khat.

Conclusion and Recommendation: the magnitude of khat chewing among Kessem sugar factory project employees was high. Sex, education level, having friend who chews khat, experienced cigarette and shisha smoking were factors significantly associated with chewing khat. Therefore, the factory's managers, health department and concerned bodies shall conduct interventions to bring behavioral change towards khat chewing.

Keywords: Khat chewing; Kessem Sugar Factory; Afar; Ethiopia

Introduction

Khat was first discovered by a Swedish botanist, Peter Forskal, as Celastraceae Edulisas plant during an expedition to Egypt and Yemen in 1761– 1763d (1.2). It is short ever green plant or sharub from family celestraceae which grow in higher altitude and it has green glossy leave, with bark a small crown and diminutive white flowers in small branches [1,2]. Available literature showed that khat is a plant native to the Horn of Africa as early as in the 14th century [3]. Worldwide Khat chewing is estimated as many as ten million people; the most recent estimates suggested that Europe accounts for about 40% of the Khat seized worldwide [4]. Khat is a drug of abuse that has become known in Norway due to increased immigration from east Africa, especially Somalia [5]. Khat is a drug which stimulates the central nervous system causing increased alertness, euphoria, and occasionally psychosis and increases activity in the peripheral sympathetic nervous system leading to palpitation, increased blood pressure, large publics and red eyes [6]. Long term use or abuse can cause insomnia, anorexia, gastric disorders, depression, liver damage and cardiac complications, including myocardiac infractions [2]. Manic and delusional behavior violence, suicidal depression, hallucinations [7]. The main psychoactive ingredient of khat includes cathine, cathinone and chemicals that are similar to amphetamines [8]. Khat is a strong stimulant that causes mild to moderate psychological dependence, although not as strong as that of alcohol and tobacco, and it can have serious health and economic consequence [4].

Despite of having such health and economic consequences, khat chewing has been practiced as stimulant and social custom for thousands of years in the Horn of Africa and Arabian Peninsula [9]. The largest numbers of chewers were found in Arabian Peninsula. As an example, half of the general adult population in Yemen consumes khat leaf on a daily basis [1,10], of which 90% were adult males. People who chewed Khat also high risk to death following stroke and heart failure. Such study showed Khat users admitted to the hospital for heart disease had 7.5% death rate in the hospital compared to 3.8% rate among non-users. The death rate within one year was nearly 19% among Khat users' versus 11% among nonusers [11]. Chronic use of Khat predisposes the users to have oral keratotic white lesions. Such study reported that 22.4% of Khat chewers had oral keratotic white lesions at the site of Khat chewing, while only 0.6% of non-chewers [12]. But it is widely consumed in East African countries including Somalia, Djibouti, Uganda, Kenya and Ethiopia [13,14].

Khat chewing found to associate with elevated diastolic blood pressure among adults in Ethiopia [5]. It is significantly associated with higher risk of cardiogenic shock, stroke and death in patients presenting with acute coronary syndrome [6]. Regular users of khat suffer from higher rates of mental distress [7]. It is also associated with early initiation of sexual intercourse [15] and identified as a risk behavior to HIV among taxi drivers [16]. Khat is found to associate with strain on family relationships, anti-social behavior [9], insomnia [12,17], anemia [18], as well as gastrointestinal disorders [19]. Hence, this psychoactive action has largely hampered the social, economic and health status of the society [11]. The numbers of khat chewers have significantly increased over the years in Ethiopia. Previously, khat is being mainly cultivated and chewed in the eastern part of Ethiopia. Nowadays, evidence shows that, khat is spreading to all Ethiopian geographic regions, religious and ethnic groups [17,20,21]. It persistently becomes a highly prevalent habit and a growing regional and international public health concern [22,23]. In Ethiopia, Khat is commonly used for social purpose, recreation, and in occupation groups such as motor vehicle drives, trunk drives and students to be alert especially during examination periods [24]. Currently in Ethiopia the prevalence of Khat chewing is increasing at alarming rate. It varied widely 0.3 to 64.7% [22]. Among university students estimated to be 24.79 % [14]. Despite Khat chewing being a health problem and also affecting national economy there is no reports from Factories in this country, therefore, this study was designed to identify the magnitude and factors associated with Khat chewing and also to recommend the possible recommendations based up on the findings.

Methods and Materials

Study Area and Period

The study was conducted in Kessem Sugar Factory projects (KSFP) which is found in Afar Regional State, Ethiopia. KSFP is located at distance of 250 km to North East of Addis Ababa the capital city of Ethiopia *Latitude 9.279 and longitude 40.0503*. It was established in 2013, has a total area of 200 km^2. According to the Kessem Sugar Factory project human resource office, overall the project has 5134 employees, of which 1591 are permanent employees, out of a total permanent employees 264(17%) and 1327(83%) are female and

male respectively. The study was conducted from May to July, 2018.

Study design: Institution based cross sectional study was carried out at Kessem Sugar Factory Project.
Study population: All Permanent employees of Kessem Sugar Factory Project.
Study subject: Permanent employees of Kessem Sugar Factory.

Sampling Technique

From the permanent employees of KSFP 333(three hundred thirty three) individuals were selected based on systematic random sampling techniques. Accordingly, the study subjects were selected using the human resource roster as the sampling frame. So every N/n = (K^{th}) or 5^{th} and lottery method was employed to select the 1^{st} participant from permanent employees

Ethical Consideration

A letter of permission was obtained from Adama General Hospital & Medical College, Postgraduate office. Before starting the data collection the ethical consideration letter was given to Kessem Sugar Factory administration office.

The importance of this study was explained to the respondents in their mother tongue and also the need to answer each question honestly was explained. Consent format was provided to all participants for their willingness to participate on the study. Employees were assured of confidentiality of their response and the questionnaires were filled anonymously.

Result

Socio-Demographic Characteristics of Employees

Out of the planned 333 respondents, 320 were achieved with response rate of 96.1%. The mean age of participants was 29.42+5.08(SD) years old. Majority of respondents, 281(87.8%) were male. Around half of the respondents, 154(48.1%) were 25-29 years old. Around two-fifth of the respondent, 129(40.3%) were educated diploma level, around one third, 109(34.1%) were degree graduated and about a quarter, 82(25.6%) were high school level. Nearly half of the respondents, 156(48.8%) were Orthodox, about one third, 108(33.8%) were Muslim and about more than one tenth were protestant.

Regarding the ethnicity, around the quarter of the respondent, 80(25.0%) and 81 (25.3%) were from Amhara and Oromo ethnic group respectively. Around three fifth, 192(60.0%) were married whereas about two fifth, 122(38.1%) were never married. Slightly near half, 141(44.1%) and 143(44.7%) had income from 1500-2000 and 2001-6000ETB respectively (Table 1).

Variables		Frequency	Percent
Sex	Male	281	87.80%
	Female	39	12.20%
Age	20-24	38	11.90%
	25-29	154	48.10%
	30-34	85	26.60%
	=>35	43	13.40%
Education	High school	82	25.60%
	Diploma	129	40.30%
	Degree	109	34.10%
Religion	Orthodox	156	48.80%
	Protestant	50	15.60%
	Muslim	108	33.80%
	Others*	6	1.90%
Ethnicity	Afar	45	14.10%
	Amhara	80	25.00%
	Hadiya	42	13.10%
	Kembata	13	4.10%
	Oromo	81	25.30%
	Tigre	45	14.10%
	Other**	14	4.40%
Marital Status	Never married	122	38.10%
	Married	192	60.00%
	Other***	6	1.90%
Income	1500-2000	23	7.20%
	2001-6000	141	44.10%
	6001-10000	143	44.70%
	>10000	13	4.10%

Table1: Socio-background of Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia.
N.B: Others * Joba, Wakefeta, Adeventisit, ** Gurage,wolayeta, Silte, ***Divorce, widowed & separated

Social and Behavioral Characteristics of Employees

Around one third of the respondents' family were chewing khat, 90(28.1%) and almost nine-tenth of the respondents friends, 282(88.1%) were chewing khat. Regarding the behavioral characteristics of employee, around two third, 211(65.9%) were drinking alcohol, one quarter, 80(25.0%) were smoking cigarettes and half of

the respondents, 163(50.9%) were smoking shisha. 48 (15%) of the respondents had not yet experienced any substances (Table 2).

Variables		Frequency	Percent
Family chew khat	Yes	90	28.10%
	No	230	71.90%
Friends chew khat	Yes	282	88.10%
	No	38	11.90%
Drinking alcohol	Yes	211	65.90%
	No	109	34.10%
Smoking cigarette	Yes	80	25.00%
	No	240	75.00%
Smoking Shisha	Yes	163	50.90%
	No	157	49.10%
Not taking any substance	Yes	48	15.00%
	No	272	85.00%

Table 2: Social and behavioral characteristics among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia, 2018.

Magnitude of Khat Chewing

Around three fifth of the Kessem sugar factory permanent employees, 192(60.0%) [95% CI: 54.4-65.3)] ever chewed Khat in their life time. Half of the respondents, 161(50.3%) [95% CI: 45.0-55.9)], are currently chewing khat (Table 3).

Variable		Sex		Total (%)
		Male (%)	Female (%)	
Ever chew khat	Yes	177(92.2)	15(7.8)	192(60.0)
	No	104(81.3)	24(18.8)	128(40.0)
Chew khat in last one year	Yes	158(93.5)	11(6.5)	169(52.8)
	No	123(81.5)	28(18.5)	151(47.2)
Currently chew khat	Yes	150(93.2)	11(6.8)	161(50.3)
	No	131(82.4)	28(17.6)	159(49.7)

Table 3: Life time, last one year and current chewers of khat among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia, 2018.

Pattern of Chewing Khat

About three fourth of the respondents, 137(71.4%) started chewing at age greater or equal to 20 years old. Slightly near half, 86(44.8%) were chewing khat daily, around one third, 63(32.8%) were chewing within every 1-3 days and about one fifth chew occasionally. Around three fourth, 142(74.7%) expensed 51-100ETB during each chewing. Three quarter of the respondents, 142(74.7%) were chewing at their home. Majority, 106(55.5%) were chewing with their coworkers (employees) and half, 100(52.1%) get khat in front of the factory. Around three fourths or 142(74.0%), 136(70.8%) of the participants were drinking alcohol and smoking Shisha after chewing khat respectively (Table 4).

Variables		Frequency	Percent
Age of started chewed	<=15	3	1.60%
	16-19	52	27.10%
	>=20	137	71.40%
Frequency of chewing	Everyday	86	44.80%
	1-3 days	63	32.80%
	Occasionally	43	22.40%
Money expensed during each chewing	=<50	9	4.70%
	51-100	142	74.30%
	101-150	40	20.90%
Chewing place	In chat selling shop	42	22.10%
	Home	142	74.70%
	Other (in relative home/video)	6	3.20%
With whom Khat is chewed	Alone	27	14.10%
	With Employee	106	55.50%
	Other friends	58	30.40%
Place of Khat available	In front of factory	100	52.10%
	In Town	84	43.80%
	From friend	8	4.20%
Taking alcohol after chewing	Yes	142	74.00%
	No	50	26.00%
Smoking cigarette after chewing	Yes	58	30.20%
	No	134	69.80%
Smoking Shisha after chewing	Yes	136	70.80%
	No	56	29.20%
Taking hypnotics after chewing	Yes	1	0.50%
	No	191	99.50%

Table 4: Pattern of Khat chewing among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia 2018

Reasons for Chewing Khat

Almost all of the respondents (99.0% and 92.2%) were chewing Khat for the purpose of relaxing and peer pressure respectively. About half (49.5%) chew Khat for the reason of their work performance improvement (Figure 2).

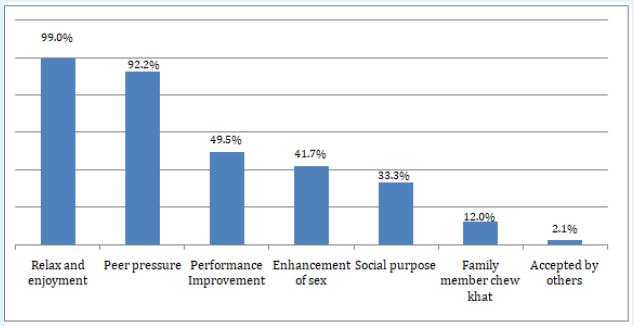

Figure 1: Reason to chew khat among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia.

Factors Associated with Khat Chewing

In order to identify factors associated with Khat chewing, bivariate and multivariate binary logistic regression analysis were conducted. At bivariate level religion and having never used substance are not significantly associated (p-value less than 0.25) with Khat chewing. All of the variables with p-values less than 0.25 at bivariate analysis were incorporated in the final multivariable logistic regression model.

After controlling for the effects of potentially confounding variables using multivariate logistic regression model, sex, education level, peer pressure/having friend who chews Khat, experienced cigarette and Shisha smoking were factors significantly associated (p-value less than 0.05) with Khat chewing (Table 6).

Odds of chewing khat among male were 2.45 times higher as compared to female [AOR =2.45, 95%CI (1.01-5.94)]. Respondents of diploma level were 4 times higher odds of chewing khat when compared with those educated up to high school level [AOR= 3.98, 95%CI (1.87-8.49)]. Employees of degree level were also 2.36 times higher odds of chewing Khat when compared with those educated up to high school level [AOR= 2.36, 95%CI (1.09-5.14)].

Those employees who have friends chews Khat were 3.17 more likely to chew khat than compared to those who did not have friends chew Khat [AOR= 3.17, 95%CI (1.29-7.79)]. Odds of chewing khat among those experienced cigarette smoking were 2,7 times higher as compared to those who did not ever smoke cigarette [AOR= 2.71, 95%CI (1.32-5.57)]. Those who smoked shisha were 7 times more likely to chew Khat than compared to those who did not ever smoke shisha [AOR=7.03,95%CI(3.71-13.33)] (Table 5).

Variable	Category	Ever chewed khat		COR (95%CI)	P-value
		Yes (%)	No (%)		
Sex	Male	177(63.0)	104(37.0)	**2.72(1.37-5.42)***	**0.004**
	Female	15(38.5)	24(61.5)	1	
Education	High School	44(53.7)	38(46.3)	1	
	Diploma	90(69.8)	39(30.2)	**1.99(1.12-3.54)***	**0.019**
	Degree	58(53.2)	51(46.8)	0.98(0.55-1.74)	**0.951**
Having friend who chew Khat	Yes	182(64.5)	100(35.5)	**5.10(2.38 - 10.92)***	**0.001**
	No	10(26.3)	28(73.7)	**1**	
Ever used Cigarette	Yes	63(78.8)	17(21.3)	**3.19(1.76-5.77)***	**0.001**
	No	129(53.8)	111(46.3)	**1**	
Ever used Shisha	Yes	133(81.6)	30(18.4)	**7.36(4.42-12.28)***	**0.001**
	No	59(37.6)	98(62.4)	1	
Ever used nothing substance	Yes	15(31.3)	33(68.8)	**0.24(0.13-0.47)***	**0.001**
	No	177(65.1)	95(34.9)	1	

Table 5: Bivariate analysis to identify factors of chew khat among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia.
'Bold *' = significant at bivariate level

Variable	Category	Ever chewed khat		COR (95%CI)	P-value
		Yes (%)	No (%)		
Sex	Male	177(63.0)	104(37.0)	**2.72(1.37-5.42)***	**0.004**
	Female	15(38.5)	24(61.5)	1	
Education	High School	44(53.7)	38(46.3)	1	
	Diploma	90(69.8)	39(30.2)	**1.99(1.12-3.54)***	**0.019**
	Degree	58(53.2)	51(46.8)	0.98(0.55-1.74)	**0.951**
Having friend who chew Khat	Yes	182(64.5)	100(35.5)	**5.10(2.38 - 10.92)***	**0.001**
	No	10(26.3)	28(73.7)	**1**	
Ever used Cigarette	Yes	63(78.8)	17(21.3)	**3.19(1.76-5.77)***	**0.001**
	No	129(53.8)	111(46.3)	**1**	
Ever used Shisha	Yes	133(81.6)	30(18.4)	**7.36(4.42-12.28)***	**0.001**
	No	59(37.6)	98(62.4)	1	
Ever used nothing substance	Yes	15(31.3)	33(68.8)	**0.24(0.13-0.47)***	**0.001**
	No	177(65.1)	95(34.9)	1	

Table 6: Multivariate analysis to identify factors of chew khat among Kessem Sugar Factory Project permanent Employees, Afar Regional State, Ethiopia.
'Bold ** **=**significant at multivariate level, 1.00 = Reference group

Discussion

This study assessed the magnitude and associated factors of chewing khat among Kessem Sugar Factory Project employees, Afar Regional State, Ethiopia. The findings showed that the magnitude of khat chewing among Kessem sugar factory project permanent employees was 50.3% [95% CI: 45.0-55.9)]. Sex, education level, peer pressure/having friends who chew khat, experienced cigarette and shisha smoking were factors significantly associated with chewing khat.

This study revealed that the magnitude of khat chewing was 50.3%. This is similar to study finding reported from Jimma University (46%) [24], University of Ambo Woliso Campus (48.1%) and also a study done in Buta Jira (50.5%) [25]. In contrast, it was higher than studies from college students of Saudi Arabia (23.1%) [26], in North West Ethiopia 26.7%, and it is also higher than a study conducted among students at Axum University (27.9%) [27]. The possible reasons for the disagreement could be differences in the study settings, such as access to khat, factors outside the factory or university environment, religion and culture of the society. In Afar region Khat chewing is more common and normal in the community where as it is not as such in other parts of the country.

Odds of chewing khat among males was 2.45 times higher as compared to females [AOR =2.45, 95% CI (1.01-5.94)]. This finding is concordance with findings reported from studies among students of Jimma University [28], Axum University [2] and Haramaya University [27] and Ethiopian college students in Bahir Dar town [30]. The difference between males and females could be due to cultural restrictions, because in Ethiopia females are less exposed to Khat chewing than males [30].

Regarding the employees education, those who hold diploma level were 4 times higher odds of chewing khat when compared with those educated up to high school level [AOR= 3.98, 95%CI (1.87-8.49)]. Again, employees of degree level were also 2.36 times higher odds of chewing khat when compared with those educated up to high school level [AOR= 2.36, 95%CI (1.09-5.14)] and among Public College Students in Bonga Town, Southwest Ethiopia [31]. This might be due to addiction development and using khat for academic performance.

Those employees who have friends chew khat were 3.17 more likely to chew khat as compared to those who did not have friends who chew khat [AOR= 3.17, 95%CI (1.29-7.79)]. In Ethiopian college students in Bahir Dar town [32]. This study also indicated that the major reasons claimed for chewing khat was relaxing (99%) and peer pressure (92.2%).

Independent variables, smoking cigarettes and Shisha were factors related to chewing khat. Odds of chewing Khat among those who experienced cigarette smoking was 2.7 times higher as compared to those who did not ever smoke [AOR= 2.71, 95%CI (1.32-5.57)]. Those who

smoke Shisha were also 7 times more likely to chew khat as compared to those who did not ever smoke Shisha [AOR= 7.03, 95%CI (3.71-13.33)]. This study finding was in concordance with the study finding reported from northwest Ethiopia [30]. This might be true due to the high relationship between Khat and smoking. Starting with one substance might initiate the use of combined substances.

Conclusion and Recommendation

The findings showed that the magnitude of Khat chewing among Kessem sugar factory project permanent employees was 50.3%. Sex, education level, peer pressure/having friends who chew khat, experienced cigarette and Shisha smoking were factors significantly associated with Khat chewing. The factory's managers, health department and afar regional health bureau shall work on interventions to bring behavioral information to employees on the negative impact of khat and other substances too. The factory administration shall take some measures to control khat chewing in the factory compound and Khat selling shops around the factory

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Author Contributions

Analyzed the data: EA. TE Wrote the paper: EA, TB. Conceived the idea and designed the study: TB. Performed the study: EA, TB.

Conflict of Interests

There are no competing interests.

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