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## Short Communication

# Comparison of Smoking and Khat Chewing Habits between Medical and Non-Medical Female Students at UST, Sana'a, Yemen

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### ABSTRACT

**Background:** Smoking is a worldwide problem that kills millions of people. Women smoke much lower than males but the numbers of smoker women are growing up. The objectives of this study were to assess the prevalence of smoking and khat chewing in medical and non-medical female students at University of Science and Technology (UST), Sana'a, Yemen.

**Methods:** We used self-administrated questionnaire to collect cross-sectional data from a randomly selected sample of medical and non-medical female students of UST in 2012-2013. Overall, 480 students completed and returned the questionnaire, medical students represented 50% of them.

**Results:** The prevalence of smoking was significantly low among female medical students ( $P=0.045$ ), however, not significantly difference was found between medical and non-medical female students in khat chewing habits ( $P=0.083$ ). Non-smoker medical female students who tried smoking (45.6%) were significantly lower than non-medical students (54.4%), and curiosity was the main reason for trying smoking. Water pipe was the most common type of smoking among smoker students (78.6%). Out of 26 female students who smoke and chew khat, 18 students reported that they smoke more while they chew khat.

**Conclusions:** Our study highlights the need for increased health education, awareness, and knowledge of the risks of smoking and particularly khat chewing to reduce these habits among female university students especially in non-medical female students.

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## Introduction

Smoking is one of the most public health problems which lead to kill nearly 6 million people each year. More than 5 million deaths are due to direct tobacco use and more than 600,000 deaths are due to second-hand smoke<sup>1</sup>. Furthermore, the numbers of deaths as a result of smoking are much higher than all deaths result from tuberculosis, human immunodeficiency virus (HIV/AIDS), and malaria<sup>2</sup>. According to WHO report; by 2030, number of death will exceed eight million each year due to tobacco smoking, and 80% of the deaths will be from developing country<sup>1</sup>. Most of the adult smokers start to smoke during their teenage years. Moreover, the majority of them start smoking at early age 16 years; indeed, they are less likely to quit smoking<sup>3-4</sup>. Chewing khat is widely accepted in Yemen and East Africa<sup>5</sup>. The active ingredients of khat plant (*Catha edulis*) are cathinone and cathine, which have stimulant effect that resemble amphetamine action<sup>5-6</sup>. Khat is reported to induce euphoria and hypomania, as well as, alertness and arousal. For that reasons, chewing khat enhances memorization and preparation before exams. On the other hand, at the end of khat session, the user may feel depressed, irritable, and difficult of sleeping<sup>5-6</sup>. Furthermore, khat has major socioeconomic negative consequence<sup>5</sup>.

According to WHO epidemic, tobacco use in males of Arabic countries are more than males of western countries (24.8% to 61.7% vs. 19.8% to 46%)<sup>7</sup>, however, the opposites are observed in females of Arabic countries comparing to western countries (0.3% to 7.9% vs. 13.7% to 31.1%)<sup>8</sup>.

In general, the prevalence of smoking among women is less than men in Arabic nations that may be due to culture and tradition influence<sup>8-9</sup>. However, now it is on the rise<sup>10</sup>. Although smoker women less commonly use conventional tobacco, they are commonly use water pipes<sup>8, 11</sup>. In Yemen, as other Arabic countries, the prevalence of tobacco smoking in adults is much higher in males than females (27.4% vs. 10.3%)<sup>12</sup>. However, the rate of smoking in Yemen is considered as one of the top ten highest countries in the world between both men and women (men 77% and women 29%)<sup>10</sup>.

Increase knowledge about the risk of smoking and khat chewing may decrease these habits among population, as a result, medical students are expected to have lower prevalence of smoking and khat chewing compared to other group. However, tobacco use still high between medical

students, although they have greater knowledge of the risk<sup>8, 13-14</sup>.

The aim of this study was to evaluate the smoking and khat chewing in medical and non-medical female students at University of Science and Technology, Sana'a, Yemen, and to determine whether non-medical students are more likely to smoke and chew khat than medical students due to their unawareness of health risks.

## Methods

A cross-sectional study using Arabic questionnaire, derived from the global tobacco survey (GATS, 2010), was distributed randomly to medical female students at Colleges of Medicine and Health Science, Dental, and Pharmacy, and non-medical female students at Colleges of Engineering, Administrative Sciences, Computing and Information Technology, as well as Humanities and Social Sciences at different education levels at University of Science and Technology, Sana'a, Yemen. A total of 460 female students filled and returned the survey (232 medical students, 228 non-medical students). The study was conducted during the academic year 2012-2013. We took permission from the university's Research Ethics Committee before distributing the questionnaires.

The questionnaire contained questions about demographic details, parents and friends smoking habits, smoking behavior (use of cigarettes, water pipes, or both), reasons for smoking, frequency of smoking, thinking to quit smoking, khat chewing habits, whether they smoke more when they chew khat, and their knowledge about consequences of smoking and khat chewing. Student who had smoked any tobacco product or chew khat even daily or occasionally, and was still

a smoker or khat chewer at the time of the study, we defined them as current smoker and khat chewer.

The data were analyzed using SPSS version 20 and *P* values <0.05 considered as statistically significant. Chi-square test used to test statistical significance.

## Results

A total of 460 female students completed the questionnaires. Of 460 participants, 85.9% (n=395) were Yemeni, whereas 12.6% (n=58) were from Arabic countries, and only 1.1% (n=5) were from foreign countries. Mean age was 20.4 ±1.7 years. Students involved in the study were in their 1<sup>st</sup> to 6<sup>th</sup> level of study; participants in the first year were 137 students, second year 94 students, third year 117 students, fourth year 94 students, fifth year 11 students, sixth year 6 students, and one student was undetermined.

The results of relationship between smoking and khat chewing habits, and demographic characteristics of the study sample are displayed in Table 1. Smoking in medical students was significantly lower than non-medical students; 35.7% of them were smokers compared to 64.3% of non-medical students (*P*=0.045). On the other hand, no significant difference was noticed between medical and non-medical khat chewer female students, 40% of the medical students chewed khat compared to 60% of non-medical students (*P*=0.083). In comparison to non-medical female students, medical female students had more knowledge about the risks of both smoking and khat chewing. Furthermore, non-medical students had tried smoking more than medical students (*P*=0.032) (Table 2). Curiosity was the most common reason for having tried smoking which was cited by non-smokers (Table 2).

**Table 1:** Demographic characteristics of smoking and Khat chewing habits among a sample of 460 students

Demographic data	All, n (%)	Medical, n (%)	Non-medical, n (%)	<i>P</i> value
Smokers	42 (9.1)	15 (35.7)	27 (64.3)	0.045
Khat chewers	60 (13.0)	24 (40.0)	36 (60.0)	0.083
Have family members who smoke	139 (30.2)	58 (41.7)	81 (58.3)	0.042
Have friends who smoke	133 (29.0)	59 (44.4)	74 (55.6)	0.153
Have knowledge about the risks of smoking	440 (96.1)	226 (51.4)	214 (48.6)	0.058
Have knowledge about the risks of Khat chewing	349 (76.0)	178 (51.0)	171 (49.0)	0.305

**Table 2:** Demographic data for 418 non-smoking students and the reasons given by them for trying smoking

Non-smoker	Total, n (%)	Medical, n (%)	Non-medical, n (%)	<i>P</i> value
Tried smoking	171 (40.9)	78 (45.6)	93 (54.4)	0.032
<b>Reasons for trying smoking</b>				
Curiosity	122 (29.2)	59 (48.4)	63 (51.6)	0.351
Friends	8 (1.9.0)	2 (25.0)	6 (75.0)	0.124
Parents	2 (0.5)	2 (100.0)	0 (0.0)	0.172
Psychological	5 (1.2)	1 (20.0)	4 (80.0)	0.151
Enjoyment	4 (1.0)	1 (25.0)	3 (75.0)	0.279
Mimicry	7 (1.7)	3 (42.9)	4 (57.1)	0.629
Appearing	2 (0.5)	1 (50.0)	1 (50.0)	0.957
Smell or view	10 (2.4)	2 (20.0)	8 (80.0)	0.041
Others	22 (5.3)	9 (40.9)	13 (59.1)	0.289

Smoking type among current smokers was as follows: 2.4% smoke cigarette, 78.6% smoke water pipe, 19% smoke both cigarette and water pipe (Table 3). The common reason given for smoking habits was enjoyment (14.3%), life stresses (9.5%), and influence of friends (9.5%). In addition, the majority of smokers smoked with friends (57.1%) and had smoker friends (85.7%). Most of the smokers had knowledge about the risks of smoking (88.1%). For the frequency of smoking, 9.5% of the smokers had smoked 1-5

cigarettes per day, and 47.6% of those who smoked water pipes smoked 1-2 in per day at last month. Moreover, 15 students of the smokers thought to quit smoking, and most of them (14 students) tried to stop smoking last year (Table 3).

Table 4 shows the characteristics of khat habits. Of the sixty khat chewers, 4 chew khat every day (6.7%), 12 chew khat weekly (20%) and 44 chew khat occasionally (73.3%). Eight chew khat once weekly (66.7%), and 4 chew khat twice or more per week (33.3%). Here, we found that 26 students of

khat chewer were smokers, and most of them 18 students said they smoke more when they chew khat. Furthermore, 28 of students spend two to three hours chewing khat (46.7%).

**Table 3:** Characteristics of smoking habits among a sample of 42 smoking students

Type	Number	Percent
Type of smoking		
Cigarettes	1	2.4
Water pipe	33	78.6
Both	8	19.0
Place of smoking		
Alone	2	4.8
With family	12	28.6
With friends	24	57.1
Not answered	4	9.5
Parent smoker		
Both	11	26.2
Father only	9	21.4
Mother only	5	11.9
None	17	40.5
Friends Smoker		
Yes	35	85.7
No	6	14.3
Reasons for Smoking		
Curiosity	2	4.8
Friends	4	9.5
Life stress	4	9.5
Enjoyment	6	14.3
Mimicry	3	7.1
Others	23	54.7
Have knowledge about the risks of smoking		
Yes	37	88.1
No	4	9.5
Don't Know	1	2.4
Frequency of cigarettes smoking		
1-5 cigarette/day	4	9.5
6-20 cigarette/day	2	4.8
>20 cigarette/day	2	4.8
Not answered	1	2.4
Frequency of waterpipe smoking last month		
1-2 days	20	47.6
3-5 days	6	14.3
6-9 days	6	14.3
≥10 days	5	11.9
Not answered	4	9.5
Thinking of quitting smoking	15	35.7
Trying stop smoking last year	14	33.3
Time without smoking		
1-7 days	4	9.5
8-15 days	2	4.8
>1 month	2	4.8
Not answered	6	14.3

**Table 4:** Characteristics of khat habits among a sample of 60 khat chewer students

Type	Number	Percent
Khat chewer frequency		
Every day	4	6.7
Weekly	12	20.0
Occasional	44	73.3
Frequency of khat chew per week		
Once	8	66.7
Twice or more	4	33.3
Khat chewer and Smoker		
Smoke more with khat chewing	18	69.2
Have knowledge about the risks of khat chewing		
Yes	36	60.0
No	14	23.3
Don't Know	10	16.7
Khat session time (hour)		
1	8	13.3
2-3	28	46.7
4-6	16	26.7
≥7	2	3.3
Not answered	6	10.0

## Discussion

This study has demonstrated that the prevalence of smoking among medical female students was very low in compared to non-medical female students. 35.7% represented the medical students, whereas 64.3% represented the non-medical students ( $P=0.045$ ). One of the reasons to increase tobacco use among non-medical students may be due to lack of medical knowledge. Our finding of prevalence is comparable to that mentioned in previous studies<sup>8, 15</sup>. Furthermore, we revealed that most of the smokers smoked with their friends (58.5%) rather than their family (28.6%) or alone (4.8%) which implies that friends inspire smoking behavior more than family members. This agrees with other studies, which showed that most people started smoking due to the influence of friends<sup>4, 8, 16-18</sup>.

The most common reasons given for smoking behavior were enjoyment (14.3%), stress factors (9.5%), and friends (9.5%). This agrees with other studies which showed that relaxation, ability to cope with stress, and friends were the main reasons to start smoking<sup>8, 17</sup>. These reasons could illustrate why most of the smokers, in this study (88.1%), smoked, even they had knowledge about the risks of smoking.

Based on our findings, the majority of female students smokes water pipe (78.6%), whereas, 2.4% of the smokers were cigarette smokers and 19% smoke both water pipe and cigarette. Similarly, findings of other studies reported that the prevalence of either water pipe smoking alone or with cigarette was high<sup>8, 15, 19</sup>. Increase in the water pipe smoking may due to the misconception that water pipe smoking is harmless. Actually, water pipe smoking may be more harmful than smoking cigarettes, as a water pipe smoker inhales equivalent of 100 cigarettes in one session of smoking<sup>20</sup>. Therefore, it is strongly recommended that tobacco control programs should include all types of smoking, in addition to cigarettes smoking.

In the present study, we found that 35.7% of the current smokers were thought to quit smoking. Furthermore, 33.3% of them tried to stop smoking last year, and only 4.8% who could stop smoking for more than one month. This is may be due to increase the awareness among smokers about the hazard effects of smoking, which increase the attitude against it<sup>21-23</sup>.

Our study showed that medical female students (24 students) chew khat less than non-medical students (36 students) but without significant difference ( $P = 0.083$ ). This is in consistence with other reports, where medical students chew khat less than general population at same age and sex<sup>5-6</sup>. However, the social view among many Yemenis that khat has a good effect on the concentration of the mind and keeps one awake for long time may explain why there is no big difference in chewing khat habits between the two groups.

We found most of the female students, 26 students (43.3%), who chewed khat were smokers. Moreover, most of them, 18 students (69.2%), stated that they smoked more while they chewed khat. Likewise, other studies mention that khat is often used with tobacco<sup>24-25</sup>. However, in one study, they could not find any relationship between cigarette smoking and khat chewing<sup>5</sup>. Therefore, in general, khat may be considered as a risk factor for smoking which include it in

the tobacco control programs could minimize smoking behaviors among students.

## Conclusions

Smoking behavior is very low among female medical students compared to non-medical female students at University of Science and Technology, Sana'a, Yemen. This may be due to increase awareness and knowledge about health risks that associate with smoking among medical students. However, for khat chewing, we did not find any significant difference between medical and non-medical female students and this is probably because social misunderstanding views. Current study emphasizes that programs that are more educational are needed to increase awareness and knowledge about hazard effect of smoking and khat chewing in order to reduce smoking and more essentially khat chewing habits among university students, especially non-medical students.

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## Conflict of interest statement

The authors have no conflict of interest.

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