PREVALENCE OF SMOKING AMONG TAIF UNIVERSITY FEMALE STUDENTS AND ITS IMPACT ON ACADEMIC PERFORMANCE

Medicine

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ABSTRACT

The Saudi Arabian culture is based on Islamic Shari'ah rules, in which tobacco smoking is considered unacceptable behavior among both sexes but is deemed more unacceptable among women.

Objectives: To determine the prevalence of different types of smoking among female University students in Taif, 2015-2016 as well as to explore the association between smoking and their demographic characteristics and identify the impact of smoking on students` academic performance.

Methods: A cross sectional study was carried out including randomly selected sample of regulate attending female Taif University students in the academic year 2015-2016 representing both scientific and literature colleges. Self-administered Global Adult Tobacco questionnaire, 2011 (GATS) was utilized to determine prevalence, knowledge and attitude of smoking among participants.

Results: The prevalence of current smoking was 13.4% whereas the prevalence of smoking (current and formal) among them was 16.1%. Regarding type of smoking, 50% of smokers claimed that they smoked water pipes (Shisha) and 40.6% smoked cigareetes while the remaining 9.4% smoked both. Students` academic performance was significaly associated with history of current smoking as 19% of students with fair performance compared to 7.8% and 3.1% of those whose academic performance were very good or excellent, respectively were current smokers, p=0.026. Multivariate logistic regression analysis revealed that female students who had at least one smoker family member were more likely to be current smoker compared to those without any smoker family member (aOR=2.98; 95% CI=1.12-7.96, p<0.05).

Conclusions: Smoking is considerably prevalent (13.4%) among female students of Taif University. The amount of water-pipe smoking among the female smokers was higher than that of cigarette smoking. Smoking had a negative effect on students` academic performance. Among important factors influencing the participants to smoke was the presence of a smoker in the family particularly mother and sister and having peer smokers.

KEYWORDS

"Smoking", "Female Students", "Academic Performance", "Taif University".

Introduction

Smoking is a major, preventable cause of morbidity and mortality. It kills nearly 6 million people worldwide each year. If the current trend continues, by 2030, tobacco will kill more than 8 million people worldwide each year. Over the course of the 21st century, tobacco use could kill a billion people or more. 1-3 It is associated with a wide range of diseases, such as pulmonary, gastrointestinal and cardiovascular diseases, and various kinds of cancers. 4,5 To further worsen the situation, the majority of smokers start their destructive habit before the age of 18 years. 5,6 Less than 2% of them start smoking after their 22nd birthday. 7,8 For all these reasons, the prevention and treatment of tobacco addiction have been targeted by the World Health Organization as priorities for intervention, especially in developing countries. 9

Smoking poses adverse social, economic and developmental effects on the lives of individuals, their families and communities. The economic burden includes direct medical care for tobacco-induced illnesses, absence from work, reduced productivity and loss of life from early death. 16

Poor academic achievement is strongly related to smoking but studies that examine the mechanism between academic achievement and smoking are lacking. Only a few studies have been conducted to estimate the prevalence of smoking among Saudi female university students, 11, 13, 14, 17 and most of them failed to explore in-depth the women's awareness and attitude toward smoking. The smoking behaviors of college students can provide valuable information about smoking trends among young adults, and such information can help to create a tailored approach to tobacco control.

The overall aim of this study is to explore the magnitude of smoking problem among female Taif University students (2015-2016) and its sequel on their academic performance. Also, to highlight tobacco consumption patterns and different risk factors that may contribute to adoption of the habit among Saudi youngsters. Female University students as current or future mothers should be aware of the dangerous effect on their health as reducing fertility and increasing the rate of spontaneous abortions and complications of pregnancy.

Literature Review:

Several studies were performed locally, regionally, and globally to determine the prevalence of smoking among female University students and its associated factors.

Local studies:

Abdulghani et al conducted a cross-sectional study in 2013 to determine the prevalence of smoking, knowledge about the ill effects of smoking on health, and the influence of family members' smoking habits among Saudi female students of King Saud University, Riyadh, Saudi Arabia. The prevalence of current smoking was 4.3% and 5.6% for cigarettes and water-pipes, respectively, whereas 3.9% of the participants were ex-smokers. More than half (54%) of the smokers started their smoking habit for entertainment, and 44.4% of the participants did not know that smoking causes serious health problems. The most common factors for quitting smoking were health concerns (54%), religious beliefs (29%), and parent's advice (17%).17 Azhir and Alsayed conducted a study in 2012 to assess the prevalence of smoking among female medical students in comparison to female non-medical students, among female students attending King Abdul-Aziz University, Jeddah, Saudi Arabia. The prevalence of smoking was higher in non-medical female students (4.2%) compared to medical female students (0.32%). They concluded that the prevalence of smoking is low among female medical students compared to female non-medical students, presumably because of their awareness, level of education, and knowledge of the risks to health associated with smoking. 14

Mandil et al conducted a study in 2011 to estimate the prevalence and behavioural patterns of tobacco use among undergraduate students at King Saud University, Riyadh, Saudi Arabia during the academic year 2008/2009 and investigate factors that influenced their tobacco use. The overall prevalence of smoking among students was 14.5%, among fathers and mothers was 22.2% and 2.2% respectively , 15.0% reported all or most of their friends smoked. The most important independent predictors of smoking were: friends' smoking then sister's and mother's smoking, single status and age were the least. 18

Koura et al conducted a study in 2011 to estimate the prevalence of smoking and assess its pattern among non-medical female college

students in Dammam, Saudi Arabia. Results revealed that occurrence of smoking among female college students was 8.6%. It was significantly higher among literature college students (12.1%) than among Science College students (3.4%). The mean age at which smoking started was 16 ± 2.4 years. More than half of the students who smoked were cigarette smokers, while 43.2% were shisha smokers. There was a strong relationship between parents who smoked and daughters who smoked. The main motive for smoking was curiosity, followed by relief of tension. [19]

Wali carried out a research in 2011 to estimate the prevalence of tobacco smoking, and understand the attitude, practice, and knowledge among medical students attending the main Medical College of King Abdulaziz University, Jeddah,Saudi Arabia. The prevalence of smoking was 24.8% among males, and 9.1% among females. Smoking was more common in males, but there were more ex-smokers among females. The friends and parents were considered the primary influence for initiating a smoking habit, followed by the media. Most of them thought that smoking tobacco is harmful, approximately 9.5% believe that smoking a water pipe is not. [20]

International studies:
Musmar carried out a research in 2012 to explore the rate of and attitudes towards smoking among An-Najah National University students in Palestine during spring 2010. Overall 34.7% of the study sample were cigarette or waterpipe smokers, and this rate was higher among males than females (52.7% versus 16.5%). Male sex, older age and higher family income were predictors of current smoking status. [21]

In 2011, Fawibe and Shittu have surveyed cigarette smoking among undergraduates of the University of Ilorin, in the North Central region of Nigeria. The prevalence rate of current smoking was 5.7% (males 7.7%, females 2.0%) and of ever smoking was 17.1% (males 22.9%, females 6.2%). Smoking was more common in non-medical students. Eighty-three (83.8%) of the smokers had already started smoking by their eighteenth birthday. Sixty-seven (67.6%) of them believed that smoking could never have a negative impact on their health status and quality of life and just 39 (39.4%) smokers were willing to quit. [22]

Methodology:
The study was conducted among regular attending female students in the academic year 2015-2016 at Taif University in Taif city, Saudi Arabia. A cross sectional study was used by Self-administered Global Adult Tobacco questionnaire, 2011 (GATS), the World Health Organization (WHO), CDC, and the Canadian Public Health Association, developed the GATS. [24] This questionnaire was used to determine prevalence, knowledge and attitude of smoking among adults. In addition, the Grade Point Average (GPA) of the students in the last semester was obtained. It was categorized into four categories:

1 - 1.74 (Fair)
1.75 - 2.74 (good)
2.75 - 3.49 (very good)
3.5 - 4 (excellent)

Two separate sampling frames were prepared, the first for literature colleges of females whereas the second for scientific colleges of females. One college was randomly selected by simple random technique from each frame: College of Administration and Financial Sciences representing scientific colleges and college of Arts representing literature colleges. Again one department from each college was randomly selected; Business administration department from college of Administration and Financial Siences and Arabic Language Department from college of Arts were selected. Each department consisted of multiple levels. All levels of both department were selected (2nd-4th).

Sampling Strategies
The sample size was calculated by using the single proportion equation in Raosoft software package, [23] the required sample size was 430 students at 95% confidence intervals. This sample was distributed equally between scientific and literature divisions (215 from each division) and between different levels (72 from each of levels). Simple random technique was applied to select students from the list of students obtained from the administration department.

Data source and data collection procedures
Self administered questionnaires were distributed by the researcher to the students throughout the period 1st April till 30th April, 2016. The filled questionnaires were collected by the researcher in the same day.

Data management and analysis procedures
Statistical package for Social Sciences (SPSS) software version 20.0 was used for data entry and analysis.

Ethical Procedure
Necessary approval by the Research Ethics Committee of the Armed Forces Hospitals in Taif was obtained prior to the study. Also, the permission from Deans of the selected colleges (female sector) were obtained. The purpose of the study was explained to the students. It was also explained to them that their privacy and anonymity would be fully protected.

Results:
The questionnaire was distributed over 430 students. Out of them 404 responded by filling in the questionnaire and providing GPA. Thus, a response rate of 94% has been achieved. Regarding students` academic performance, almost half of them (49.3%) had good grades whereas 7.9% had excellent grades.

Table (1): Personal characteristics of Taif University female students participated in the study (n=404)

|	Frequency	Percentage
Age in years		
19-22	285	70.5
>22	119	29.5
Range	19-39	
Mean	21.76	
SD	1.83	
College/department)		
College of Administration and Financial Siences/Bussiness Administration	206	51.0
Arts/Arabic language	198	49.0
Academic year		
2nd	133	32.9
3rd	157	38.9
4th	114	28.2
Marital status		
Single	330	81.7
Married	66	16.3
Divorced	6	1.5
Widowed	2	0.5
Family income in SR/month		
≤5000	112	27.7
>5000-10000	140	34.7
>10000-20000	112	27.7
>20000	40	9.9
Father`s educational level		
Illiterate	39	9.7
From primary to secondary	225	55.6
University and above	140	34.7
Mother`s educational level		
Illiterate	94	23.3
From primary to secondary	231	57.1
University and above	79	19.6
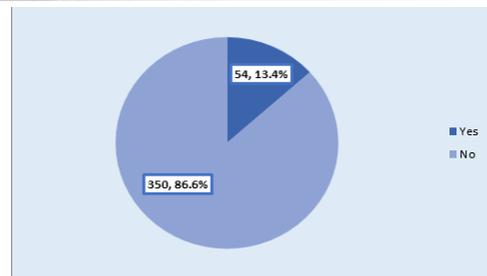
Figure 1: Prevalence of current smoking among Taif University female students
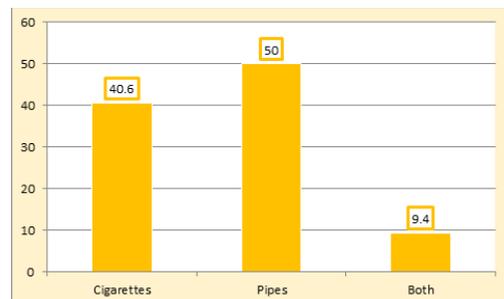

Figure 2: Type of smoking among smokers Taif University female students

Table 2: Personal characteristics associated with current smoking among female Taif University students

	Current smoking		p-value*
	Yes N=54 N (%)	No N=350 N (%)	
Age in years			
19-22 (n=285)	38 (13.3)	247 (86.7)	
>22 (n=119)	16 (13.4)	103 (86.6)	0.976
College/department)			
College of Administration and Financial Siences/Bussiness Administration (n=206)	35 (17.7)	163 (82.3)	
Arts/Arabic language (n=198)	19 (9.2)	187 (90.8)	0.013
Academic year			
2nd (n=133)	18 (13.5)	115 (86.5)	
3rd (n=157)	25 (15.9)	132 (84.1)	
4th (n=114)	11 (9.6)	103 (90.4)	0.325
Marital status			
Single (n=330)	43 (13.0)	287 (87.0)	
Married (n=66)	9 (13.6)	57 (86.4)	
Divorced (n=6)	0 (0.0)	6 (100)	
Widowed (n=2)	2 (100)	0 (0.0)	0.003
Family income in SR/month			
≤5000 (n=112)	13 (11.6)	99 (88.4)	
>5000-10000 (n=140)	16 (11.4)	124 (88.6)	
>10000-20000 (n=112)	17 (15.2)	95 (84.8)	
>20000 (n=40)	8 (20.0)	32 (80.0)	0.459
Father`s educational level			
Illiterate (n=39)	3 (7.7)	36 (92.3)	
Primary-secondary (n=225)	25 (11.1)	200 (88.9)	
University/ above (n=140)	26 (18.6)	114 (81.4)	0.025
Mother`s educational level			
Illiterate (n=94)	8 (8.5)	96 (91.5)	
Primary-secondary (n=231)	27 (11.7)	204 (88.3)	
University/ above (n=79)	19 (24.1)	60 (75.9	0.006

* Chi-square test

The prevalence of current smoking among students of college of Administration and Financial Science is significantly higher than that of college of Arts (17.7% versus 9.2%, p=0.013). Students` academic performance was significantly associated with history of current smoking as 19% of students with fair performance compared to 7.8% and 3.1% of those whose academic performance were very good or excellent, respectively were current smokers, p=0.026.

Table 3: Association between academic performance and current smoking among female Taif University students

Academic performance	Current smoking		p-value*
	Yes N=54 N (%)	No N=350 N (%)	
Fair (n=58)	11 (19.0)	47 (81.0)	
Good (n=199)	33 (16.6)	166 (83.4)	
Very good (n=115)	9 (7.8)	106 (92.2)	
Excellent (n=32)	1 (3.1)	31 (96.9	0.026

* Chi-square for trend

Almost three quarters (75.9%) of current smoker females reported that they thought to quit smoking. About one third of the students (30.2%) reported history of smoking among friends. A 35.2% of students who had smoker friends compared to only 3.9% of those who hadn`t smoker friends were current smokers. This difference was statistically significant, p<0.001.

Multivariate logistic regression analysis revealed that female students who had at least one smoker family member were more likely to be current smoker compared to those without any smoker family member (aOR=2.98; 95% CI=1.12-7.96, p<0.05). Students whose mothers are smokers were at almost 10-folded risk to be current smokers opposed to those without smoker mothers (aOR=10.77; 95% CI=1.05-109.79, p<0.05). Similarly, students whose sisters are smokers were at almost 17-folded risk to be current smokers opposed to those without smoker sisters (aOR=17.45; 95% CI=1.68-181.13, p<0.05). Having smoker friends was accompanied with a significant risk for current smoking among female students (aOR=11.89; 95% CI=5.57-25.39, p<0.001).

Discussion
The main finding of this study was that 16.1% of female students at Taif University, Saudi Arabia have experimented with smoking and 13.4% are current. This prevalence is higher than that reported in a study conducted by Abdulghani et al to determine the prevalence of tobacco smoking among Saudi female students studying at KSU.[17] It demonstrated that 4.3% of the participants were current smokers. Also it is higher than the results obtained from a local study involving adult women who visited primary health care centers in Riyadh city (4%).[25] However, it is in agreement with several international studies [26-28] and local studies conducted in Saudi Arabia showed a higher prevalence of smoking in a similar group (11%).[10-14] A study of female students at the College of Arts and Sciences, King Abdul Aziz University, Jeddah, Saudi Arabia, showed that nearly 11% of the respondents were current tobacco users. [15]

In agreement with results from other studies across the globe, the water-pipe form of tobacco use was the most commonly used smoking practice in this study including studies conducted in Saudi Arabia that reported that the prevalence of cigarette and water-pipe smoking was 5% and 8.7%, respectively, whereas about 2.7% of the women were both cigarette and water-pipe smokers. [15]

The Global Youth Tobacco Survey Collaborative Group 2005, in the Eastern Mediterranean Region, reported that water-pipe smoking is enjoying a great rise in popularity and becoming a behavioral norm, including for women.[29] Possibly, this could be a result of the misconception that water-pipe smoking is less dangerous than smoking cigarettes. Instead, water-pipe smoking may bear larger risks to health[29,30] and be even more detrimental because the plasma nicotine level resulting from smoking a single water-pipe is 20% greater than that resulting from smoking 21 cigarettes. [31]

In agreement with data presented from the 2009 National Youth Risk Behavior Survey (YRBS), [32] our results show a negative association between tobacco use and academic achievement. This means that students with higher grades are less likely to engage in tobacco use behaviors than their classmates with lower grades, and students who do not engage in tobacco use behaviors receive higher grades than their classmates who do engage in tobacco use behaviors. These associations do not prove causation. Many physical changes occur in the brain and body as a result of tobacco abuse. These physical changes can make learning and concentration more difficult and can negatively affect school performance.According to the U.S. Department of Health and Human Services (1988)[33] some short-term effects of tobacco use that can impede student performance including decreased attentiveness and activity, caused by the effects of nicotine withdrawal and increased absenteeism associated with cold, bronchitis, and asthma due to weakened immune systems. Further in-depth research is recommended in this regard.

In the present study, smoking among family members in particular mothers and sisters was a strong predictor for smoking among female university students. The same has been reported by Kubo et al in Japan.[34]

In a society like Saudi Arabia, religious considerations are important for Muslims since Islamic teachings prohibit or at least strongly discourage indulging in the habit of smoking. [35,36] So, we can depend on religious considerations as important motives for not initiating smoking and reasons to quit smoking among young smokers. Therefore, emphasizing its role should be considered by both family and teachers.

Almost three quarters of current smoker female reported that they thought about quitting. This indicate that most of current smokers were in the contemplation stage of changing model and it would be easy to push them toward quitting . One of this study suggestion is to Establish anti-smoking clinics in female colleges. Also it is important to Initiate an effective sound preventive comprehensive health education program on smoking for females in primary schools. The media engagement to control tobacco use should be intensified to reach the entire community.

CONCLUSION
On the basis of this study, smoking is considerably prevalent among female students of Taif University. The amount of water-pipe smoking among the female smokers was higher than that of cigarette smoking. Smoking had a negative effect on students` academic performance. Among important factors influencing the participants to smoke was the presence of a smoker in the family particularly mother and sister and having peer smokers

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