

Smoking Knowledge, Attitude, and Behavior in Female Saudi Medical and Non-Medical Students at King Faisal University

Ahmed Abdullah Alhashim, Moath Saud Alhamed, Mohammad Aljamaan, Yasser Elmedany

Abstract: *This study aimed to assess awareness of tobacco smoking, prevalence, and related factors among female university students, while comparing medical and non-medical students. A cross-sectional study was conducted in different departments of King Faisal University, Al-Ahsa, during 2018-2019. A stratified random sampling technique was used, based on college. A modified structured Global Youth Tobacco Survey was used to collect detailed information about tobacco smoking habits and associated factors. All students signed a consent form before receiving the questionnaire. SPSS version 21 was used. Two hundred female students participated, from medical (53%) and non-medical (47%) colleges with an average age of 21.1 ±1.8 years; 76.5% had single marital status. Tobacco smoking had an overall prevalence of 13%, cigarettes 5.5%, shisha (water-pipe) 7%, e-cigarettes 4%, and 3% were ex-smokers. However, 79 (39.5%) students refused to answer the smoking question. Medical students were more aware of benefits of smoking cessation (OR 2.03, P 0.03) and treatment modalities (OR 6.19, 0.01), and had lower smoking rates (OR 0.25, P 0.003) compared to non-medical students. Tobacco smoking was highly prevalent among female university students despite their good level of awareness. Qualitative studies are recommended to identify the root causes and develop effective treatment methods.*

Keywords: tobacco smoking, Saudi Arabia, medical students, female smokers, university students

1. Introduction

Smoking is the act of inhaling smoke, produced by the combustion of an element, through the mouth, usually of tobacco in a cigarette, cigar, or pipe. Frequent smoking, especially of cigarettes, which contain many toxic substances such as nicotine and tar, is a proven health hazard. Tobacco smoking is a growing global public health issue. There are about 1 billion smokers currently and 6 million people die annually because of tobacco-related complications such as lung cancer, stroke, and asthma [1]. In women with children, smoking-related harms are not limited to the mother's own health but extend to babies and children, and can cause premature birth and low birth-weight.

2. Literature Survey

Globally, there is extensive variation among women and girls in the prevalence of smoking, and this is also true when comparing smoking among females in Arab countries. Smoking seems to be much lower in Arab countries than in Western nations (0.3-7.9% vs. 13.7-31.1%) [2]. Sadly, water-pipes (shisha) have become fashionable among young women in the Middle East, which in turn has led to a higher prevalence of smoking [3]. In the Middle East, water-pipe usage has been increased up to 200% in females and 60% in males [4].

In Saudi Arabia, the prevalence of tobacco smoking was 37.6% among men and 6% among women over 15 years old [5,6], while it was found to be higher among women aged between 20 and 24 years old [3]. Among university students, non-medical female students at the University of Dammam had a smoking prevalence of 8.6%, while in the western region, the prevalence of smoking among female medical students was 9.1% [7]. However, there is a lack of local data about the prevalence of smoking and water-pipe usage in Saudi female students from different health

sciences departments. Additionally, electronic cigarettes are more likely to be smoked by females, adolescents, and people with lower education [8].

Female university students are well educated and aware of the hazardous effects of tobacco smoking on health [9]. However, as more and more educated women are choosing to work, a further increase in women smoking is expected because of exposure to stress during work hours. In addition to coping with work stress, some women have attributed the reasons behind tobacco smoking to gender equality and other economic factors [10-12].

Considering these factors, it is important to understand not only the overall prevalence of tobacco smoking among female university students, but also the prevalence of specific smoking methods, such as water-pipes and e-cigarettes, which have recently grown in popularity. Hence, this study aimed to estimate the prevalence of tobacco smoking, measure awareness levels, and assess factors associated with smoking habits among female students in King Faisal University, Al-Ahsa, while comparing students in medical and non-medical colleges on tobacco smoking.

3. Methods

A cross-sectional study was conducted on 200 female students in King Faisal University during 2018-2019. It included female students in medical, pharmacy, agriculture, and English colleges, regardless of educational level or performance. A required sample size was estimated using a proportion equation for sample size estimation with 95% confidence intervals, a 4% margin of error, and prevalence of female tobacco smoking as 8.6% [13]. A multistage sampling technique was used. A cluster random sample included two medical (medical and pharmacology) colleges and two non-medical (English and agriculture) colleges.

A self-administered questionnaire was used to measure students' knowledge, attitude, practice, and prevalence of tobacco smoking and associated factors in addition; students in medical and non-medical colleges were compared. The questionnaire was modified from the structured Global Adult Tobacco Survey [14], in addition to incorporating items from some relevant studies [3, 6, 7, 13]. The modified questionnaire was translated to Arabic and was back-translated to English. Then, it was reviewed by two family medicine.

4. Results

A total of 200 female students completed the survey form. Based on specialty, there were 25% in English, 25% in medicine, 28% in pharmacy, and 22% in sciences. The average age was 21.13 (SD 1.77) years and, regarding marital status, 153 (76.5%) students were single. Furthermore, 116 (58%) students were in their 2nd or 3rd year and the remaining 42% were in higher levels. Regarding academic performance, 52 students had GPAs (out of 5) between 2.5 to 3.5 while the remaining 148 students were between 3.5 to 5. Regarding parents' education, 69% of fathers and 63.5% of mothers had undergone higher education (Table 1).

Consultants and a biostatistician who assessed Table 1. General characteristics of female university students (N = 200) the questionnaire's validity and modified it accordingly. A pilot study was performed on 10 female university students from other colleges. During data collection, the study's investigator distributed and received questionnaires at the same time to ensure that all questionnaires were submitted.

The questionnaire included five parts. The first part included demographic data with some family and educational information, while the second and third parts contained questions about students' general knowledge and attitude regarding tobacco smoking habits. Part four included associated factors and part five included the practice of tobacco smoking. Five was to be answered by students who had any experience of tobacco smoking.

SPSS version 21 was used for data entry, cleaning, coding, and analysis. Descriptive statistics of general characteristics, knowledge attitude, associated factors, and the practice of tobacco smoking were carried out. They included calculation of proportions of

Education – Father categorical variables, with means and standard deviations for continuous variables. Chi-square tests were used to assess the statistical significance of differences between medical and non-medical female students, based on P-values and odds ratios.

The Saudi Council for Health Specialties - Research Office approved the study.

University approval and coordination were arranged before data collection. All included students signed an informed consent form before participating in the study.

All information was kept confidential and students had the right to refuse to participate in the study.

Table 2 shows the knowledge and attitude toward tobacco smoking among female university students. A total of 22.1% did not know the effects of smoking on fertility with 7% answering "no effect"; 17% answered that shisha has fewer effects than cigarette smoking and 13% did not know that quitting smoking can reduce the risk of sudden death and lung cancer to that of non-smokers with 22% answering "No." However, 68.5% agreed that smoking habits have been increasing recently among females in our community. Regarding attitude toward tobacco smoking, students answered that family history of smoking (88.4%), social media (57%), work specialty (32%), secondhand smoke (52.5%), and friends (90%) played a big role in one's tobacco smoking practices.

Table 3 and figure 1 show tobacco smoking practices among female university students. Among the 200 students, the following rates of specific tobacco smoking practices were observed: cigarettes 5.5%, shisha 7%, e-cigarettes 4%, and ex-smoker 3%. The rate of parental history of tobacco smoking was 26.5%, while 24.5% had close friends who were smokers. On the other hand, 39% had never seen women smoking in public places for women and 55 (27.5%) had never seen female celebrities smoke cigarettes on social media. During their college career, 137 (68.8%) students did not have any classes about the harmful effect of tobacco smoking.

Thirty-two (16%) students had tried tobacco smoking in their lives, including 14 (43.8%) students who were aged 16 years or younger when they tried smoking for the first time, 6 (18.8%) students had stopped smoking ("ex-smokers"), and 12 (37.5%) were willing to stop smoking. However, 79 (39.5%) students refused to answer the tobacco smoking practices question. Additionally, the most common source for obtaining their cigarettes was friends (71.8%) and the usual place included friends' homes (75%) followed by their own home (50%), public places (46.9%), and while travelling (37.5%).

Tables 4 and 5 summarize the differences in tobacco smoking knowledge, attitude, and practices between medical and non-medical female university students. Seventy-eight (61.7%) medical students agreed that smoking can affect fertility compared to 54 (38.3%) non-medical students (OR 3.58, P 0.0001).

Furthermore, medical students were more aware of the benefit of smoking cessation (OR 2.03, P 0.03) and treatment modalities (OR 6.19, P 0.01).

Regarding attitude toward tobacco smoking, 76 (58.9%) medical students were aware that social media increased the incidence of smoking and 104 (55.3%) medical students disagreed with the statement that, "smoking has positive effects on relieving stress" compared to 53 (41.1%) and 84 (44.7%) non-medical students (OR 2.03, P 0.03) (OR 6.19, P 0.01), respectively. In tobacco smoking practices (Table 5), medical students had less experience with tobacco smoking than non-medical students (OR

will increase your chances of being smoker?						
2-Do you think that social media have increased the incidence of tobacco smoking?	80 (70.2%)	26 (30.2%)	34 (29.8%)	60 (69.8%)	0.000	15.43
3-Do you think that tobacco smoking will have a positive effect on relieving stress?	32 (55.2%)	73 (51.8%)	26 (44.8%)	68 (48.2%)	0.8	1.15
4-Do you think tobacco smoking habits are related to work specialty?	432 (65.6%)	64 (47.1%)	22 (34.4%)	72 (52.9%)	0.02	22.1
5-Do you think that being a second-hand smoker increases the likelihood of becoming a smoker?	51 (48.6%)	55 (57.9%)	54 (51.4%)	40 (42.1%)	0.2	0.69
6-Do you think that friends play a big role in tobacco smoking practices?	99 (55%)	7 (35%)	81 (45.0%)	13 (65%)	0.1	2.27
7-Do you think smoking makes one look more attractive?	19 (50%)	87 (53.7%)	19 (50.0%)	75 (46.3%)	0.7	0.86
8-Do you think women smoking tobacco in Saudi Arabia is currently a serious issue?	67 (60.4%)	38 (43.2%)	44 (39.6%)	50 (56.8%)	0.02	2.00

Table 5: Comparison of tobacco smoking practices between female university students in medical and non-medical colleges (chi-square test)

Item	Categories	Medical (106)	Non-medical (94)	P	OR
Are there any tobacco smokers in your family?	Yes	25 47.2%	28 52.8%	0.3	0.73
	No	81 55.1%	66 44.9%		
Do any of your closest friends smoke?	Yes	26 53.1%	23 46.9%	1	1.00
	No	80 53.0%	71 47.0%		
How often do you see female tobacco smokers in public places for women?	Yes	61 50%	61 50%	0.3	0.73
	Never	45 57.7%	33 42.3%		
On social media, how often do you see female celebrities smoke tobacco?	Yes	75 51.7%	70 48.3%	0.6	0.83
	Never	31 56.4%	24 43.6%		
During your college career have you had any classes about the harmful effects of tobacco?	Yes	45 72.6%	17 27.4%	0.0001*	3.40
	No	60 43.8%	77 56.2%		
Have you ever tried or experimented with tobacco smoking, even one or two puffs?	Yes	8 25%	24 75%	0.003*	1
	No	51 57.3%	38 42.7%		
	Refrain	47 59.5%	32 40.5%	0.77	1.09

5. Discussion

The prevalence of tobacco smoking habits among female university students in Saudi Arabia was student populations in different countries showed they had high awareness levels [20-22]. A study from Najran, Saudi Arabia, reported higher knowledge among female compared to male found to be 13% in the current study (excluding six students about health problems caused by smoking ex-smokers). An analysis of the responses showed that friends were the most common source for [23]. In the literature, there are also reports that the prevalence of smoking among health-related obtaining cigarettes and students' homes were also college students was higher despite their the most common place where they usually smoked. A review of the literature showed that studies reported different prevalence rates of tobacco smoking habits among female students. Knowledge related to its harms [13, 24-25].

Apart from the questions being asked in the awareness section, participants showed moderate agreement in response to questions related to study from Riyadh in 2014 reported a prevalence of attitude and practice. Attitude level was about 50% smoking habits among female students of about 12% (15), while Amin et al. found 8.5% of their sampled population were habitual smokers [16]. Another study from Riyadh conducted in 2010, reported that 5.9% of their sampled female students were habitual smokers [17]. In addition, Azhar et al. while knowledge level was as high as 70 to 80%. This can explain why, even though the study participants had a good knowledge of the consequences of tobacco smoking, the prevalence of smoking was still high. In a study from Jeddah also found a low prevalence of smoking habits and reported that 4.2% of female students were smokers [3]. A study conducted in Dammam reported a prevalence of smoking among female medical students of about.

6. Conclusion

A high prevalence of tobacco smoking habits was observed among female university students despite 13.3% [18]. It has been noticed that the prevalence their good level of awareness. Female university of tobacco smoking among female university students in medical specialties were more aware of students has increased in recent studies. Our results tobacco harms and had a lower prevalence of are consistent with the studies in Riyadh and Dammam [3, 15-18]. A further review of the literature revealed that female students normally smoke with friends, which suggests that they might be inspired by their friends to start smoking [3]. Mandil et al. also found a significant association between smoking habits in friends and the prevalence of smoking habits among the studied population [17]. Al-Turkey also reported that smoking by friends was an important risk factor among medical students [19]. The findings of Ansari et al. showed that 38.6% of their studied sample obtained cigarettes from their friends, which is quite a high rate [18]. Tobacco smoking than those in non-medical specialties.

7. Future Scope

This study has some limitations. When students were asked the question, "Have you ever tried or experimented with tobacco smoking, even one or two puffs?" 39.5% of participants did not answer. This behavior could have been due to the social and cultural values of Saudi society. Unfortunately, this could have distorted the findings and yielded inaccurate results. Smart and effective strategies are required in future studies to overcome this problem. Accurate findings are a key factor in the results of the present study showed that a high building effective strategies and programs that proportion of female smokers started smoking when they were only 16 years old or even younger. A study conducted at the University of Dammam could help students to quit smoking.

This study was restricted to female students rather explored the same pattern that most students started than both genders, which did not allow gender smoking as early as the age of 16 years [13].

Evaluation of the questions about students' knowledge of the health risks associated with comparisons regarding prevalence and awareness of tobacco smoking. As it was a self-administered questionnaire-based study, it was liable to recall bias. Multivariable statistical analysis was not smoking revealed that most students were aware of carried out because a descriptive non-analytic study the harms caused by smoking. In some questions about knowledge, medical and non-medical students gave significantly different responses; however, aggregate scores (medical and non-medical combined) showed that there was a consensus among the students regarding health-related risk factors. Studies conducted on various design was used. The study included only four colleges from one educational institution and did not target specific university educational levels. It would be desirable to include further related factors in study subjects, such as educational stress, parental smoking, and so on.

Further qualitative studies are recommended in this regard to explore common reasons behind the increase in tobacco smoking prevalence increasing among female university students and to explain the causes of female embarrassment about disclosing experimentation with smoking. It is necessary to provide classes for female students in secondary educational that explain the harmful effects of tobacco smoking. Additionally, making smoking cessation clinics available for both genders and trying to make them more popular and attractive among smokers would help them to quit smoking.

References

- [1] World Health Organization, Health topics- tobacco, 2015, <http://www.who.int/topics/tobacco/en/>
- [2] World Health Organization. Women and Health: Today's Evidence, Tomorrow's Agenda. Geneva: World Health Organization; 2009.
- [3] Azhar A, Alsayed N. Prevalence of smoking among female medical students in Saudi Arabia. *Asian Pacific J Cancer Prev* 2012; 13(9):4245–4248.
- [4] Jradi H, Wewers ME, Pirie PR, Binkley PF, Ferketich K. Cigarette and waterpipe smoking associated knowledge and behaviour among medical students in Lebanon. *East Mediterr Health J* 2013;19:861–868.
- [5] Al-Mohrej OA, AlTraif SI, Tamim HM, Fakhoury H. Will any future increase in cigarette price reduce smoking in Saudi Arabia? *Ann Thorac Med* 2014 Jul;9(3):154–157.
- [6] Al-Zalabani A, Kasim K. Prevalence and predictors of adolescents' cigarette smoking in Madinah, Saudi Arabia: a school-based cross-sectional study. *BMC Public Health* 2015 Jan 21;15:17.
- [7] Wali SO. Smoking habits among medical students in Western Saudi Arabia. *Saudi Med J*. 2011 Aug; 32(8):843–848.
- [8] Pepper JK, Eissenberg T. Waterpipes and electronic cigarettes: increasing prevalence and expanding science. *Chem Res Toxicol*. 2014 Aug 18;27(8):1336–1343
- [9] Leena A. Merdad, Mohammad S. Al- Zahrani, and Jamila MA Farsi. Smoking habits among Saudi female university students: prevalence, influencing factors and risk awareness. *Ann Saudi Med* 2007 Sep-Oct;27(5):366–369
- [10] Radi S, Ostry A, Lamontagne AD. Job stress and other working conditions: Relationships with smoking behaviors in a representative sample of working Australians. *Am J Ind Med* 2007;50(8):584–596.
- [11] Richardson L, Greaves L, Jategaonkar N, Bell K, Pederson A, Tungohan E. Rethinking an assessment of nicotine dependence: a sex, gender and diversity analysis of the Fagerstrom Test for Nicotine Dependence. *J Smoking Cessation* 2007;2(2):59–67.
- [12] Pampel FC. Global patterns and determinants of sex differences in smoking. *Int J Comp Sociol* 2006;47(6):466–487.
- [13] Koura MR, Al-Dossary AF, Bahnassy AA. Smoking pattern among female college students in Dammam, Saudi Arabia. *J Family Community Med* 2011;18(2):63.
- [14] Global Adult Tobacco Survey Collaborative Group. Global Adult Tobacco Survey (GATS): Core Questionnaire with Optional Questions, Version 2.0. Atlanta, GA: Centers for Disease Control and Prevention, 2010. https://www.who.int/tobacco/surveillance/en_tfi_gats_corequestionnairewithoptionalquestions_v2_FINAL_03Nov2010.pdf
- [15] Jradi H, Al-Shehri A. Knowledge about tobacco smoking among medical students in Saudi Arabia: Findings from three medical schools. *J Epidemiol Glob Health* 2014;4:269–276.
- [16] Amin TT, Amr MAM, Zaza BO, Suleman W. Harm perception, attitudes and predictors of waterpipe (shisha) smoking among secondary school adolescents in Al- Hassa, Saudi Arabia. *Asian Pacific J Cancer Prev* 11:293–301.
- [17] Mandil A, BinSaeed A, Ahmad S, Al- Dabbagh R, Alsaadi M, Khan M. Smoking among university students: A gender analysis. *J Infect Public Health* 2010;3:179–187
- [18] Ansari K, Farooqi FA. Comparison and prevalence of smoking among Saudi females from different

Departments of the College of Applied Medical Sciences in Dammam. *Int J Health Sci* 2017;11(5):56–62.

- [19] Al-Turky YA. Smoking habits among medical students in Central Saudi Arabia. *Saudi Med J* 2006;27:700–703.
- [20] Hasim TJ. Smoking habits of students in College of Applied Medical Science, Saudi Arabia. *Saudi Med J* 2000;21(1):76–80.
- [21] Adeyeye OO. Cigarette smoking habits among senior secondary school students in Lagos, south west Nigeria. *Int J Biol Med Res* 2011;2(4):1047–1050.
- [22] Ferrante M, Saulle R, Ledda C, Pappalardo R, Fallico R, La Torre G, Fiore M. Prevalence of smoking habits, attitudes, knowledge and beliefs among Health Professional School students: a cross-sectional study. *Ann Ist Super Sanità* 2013;49(2):143–149.
- [23] AlQahtani JM. Knowledge, attitude and practice of tobacco smoking among health colleges' students at Najran University, Saudi Arabia: A cross-sectional descriptive study. *J Health Spec* 2017;5:35-41.
- [24] Mansour MA, Youssef HA, Al-Mawajdeh NA, Ayasreh RA. Awareness, attitude and practice of smoking among medical sciences & non-medical sciences students at Taif University: Comparative study. *Int J Sci Res* 2014;13:955–964.
- [25] Vohra MS. Smoking habits of preclinical Saudi medical students. *Pak J Med Sci* 2009;25(6):906–911