

## RESEARCH ARTICLE

# Prevalence of Smoking among Female Medical Students in Saudi Arabia

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### Abstract

**Background:** Women make up half of the world's population, and comprise 20% of the world's one billion smokers. The aim of this study was to assess the prevalence of smoking among female medical students in comparison to female non-medical students, and to assess the importance of medical education and knowledge in decreasing the prevalence of smoking among female university students in Saudi Arabia. **Method:** We used a self-administered questionnaire to collect cross-sectional data from a randomly selected sample of 320 female students attending King Abdul-Aziz University, Jeddah. Medical students comprised 50% of the sample. **Results:** A total of 310 students (96.9%) completed and returned the questionnaire. The prevalence of smoking was higher in non-medical female students (4.2%) compared to medical female students (0.32%) ( $P < 0.001$ ). **Conclusion:** 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. Our study highlights the need for increased knowledge, health education, and awareness of the risks of smoking to reduce smoking among female university students.

**Keywords:** Smoking - prevalence - medical students - education - smoking risks - Saudi Arabia

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### Introduction

Smoking is one of the world's leading preventable causes of premature death, disease and disability (Ezzati et al., 2002). Women comprise 20% of the world's one billion smokers. Furthermore, tobacco use among women has increased (World Health Organisation (WHO). World No Tobacco Day 2010 [press release]). Data from 151 countries show that about 7% of adolescent girls smoke cigarettes compared to 12% of adolescent boys. In some countries, the prevalence of smoking among girls is almost as high as that in boys (WHO: Women And Health: Today's Evidence, Tomorrow's Agenda, 2009).

The WHO report on the Global Tobacco Epidemic 2009 (2009) has indicated wide variation in the prevalence of male and female tobacco use. WHO estimates of male tobacco use are higher in Arab than in Western nations (24.8-61.7% versus 19.8-46%) but are lower for female tobacco use in Arab compared to Western nations (0.3-7.9% versus 13.7-31.1%).

Overall, the prevalence of smoking is consistently lower among women than in men, especially in developing countries, where there is a strong influence of culture and tradition, and where women are traditionally stigmatized for using tobacco (Lopez et al., 1994). However, the situation is changing and there is a growing epidemic of smoking among women in the developing world

(WHO: Gender, Health and Tobacco, 2003). In Eastern Mediterranean countries, including Saudi Arabia, there is a similar trend of gender differences in conventional tobacco use (cigarette smoking) (Maziak et al., 2004). However, waterpipes (muasel or shisha) are commonly used by women of different ages, while conventional tobacco use appears relatively uncommon. Unfortunately, girls and young women in the Eastern Mediterranean are increasingly smoking waterpipes, which they perceive as fashionable (Maziak et al., 2004).

Recent studies have been conducted in Saudi Arabia to investigate patterns and potential predictors of tobacco consumption among the young, particularly among the female population. The prevalence of smoking ranges from 13% to 20% among male and 9-11% among female university students, but the prevalence is much lower than that in other countries from the Gulf Cooperation Council (Ulin et al., 2005; Abdalla et al., 2007; Merdad et al., 2007; Al-Turki and Al-Rowais, 2008).

In many developing countries, physicians represent an important asset in the fight against tobacco use, because they are respected in society as credible sources of information on health (Maziak et al., 1999).

Awareness of the risks of smoking will decrease smoking habits among the population. Since medical students have greater exposure to awareness programs and greater knowledge of the risks of smoking compared

to other groups, we might expect them to have a lower prevalence of smoking than non-medical students. However, evidence suggests that tobacco use remains widespread among medical students despite their greater knowledge of the risks (Flaherty & Richman, 1993; Richmond, 1999).

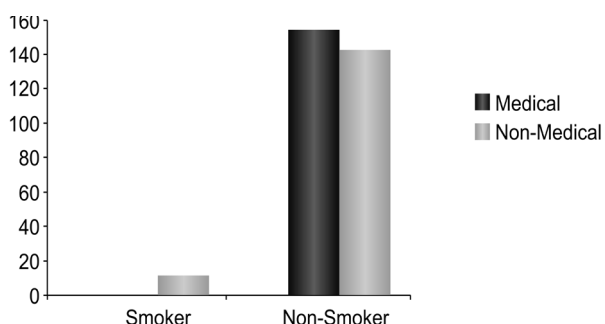
The aim of this study was to assess the prevalence of smoking among medical and non-medical female students at King Abdul-Aziz University in Jeddah city, the Western Region of Saudi Arabia, and to determine whether medical students are less likely to smoke due to their awareness of the health risks and the environment in which they are working.

## Materials and Methods

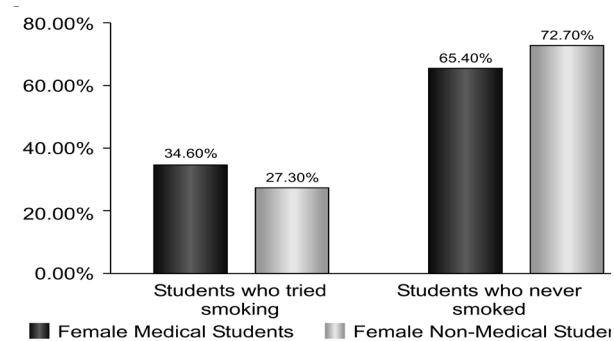
We used a cross-sectional approach to collect data by means of a self-administered questionnaire. Our sample comprised 320 female students attending King Abdulaziz University, Jeddah. The study was conducted during the academic year 2010-2011. We obtained the approval of the university's Research Ethics Committee before distributing the questionnaires.

The questionnaire was written in English and Arabic, and was derived from the global tobacco survey (GATS, 2008). The questionnaire was randomly distributed among female students by a medical student who also explained the purpose of the study. The participants were guaranteed anonymity, so we did not request the students' names and serial numbers. Information contained in the completed questionnaires was treated as confidential.

The questionnaire contained questions about demographic details, smoking behavior (use of cigarettes or waterpipes), smoking habits among families and peers, stress-related smoking, duration and frequency of smoking



**Figure 1. Numbers of Smokers and Non-Smokers in a Sample of 310 Female University Students**



**Figure 2. Percentage of Non-Smoking Female Medical Students who Had Previously Tried Smoking**

(daily cigarette or water pipe consumption), reasons for starting smoking, general knowledge of the consequences of smoking, whether they encouraged other people to smoke, and whether they had thought about quitting smoking. For this study, we defined a current smoker as a student who had smoked any tobacco product daily or occasionally, and was still a smoker at the time of the study. Non-smokers were those who had never smoked.

We used Statistical Package for Social Science (SPSS) version 13 to manage and analyze the data. The qualitative data are presented in the form of numbers and percentages. We used the chi-square test to test for statistical significance. We considered P values < 0.05 to be statistically significant.

## Results

We distributed questionnaires to 320 students from whom we obtained 310 completed questionnaires (96.9%). Half of the respondents were randomly selected medical students in their 2<sup>nd</sup> to 7<sup>th</sup> (internship) year and the other half were randomly selected non-medical students. The age of the students ranged from 18 to 25 (median, 21) years.

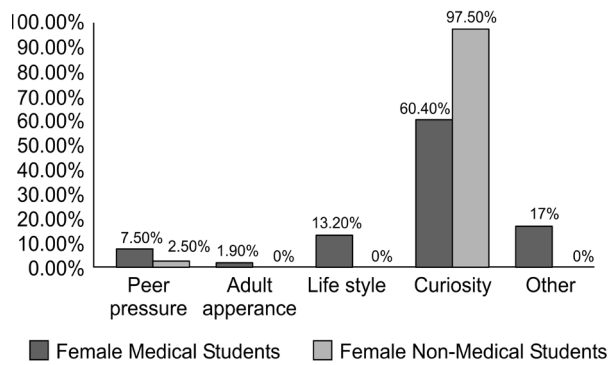
The relationship between smoking habits and the demographic characteristics of the study sample are displayed in Table 1. Smoking was more common among non-medical students; 3.9% of them were smokers compared to 0.32% of medical students (P=0.001) (Figure 1). However, more medical students had tried smoking compared to non-medical female students (Table 2). Non-smokers most commonly cited curiosity as the main reason for having tried smoking (Figures 2 and 3).

**Table 1. Demographic Characteristics and Smoking Habits Among a Sample of 310 Students**

Demographic data	All N (%)	Medical N (%)	Non-medical N (%)
Smokers	13 (04.2%)	1 (00.32%)	12 (03.9%)
Have family members who smoke	173 (55.8%)	86 (27.70%)	87 (28.1%)
Have friends who smoke	114 (36.8%)	59 (19.00%)	55 (17.7%)
Have knowledge about the risks of smoking	303 (97.7%)	155 (50.00%)	148 (47.7%)

**Table 2. Demographic Data for 297 Non-Smoking Students and the Reasons Given by them for Trying Smoking**

Non-smoker	Total N (%)	Medical N (%)	Non-medical N (%)
Happy being a non-smoker	287 (96.6%)	148 (59.8%)	139 (46.8%)
Tried smoking	93 (31.3%)	53 (17.8%)	40 (13.5%)
Reasons for trying smoking:			
Peer pressure	5 (1.7%)	4 (01.3%)	1 (00.3%)
Appearing mature	1 (0.3%)	1 (00.3%)	0 (00.0%)
Life style	7 (2.3%)	7 (02.3%)	0 (00.0%)
Curiosity	71 (23.9%)	32 (10.8%)	39 (13.1%)
Other reason	9 (3.0%)	9 (03.0%)	0 (00.0%)



**Figure 3. Reasons Given by Non-Smoking Female Medical Students for Having Tried Smoking**

**Table 3. Characteristics of Smoking Habits among a Sample of 13 Smoking Students**

Type	Total number	Percentage
Cigarettes	2	15.40%
Waterpipe	7	53.80%
Both	4	30.80%
Smokes alone or with others:		
Alone	3	23.10%
With family	1	7.70%
With friends	9	69.20%
Reasons for smoking:		
Mature appearance	1	7.70%
Life style	2	15.40%
To cope with stress	2	15.40%
To relax	5	38.50%
For the sake of having something to do	1	17.70%
Enjoyment	2	15.40%
Frequency of smoking:		
> 5 cigarettes/day	2	15.30%
5–10 cigarettes/day	4	30.80%
Water pipe twice a week	9	96.20%
Water pipe 3 times a week	1	7.70%
Water pipe 4 times a week	1	7.70%
Thinking of quitting smoking:	12	92.30%

When asked whether being a medical student had affected their smoking habit, 74 medical students (23.9%) said it had, while 81 medical students (26.1%) said it had not.

Less than one-thirds (30.8%) of smokers were 20 years of age and had smoked 5–10 cigarettes per day for 6–12 months. 96.2% of those who smoked waterpipes smoked twice a week. None (0%) of the students said they encouraged others to smoke (Table 3).

## Discussion

The prevalence of smoking among female students in our study was 4.2%. Medical students represented 0.32% (less than 1%) of smokers, and non-medical students, 3.9%: this suggests that increased tobacco consumption is linked to lack of medical knowledge. The prevalence is comparable to that reported in previous studies (0.0–2.4%) (Al-Haqwi et al., 2010; Al-Turki and Al-Rowais, 2008; Wali, 2011). In addition, our study revealed that more students smoked with friends (69.2%) than alone (23.1%) or with their family (7.7%). This suggests that friends influence smoking behavior more than family

members, and corroborates evidence from other studies that most people started smoking due to the influence of friends (Siddiqui & Ogbeide, 2001; Al-Damageh et al., 2004; Al-Turki, 2006; Al-Haqwi et al., 2010).

Most female students indicated that stress was a huge factor in starting smoking. This hypothesis is supported by our findings, as awareness of the consequence of smoking was greater in medical than in non-medical students (Table 1). Furthermore, a feeling of relaxation and the ability to cope with stress was the most common reason given for smoking (>50% of smokers) (Table 3).

Many people smoke both cigarettes and waterpipes and this was the case among 30.8% of the smokers in our study. However, more than half the student smokers used the waterpipe alone. Similar findings have been reported by others, showing a high prevalence of waterpipe smoking alone or of smoking both waterpipes and cigarettes (Al-Turki, 2006; Al-Turki & Al-Rowais, 2008; Wali, 2011). This is probably due to the common misconception that waterpipe smoking is harmless. In fact, waterpipe smoking may be more damaging since the plasma nicotine level resulting from smoking one waterpipe is 20% higher than that resulting from smoking 21 cigarettes (Hadidi & Mohammed, 2004). In other words, waterpipe smoking may carry greater risks to health, and current data refute the perception that smoking a waterpipe is harmless (Maziak et al., 2007). These findings strongly imply that tobacco control programs must address all other forms of tobacco consumption, in addition to cigarette smoking.

Despite the size of our study sample, there were some limitations. Our study is the first of its kind from Saudi Arabia and other Arab countries. The study was conducted in an institution in the western region of Saudi Arabia. Though we compared our results to those from other regions in the Kingdom of Saudi Arabia, a multicenter study would have been more representative and provided more valuable information.

In conclusion, the prevalence of smoking is very low among female medical students compared to non-medical female students in the western region of Saudi Arabia; this is probably because medical students have greater knowledge and awareness of the health risks associated with smoking. Our study highlights the need for increased knowledge, health education, and awareness of the risks of smoking in order to reduce smoking among female university students.

## Acknowledgements

The authors do not have any conflict of interest to declare.

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