Knowledge, Attitudes, and Practices Regarding Waterpipe Smoking among Health Science Students at King Abdulaziz University, 2016: A Cross Sectional Study

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ABSTRACT

Objective: Waterpipe smoking is one of many methods of smoking and is a traditional habit in the Middle East. Waterpipe smoking produces toxins similar to those in cigarette smoke and is associated with substantial health risks. The aim of the study was to estimate the prevalence of waterpipe smoking among medical students, to evaluate their attitudes, motivations and knowledge about the hazardous effects.

Methods: This cross-sectional study of King Abdulaziz University Health Science students required a sample size of 700 participants. The participants were selected using the multi-stage stratified random sampling technique, and a validated self-administered questionnaire in English was used. The study was conducted from 24 April 2016 to 15 May 2016.

Results: Seven hundred twenty-one participants (325 (45.1%) males and 396 (54.9%) females) were selected for analysis. The prevalence of waterpipe smoking was 16.1%. The most common motives for smoking were socialization with friends, relaxation and taste, and most of the students were aware of the effects of waterpipe smoking on health.

Conclusion: There is a high prevalence of waterpipe smoking among medical students. Sharing waterpipes with others was common, particularly among males, and the majority of students thought that they could quit this habit.

Keywords
Waterpipe; Shisha; Hookah; Hubble-bubble; Smoking.
INTRODUCTION

Waterpipe smoking is one of many forms of smoking and is known as shisha, hookah, goza, hubble-bubble, kalian, narghile, argeela, okka, ghelyoon and ghalyan\(^1\). A waterpipe consists of a water bowl, body, head, and an oriental tobacco pipe with a long flexible tube (hose) connected to a container (water bowl), and charcoal is lit on top of the head. The smoking substance, tobacco, is then vaporized, and the smoke is cooled as it passes through the water. Often, the tobacco is flavored, and there are many flavors, such as apple, mint, grape and cappuccino\(^2\). A typical waterpipe smoking session lasts approximately 45 minutes\(^3\).

Waterpipe smoking is a traditional habit in the Middle East, and its popularity has been increasing among younger generations since the 1990s\(^4,5\). The prevalence of waterpipe smoking in the Arabian Gulf region is 9%-16%\(^6\).

There are many motivational factors for waterpipe smoking, including relaxation, peer influence, pleasure, fashion and the aroma\(^6,7\).

Waterpipe smoking produces toxins similar to those in cigarette smoke. It contains toxins such as volatile aldehydes (VA), which contribute to lung diseases; carbon monoxide (CO), which can cause cardiovascular disease; polycyclic aromatic hydrocarbons (PAHs), which have a carcinogenic effect; and nicotine, which causes dependence. It also contains toxins such as lead, chromium and benzo(a)pyrene, and the amounts of these toxins in waterpipe smoke can be greater than the amount found in cigarette smoke\(^8-13\).

Although there are known risks associated with all types of smoking, the general population—and even medical students—do not yet understand them.

The researchers conducted the study to estimate the prevalence of waterpipe smoking among medical students, to evaluate their attitudes, motives towards this practice and their knowledge regarding the hazardous effects of waterpipe smoking.

METHODS

This was an analytical cross-sectional study involving King Abdulaziz University health science students. King Abdulaziz University, located in Jeddah city, Saudi Arabia, was founded in 1967. There are five colleges related to health sciences: Faculty of Medicine, Faculty of Nursing, Faculty of Dentistry, Faculty of Pharmacy, and Faculty of Applied Medical Sciences, which houses the following departments: Medical Laboratory Technology, Physical Therapy, DiagnosticRadiology, and Clinical Nutrition.

There are approximately 4,212 health science students enrolled in the university. The Raosoft sample size calculator showed that approximately 700 participants should be recruited, which was estimated with a prevalence of 50%, a level of significance of \(\alpha < 0.05\), a confidence interval (CI) of 90% and a margin of error of 5%. Researchers added 10% to the already estimated number of participants to compensate for the non-responders and confounders. The participants were selected using a multi-stage stratified random sampling technique. A validated self-administered questionnaire in English was used\(^14,15\). Linguistic validation of the questionnaire was not necessary because medical students at King Abdulaziz University are fluent in English.

The questionnaire consists of four parts. The first part collected demographic data: gender, age, college, academic level, etc. The second part consisted of nine questions to assess the prevalence of current and former smokers. Current waterpipe smokers were defined as people who smoked a waterpipe at least once in the previous month. Former smokers were defined as participants who smoked a waterpipe at least once a month for three consecutive months in the past. The questionnaire also assessed usage patterns and intention to quit\(^15\). The third part consisted of two questions to assess motivation for smoking. The last part consisted of two questions to assess knowledge of the hazardous effects of waterpipe smoking\(^14\).

An information sheet was given to all participants, and their informed consent was obtained. The study was approved by the King Abdulaziz University Ethical Committee. The study was conducted from 24 April 2016 to 15 May 2016. All participants were health science students.

Data were entered into the as IBM SPSS Statistics for Windows, Version 20 (IBM Corp., Armonk, NY USA), for analysis.

RESULTS

After data collection, 721 participants were selected for analysis. The response rate was 93.6%, while the non-responders were 6.36%. The sample population was 45.1% male (n = 325) and 54.9% female (n = 396). The mean age of the participants was 21 ± 1.49 years. Table 1 presents the sociodemographic details of the participants.

One hundred fifteen participants (16% of the general population) reported that they smoke cigarettes. The prevalence of current waterpipe smoking among medical students was 16.1%.

The majority of current smokers were male; there were 66.37% more current male smokers than female smokers, and this difference was statistically significant (\(P < 0.001\)). The mean age at which current smokers started smoking was 17 ± 2.99 years. Most current smokers smoke waterpipe approximately seven times per month (6.78 ± 3), and the mean number of waterpipe headfuls (ras, nafas) that they smoke per month was 7.60 ± 4.4.
Most of the current smokers were in their third year of university (28.4%). In addition, approximately 38.7% have educated parents with bachelor’s degree, 12.9% of students have mothers who did not complete high school, and 4.3% have fathers who did not complete high school.

40.4% of the participants reported that they had tried waterpipe smoking at least once. In addition, 21.7% were considered former smokers.

The top motives for current smokers to smoke were socializing with friends (80.9%), relaxation (78.8%) and taste (77.9%) and aroma (62.2%). The least important reason was loneliness (29.7%). Socializing with friends was found to be the main motivation for males (67.8%). Relaxation and taste motivated 68.5% and 67% of the male participants, respectively. The motives are presented in Table 2.

In addition, according to their attitude towards smoking, 64.9% of the students shared their waterpipe with others, and the tendency to share was significantly higher among males (62.2%) than among females (37.8%).

Moreover, 78.9% of students thought that they could quit waterpipe smoking anytime they wanted. The majority planned to quit in the future (51.8%), whereas 24.5% had no intention to quit. Additionally, 11.8% intended to quit in the next month, and another 11.8% intended to quit after 6 months.

When evaluating the data regarding medical students’ knowledge of the side effects and health hazards of waterpipe smoking, there was no considerable difference in understanding between genders or academic levels. In addition, 92.9%, 90.3% and 83.2% of the students were aware of the role of waterpipe smoking in respiratory disease, cancers and cardiovascular disease, respectively. However, only 45.5% claimed they were aware of hematological diseases resulting from waterpipe smoking, and 72.3% were aware of its teratogenic effect. See Table 3 for awareness of health risks associated with waterpipe smoking.

More than half of the former smokers believe that waterpipe smoking is associated with hematological diseases and teratogenicity. They were also aware that shisha contains a significant amount of tobacco. In addition, 51.6% of the student participants thought that waterpipe smoking is more harmful than tobacco smoking. On the other hand, 26.2% did not recognize its harm compared to tobacco smoking. Current smokers had a higher percentage (34.48%) of misperceptions of waterpipe smoking’s harmfulness.

It was clear that most of the medical students were aware of the relationship of waterpipe smoking and respiratory diseases, more so than other diseases; 87.93% of current smokers, 92.9% of formal smokers and 92.44% of those who never tried waterpipe smoking recognized this health risk.
The results of this study demonstrate that the prevalence of current waterpipe smoking among medical students at King Abdulaziz University is approximately the same as the prevalence of current cigarette smokers; they were different by 0.1%, which was insignificant. This insignificant difference in the prevalence was due to the reemerging trend, starting in the 1990s, of waterpipe smoking among younger generations, which is still increasing unto the present[5]. Also, it could be explained as the smokers tend to have different types of smoking patterns. Moreover, the higher percentage of current cigarette smokers were males and, in our culture, it is more acceptable for males to smoke waterpipes especially for females. Also, waterpipe smoking is considered a more prestigious leisure activity among younger generations. A study conducted in Qatar reported that 33% of the general population found waterpipe smoking to be culturally more acceptable than cigarette smoking[16].

In this study, we found that 40.4% of participants had tried waterpipe smoking at least once; a study conducted in Pakistan among university students stated that 53.6% of participants had tried waterpipe smoking[14]. A reason for this difference may be that the latter study included both medical and non-medical university students. Additionally, a study involving dental university students in Jordan revealed that 13.1% of students have tried waterpipe smoking at least once[17]. This lower rate among Jordanian dental students may be due to the limited sample size because the study included students from only one college.

In the present study, 16.1% of participants were considered current smokers. The prevalence of current smokers in the present study was approximately four times lower than that found in the study in Pakistan (61.8%)[14]. This difference could be related to the popularity of waterpipe smoking in urban Pakistan and the fact that it is trendy for younger generations; an increasing number of cafes are available in Karachi and Lahore. Additionally, that study involved both medical and non-medical students.
Males were also more likely to be current smokers than females. The proportion of male current smokers was significantly higher than the proportion of female current smokers ($P < 0.001$). A study conducted in Bahrain among health care physicians reported that 4.6% smoke waterpipe, with a higher proportion of males (12% of males, 2% of females)[10]. Differences in smoking habits between sexes can be related to the easy accessibility of outdoor places to men. Additionally, customs and traditions make waterpipe smoking a taboo practice for women. In Qatar, only 45% agreed that waterpipe smoking is acceptable for females[16].

The mean age of our participants was 21 years, with a standard deviation (SD) of 1.49. This is similar to the population of university students included in the Pakistan study, who had a mean age of 21 years and an SD of 2.2[14]. In addition, the age of initiation of waterpipe smoking was between fourteen and twenty years (mean age 17.64, SD 2.99); in Pakistan, the mean age was 18.1 years, with an SD of 2.5[14]. In Qatar, most waterpipe smokers started smoking between eighteen and twenty-two years of age[14].

Regarding the attitude of waterpipe smokers, most waterpipe smokers share their waterpipe with family/friends (64.9%). In Qatar, 66% stated that they like to share their waterpipe with friends[16]. A study that was performed in Birmingham, England and Toronto among western students revealed that waterpipe smokers’ perceptions of waterpipe smoking are different from their perceptions of any other type of smoking. They do not feel pressured to stop waterpipe smoking, and they might not continue after finishing university[19]. When evaluating the intention to quit waterpipe smoking, 78.9% of participants felt they could quit shisha smoking any time they want. Furthermore, in Qatar, 54% intended to quit[16].

The top three motives for waterpipe smoking were socializing with friends, relaxation and taste; we found no significant difference in motives between males and females. Socializing with friends/family is an important motivation for waterpipe smokers according to many studies conducted in different countries, such as Saudi Arabia, Qatar, Egypt, Pakistan and Turkey[14,16,20-22]. In contrast, in Kuwait, nonsmokers believe that social pressure is the main motivating factor for initiating waterpipe smoking[23].

Relaxation was reported as one of the top motives in Riyadh, Jordan, Pakistan and Iran[14,17,20,24], and taste and aroma motivate King Abdulaziz University medical students, Syrian university students and Qatari people to smoke[8,16]. Medical students at King Fahad Medical City reported that leisure and imitation of others motivated them[20]. Furthermore, in Qatar and Pakistan, boredom was also reported as one of the motives[14,16]. University students in Iran and Turkey reported that enjoyment and pleasure are important reasons for waterpipe smoking[12,20]. In Egypt, waterpipe smoking is considered more fashionable and less harmful than cigarettes[21]. Iranian university students reported that fun, energy and addiction were the main motives; many of them consider it a habit[24-26].

In assessing knowledge of waterpipe smoking hazards, this study showed that medical students at King Abdulaziz University were aware of the health effects of waterpipe smoking. In comparison, the level of knowledge of university students in Pakistan about waterpipe smoking effects on health was lower than in our study[14]. These disparities could be explained by the time difference between the two studies; the Pakistani study was conducted in 2007, almost a decade earlier than our study. In addition, it included medical and non-medical students; the medical students showed a greater understanding of the health risks.

Additionally, many studies in different countries reported high awareness of waterpipe smoking hazards. In Qatar, a high percentage of participants knew that waterpipe smoking causes respiratory problems and lung cancers[16]. Similarly, in Kuwait, they believed it is associated with hypertension, heart disease, lung cancer, mouth ulcers and decreased oxygen concentration in the blood[23].

However, there is still a misconception regarding the effects of waterpipe smoking on health. Among all our participants, 22.2% believed it is less harmful than cigarette smoking. Although there are many antismoking programs in Saudi Arabia, there is a lack of programs that provide education on waterpipe smoking hazards. The Ministry of Health has a goal to decrease smoking by 2% by 2020. It plans to accomplish this by increasing awareness of the health risks of smoking, especially waterpipe smoking, because many people incorrectly think it is less harmful than cigarettes.

To date, there has been no study related to waterpipe smoking conducted among medical and non-medical students at King Abdulaziz University. The sampling technique was precise and comprehensive. A limitation of this study is that the data collection was difficult because it was performed before final exams. We also hoped to include non-medical students, but they were unreachable during the study period.

**CONCLUSION**

There is a high prevalence of waterpipe smoking among medical students at King Abdulaziz University, mostly among males. The tendency to share waterpipes with others was high, especially among males, and the majority of students believed they could quit this habit. The top motivations reported were socialization with friends, relaxation and taste. Additionally, there is a positive perception of the harms associated with waterpipe smoking.
Acknowledgments


Conflict of Interest

The authors have no conflict of interest.

Disclosure

The authors have not receive any type of commercial support either in the form of compensation or other finances for this study. The authors have no financial interest in any of the products devices, or drugs mentioned in this article.

Ethical Consent

Informed consent was obtained from each participant after approval of The Unit of Biomedical Ethics Research Committee at King Abdulaziz University.

REFERENCES


المعرفة والموافقات والممارسات المتعلقة بتدخين المعمل (الشيشة) بين طلاب وطالبات كليات العلوم الصحية في جامعة الملك عبد العزيز (دراسة مقطعية)، 2016

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المستخلص.

السياق: المعمل (الشيشة) هو نوع من أنواع التدخين وهو إحدى الطرق المنتشرة حديثاً في العالم العربي. تدخين الشيشة ينتج سموماً كثيرة تنتج عن تدخين السجائر. أيضاً يرتبط هذا النوع من التدخين بخطره على الصحة. ويتوجه المدخنون لهذا النوع من التدخين للوقاية متعدد.

الأهداف: تحديد مدى انتشار تدخين المعمل (الشيشة) بين طلاب وطالبات الكليات الصحية في جامعة الملك عبد العزيز ودراسة معوقته وأجرام هذا النوع من التدخين والوقاية التي تدعومه لممارسته.

الممواد والطرق: كانت هذه الدراسة مقطعية مستعرضة لجميع طلاب وطالبات الكليات الصحية في جامعة الملك عبد العزيز من جميع الأقسام الصحية وتطبيقات مشتركة 700 شخص. وقد جمعت البيانات بواسطة استمارة بدائية باللغة الإنجليزية تعايا من قبل المشاركين في الدراسة.

النتائج: استُخدم في الدراسة 721 شخص، وقد كانت نسبة تدخين المعمل تساوي 19.1% من العينة المشاركة. أيضاً اتضح أن أكثر الدوافع للمدخنين كانت: التواصل مع الأصدقاء، الاسترخاء، المذاق. معظم المشاركين كانوا على علم بأخطار تدخين المعمل على الصحة.

الاستنتاجات: كان معدل انتشار تدخين المعمل بين طلاب وطالبات الكليات الصحية مرتفعاً، تبين أن معظمهم يفضلون اتخاذ إجراءات الوقاية من التدخين.

المعمل مع الآخرين، خصوصاً لدى الذكور. معظم مدخنين المعمل يعتقدون أنهم يستطيعون الإقلاع عنه.