



ORIGINAL ARTICLE

Waterpipe smoking among health sciences university students: Knowledge, attitude and patterns of use



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Received 25 January 2016; accepted 30 May 2016

Available online 23 June 2016

KEYWORDS

Waterpipe smoking;
Tobacco;
University students;
Prevalence;
Questionnaire study

Abstract *Introduction:* Although waterpipe smoking is common in Gulf counties, its prevalence in Saudi Arabia is uncertain. The purposes of this study were (a) to assess the prevalence of waterpipe smoking among healthcare university students in Saudi Arabia and (b) to determine their attitudes and practices of waterpipe smoking.

Materials and methods: A cross-sectional survey was conducted among university students of three different health sciences colleges, namely medical, dental, and pharmacy, of a public university, through random cluster sampling. The questionnaire was designed to ask specific questions related to smoking in general and to waterpipe smoking specifically. The study was approved by the institutional research & ethics committees.

Results: A total of 535 participants were included in the study. More than one-third of the participants that reported having ever smoked a waterpipe ($n = 198$, 37%), and the majority of these were current smokers (62.1%, $n = 123$); dental students were the most common (45.5%, $n = 90$). Curiosity and pleasure-seeking were the main factors associated with starting waterpipe smoking. About one-sixth (14.9%, $n = 80$) of the participants failed to identify a single harmful effect, while a vast majority of participants considered waterpipe smoking to be less unhealthy than cigarette smoking.

Conclusion: Waterpipe smoking is very popular among Saudi university students, and knowledge among university students about the dangers of waterpipe smoking is alarmingly low.

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Peer review under responsibility of King Saud University.



1. Introduction

Waterpipe smoking (WPS) is a common habit among people in Middle Eastern countries, with prevalence rates of 11–32% (Maziak et al., 2004; Tamim et al., 2003; Refaat,

2004; Zoughaib et al., 2004). In recent years, there has been an alarming increase in the prevalence of WPS, particularly among youth (Chaaya et al., 2004; El-Roueiheb et al., 2008; Salameh et al., 2014; Waked et al., 2009). There is compelling evidence in the literature that the presence of toxicants in waterpipe smoke is similar to that of cigarette smoke, including carcinogenic polycyclic aromatic hydrocarbons (Sepetdjian et al., 2008), volatile aldehydes (Al Rashidi et al., 2008), carbon monoxide (Eissenberg and Shihadeh, 2009), and nicotine (Maziak et al., 2009; Neergaard et al., 2007; Shihadeh and Saleh, 2005).

Healthcare professionals play an important role in the fight against tobacco, since they are generally considered a reputable source of health information (Maziak et al., 1999). Several studies have demonstrated the positive influence healthcare professionals have on their patients in terms of tobacco use and assistance in smoking cessation efforts (Davis, 1993; Gilpin et al., 1993). However, this positive influence may be seriously hindered by healthcare professional's own tobacco-related practices. Moreover, tobacco use practices are generally developed early in life, and therefore it is quite interesting to assess its use among health-related students and also to know if their education has altered their motives and beliefs. The use of tobacco is highly prevalent among health-related students regardless of their better understanding of the relevant risks (Awan et al., 2015; Flaherty and Richman, 1993).

Although there have been some studies evaluating WPS among the general population, research related to its use among university students is still sparse. The aim of the present study was to evaluate the prevalence and knowledge of WPS among university students from health-related disciplines. It further assesses WPS practices and factors that influence its continued use.

2. Materials & methods

2.1. Study population and design

A cross-sectional survey was conducted among medical and dental students of King Saud University, through random cluster sampling. A self-administered, anonymous questionnaire was distributed to all male students during March

2015. The objectives of the study were explained to the students, and their participation was entirely voluntary. Approval of the study was obtained from institutional research and ethics committees.

2.2. Instrument and data collection

A two-page structured questionnaire in English was developed based on published literature and tailored to the local context. The questionnaire was peer-reviewed and pre-tested before administration. Questionnaires were distributed immediately after morning lectures to ensure maximum student participation. The students were required to complete the questionnaires on site and to return them immediately to the research team.

The questionnaire consisted of 18 items, with three sections: (i) knowledge, (ii) attitude, and (iii) practice. Knowledge-based questions focused on the ability of students to recognize the risks of WPS. Attitude-based questions focused primarily on the behavior and feelings of the students toward WPS, whereas practice-based questions assessed the use of waterpipes among the participants (Fig. 1).

2.3. Data analysis

Data were analyzed using SPSS (version 18.0; IBM Corporation, Armonk, NY, USA). Responses were coded numerically to facilitate data entry. WPS characteristics among the different groups of students were compared and the data were analyzed using the Pearson Chi-square (χ^2) test, with the level of significance set to $p < 0.05$.

3. Results

A total of 535 students with a mean age of 24.0 years (standard deviation [SD] 1.3 years) participated in the study. The response rate of participants was 92.9%. Almost equal numbers of students were from the dental ($n = 224$) and medical ($n = 212$) colleges, whereas only 19.5% ($n = 99$) belonged to the pharmacy college (Table 1).

More than one-third of the participants reported having ever smoked a waterpipe ($n = 198$, 37%), and the majority of these were current smokers (62.1%, $n = 123$); dental students were the most common group (45.5%, $n = 90$). Regarding the frequency and duration of WPS, the majority of smokers reported smoking at least once a month

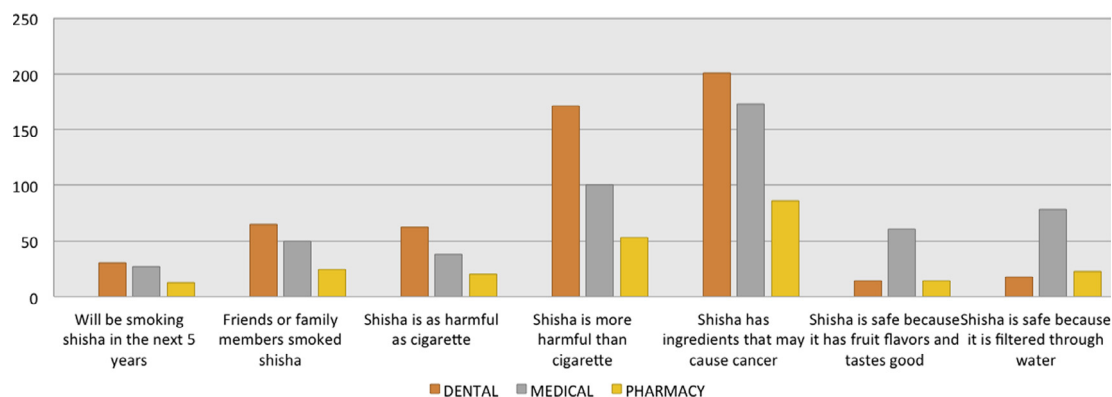


Figure 1 Knowledge of students toward waterpipe smoking.

Table 1 Demographic characteristics by waterpipe smoking.

	All (<i>N</i> = 535)		Waterpipe smokers (<i>N</i> = 198)		Non-waterpipe smokers (<i>N</i> = 337)		<i>P</i> ^a -value
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Colleges							
Dental	224	41.9	90	45.4	134	39.8	.401
Medical	212	39.6	72	36.4	140	41.5	
Pharmacy	99	18.5	36	18.2	63	18.7	
Year of study							
First year	126	23.5	58	29.3	68	20.2	.039
Second year	124	23.2	48	24.2	76	22.5	
Third year	137	25.6	40	20.2	97	28.8	
Fourth year	148	27.7	52	26.3	96	28.5	
Age							
16–19	96	17.9	33	16.7	63	18.7	.012
20–21	207	38.7	62	31.3	145	43.1	
22–24	192	35.9	83	41.9	109	32.3	
25+	40	7.5	20	10.1	20	5.9	
Marital status							
Single	489	91.4	183	92.4	306	90.8	.517
Married	46	8.6	15	7.6	31	9.2	
Housing status							
With family	430	80.4	111	56.1	319	94.6	< 0.00001
Alone	48	8.9	39	19.7	9	2.7	
With friends	57	10.7	48	24.2	9	2.7	
Income^b							
0–1500	71	13.3	25	12.6	46	13.6	.590
1501–2000	163	30.5	61	30.8	102	30.3	
2001–3000	233	43.5	82	41.4	151	44.8	
3000+	68	12.7	30	15.2	38	11.3	

^a Chi-squared analyses.

^b Income figures are in Saudi Riyal.

(61.8%, *n* = 76) and a session lasting an hour or more (60.2%, *n* = 74). The age of initiation of WPS was as low as 11 years (mean age 18.1 years, SD 2.5).

On examining factors associated with initiating WPS, curiosity (74.8%, *n* = 148) was found to be the most common reason, followed by pleasure-seeking (57.1%, *n* = 113), peer pressure (27.8%, *n* = 55), boredom (21.7%, *n* = 43), and stress (13.1%, *n* = 26). About one-

third of current waterpipe smokers (32.5%, *n* = 40) felt the need to cut down or quit WPS, however only 15.4% reported their intention to do so.

Assessing knowledge regarding the health-related effects of WPS, about one-sixth (14.9%, *n* = 80) of the participants failed to identify a single harmful effect. However, a vast majority of the participants considered WPS less harmful than cigarette smoking. Peer pressure,

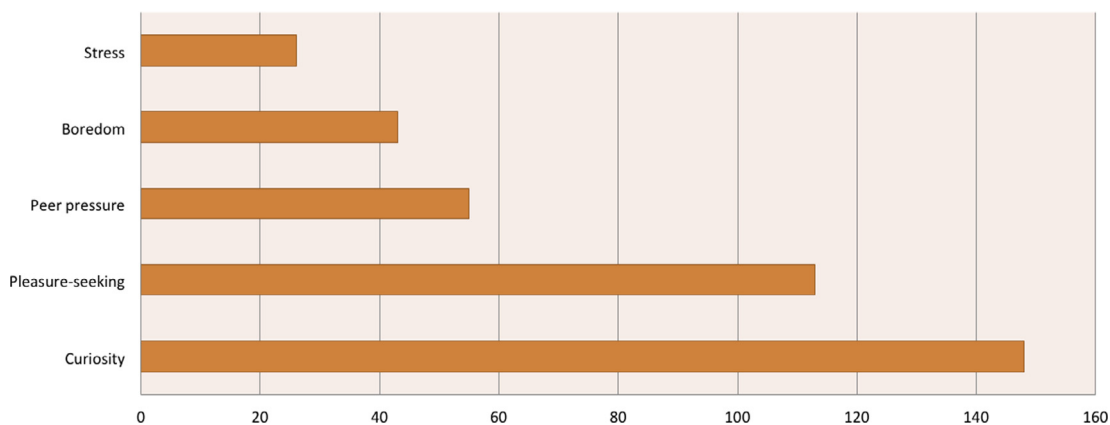


Figure 2 Reasons reported by the students for starting waterpipe smoking.

its use in leisure activities, and boredom were identified as the most common reasons for the increasing popularity of WPS among youth (Fig. 2).

4. Discussion

The harmful effects of WPS were first reported by in 1973 (Nafae et al., 1973). Since then, compelling published evidence has accumulated regarding the harmful effects of WPS (Knishkowsky and Amitai, 2005). However, the ever-increasing evidence against the general perception of WPS being a safe form of tobacco has been unsuccessful in countering the popularity of its use, particularly among youth. According to the World Health Organization (WHO), the highest prevalence of WPS is observed in North Africa, East Mediterranean, and South-East Asian regions. In addition, there has been an alarming increase in the use of WPS among the youth of Western countries (WHO, 2005). Studies in the United States also confirm the increasing popularity of WPS among youth (Marshall et al., 2006; Ward et al., 2006, 2007).

The prevalence of WPS has been reported to be high among university students (Akl et al., 2011). The data from our study also show an increased use of WPS among university students. It is of great concern to see a high prevalence of WPS among health sciences students, since, as future healthcare professionals, these students presumably have better knowledge of tobacco-associated danger and risks. A recent systematic review on the prevalence of WPS among general and specific populations reported prevalence rates of 15–28% in the East Mediterranean region, 33% in the South Asia region, 10% in the Americas, and 8% in Europe (Akl et al., 2011).

The participants of our study were graduate students from three different health science degree programs. Although many agree to the challenging and stressful nature of the health sciences curriculum, the majority of students in our study reported curiosity and pleasure-seeking as the main reasons for their WPS habit. On the contrary, few reported stress as a motivator for WPS, in addition to other factors, such as peer pressure and boredom. In our study, almost one-sixth of the students failed to identify a single waterpipe-associated health hazard. This lack of perceived harm may explain the recent rise in the popularity of WPS among youth, particularly in Western countries.

There were some limitations to our study. The study population belonged to one university, and therefore the results may not represent the entire population of the country. Moreover, it was a cross-sectional study and consisted only of male students.

5. Conclusions

Our results showed that WPS is very popular among Saudi university students, and knowledge among university students about its dangers is alarmingly low. Precautions against WPS must be taken, and awareness should be raised in young students regarding its risks. We should also correct the incorrect perception that WPS is less harmful than cigarettes. All health care colleges should make efforts to educate students regarding WPS and to include it more in their curriculum.

Conflict of interest

The authors declare that they have no conflict of interest.

Acknowledgement

The author would like to thank the College of Dentistry Research Centre and Deanship of Scientific Research at King Saud University, Saudi Arabia for supporting this research project.

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