Original Article

Sheesha Smoking among a Sample of Future Teachers in Kuwait

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ABSTRACT

Objective: To assess the prevalence of sheesha smoking and the personal, social and environmental factors associated with it.

Subjects and Methods: A convenience sample of 761 students (261 male, 500 female) in the teacher training program of the Public Authority for Applied Education and Training in Kuwait City answered a 70-question survey regarding sheesha use. Data were analyzed using SPSS version 10.

Results: 24.6% of males and 5.5% of the females smoked sheesha. 49.2% of the male sheesha smokers smoked at least one bowl a day, as did 26.9% of the female sheesha smokers. The majority of sheesha smokers first started smoking sheesha at age 18 or older. Almost half were encouraged to smoke sheesha the first time by their friends. The majority of sheesha non-smokers had sheesha non-smokers as friends. Among the sheesha smokers, 59.2% of females and 61.3% of males said all or most of their friends smoked sheesha. Sheesha smokers were more likely than sheesha non-smokers to live in a home where there are other sheesha smokers. Half of the males and one-third of the females who smoked sheesha wanted to quit. The majority of sheesha smokers also smoked cigarettes. Teachers, including female teachers, were frequently seen smoking in their schools. As expected, sheesha smokers had more positive attitudes towards sheesha smoking and were less likely to believe in its harmful effects.

Conclusions: This is the first known study of sheesha use among college students in Kuwait. Results suggest efforts to reduce sheesha smoking in this young population should: 1) help young people address pressures from peers, 2) reduce sheesha smoking at home and school environment, 3) counteract personal beliefs and attitudes that contribute to sheesha smoking, and 4) reinforce beliefs about the health risks of sheesha smoking.

KEYWORDS: attitude, behavior, belief, tobacco survey

INTRODUCTION

The water pipe, known in Arabic as nargile or sheesha and in English as hookah, is a traditional Arab method of smoking tobacco, especially for men. In this article the term sheesha refers to all types of water pipe, nargile, or hookah used for inhaling tobacco smoke. Water pipes present an especially attractive means of smoking tobacco. They are frequently beautiful works of art representing an exotic tradition and the promise of relaxation and pleasure. They can be used by several people at the same time contributing to friendship and camaraderie. The mix of rolled tobacco leaf, molasses and flavouring used to produce jurak allows for many taste preferences. When inhaled, the sound of the smoke bubbling through the water adds an auditory pleasure. The water cools the smoke allowing deep inhalation, maximizing the opportunity to appreciate the smoking sensation. These aesthetic and social qualities of sheesha smoking have likely contributed to the recent spread of sheesha use around the world. This study assessed the prevalence of sheesha smoking and the personal, social and environmental factors associated with it in a student population.

Studies of Tobacco Use in Kuwait

Data on sheesha smoking in Kuwait and other Arab countries are limited. Cigarette smoking, however, has been described quite extensively, suggesting possible patterns of sheesha use. Cigarette smoking in Kuwait is increasing, especially among young males, and the age of

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beginning smoking is declining. Memon *et al*[1] and Moody *et al*[2] reported that 34.4% of males and 1.9% of females smoked cigarettes at the time of their survey and had smoked more than 100 cigarettes in their lifetime. Memon *et al* reported that 13.8% of males and 7.7% of females began smoking cigarettes between the ages of 10 and 14, and 56.5% of the males and 25.6% of the females began smoking between the ages of 15 and 19[1]. More than half of the male cigarette smokers (57%) and 69% of the female cigarette smokers also smoked other types of tobacco, most often sheesha. Behbehani *et al*'s 2004 survey of tobacco use among Kuwait physicians reported 18.4% smoked cigarettes and 12% smoked sheesha[3]. A 1993 study of Kuwait physicians reported 31% smoked cigarettes[4]. Cigarette smoking was reported by 37% of married Kuwaiti men[5] and 30% of male Kuwait university students[6].

Tobacco Use in Other Arab Countries

In Syria, among a sample of 587 university students, 30.9% of males and 7.4% of females were cigarette smokers, with 24.8% of males and 5.2% of females reporting daily smoking. The same study reported that 62.6% of men and 29.8% of women had tried smoking sheesha, and 25.5% of men and 4.9% of women were at least occasional sheesha smokers. Only 7% of the men smoked sheesha daily[7,8]. Among primary care physicians in Bahrain 26.6% were reported smokers and 18.8% were daily smokers[9]. In Iran, 26.0% of men and 3.6% of women were reported current cigarette smokers[10]. In Saudi Arabia, a 2004 study reported 29.8% of male secondary school students were current cigarette smokers and 83.7% of these smokers started smoking at age 15 years or less[11]. Abolfotouh *et al* reported cigarette smoking at 30.6% among male Saudi college students[12].

The World Health Organization reports that smoking prevalence among young people in Arab countries differs greatly: 7% in Oman, 14% in Iran, 18% in Kuwait, 23% in Iraq, 25% in Saudi Arabia and Jordan, 31% in Syria, 43% in Yemen and 53% in Lebanon[13].

Sheesha

Many consider sheesha smoking less harmful than cigarette smoking because they believe the water filters out the harmful substances. Sheesha smoke does contain less nicotine than cigarette smoke but more carbon monoxide. Zahran, Ardawi and Al-Fayez found higher blood carboxy-hemoglobin concentration in sheesha smokes than in cigarette smokers[14]. The World Health Organization reported, "sheesha is lighter than other forms of tobacco smoking, but generates a high level of carbon monoxide, in part from the charcoal that keeps the jurak burning"[15]. Cigarette smokers and sheesha smokers are more likely to report coughs, dizziness, headaches, palpitation, nausea, epigastric pain and heartburn than non-smokers[16]. Both sheesha smokers and cigarette smokers have a higher risk of developing pulmonary diseases such as obstructive airway disease (OAD) than non-smokers.

Many Islamic scholars recognize that smoking is harmful and conclude that smoking is, therefore, forbidden by the Qur'an and the Hadith[17]. The Qur'an, however, is silent on the specific topic of tobacco[18] and no verse in the Qur'an specifically prohibits smoking tobacco. The Qur'an does give guidance for distinguishing right from wrong and commands the avoidance of wrong behavior. Major wrongs outlined in the Qur'an include harming oneself or others[19-21]. Medical evidence suggests that smoking and exposing others to second-hand smoke causes significant harm[22].

SUBJECTS

Our subjects were 761 students (261 male and 500 female) enrolled in the teacher training program of the Public Authority for Applied Education and Training in Kuwait City, Kuwait. The average age for subjects was 21.0 years for males and 20.8 years for females. The sample for this cross-sectional study was constructed by randomly sampling classes in the teacher training program until 900 students were identified and asked to voluntarily answer the questionnaire. Students completed questionnaires in the sampled classes.

METHOD

A questionnaire was developed to explore sheesha smoking behavior and attitudes and beliefs about the dangers of sheesha smoking. Questions were based on a careful review of the available literature and interviews and discussions with young people in Kuwait. The initial questionnaire was pilot tested with 30 volunteer students at the University of Kuwait, College of Education. Revisions to the questionnaire were based on feedback from the College of Education students and on discussions and review by a panel of experts in questionnaire development. The final version of the questionnaire contained 70 questions: 23 questions about sheesha use were answered only by sheesha smokers and 12 questions about beliefs regarding sheesha were answered only by sheesha non-smokers. All students responded to eight attitude statements and ten belief statements. The attitude and belief statements were answered on a five-point scale (1 = strongly disagree, 2 = disagree, 3 =

Table 1: Demographic characteristics of the sample

	Male		Female		Total	
	n	%	n	%	n	%
Gender	261	34.3	500	65.6	761	100.0
Class standing						
First year	49	18.9	158	31.6	207	27.3
Second year	54	20.9	160	32.0	214	28.2
Third year	58	22.4	86	17.2	144	19.0
Fourth year	98	37.8	96	19.2	144	25.5
Total	259	100.0	500	100.0	759	100.0
Missing	2		0		2	
Age						
17-21	164	63.8	341	68.5	505	66.9
22-26	87	33.9	138	27.7	225	29.8
27 and over	6	2.3	19	3.8	25	3.3
Total	257	100.0	498	100.0	755	100.0
Missing	4		2		6	
Marital status						
Married	29	11.1	187	37.6	216	28.5
Single	226	86.6	303	60.8	529	69.7
Divorce/widow	6	2.3	8	1.6	14	1.8
Total	261	100.0	498	100.0	759	100.0
Missing	0		2		2	

neither disagree nor agree, 4 = agree, and 5 = strongly agree). The remaining questions asked about sheesha and tobacco use and demographic characteristics. Questions about attitudes toward sheesha by sheesha smokers and non-smokers had reliability coefficients of 0.98 and 0.97, respectively. Two of the belief statements were eliminated from the analysis because the wording of the statements was confusing. The remaining questions about beliefs had a reliability coefficient of 0.51, well within the acceptable range[23].

In this study, anyone who said they smoked sheesha and had smoked sheesha for at least one month was classified as a sheesha smoker. Those who had not smoked sheesha or said they had quit were classified as sheesha non-smokers.

RESULTS

Seven hundred sixty-one (84.5%) students returned usable questionnaires for analysis. The sample is described in Table 1.

Sheesha use and age of onset

Twenty-four percent (24.6%) of males and 5.5% of females were sheesha smokers. The males were more likely to smoke at least one bowl a day (49.2%) than females (26.9%). Of the male sheesha smokers, 15.5% reported their first use was before the age of 14 years, as did 4.0% of the females. Another 30 percent of the males and 12.0% of the females reported their first use of sheesha between ages 14 and 17 years. The majority of the sheesha smokers (63.9%) did not begin until they were 18 years or older (54.5% of males and 84.0% of females). Almost half of the sheesha smokers were first encouraged to smoke by their friends (47.6%).

Table 2: Friends' Sheesha smoking

	Sheesha Smokers		Sheesha Non-smokers		Total	
	n	%	n	%	n	%
How many of your close friends smoke sheesha?						
MALES						
All of them	10	16.2	10	5.2	20	8.0
Most of them	28	45.1	39	20.2	67	26.2
A few of them	19	30.6	25	13.0	44	17.3
None/I don't know	5	8.1	119	61.6	124	48.5
Total	62	100.0	193	100.0	256	100.0
FEMALES						
All of them	4	14.8	3	0.6	7	1.4
Most of them	12	44.4	25	5.4	37	6.8
A few of them	6	22.2	76	17.0	82	17.2
None/I don't know	5	18.6	354	77.0	359	74.6
Total	27	100.0	458	100.0	485	100.0

Males: $\chi^2 = 55.03$, $df=3$, $p<0.05$; Females: $\chi^2 = 98.59$, $df=3$, $p<0.05$; Missing: 5 males and 15 females did not answer this question.

Sheesha Use and Cigarette Smoking

This study uses the U.S. Center for Disease definition of a cigarette smoker: A cigarette smoker is someone who smoked cigarettes and had smoked cigarettes for at least one month[24]. Thirty-nine percent (38.8%) of males and 7.9% of females were cigarette smokers. Of the male sheesha smokers, 71.4% were also cigarette smokers and of the female sheesha smokers 63.0% were also cigarette smokers. Among the sheesha non-smokers 28.1% of the males and 4.6% of the females smoked cigarettes.

Social and Environmental Factors

Considerable research suggests that social factors, such as the behavior and expectations of other people, and environmental factors, such as the availability of sheesha, rules and regulations about sheesha sale and use, penalties for breaking rules, and public attitudes toward sheesha have a significant effect on the behavior of young people[25]. Changes in the social environment of Kuwait have possibly encouraged sheesha smoking and need to be considered in interpreting these results.

Sheesha in the home

Almost all of these sheesha smokers (96.4%) smoked in their homes. Forty-three percent (42.8%) of the male sheesha smokers and 74.1% of the female sheesha smokers reported two or more other sheesha smokers living in their home. Of the sheesha non-smokers, 41.5% of the males and 46.7%

Table 3: Friends' attitudes toward Sheesha Smoking

	Sheesha Smokers		Sheesha Non-smokers		Total	
	n	%	n	%	n	%
Among your friends, how accepted would you say that sheesha smoking is?						
MALES						
Very accepted	10	15.8	9	5.2	20	7.8
Accepted	21	33.4	39	20.2	60	23.5
Neither accepted nor unaccepted	7	11.1	25	12.9	32	12.5
Unaccepted	18	28.6	38	19.7	56	21.8
Very unaccepted	7	11.1	81	42.0	88	34.4
Total	63	100.0	193	100.0	256	100.0
FEMALES						
Very accepted	8	29.6	4	0.8	12	2.5
Accepted	11	40.8	35	7.7	46	9.6
Neither accepted nor unaccepted	3	11.1	39	8.5	42	8.6
Unaccepted	5	18.5	93	20.4	98	20.2
Very unaccepted	0	.0	286	62.6	286	59.1
Total	27	100.0	457	100.0	484	100.0

Males: χ^2 = 26.18, *df*=4, $p<0.05$; Females: χ^2=131.5, *df*=4, $p<0.05$; Missing: 5 males and 16 females did not answer this question.

Table 4: Beliefs about Sheesha

	Sheesha Smokers		Sheesha-Non-smokers		
	M	SD	M	SD	*t*
MALES					
Inhaling smoke from a parents' sheesha harms the health of babies and children	3.83	1.432	4.24	1.248	2.217*
Sheesha smoking is associated with decreased oxygen in the blood	3.38	1.136	3.79	1.049	2.546*
Sharing a sheesha mouthpiece can lead to transmission of infection / disease	3.41	1.291	4.01	.957	3.354*
Smoking sheesha daily for a period of time might cause mouth ulcers	3.18	1.222	3.75	1.036	3.628*
Smoking sheesha is associated with lung cancer	3.67	1.107	4.10	1.086	2.764*
Smoking sheesha is associated with diseases such as heart disease and high BP	3.61	1.150	4.06	1.098	2.738*
Sheesha contains more carbon monoxide compared to cigarettes	3.14	1.060	3.64	1.051	3.239*
FEMALES					
Inhaling smoke from a parents' sheesha harms the health of babies and children	4.07	1.141	4.54	.971	2.385*
Sheesha smoking is associated with decreased oxygen in the blood	3.67	1.00	4.03	.892	2.047*
Sharing a sheesha mouthpiece can lead to transmission of infection / disease	3.74	1.163	4.36	.832	2.666*
Smoking sheesha daily for a period of time might cause mouth ulcers	3.56	.934	4.10	.835	3.251*
Smoking sheesha is associated with lung cancer	3.81	.921	4.34	.845	3.126*
Smoking sheesha is associated with diseases such as heart disease and high BP	4.04	.706	4.38	.800	2.429*
Sheesha contains more carbon monoxide compared to cigarettes	3.42	.809	3.72	.900	1.668*

Scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree. *$p < 0.05$ after Levine's post test with Welch's adjustment[29,30], BP= blood pressure

of the females lived in homes where nobody else smoked sheesha. Only 16.1% of the male sheesha non-smokers and 20.2% of the female sheesha non-smokers lived in homes with two or more sheesha smokers. More than half (59.7%), of the male sheesha smokers indicated that smoking was not allowed in any part of their homes, whereas 33.3% of the female smokers indicated smoking was not allowed in any part of their home.

Friends' behaviour and attitudes

Friends' behaviors and attitudes have been shown in a large number of studies to be a particularly powerful force in shaping someone's behavior[26-28]. Table 2 shows that sheesha smokers were significantly more likely to have sheesha smokers as friends: 61.3% of the male sheesha smokers and 59.2% of the female sheesha smokers said all or most of their friends smoked sheesha. Sheesha non-smokers were significantly more likely to have friends who were sheesha non-smokers or to not know the sheesha smoking status of their friends. Peer pressure (wanting to be like your friends) depends upon knowing your friends' behavior; therefore, it was appropriate to combine friends whose sheesha smoking status was unknown and friends who were sheesha non-smokers because neither group would be known by their friends as sheesha smokers.

Friends' attitudes toward sheesha smoking were also related to sheesha smoking (Table 3). About half (49.2%) of the male sheesha smokers and 70.4% of the female sheesha smokers reported that sheesha smoking was either accepted or very much accepted by their friends. Among the sheesha non-smokers, 61.7% of the males and 83.0% of the females reported that sheesha smoking was either unaccepted or very much unaccepted by their friends. Both males and females tended to have friends whose behavior and attitudes reflected their own behaviors, but for females there was a tendency for homogeneity of friendship groups to be more pronounced.

Teacher behavior

Almost all the males (93.4%) and almost half of the females (44.6%) had observed their teachers smoking cigarettes inside their schools.

Quitting

Among the current sheesha smokers 50.8% of the males and 33.3% of the females had tried to quit and 58.7% of the males and 26.0% of the females said they would like to quit. Of those who had tried

to quit in the past, 59.4% of the males and 33.3% of the females said they would still like to quit.

Attitudes and Beliefs about the Dangers of Sheesha Smoking

An independent t-test indicated a statistically significant difference in the attitudes of sheesha smokers and sheesha non-smokers. As expected, across both genders, sheesha smokers had more positive attitudes towards sheesha smoking than sheesha non-smokers ($t = 3.776$, $p < 0.001$ for males and 3.153, $p = 0.002$ for females).

Similarly, an independent t test indicated that both male and female sheesha non-smokers were more likely to believe in the statements about the danger of sheesha smoking than were sheesha smokers ($t = 3.767$, $p < 0.001$ for males and $t = 3.792$, $p < 0.001$ for females).

Because the belief scale had not previously been validated, each item was examined individually using a non-parametric t test and Levine's post test with Welch's adjustment[29,30]. Results indicated that all seven items showed significant differences between sheesha smokers and sheesha non-smokers for males and six of the seven items showed significance for females (Table 4).

DISCUSSION

This is the first known study of sheesha smoking among future teachers in Kuwait. Therefore, it is not possible to compare these findings with other Kuwait studies. A comparison of these Kuwait findings for sheesha smoking with survey data on cigarette smoking gives some perspective to the results. In Kuwait, among the adult population 34% of the males and 2% of the females reported smoking cigarettes[1,2]. In this sample of students, 38.8% of the males and 7.9% of the females reported smoking cigarettes, and 24.6% of the males and 5.5% of the females reported sheesha smoking. These results indicate that more college females smoke cigarettes than females in the general population[1,2]. Comparable data for sheesha smoking is not available. Whether or not this represents an increase in smoking among younger Kuwaiti females is not clear. It does suggest the need for public health workers to carefully monitor cigarette and sheesha smoking rates among males and females and to consider the need for specific tobacco education programs for females.

Data from Saudi Arabia and Syria allow comparison of sheesha use by male college students. Sheesha smoking among male college students in Kuwait (24.6%) is comparable to the 27.3% found for male college students in Saudi Arabia and the 25.5% found for males in the general population in Syria[8,12].

The male sheesha smoking rate of 24.6% in this Kuwait sample of students is lower than the 34% of the total male population that smokes cigarettes as reported by Memon *et al* and Moody *et al*[1,2], but still suggests that sheesha smoking is a significant public health issue.

The apparent popularity of sheesha smoking is difficult to explain. The widespread attention focused on the dangers of cigarette smoking and increasing efforts to discourage cigarette smoking might unintentionally encourage sheesha smoking, since sheesha smoking is viewed as a less dangerous alternative. Anti-smoking messages are often specific to cigarettes. Some cigarette packs carry warning labels about the dangers of smoking to health. Because sheesha pipes are frequently prepared by someone other than the smoker, any printed health warnings are rarely seen by the smoker. Increasing attention to Arab identity possibly contributes to an increase in sheesha smoking. Sheesha has traditionally been a unique middle-east practice, associated with socializing, relaxing, the company of friends and the esthetics associated with the beauty of the water pipes themselves. As sheesha gains popularity throughout the world, it may also increase sheesha use in the countries where it has long been a tradition. Similarly, the increasing emancipation of women may encourage sheesha smoking among women.

The acceptance of sheesha smoking in a variety of social settings may be influencing young people's intentions to use sheesha. During Ramadan, for example, sheesha smoking is a common practice when families and friends gather to break the fast. Because this is an especially important social event, the messages received by young people watching this adult behavior may impact a young person's behavior in the future. For example, if a young person views sheesha smoking as an adult behavior, he or she may imitate the behavior as a means to becoming "more adult." The strong association of the sheesha behavior of those students with the finding that most sheesha smoking occurred at home (96.4%) and the finding that 74.1% of the female sheesha smokers were from homes with two or more other sheesha smokers again reflects a clear message of acceptance, even for females.

A majority of the students in this sample have seen their teachers smoking cigarettes (though not sheesha). This is another environmental factor that may affect young people's attitude regarding smoking in general. Teachers are typically admired by young people and this adds to the impression that society apparently accepts smoking.

One of the most potent environmental forces is the influence of friends (peer pressure)[26-28]. These results, like results from practically all other studies of smoking behavior, confirm the influence of friends. These data show that the sheesha non-smokers have sheesha non-smokers as their friends and that smokers have sheesha smokers as friends. The finding that the friendship patterns of female sheesha smokers and non-smokers were more homogeneous than for males suggests that sheesha smoking by females is not as accepted in society - a condition that public health workers should reinforce. This finding and the finding that a majority of female sheesha users came from homes with two or more other sheesha smokers suggested there is a family acceptance of a behavior that is not yet publicly accepted. Understanding the dynamics of friendship patterns (both male and female) has been a focus of western social scientists for some time, but friendship patterns have not been studied as extensively among Middle Eastern youth. It is not possible, therefore, to assume that friendship patterns in the Middle East are the same as friendship patterns among western young people. There is a need for studies on this topic, if effective programs to discourage smoking among young people are to be developed.

Other environmental factors such as the examples set by parents and teachers and available entertainment opportunities in the community are often overlooked in understanding young people's behavior. The leisure patterns of young males, such as spending time with their friends going around the community together, watching TV, playing cards and drinking tea, provides many opportunities for smoking cigarettes and sheesha. Cafes and restaurants provide places where it is easy for young men to smoke sheesha. The females' environment is more restricted. Young females are encouraged to stay at home and spend time with their friends in the house. Consequently female sheesha smokers come from homes where sheesha smoking is accepted and they choose friends who are also sheesha smokers.

As evidence of the health related dangers of sheesha smoking accumulates, it is important for health workers to carefully measure the extent of sheesha smoking and its associated motivations. Understanding the motivations to smoke sheesha will be critical for the development of educational initiatives to discourage this behavior. Because sheesha smoking is a long-standing traditional behavior, its reduction will present challenges as complicated, if not more complicated, than the challenges of decreasing cigarette smoking.

The finding that sheesha smoking and cigarette smoking tend to occur together in the same segments of the population suggests these two behaviors may be dealt with together when formulating public health strategies to reduce or prevent smoking. But we do not understand whether these two behaviors (sheesha smoking and cigarette smoking) are motivated by the same factors and whether the two behaviors would be responsive to similar educational interventions. Sheesha smokers who do not smoke cigarettes may have quite different motives for smoking than sheesha smokers who also smoke cigarettes.

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