

The Comparison of Hookah Smoking Prevalence in Medical Students between 2009 and 2014

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ABSTRACT

Background: Hookah smoking is increasing worldwide. It is estimated that the worldwide prevalence of daily hookah smoking is 100 millions. The aim of this study was to compare hookah smoking prevalence in Islamic Azad University medical students in the city of Ardabil at the northwest of Iran between 2009 and 2014.

Methods: Of 2956 Islamic Azad University medical students, Ardabil branch, almost 25% of students (737 students (226 males vs. 511 females; 436 subjects in 2009 vs. 301 subjects in 2014)) were selected to participate in this survey using a cluster sampling technique. An anonymous self-administered questionnaire was used after verbal informed consent according to the Review Committee of Ardabil Branch Islamic Azad University Medicine School approved protocol. A cluster sampling technique was used. The questions focused on gender, hookah smoking status, and students' replies to the following issues: (1) Kind of hookah (2) Frequency of smoking (3) Motivation of hookah use (4) Place of smoking use (5) and Second-hand exposure to hookah.

Results: Hookah use showed significant decrease in male students compared with five years ago ($P<0.05$). Frequency of molasses (tobacco with sweetened fruit flavours and mild aromatic smoke) use has significantly enhanced among both genders in 2014 compared with 2009 ($P<0.05$). Furthermore, second-hand exposure to hookah was significantly higher among both non-smoker genders in 2014 compared with 2009 (32.7% in 2014 vs. 13.2% in 2009).

Conclusion: Unfortunately, in spite of knowledge promotion among medical school students in recent years, hookah use is still prevalent among medical students. Molasses use has significantly increased and second-hand exposure to tobacco has escalated since 2009.

Key words: Hookah smoking; Medical students; Molasses; Second hand exposure.

INTRODUCTION

Hookah smoking is increasing worldwide [1]. It is estimated that the worldwide prevalence of daily hookah smoking is 100 millions [2]. The main reasons for the

rising of hookah use are the misperception that it is 'healthier' than cigarette smoking; a social acceptance and being an essential part of gatherings, café and restaurant culture; internet, mass and social media; low cost; lack of hookah-specific policy and regulations

towards its use; and immigration of people from Middle Eastern countries in the European Region, the Region of the Americas and the Western Pacific Region [1, 3]. In spite of misconception about the safety of hookah, several investigations have demonstrated its deleterious effects on many organs, but primarily on cardiovascular and respiratory system where there is documentation of coronary artery disease (CAD) and obstructive pulmonary disease and increased risk to develop lung cancer. Furthermore, perinatal effects in smoking mothers, periodontal disease and other health effects have been described in this group of smokers [4]. A plenty of studies documented presence of harmful toxicants and carcinogens in hookah smoke [5-7]. For example, a single machine-smoked hookah session produces approximately 50 times the quantities of carcinogenic 4 and 5-membered ring polycyclic aromatic hydrocarbons (PAHs) compared to a single cigarette smoked using the Federal Trade Commission (FTC) protocol [8]. Global statistics on ever and current hookah smoking show alarming levels in high school and university students, often surpassing cigarette use [9-12].

In plenty of developing countries, including Iran, physicians have a very critical role to struggle against tobacco, owing to their respectability in the society as a credible source of health information [13]. Studies have shown repeatedly the positive role of physicians in influencing patients' tobacco use, assisting in their smoking cessation efforts and influencing national tobacco control policies [14-16]. This positive role is obviously hindered by physicians' own tobacco use practices, which place their messages in conflict with their behaviour [17]. Since tobacco use practices and beliefs about tobacco are formed early in life, it becomes interesting to look at the development of tobacco use among medical students and how their education may have influenced their beliefs and practices. Evidence suggests that tobacco use remains widespread among medical student despite their better knowledge of the involved risks [18]. Regarding to escalating trend of hookah use among students in one side and health damaging effects of it on the other side, we decided to compare the prevalence of hookah in the medical students of Islamic Azad University-Ardabil branch between 2009 and 2014.

METHOD

Population, sample and data collection

This descriptive-analytic study was carried out within five years from 2009 to 2014 among medical students of Ardabil branch, Islamic Azad University in the city of Ardabil at the northwest of Iran.

The study consisted of medical students, educating in 2009 and 2014 at medicine school of Ardabil branch, Islamic Azad University. We thought that the five year

interval will give us information about the trends of smoking use among the study's target group. We aimed to recruit about 25% of the students registered in these years totalling 2956 to have sufficient numbers for sex and smoking method-based comparisons. Accordingly, 737 students (226 males + 511 females; 436 subjects in 2009 and 301 subjects in 2014) were selected using a cluster sampling technique (The sampling unit was the class). An anonymous self-administered questionnaire was used after verbal informed consent according to the Review Committee of Ardabil Branch Islamic Azad University Medicine School approved protocol. All medicine school students of Islamic Azad University were eligible to participate in this study. The dean of the university was to give consent to the study for the faculty to be selected.

Data collection was conducted in April, May and June 2009 and 2014, by means of self-administered two-page questionnaire. Every student accepted to fill up the questionnaire and handed back the questionnaire after completing it. However, a small number of respondents did not provide answers to one or two questions. Such non-responders were less than 1%.

Variables and measures

The questions focused on gender, hookah smoking status, and students' replies to the following issues: (1) Kind of hookah {Molasses (tobacco with sweetened fruit flavours and mild aromatic smoke) vs. traditional tobacco} (2) Frequency of smoking (3) Motivation of hookah use (4) Place of smoking use (5) and Second-hand exposure to hookah.

Definitions

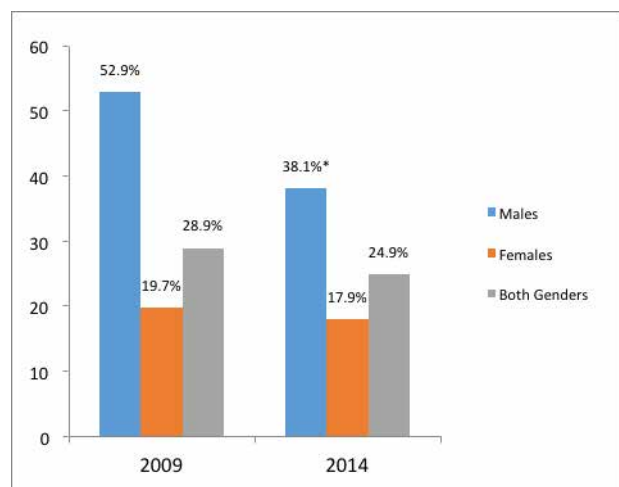
Smokers (users) were subjects who, at the time of the survey, smoked more than 1 hookah per week.

Statistical Analysis

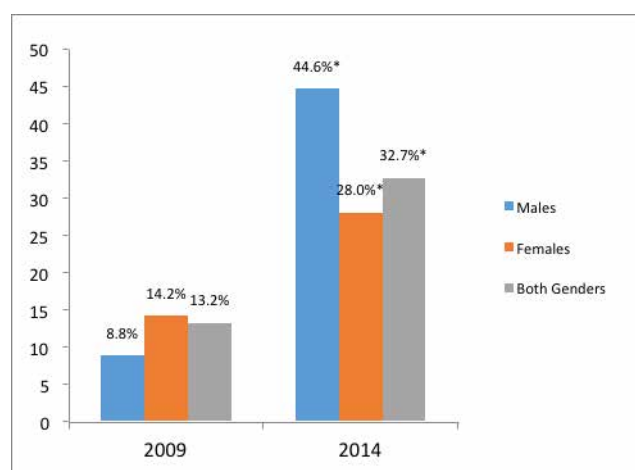
Analysis was done separately for males and females. Time trends for Kind of hookah, Frequency of smoking, Motivation of hookah use, Place of smoking use, and Second-hand exposure to hookah were described by using frequency tables and figures. Because of nominal variables, non-parametric statistical methods (Chi square) were used to compare differences in time series ($P < 0.05$).

RESULTS

Hookah prevalence and second-hand exposure to hookah percentages in different years and genders are demonstrated in figures 1 and 2, respectively. According

FIGURE 1. Hookah Users Percentage in different years and genders.

* indicates significant changes in 2014 compared with 2009.

FIGURE 2. Second hand exposure to hookah percentage in nonsmokers in different years and genders.

* indicates significant increase in 2014 compared with 2009.

to figure 1, prevalence of hookah use significantly decreased among male students in 2014 compared with 2009. Second-hand exposure to hookah shows significant increase among both genders within 5 years (figure 2).

Percentage of hookah use based on kind of hookah, places of use and motivation of smoking is listed in tables 1, 2 and 3, respectively. Frequency of daily and weekly hookah use and smoking duration per session are listed in tables 4, 5 and 6, respectively. In relation to the kind of hookah, molasses use significantly increased among both genders in 2014 than 2009 (Table1). Table 2 demonstrates significant raise of hookah use in café among male students and enhancement of hookah use at home among female students in 2014 than 2009. According to table 3 and 4, there are no significant differences in relation to motivation and frequency of weekly hookah use

TABLE 1. Kind of hookah use percentage in different years and genders. * indicates significant differences.

Kind of Hookah		Year		Total
		2014	2009	
Males	Tradition	5.0%	10.9%	8.7%
	Molasses	75.0%*	65.6%	69.2%
	Both	20.0%	23.4%	22.1%
Total		100.0%	100.0%	100.0%
Females	Tradition	5.7%	30.5%	21.3%
	Molasses	77.1%*	44.1%	56.4%
	Both	17.1%	25.4%	22.3%
Total		100.0%	100.0%	100.0%

TABLE 2. Place of hookah use percentage in different years and genders. * indicates significant differences.

		Year		Total
		2014	2009	
Males	Café	62.5%*	15.6%	33.8%
	Home	17.5%	37.5%	29.8%
	Friends' home	10.0%	15.6%	13.5%
	Another places	10.0%	31.3%	23.1%
Total		100.0%	100.0%	100.0%
Females	Café	28.6%	56.9%	46.2%
	Home	40.0%*	18.6%	26.9%
	Friends' home	5.7%	17.2%	12.9%
	Another places	25.7%	6.9%	14.0%
Total		100.0%	100.0%	100.0%

among genders within 5 years, respectively. Finally, table 5 demonstrates that 30-45 minute duration of hookah use is significantly higher in 2014 than 2009 among male students.

DISCUSSION

The aim of this study was to compare the prevalence of hookah use between 2009 and 2014 in different genders of Islamic Azad University medical students in the city of Ardabil. According to figure 1, hookah use declined among medical students in 2014 compared with 2009 ($P < 0.05$). This decline was not significant and is still high in Iranian medical students ($P > 0.05$). Comparing with Syrian medical students, the prevalence of hookah smokers in Iranian university is still higher (24.9% in Iranian

TABLE 3. Motivation of smoking in different years and genders.

		Year		Total
		2014	2009	
Males	Relaxation	7.5%	14.1%	11.5%
	Amusement	55.0%	67.2%	62.5%
	Friends' meeting	30.0%	9.4%	17.3%
	Other reasons	7.5%	9.4%	8.7%
Total		100.0%	100.0%	100.0%
Females	Relaxation	8.6%	18.6%	14.9%
	Amusement	77.1%	61.0%	67.0%
	Friends' meeting	8.6%	16.9%	13.8%
	Other reasons	5.7%	3.4%	4.3%
Total		100.0%	100.0%	100.0%

TABLE 4. Frequency of weekly hookah use in different years and genders.

		Year		Total
		2014	2009	
Males	1day	25.7%	57.1%	44.0%
	2days	25.7%	12.2%	17.9%
	3days	14.3%	6.1%	9.5%
	4days	0.0%	8.2%	4.8%
	5days	2.9%	2.0%	2.4%
	6days	11.4%	2.0%	6.0%
	7days	20.0%	12.2%	15.5%
Total		100.0%	100.0%	100.0%
Females	1day	48.3%	26.3%	33.7%
	2days	24.1%	19.3%	20.9%
	3days	6.9%	19.3%	15.1%
	4days	6.9%	10.5%	9.3%
	5days	0.0%	8.8%	5.8%
	6days	3.4%	3.5%	3.5%
	7days	10.3%	12.3%	11.6%
Total		100.0%	100.0%	100.0%

students vs. 23.5% in Syrian students [18], but it is lower compared with Turkish medical students [19]. However, Hookah use showed significant decrease in male students compared with five years ago ($P<0.05$). The main reason for hookah use decline among male students could be owing to the promotion of knowledge of students about the harmful effects of hookah in recent five years. After 2010, the results of our previous study issued among students and it is one of the possible reasons for rising of knowledge

TABLE 5. Frequency of daily hookah use in different years and genders.

		Year		Total
		2014	2009	
Males	once	82.8%	86.1%	84.6%
	twice	6.9%	2.8%	4.6%
	more than twice	10.3%	11.1%	10.8%
Total		100.0%	100.0%	100.0%
Females	once	83.3%	66.0%	70.8%
	twice	11.1%	27.7%	23.1%
	more than twice	5.6%	6.4%	6.2%
Total		100.0%	100.0%	100.0%

TABLE 6. Duration of hookah smoking per session in different years and genders. * indicates significant differences.

		Year		Total
		2014	2009	
Males	<15min	22.5%	53.1%	41.3%
	15-30min	32.5%	29.7%	30.8%
	30-45min	32.5%*	4.7%	15.4%
	More than 45min	12.5%	12.5%	12.5%
Total		100.0%	100.0%	100.0%
Females	<15min	60.0%	54.2%	56.4%
	15-30min	28.6%	27.1%	27.7%
	30-45min	5.7%	10.2%	8.5%
	More than 45min	5.7%	8.5%	7.4%
Total		100.0%	100.0%	100.0%

among students.

As observed in table 2, the percentage of hookah use in café has significantly increased among male students (15.6% in 2009 vs. 62.5% in 2014), whereas among females, frequency of hookah use at home significantly enhanced (18.6% in 2009 vs. 40.0% in 2014) ($P<0.05$). In the city of Ardabil, females are banned to enter the majority of café. For this reason, most females prefer to use hookah in their own home. Adversely, because of raising the number of café serving hookah, the majority of males would rather use hookah in café.

Unfortunately, frequency of molasses use significantly enhanced among both genders in 2014 compared with 2009 ($P<0.05$). According to studies, the presence of aromatic hydrocarbons makes molasses more dangerous because of its higher carcinogenic materials [20].

Table 3 indicates that the main motivation for hookah use is still amusement among both genders in 2014 same as in 2009, showing the lack of recreational places for students [11]. There are no significant differences in weekly and daily hookah use for both genders within five recent years (Table 5 and 6). Although there are no significant differences in total duration of hookah use per session among both genders over the times, 30-45 minute use among males is significantly more in 2014 than 2009 ($P < 0.05$).

According to figure 2, second-hand exposure to hookah is significantly higher among both non-smoker genders in 2014 compared with 2009 (32.7% in 2014 vs. 13.2% in 2009 in both genders). It might be owing to escalation of café over the city, as well as enhancement of hookah at citizen homes [11, 21]. Unfortunately, all café and some restaurants freely serve hookah in Iran and there is no legislation to ban them.

CONCLUSION

Unfortunately, in spite of knowledge promotion among medicine schools in recent years, hookah use is still prevalent among medical students. Molasses use is increasing and exposure to second-hand tobacco escalated in recent five years. According to the results of this study, it is critical to develop and implement tobacco prevention and control programs among the medical students of Islamic Azad University, Ardabil, Iran.

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