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Cigarette Smoking Knowledge, Attitudes, and Practices of Iranian Health Professions Students of Shiraz University of Medical Sciences, Shiraz, Iran-2011

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Abstract

Background: As tobacco use is a worldwide public health problem, it is vital that all healthcare professionals be able to provide tobacco interventions for their patients. The purpose of this study was to survey Iranian health professions students to assess their tobacco knowledge, attitudes, behavior and practices

Methods: A 61-item survey instrument was administered to 1000 Shiraz University of Medical Sciences students across multiple health professions programs. Data was statistically analyzed using descriptive statistics. Pearson chi-square test of independence was conducted for the relationship between the independent variables of gender and academic program and all other dependent variables. Post hoc analyses using standardized residuals and a critical value of +/- 1.96 was conducted for any significant items. To determine the predictive variables of tobacco use, logistic regression analyses was conducted

Results: Of respondents, approximately 10%, mainly males, reported tobacco use, primarily in the form of cigarettes and hookah. Predictors of smoking included having friends who smoked and living with a smoker or allowing smoking in the home ($p<0.05$). Compared to male students, females had greater knowledge of tobacco harms and expressed more anti-tobacco attitudes. Eighteen percent of respondents indicated they had received some tobacco cessation training in their academic program, whereas 25% did not know and 57% reported not receiving any such training. Dental students were more likely to report recent use of tobacco and believed that smokeless tobacco is not as addictive or harmful as cigarettes. Paramedical science students more frequently underrated tobacco risks than students from other programs, while medical residents were most likely to believe that using smokeless tobacco posed high health risks.

Conclusions: Results suggest that tobacco dependence education and cessation training should be enhanced in the health professions programs and tobacco use prevention communications should be aimed at college students, particularly males.

Keywords: Tobacco use; Health Professions Students; Iran

Introduction

As the single most preventable cause of death worldwide, tobacco use results in the deaths of nearly 6 million people per year. If current trends continue, tobacco will kill more than 8 million people per year by 2030 with most of the tobacco-related morbidity and mortality occurring disproportionately in low and middle income countries [1]. In Iran, obtaining accurate assessments of smoking prevalence has been complicated by variations in local tobacco use patterns and research methodologies which employ different definitions of tobacco use [2]. A study conducted with a national sample of over 10,000 Iranians a ages 11-18 found self-reported smoking prevalence to vary by region, but averaged 14.3% overall, with 18.5% of boys and 10.1% of girls reporting daily or occasional smoking [3]. Using WHO guidelines, in 2007 a national Survey of Risk Factors of Non-Communicable Disease (SuRFNCD-2007) was conducted with a large sample of Iranians ages 15-64 [4]. From this survey, estimates of current tobacco use included the use of cigarettes, pipes and water-pipes and were 14.8% overall, 26.1% among males and 3.2% among females. More than half of the female smokers used waterpipes and 21.4% of males and 1.1% of females reported smoking cigarettes everyday [4]. However, smoking rates may actually be higher, especially among women; a recent study which employed biochemical confirmation of tobacco use along with self-reported data found that among Iranian adults 21% of men and 7% of women were smokers [5]. Public health researchers in Iran have expressed concern that the prevalence of daily smoking has not declined and future economic and health burdens will likely increase with the size of the Iranian population [4].

It is important that healthcare professionals take an active role in addressing tobacco dependence and support public health policies that curtail tobacco use. Research indicates that when healthcare professionals offer patients assistance in quitting, a person's chances of quitting tobacco double. Quit rates increase even further when patients receive support for cessation from multiple healthcare providers [5,6].

Healthcare professionals, such as physicians, dentists, nurses and others serve as role models by not smoking themselves. Smoking by healthcare professionals contradicts health promotion efforts and undermines the message to smokers that quitting is important. Healthcare professionals who smoke are less likely to recognize their role as health educators and they are less likely to effectively counsel smokers on quitting [7,8]. During the past several decades, smoking rates among healthcare professionals in many countries such as the USA, Australia and the United Kingdom have plummeted to below 5% [9]. However, a recent study of the smoking patterns among Iranian physicians indicated that nearly a quarter of them had a smoking history and 16% were current tobacco users [8].

An ideal time to increase tobacco dependence education and smoking cessation efforts for healthcare providers is during their professional training program. A few studies have evaluated smoking prevalence among specific groups of Iranian health sciences students. For example, a cross sectional survey study on a sample of Guilan University of Medical Sciences students (N=827) found that 26% of the respondents had tried cigarettes and 9.6% reported smoking during the previous month [10]. A similar study of dormitory students at the Golestan (Iran) University of Medical Sciences found that current smoking was reported by 6.3% of the 538 respondents (17.3% males and 0.8% females) [11]. In 2006, Nazary et al. [12] investigated smoking behavior in male health professions students in Semnan, Iran with an anonymous, self-administered questionnaire; of the 320 respondents, approximately 30% described themselves as former smokers while 14.4% reported currently smoking either occasionally or daily [12].

In 2005, dental students across Iran were surveyed regarding tobacco use behaviors; of the 263 respondents, 23% (37 males / 22 females) reported current daily or occasional use of cigarettes, pipes or waterpipes. Among both sexes, waterpipe smoking was most popular, followed by male cigarette smoking (12%) [13]. In 2010, a similar study of a stratified random sample of students across Iranian dental schools (N= 335) found that only 9.6% of respondents reported current smoking, and three-fourths of these were male [14].

The Global Health Professions Student Survey (GHPSS) is a self-administered anonymous survey which collects data from 3rd year health professions students (medical, dental, nursing or pharmacy) via standardized methods across forty-eight nations. The 2005-2008 survey found that among Iranian medical students, 11.6% of males and 2.8% of females reported current cigarette smoking; these smoking rates were the lowest among their peers in countries of the Eastern Mediterranean Region (EMR). However, use of all forms of tobacco was higher than those of their EMR peers, and was reported to be 16.2% among males and 7% among females [15]. Likewise, the nursing GHPSS (2005-2009) found that 17.4% of Iranian male nursing students and 1.6% of Iranian female nursing students self-identified as current smokers. In the nursing students, use of all forms of tobacco was also higher -- 22.6% among males and 5.7% among females [16].

In sum, despite some variation in reported tobacco use rates, tobacco appears to be an integral part of the lives of many Iranian health professions students, particularly males. However, there is less information available in the literature comparing the tobacco-related knowledge, attitudes and practices as well as behavioral predictors of smoking status among health professions students. Such information would be useful for enhancing tobacco dependence education curricula and smoking cessation training for all future health care professionals. The purpose of this study was to survey Shiraz University of Medical Sciences (SUMS) health professions students, residents and post- graduates to assess their smoking knowledge, attitudes, and behaviors. With this baseline information, tobacco-related educational programming could be improved for students in specific programs based upon their needs and practices. In addition, information generated from this study could be used to inform the development and implementation of targeted tobacco cessation interventions to further reduce student tobacco use rates and ultimately tobacco use in the population at large.

Methods

A review of curriculum plans for students at SUMS revealed that students of pharmacy, dentistry, nursing, nutrition and public health receive instruction in the diagnostic signs and symptoms, treatment and follow up of smoking and addiction treatment mostly in the form of theoretical psychology course offerings. Further, this curricular content is not dedicated or limited to tobacco use, but falls under the broader category of substance abuse. Therefore, tobacco constitutes but a small part of the lesson plan.

In conducting this study, SUMS researchers collaborated with investigators at the Indiana University School of Dentistry (IUSD, Indianapolis, Indiana, USA). Since 1992 IUSD has provided students with a comprehensive program in tobacco dependence education which includes, but is not limited to, the following: the oral and systemic effects of tobacco, nicotine addiction, pharmacological and behavioral therapies for tobacco cessation, implementing tobacco cessation strategies into clinical practice, and clinical experience in providing tobacco interventions to patients. The IUSD tobacco education program is based on the world renowned Mayo Clinic (Rochester, Minnesota, USA) tobacco dependence treatment program and is delivered by a cohort of Mayo Clinic trained faculty.

For this study, the IUSD investigator developed a 57-item survey instrument to assess the knowledge, attitudes and behaviors regarding smoking among students in SUMS health professions programs. The survey instrument contained scaled response items which were drawn from several previously published and validated surveys, including the Global Health Professions Student Survey [17-23]. The survey was divided into three sections: Knowledge & Attitudes, Tobacco Use His-

tory, and Demographics. Each individual survey was coded by number. The survey was then translated into Persian and piloted with a group of SUMS students. Based on feedback received from the pilot, the survey was revised for clarity and content and four additional demographic items were added. The reliability coefficient for the knowledge items using Kuder Richardson test for reliability was 0.706 and for attitude and practice items using Cronbach's α internal consistency coefficient were 0.702 and 0.735, respectively. Approval for the study was obtained by Deputy of Research, SUMS.

The survey was administered to the health science students of SUMS. A stratified sampling methodology was used in which members of the population were divided into homogeneous subgroups before sampling. Every element in the population was present in only one stratum. Then, random sampling within each stratum occurred. In this study, the total number of students in SUMS was obtained (of all eight schools including: medical, pharmacy, dental, nursing, paramedical, health and nutrition, rehabilitation and management) and then the percentage of each degree was calculated (Associate, Bachelor's, Master's and PhD) for each school. Participants were selected based on the calculated percentage to attain 1000 persons; however, because the classes of nursing, paramedical, health and nutrition, rehabilitation and management students were mixed, calculations were based upon degree designation.

The questionnaire was administered to the students in the classroom. One of the research investigators provided a brief explanation about the survey prior to its distribution and the same individual collected the completed surveys. Completion of the survey implied consent. Responses were anonymous and data was reported in aggregate. Survey data was coded and stored in an electronic database for analyses. Researchers from SUMS recorded the data from the surveys into a computerized spreadsheet database. The aggregate data was statistically analyzed using descriptive statistics. Pearson chi-square test of independence was conducted for the relationship between the independent variables of gender and academic program and all other dependent variables. Post hoc analyses using standardized residuals and a critical value of +/- 1.96 was conducted for any significant items. To determine the predictive variables of tobacco use, logistic regression analyses was conducted using the SPSS, Version 15. Statistical significance was set at $p<0.05$.

Results

Student demographics

Completed surveys were obtained from 1000 students. Respondents ranged in age from 18-42 years, with a mean of 23.5 years. Of the respondents, 58.5% were female and 41.5% were male. Respondents had completed from 1-14 semesters, with a mean of 5.1 completed semesters. Nearly all of the students reported living either in a dormitory (57.3%) or at home with their family (39.6%). Smoking was not permitted in the school or work building of 81.5% of the students, and the same percentage reported that they did not live with a smoker. However, 32.7% indicated that they do allow visitors to smoke in their home.

Professional programs and tobacco cessation training

The respondents' academic programs represented a broad range of health professions (Table 1). When asked if tobacco cessation training was part of the curriculum in their academic program, of the 1000 respondents, 18% reported that it was, 25% did not know, and 57% reported that tobacco cessation training was not a part of their academic program

Shiraz University of Medical Sciences , Students (%)	
Medical	18.4
Medical residency	9.2
Nursing	6.1
Dental	6.2
Dental residency	1.8
Pharmacology	13.3
Paramedical science	9.9
PhD program	3.0
Associate's degree	1.9
Other Bachelor's programs	21.2
Master's degree	9.0

Table 1: Academic Programs of Survey Respondents (N=1000)

Tobacco use history among health professions students

Of the 1000 respondents, 97 people (72 men, 25 women) reported using any form of tobacco within the previous month, with 84.5% (N=82) of these individuals using on some days and 14.4% (N=14) reporting daily use. Most tobacco users consumed either cigarettes (46.4%, N=45) or hookah (42.3%, N=41), with the remainder (11.3%, N=11) using pipes, cigars or smokeless tobacco. Table 2 reports on these students' intention to quit tobacco use. Although nearly half of these individuals believe that they will quit at some time in the future, nearly three-fourths of them have not tried to quit nor intend to make a quit attempt in the near future. However, of those who had made a quit attempt, the vast majority deemed quitting tobacco to be "very difficult" or "difficult".

Cigarette Smoking: Of the students who reported current cigarette smoking (N=30), 60% smoked on some days while 40 % smoked every day; the majority (87%, N=26) smoked less than 10 cigarettes per day. Twenty percent reported having their first cigarette within 5 minutes of waking, 26.7% between 6-30 minutes, 13.3% between 31-60 minutes and 40% reported having their first cigarette more than 1 hour after waking.

Nearly 75% of the current cigarette smokers started smoking between the ages of 16 and 20; the remainder were evenly divided between starting smoking under the age of 16 or over the age of 20.

Of students reporting current waterpipe (hookah) use (N=30), 91% smoked on some days, and the reminder reported daily use. Nearly half of the hookah users smoked at a teahouse / bar; the remaining half were equally divided between using hookah in the home of relatives / friends, or at another location.

Survey Item	Yes	No	Not sure		
Do you think you will ever quit smoking entirely? (N=53)	47.1%	24.5%	28.3%		
Are you planning to quit in the next 6 months? (N=48)	29.1%	64.5%	6.2%		
In the past 2 years, have you tried to quit using tobacco? (N=53)	28.3%	71.6%			
	Very Difficult	Difficult	Moderately Difficult	Easy	Very Easy
If you have tried to quit smoking, how difficult was it? (N=18)	55.5%	27.7%	11.1%	5.5%	0

Table 2: Intention to Quit Tobacco Use among Shiraz University of Medical Sciences' Students

Of the 1000 respondents, nearly 75% believed that most people disapprove of cigarette smoking among adults and 35% reported not having any friends or acquaintances who smoked even occasionally. Nearly 50% said they only had a few friends who smoked and only 8% indicated that half or more of their friends and acquaintances smoke cigarettes.

Gender differences: There were significant differences ($p<0.01$) in responses between males and females for nearly every survey item. Female students more often reported that cessation training was not part of the curriculum in their academic program. Of the respondents reporting current tobacco use (N=97), 72 were men and only 25 were women, and more males stated that they smoked cigarettes (23 males vs. 9 females). Compared to male students, females were more likely to live in dorms and to allow visitors to smoke in their place of residence.

The health professions students' knowledge and attitudes about tobacco use are shown in Table 3 and 4. Compared to males, significantly more female students rated the addictiveness and health risk of regular cigarette use, smokeless tobacco and hookah as "high" ($p<0.01$). Compared to their male counterparts, the female students were also more likely to oppose smoking in restaurants, parks, healthcare facilities, and campuses.

Males were more likely to believe that: 1) tobacco use increases popularity, 2) is a way to express independence, 3) is no more risky than other behaviors, and 4) is an acceptable way to relax. Males believed smokeless tobacco and hookah are less harmful and less addictive than cigarettes and they were more likely to believe that healthcare professionals from disciplines other than their own are better equipped to deliver tobacco dependence treatment services. In contrast, females were more likely to believe that tobacco use is an oral health problem that can cause tooth loss, oral cancer and gum disease, and that tobacco can hinder athletic performance. Females were also more likely to believe that tobacco use can harm the unborn, and that second hand smoke is dangerous.

Program Differences: Comparing responses by health sciences program revealed significant differences ($p<0.01$) for a number of key survey items among students from the various programs (Table 5). Dental students were more likely to report recent use of tobacco and indicate that smokeless tobacco is not as addictive or harmful to health as cigarettes. Paramedical science students more frequently underrated tobacco risks than students from other programs, while medical residents were most likely to believe that using smokeless tobacco posed high health risks.

(N=1000)			
Survey Item			
How much health risk is there from regularly…	Low %	Moderate %	High %
Smoking cigarettes?	7.2	21	72
Using waterpipe (hookah)?	12.4	16.8	69
Using smokeless tobacco?	17.6	25.7	56.7
How addictive are…	Low %	Moderate %	High %
Cigarettes?	15.3	28.1	56.6
Waterpipe (hookah)?	22.1	35.9	42
Smokeless tobacco?	30	31.6	38.4
Should smoking be allowed…	Allowed %	Not Allowed %	Only in designated areas %
In restaurants?	7.1	71.6	31.2
In health care facilities?	4.4	80.6	15
On a university campus?	12.4	70	17.6

Table 3: Tobacco Knowledge and Attitudes among Shiraz University of Medical Sciences' Students

(N=1000)		
Survey Item	Mean*	Sex § ($p<0.01$)
Tobacco use increases popularity among peers	3.61	M
Tobacco use can cause gum disease	1.91	F
Tobacco use is a way for people to express their independence	3.36	M
People who regularly use tobacco have a much harder time performing in sports	2.55	F

Tobacco uses no more risky than many other things people do	2.83	M
Tobacco use can cause tooth loss	1.75	F
A pregnant woman can harm her unborn baby if she uses any form of tobacco	1.55	F
Tobacco use is an oral health problem	1.55	F
Young people who use tobacco have more friends	3.49	M
Tobacco use could lead to oral cancer	1.76	F
Secondhand smoke can adversely affect the health of nonsmokers	1.47	F
Quitting tobacco use is mainly a matter of willpower	1.77	F
Smokeless tobacco is less harmful to an individual user than smoking cigarettes	3.21	M
Waterpipe (hookah) smoking is less harmful to an individual user than smoking cigarettes	3.22	M
Smoking is an acceptable way to relax	3.57	M
Nicotine in tobacco causes cancer	2.8	F
As a health professions student, I feel I require further training in helping patients quit tobacco	2.42	F
Patient tobacco use and dependence is difficult to discuss in my professional discipline	2.91	F
As a health provider, I believe my efforts in addressing tobacco use with patients will be worthwhile	2.36	F
To help patients stop smoking, other referral agencies or health professionals are generally better equipped than those in my discipline.	2.51	M
Patients may be offended if I raise the issue of their tobacco use	2.48	F

* Scale was 5 points: 1=Strongly Agree, 2=Agree, 3=Neither Agree nor Disagree, 4=Disagree, 5= Strongly Disagree
§ Sex of students having strongest agreement with the survey item. M=Male, F= Female.

Table 4: Tobacco Attitudes among Shiraz University of Medical Sciences. Health Professions' Students

Survey Item	Response (p<0.01)	
	Yes	No
Have you used tobacco in the last 30 days?	Dental	
Do you or someone you live with smoke at home?	Medical, Master's students	
	Totally Agree/Agree	Disagree/Totally Disagree
People who regularly use tobacco have a much harder time performing in sports.	Medical, Master's students	Bachelor's students
Tobacco use is no more risky than many other things people do.	Paramedical Science	Dental
Young people who use tobacco have more friends.	Master's students, Dental	Bachelor's students
Smokeless tobacco is less harmful to an individual user than smoking cigarettes.	Bachelor's, Dental	Medical residents, Pharmacology students
Waterpipe (hookah) smoking is less harmful to an individual user than smoking cigarettes.	Nursing, Paramedical Science	
	Low	High
How much health risk is there from using smokeless tobacco on a regular basis?	Dental	
How addictive is smokeless tobacco?	Paramedical Science	Medical residents

Table 5: Comparison of Tobacco Knowledge, Attitudes and Behaviors among Shiraz University of Medical Sciences. Students of Different Health Professions Programs (N=1000)

Items	R2	Variable	B	SE	P value	EXP(B)	95%CI	
							lower	upper
Smoking in 30 past days	0.169	female(male*)	-1.422	280	<0.001	0.241	0.139	0.418
		no one regularly smoke inside home(some one regularly smoke inside home*)	-8.8	327	0.007	0.415	0.219	0.787
		constant	0.652	0.310	0.035	1.919		
Smoking at least 100 cigarettes in lifetime	0.150	Most of friends smoke (none of friends smoke *)	2.176	0.916	0.018	8.808	1.464	53.009
		female(male*)	-1.19	0.486	0.014	0.302	0.117	0.783
		constant	-1.577	0.289	<0.001	0.206		
Water pipe use at least 20 times	0.167	Visitors are allowed to smoke inside home(visitors aren't allowed*)					2.069	

			1.522	<0.001	4.582		2.009	10.148
		Live In own city but separate from family in personal house(In my city and with my family*)	2.716	0.008	15.123			113.866
		constant	-2.655	<0.001	0.070			

*Reference group
R2= nagelkerke R square, B= coefficient, SE=standard error, EXP (B) = odds ratio, 95%CI = 95% confidence intervals
Table 6: Smoking Predictors among Health Professions Students at Shiraz University of Medical Sciences.

Results of logistic regression were obtained by randomly selecting 184 non-smoking subjects and comparing to the smoking group. Table 6 presents factors predicting the likelihood of using any form of tobacco on the final logistic regression model. According to this model, significant predictors of smoking in 30 past days included male gender, and having a smoker in the home. Smoking at least 100 cigarettes during a student's lifetime was 8 times greater for students that indicated that most of their friends and acquaintances smoke; being female was a negative predictor for smoking cigarettes.

Significant positive predictors of waterpipe use included students who allowed visitors to smoke inside their home and lived in their hometown but away from their family in their own home; odds were 4 and 15 times greater for these predictors, respectively.

Discussion

Tobacco use remains a major public health problem around the world and in Iran. Although Iran is the only country among the 16 nations of the Eastern Mediterranean Region (EMR) to have a tobacco quitline, the availability of affordable tobacco cessation services and pharmacotherapy is low [24]. Health professionals can play an important role in reducing tobacco use among the general population if they are knowledgeable about the hazards of tobacco use and are well-trained in delivering effective tobacco intervention strategies such as counseling. Unfortunately, a recent survey of Iranian general practitioners indicated that less than 10% had received any formal training in tobacco cessation although the overwhelming majority thought such training was important and necessary [25]. The purpose of this study was to obtain a baseline assessment of the tobacco knowledge, attitudes, and behaviors of health professions students of Shiraz University of Medical Sciences (SUMS). Results will be used to inform the development of a tobacco dependence education curricular component for the SUMS health sciences programs.

A recent review of curricula from the various SUMS health sciences programs indicated that tobacco-related content is taught within a narrow spectrum of courses primarily under the umbrella topic of substance abuse. In the medicine program, however, tobacco-related issues are discussed in more detail with externs, interns and residents in the courses of anesthesia, psychiatry, internal medicine, and community medicine. This likely accounted for the greater likelihood that medical residents appreciated the harms of tobacco compared to students in other health education programs. Nevertheless, of the 1000 students, nearly 60% indicated that in their academic program they had not received any specific training in helping their patients with tobacco cessation and this response was not significantly different between students of different programs. Even though the issue of tobacco is mentioned in the textbooks used by some of the health professions programs; it is not routinely discussed by faculty and might be reviewed by students solely for purposes of exam preparation. Results from the current study suggest that the SUMS health professions programs would benefit from a more comprehensive approach to tobacco dependence education including clinical training and experience for the students in helping their patients quit tobacco.

While the overall tobacco use rate reported in the present study was low, (~10%) it is comparable to some of the previous assessments of tobacco use among Iranian health professions students [10-14]. Compared to the results from the GPHSS for overall rates of self-reported current cigarette smoking (7.2%) [16], we found that at 3%, far fewer SUMS students self-reported as current cigarette smokers. This finding may have been due to underreporting and / or local factors such as the particular social or cultural environment of this institution. The most consistent finding is the much greater prevalence of tobacco use among males. Long-term studies of the smoking trends in Iran have suggested tobacco use may be increasing among Iranian youth, both men and women [4,5]. However, in conservative Iranian society smoking by women is still viewed more unfavorably; this may have increased the possibility of underreporting of smoking by female respondents in the current study. Indeed, using cotinine assessments of tobacco use among Iranian survey respondents, Sarraf-Zadegan et al. [5] , confirmed that underreporting of tobacco use was significantly greater in women. In this study, it was anticipated that underreporting of tobacco use would be a minor factor due to the anonymous nature of the survey; however, this cannot be confirmed.

Among male medical student smokers in Semnan, Iran most indicated they smoked only a few cigarettes per day [12]. Likewise, of the thirty daily cigarette smokers in the current study 60% reported smoking <10 cigarettes per day and 40% indicated that they consume their first cigarette one hour or more after waking. These tobacco use patterns suggest a low level of nicotine dependence.

In the current study, hookah smoking was nearly as popular as cigarettes. Nearly all hookah users reported a nondaily pattern of use, either at bar/teahouse or at home, suggesting that for these students, the waterpipe is primarily a recreational / social activity. Previous research on waterpipe use among Iranian university students found that "pleasure" was the primary reason cited by the majority of users; other reasons included dealing with depression, stress relief, peer pressure, and dealing with anger [26]. In Middle Eastern societies in particular, waterpipe use is perceived to be less harmful and less addictive than cigarettes as well as a socially acceptable way to relax and

express hospitality [27]. However, engaging in these activities may reduce students' perception of tobacco harms and cause them to dismiss the importance of tobacco cessation.

Of the current tobacco users who responded to the question regarding intention to quit (N=53), nearly 75% had not attempted to quit recently and nearly two-thirds did not intend to do so in the near future. However, nearly half thought they would someday completely quit tobacco. It is possible that these students underestimate the hazards of tobacco use and the challenges to quitting. Continued smoking may increase their risk for nicotine addiction, adverse health effects, and unsuccessful cessation attempts. In fact, most of the respondents who had tried to quit tobacco expressed difficulty in doing so.

Regardless of academic program, compared to males, female students were more likely to be aware of the health hazards of tobacco use to the user and others who may be exposed. Women were more likely to be supportive of smoking bans in medical facilities and public spaces. In addition, they recognized the importance of tobacco cessation and indicated a desire for more cessation training. These findings suggest female students may be more receptive to tobacco cessation education and practice.

In contrast, male students appeared to have a more accepting attitude toward tobacco use as an activity associated with personal independence, popularity, and relaxation. Furthermore, more males believed that hookah and smokeless tobacco pose less health risk than cigarettes. Male students also were less likely to indicate a desire for tobacco cessation training, and effectiveness in helping their patients quit tobacco use. While these differences may be influenced by the culture and family customs, health professions educators should take them into consideration when designing tobacco dependence education programs so as to improve male students' understanding of and participation in tobacco cessation interventions.

Students were eight times more likely to smoke if most of their friends and acquaintances smoked. Fortunately, there were few students in the SUMS sample who were associated with smokers; however, this behavior is well-supported in the literature. Nasrabadi et al. [28] found that among male nursing students this was common especially in the dormitories, and often related to the cultural hospitality – offering a cigarette to a friend or visitor. In addition, smoking provided students a way to relax and cope with life's dissatisfactions and socioeconomic concerns. Likewise, Ghanizadeh [29] noted that among Iranian university students the primary reason for initiating cigarette use was curiosity, but feelings of unhappiness, imitating someone they admire, forgetting problems, and being popular with peers also contributed to smoking behavior. On the other hand, it has been shown that strong religious engagement is inversely related to initiating and continuing smoking [30,31]. As such, tobacco cessation programs should emphasize healthful behaviors for relaxing, socializing and coping with stress. Opportunities for emphasizing the congruency between the Muslim faith and healthy behaviors could also be employed in cessation and training programs.

This study was unique in that it aimed to compare tobacco-related knowledge, attitudes and practices among students of various health professions. Although responses from students across academic programs were not significantly different, there were some notable exceptions. Compared to those in other programs, paramedical sciences students were significantly more likely to underrate the health risks of tobacco use, whereas, as expected, medical residents were the group most likely to rate the health harms of tobacco use as high ($p<0.01$). Interestingly, compared to students in other programs, dental students were more likely to have smoked recently and more likely to believe that smokeless tobacco use posed a low health risk ($p<0.01$). In Iran smokeless tobacco use is uncommon, particularly among individuals in higher socioeconomic groups [32]; therefore, even dental students may not be as familiar with the oral health risks associated with smokeless tobacco use. Because tobacco use affects all aspects of health, and study findings indicate all SUMS programs could benefit from enhanced tobacco dependence education, there is the potential to develop an interprofessional tobacco cessation training and education program in which students from multiple health professions learn about, from, and with each other on the topic of tobacco. Students could learn about tobacco harms and cessation practices from the perspectives of other professions and after they graduate they may be more inclined to develop a "team approach" to treating patient nicotine addiction.

Health professionals have the potential to reduce tobacco use rates among their patient populations by serving as nonsmoking role models and engaging in tobacco prevention and cessation practices. Tobacco use by health professionals is counterproductive to these goals; therefore, efforts to reduce tobacco use among health professions students are essential. Findings from this study support the development of a treatment program for tobacco-using students of SUMS to assist them in quitting. In addition, tobacco education and prevention media programs may be instituted to discourage students from initiating tobacco use during their years at the University.

A limitation of the study was the self-reported nature of the survey which increased the possibility of underreporting by tobacco users. However, since the questionnaires were completed anonymously, it was anticipated that this situation would be minimized. This study provided insight into the tobacco use knowledge, attitudes and practices of students in different health professions programs of SUMS and may not be generalizable to other populations.

Conclusions

Approximately 10% of all health professions students, predominately males, at SUMS reported currently using tobacco. Tobacco users smoke primarily cigarettes and hookah and self-reported patterns of use suggested low levels of nicotine dependence and recreational /social motives. Compared to male students, females had more knowledge of tobacco harms and expressed greater anti-tobacco attitudes. Most students reported not receiving any training in delivering tobacco cessation interventions to their patients suggesting that all health

professions programs would benefit from enhanced tobacco dependence education for reducing the use of tobacco among both the student and ultimately the population at large.

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