

Modeling The Underlying Tobacco Smoking Predictors Among 1st Year University Students In Iran

Abstract

Background: There are scant studies on the prevalence and determinants of tobacco smoking among 1st year university students in Iran. We aim to determine the prevalence of substance abuse and identify factors related with tobacco smoking in 1st year students of Qazvin University of Medical Sciences (QUMS). **Methods:** A self-administered questionnaire was used to collect information on sociodemographic, cigarette smoking, hookah smoking, and related risk factors among 521 1st year students in QUMS between January and February 2014. We used logistic regression to determine factors associated with substance abuse among students. **Results:** The descriptive statistics indicated that the prevalence of lifetime cigarette and hookah smoking was 8.6% (confidence interval [CI] 95%: 6.5–11.4) and 35.5% (CI 95%: 31.5–39.7), respectively. After adjustment for other factors, being male, the presence of any smoker in the family and having smoker friends were factors associated with cigarette and hookah smoking among students. Our findings also revealed the co-occurrence of risk-taking behaviors among students. **Conclusions:** Our study showed considerably low prevalence of tobacco smoking among 1st year students. Longitudinal studies are necessary to approve the observed results of this study and thus allow for a certain generalization of the observations.

Keywords: Cigarette smoking, risk-taking behaviors, substance abuse, university students

Introduction

Tobacco smoking among university students remains an important area of research due to the fact that early smoking leads to major problems in youths' future lives.^[1-4] Recent studies suggest that 1st year of university is an important period for students to become substance abuser. For example, Fromme *et al.*^[5] followed a cohort of students during the last 3 months of high school and throughout the 1st year of university and investigated their participation in a variety of behavioral risks. They found that alcohol use, marijuana use, and sex with multiple partners increased during the transition from high school to university setting.

Numerous studies indicated that tobacco smoking among university students is prevalent in Iran.^[6-8] A meta-analysis study by Haghdoost and Moosazadeh^[9] revealed that smoking prevalence among male and female students in Iran's universities was 19.8% (confidence interval [CI] 95%, 17.7–21.9) and 2.2% (CI 95%, 1.4–3.02), respectively. While the prevalence of occasionally hookah smoking among university students in Iran was about 14%,

the prevalence of regular hookah smoking was 6%.^[10,11]

Although the prevalence of tobacco smoking is lower in 1st year university students, several studies have already documented considerable changes in risk-taking behaviors in the 1st year of university.^[5,12,13] Although some studies have investigated substance abuse among university students in Iran, there is no study that examines substance abuse among 1st year university students in Iran. Therefore, in this study, we estimate the prevalence of tobacco smoking among 1st year students of Qazvin University of Medical Sciences (QUMS). Furthermore, we determine factors correlated with tobacco smoking among the students.

Methods

Participants and procedures

This is a cross-sectional analytical study of all 1st year students ($n = 535$) studying at the QUMS between January and February 2014. Out of 535 1st year students, 521 students completed the study questionnaire (response rate: 97.4%). The mean age of participants was 19.6 ± 2.40 years (Min: 17 and Max: 36).

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One hundred and sixty-six (31.7%) and 358 (68.3%) of participants were males and females, respectively.

A self-administrated questionnaire including questions about sociodemographic, cigarette smoking, hookah smoking, drug abuse, and alcohol consumption was distributed among 1st year students. To improve the validity of students' self-reports, they were assured about strict confidentiality of their responses and were informed that they could not be identified based on their answers. The Ethics Committee of QUMS has approved the study and the related questionnaire. The questionnaire was built using Youth Risk Behavior Survey Questionnaire.^[14] The reliability of the survey questionnaire was already approved in a pilot test-retest in 97 college students with 2-week interval in Iran,^[7] which showed that the minimum Spearman correlation coefficient was 0.74.

Measures

The prevalence of cigarette smoking was measured for never smoker, experimenter (<100 cigarettes in lifetime), and regular smoker (smoke daily or almost every day). Respondents were then classified into two main categories of never smoker and ever smoker to examine factors associated with cigarette smoking.

We defined hookah smoking status as never smoker, experimenter, and regular smoking (use at least once per month). To examine factors associated with hookah smoking, the respondents were classified into two categories of hookah smoking, namely, never and ever smokers.

Statistical analysis

Chi-square test was used to test the association between ever cigarette smoking or hookah smoking and qualitative independent variables. The *t*-test was used for comparison of the mean of students' age in ever and never cigarette smoker or hookah smoker. Logistic regression was used to determine factors related to ever cigarette smoking or hookah smoking as a multivariate analysis. We used the likelihood ratio test to select our final logistic regression models. All analyses were performed using SPSS-22 software, (SPSS Inc., Chicago, IL, USA).

Results

The results indicated that 91.4%, 6.7% (CI 95%: 4.9–9.2), and 2.2% (CI 95%: 1.3–3.9) were never smoker, experimenter, and regular cigarette smoker, respectively. In terms of hookah smoking, 64.5%, 31.5% (CI 95%: 27.6–35.6), and 4.0% (CI 95%: 2.6–6.1) were never smoker, experimenter, and regular smoker, respectively.

Table 1 presents the key characteristics of the sample for each category of cigarette and hookah smoking. As reported in Table 1, marital status, gender, alcohol consumption, history of drug abuse, having a smoker friend, and presence of smoker in the family had statistically significant

associations with cigarette and hookah smoking. Being employed was associated with cigarette smoking but not with hookah smoking. Results also suggested that hookah and cigarette smoking were co-occurred.

We used two multivariate logistic regressions to examine the association between the variables listed in Table 1 and cigarette and hookah smoking status. We included all the variables in the regressions that we found to be statistically significantly associated with cigarette and hookah smoking at the 20 per cent level of significance. Table 2 contains the results of these analyses. According to the results, being male (odds ratio [OR] = 5.87), being married (OR = 6.33), alcohol consumption (OR = 8.89), and hookah smoking (OR = 8.64) had positively associated with cigarette smoking and having a smoker friend (OR = 2.06), presence of a smoker in the family (OR = 2.13), alcohol consumption (OR = 5.97), and cigarette smoking (OR = 6.39) had positively associated with hookah smoking.

Discussion

In this study, we aimed to determine the prevalence of tobacco and hookah smoking in the 1st year students enrolled at QUMS in Iran. In addition, we determined factors associated with tobacco and hookah smoking among students. Our findings suggested that 8.9% of the students had experience of cigarette smoking and only 2.2% were regular smokers. We found that cigarette and hookah smoking were more prevalent in males than females. These results are similar to the findings of the previous studies in Iran.^[7,10,15-18]

Moreover, the prevalence of cigarette smoking in our sample was lower than the prevalence of cigarette smoking in high school students in Iran as whole. For example, a meta-analysis study by Nazarzadeh *et al.*^[19] revealed that 7% of Iranian high school students were regular smokers and 27% were experimenters. Using a large and representative sample of adolescents from Tabriz (a major city in Northwestern Iran), Mohammadpoorasl *et al.*^[20] found that about 22.3% (boys, 31.6%; girls, 12.4%) of high school students had experienced cigarette smoking whereas only 5.0% (boys, 6.1%; girls, 0.4%) of students were regular smokers.

Our results, however, are not consistent with previous studies that examined cigarette smoking among university students in Iran and in neighboring countries. Based on a meta-analysis of 22 studies, Haghdoost and Moosazadeh^[9] concluded that lowest and highest prevalence of smoking among male university students in Iran was 13.4% and 39.9%, respectively. The corresponding figures for female students were 0.7% and 25.5%. The authors demonstrated that smoking prevalence among male and female students in Iran's universities was 19.8% (CI 95%, 17.7–21.9) and 2.2% (CI 95%, 1.4–3.02), respectively. The prevalence of cigarette smoking among university students were 18.5% in Turkey,^[21] 24% in Pakistan,^[22] and 14.5% in Saudi Arabia.^[23]

Table 1: Demographic and key characteristics of the students by cigarette smoking and hookah smoking status

Variable	Cigarette smoking			Hookah smoking		
	No, n (%)	Yes, n (%)	P	No, n (%)	Yes, n (%)	P
Gender						
Male	130 (79.3)	34 (20.7)	<0.001	91 (55.5)	73 (44.5)	0.004
Female	346 (96.9)	11 (3.1)		245 (68.6)	112 (31.4)	
Marital status						
Single	448 (92.0)	39 (8.0)	0.104	313 (64.3)	174 (35.7)	0.691
Married	28 (82.4)	6 (17.6)		23 (76.6)	11 (32.4)	
Place of residence						
Parental house	221 (92.9)	17 (7.1)	0.309	157 (66.0)	81 (34.0)	0.462
Dormitory or other	253 (90.4)	27 (9.6)		176 (62.9)	104 (37.1)	
Employment status						
Yes	31 (81.6)	7 (18.4)	0.033	20 (52.6)	18 (47.4)	0.111
No	444 (92.3)	37 (7.7)		315 (65.5)	166 (34.5)	
Ever alcohol use						
No	462 (95.1)	24 (4.9)	<0.001	331 (68.1)	155 (31.9)	<0.001
Yes	14 (40.0)	21 (60.0)		4 (11.8)	30 (88.2)	
Hookah smoking						
No	329 (98.2)	6 (1.8)	<0.001	-	-	-
Yes	146 (79.3)	38 (20.7)		-	-	
Cigarette smoking						
No	-	-	-	329 (69.3)	146 (30.7)	<0.001
Yes	-	-		6 (13.6)	38 (86.4)	
Ever drug abuse						
No	460 (92.4)	38 (7.6)	<0.001	327 (65.5)	172 (34.5)	0.018
Yes	16 (69.6)	7 (30.4)		9 (40.9)	13 (59.1)	
Having a smoker friend						
No	406 (96.0)	17 (4.0)	<0.001	297 (70.4)	125 (29.6)	<0.001
Yes	70 (71.4)	28 (28.6)		39 (39.4)	60 (60.6)	
Smoker in the family						
No	340 (93.4)	24 (6.6)	0.011	255 (70.2)	108 (29.8)	<0.001
Yes	136 (86.6)	21 (13.4)		81 (51.3)	77 (48.7)	
Age (mean±SD)	19.5±2.2	20.6±4.0	0.072	19.6±2.4	19.6±2.5	0.975

SD=Standard deviation

Table 2: Logistic regression analysis of the relationship between “cigarette smoking” and “hookah smoking” and risk factors among 1st year university students

Variables	Cigarette smoking	P	Hookah smoking	P
	Adjusted OR (95% CI)		Adjusted OR (95% CI)	
Older age	1.12 (0.92-1.25)	0.605	1.09 (0.94-1.18)	0.806
Being male	5.87 (2.53-13.62)	<0.001	1.47 (0.72-2.31)	0.364
Being married	6.33 (1.80-22.31)	0.004	1.51 (0.78-2.24)	0.402
Having a smoker friend	1.36 (0.82-1.58)	0.301	2.06 (1.22-3.48)	0.007
Having smoker in the family	1.31 (0.84-1.43)	0.186	2.13 (1.40-3.24)	<0.001
Ever alcohol use	8.89 (3.52-22.90)	<0.001	5.97 (1.85-19.30)	0.003
Ever drug abuse	1.89 (0.76-2.83)	0.265	1.63 (0.78-2.24)	0.403
Hookah smoking	8.64 (3.23-22.47)	<0.001	-	-
Cigarette smoking	-	-	6.39 (2.47-16.52)	<0.001

OR=Odds ratio, CI=Confidence interval

The prevalence of hookah smoking (at least once per month) in our study was 4.1% (7.7% for males and 2.8% for females). A study conducted in Tabriz^[10] suggested that 8.5% of college students smoked at least once per month and 39.4% of students smoked hookah in some occasions.

Overall, our study indicated relatively low prevalence of cigarette and hookah smoking among 1st year students compared to the previous studies that measured the prevalence of cigarette and hookah smoking among university students in Iran as whole and western countries.

For example, Primack *et al.*^[24] reported that 40.5% of the United States college students had experienced hookah smoking in their lifetime, 30.6% smoked over the past year, and 9.5% smoked over the past 30 days. In Poland, 38% of high school and college students were reported to smoke hookah at least once in their life, and 22% of students were occasional hookah smoker (smoked once during the last 30 days).^[25] According to our study, it seems that the prevalence of hookah smoking among 1st year students is similar to high school students in Iran. A study of high school students in the northwest of Iran demonstrated that the prevalence of hookah smoking (at least once per month) was 5.2% (males, 10.4%; females, 1.4%). According to the latter study, 48.9% of high school students smoked hookah in some occasions.^[26]

Similar to previous studies,^[7,10,18,26,27] our findings emphasized the co-occurrence of risky behaviors. Considering co-occurrence of risky behaviors, co-changing is one of the most effective approaches to prevent high-risk behaviors. Co-occurrence of risky behaviors in our study further highlights the importance of implementing comorbid substance abuse prevention programs for students.

Our study has some limitations. First, the analysis is relying on self-reported data. Although we went to great lengths to ensure confidentiality and anonymity, we had no way of assessing underreporting of risk-taking behaviors. Therefore, our study may underestimate the actual prevalence of tobacco smoking and substance abuse among 1st year university students. Second, the cross-sectional nature of study cannot establish the causal direction between the correlates and risk-taking behaviors.

Conclusions

Our study showed considerably low prevalence of tobacco smoking, alcohol consumption, and illicit drug among 1st year students of QUMS. Special attention should be paid to the prevention of risk-taking behaviors among male students and students who have a smoker family member. The co-occurrence of risky behaviors also highlights the importance of interventions aimed at reducing or preventing different high-risk behaviors simultaneously. Longitudinal studies are necessary to approve the observed results of this study and thus allow for a certain generalization of the observations.

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Conflicts of interest

None.

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