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Tobacco Use and Substance Abuse in Students of Karaj Universities

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ABSTRACT

Background: It is clear that tobacco smoking and substance abuse have negative consequences on adolescent and youth's health. Tobacco smoking especially hookah smoking has increased worldwide especially among university students. This study aimed to determine the prevalence of risk-taking behaviors such as cigarette smoking, hookah smoking, alcohol use, and drug abuse and its predictors in students of Karaj universities.

Methods: This cross-sectional study took place in Karaj in January and February 2014. The randomly selected sample consisted of 1959 college students. A self-administered questionnaire was used to measure risk-taking behaviors as well as demographic and related risk factors. Logistic regression model was performed in data analysis.

Results: The prevalence of cigarette smoking was 9.3%. The prevalence of hookah smoking was 9.3%. 7% of students used illegal drugs and 9.5% of students used alcohol at least once in last 30 days. After adjustment for other factors, being male, living without parents, having smoker friends, and presence any smoker in the family were factors associated with students' risk-taking behaviors. The results showed the co-occurrence of risk-taking behaviors.

Conclusions: The prevalence of tobacco smoking and substance abuse, particular in males, are high. It seems that planning preventive interventions for this part of the population are necessary. This study emphasized the co-occurrence of risky behaviors, so, it is better high-risk behaviors simultaneously targeted at reducing or preventing interventions.

Keywords: Cigarette smoking, college students, risk-taking behaviors, substance abuse, water-pipe

INTRODUCTION

It is clear that tobacco smoking and substance abuse have negative consequences on adolescent and youth's

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health.[1] The prevalence of cigarette smoking has been reported as 20.8% in the United States,[2] as 22% in the United Kingdom, and as 17.5% in Iran.[3] Due to the influence of early substance dependence on the future of adolescents and young adults, tobacco smoking, and substance abuse among university students remains an important area of research. University students are at high-risk of tobacco smoking and substance abuse as they become exposed to greater availability of these substances and may be subjected to peer pressure. Furthermore, they face social, emotional, and educational challenges when they enter the university. Therefore, tobacco smoking and substance abuse are prevalent in university students.[4-7] Numerous studies have shown the negative consequences of risk-taking behaviors associated with health in youth.[8,9]

The number of cigarette smoking among university students has been reported between 8.6% and 28.6% in studies in several countries.[10-15] This wide range is primarily due to the variety of the definitions of smoking and the location where such studies have taken place. Primack *et al*.[16] found that the prevalence of hookah smoking among the United States college students in a lifetime, over the past year, and over the past 30 days were 40.5%, 30.6%, and 9.5%, respectively. The results of Ghoreshi and Shajari study in Zanjan showed that 13% and 4.2% of university students were occasional or regular hookah smokers, respectively.[17] Mohammadpoorasl *et al*.[18] showed that 8.5% of Tabriz universities students used hookah at least once a month. Studies showed that 2.6–7.6% and 8–17% of university students in Iran were drug abusers and used alcohol at least once in the past 30 days, respectively.[6,19-21]

The incidence of high-risk behaviors among Iranian college students has increased.[19,20,22,23] The aim of the study was to determine the prevalence of risk-taking behaviors such as cigarette smoking, hookah smoking, alcohol use, and drug abuse and its predictors in students of Karaj universities.

METHODS

Study design and participants

A sample of 2084 college students was selected by random proportional cluster sampling by considering student's study fields from seven universities in Karaj, Alborz Province of Iran. The sample size was calculated as 1928 assuming the prevalence of substance abuse of 7.6%[19] and considering the comparison of two genders and design effect. During January and February 2014, a self-administrated questionnaire was distributed to the students. The survey questionnaire has used in several studies in Iran, and its validity and reliability have approved.[19,24] The respondents were free to participating in the study, and there is no need to enter their personal information in the questionnaire. This study and its questionnaire have been approved by the Ethics Committee of Alborz University of Medical Sciences.

Study instrument

The questions were aimed at obtaining information on cigarette smoking, hookah use, drug use, alcohol consumption as well as demographic information.

In this study, the cigarette smoking was measured as a nonsmoker, experimenter (<100 cigarettes in lifetime), occasional user, regular smoker, and ex-smoker. The number of cigarette smokers according to these answers was calculated. However, in evaluating of variables relating to cigarette smoking, the respondents were classified in three categories of cigarette smoking:

1. Nonsmoker
2. Experimenter (experimenter and ex-smoker)
3. Regular smoker (occasionally user and regular smoker).

For logistic regression analyses, current smokers who had smoked 100 cigarettes or more in their lifetime were considered cigarette smokers.

Hookah smoking was measured by a question including the following answers: Nonuser, only tried, occasional user, used once per month, and used once per week. The number of hookah smoking according to these answers was then calculated. However, to consider the factors relating to hookah smoking, the respondents were classified in three statuses of hookah smoking as represented below:

- Nonsmoker: Students who have never smoked hookah (even a puff)
- Experimenter: Students who have tried the hookah smoking (even a puff) or have smoked occasionally
- Regular hookah smoker: Students who use hookah at least once per month.

For logistic regression analyses, students who use hookah at least once per month were considered hookah smokers.

Alcohol use was defined as consuming alcohol in the past 30 days. The use of any illicit drugs such as Ritalin, methamphetamine, ecstasy, cannabis, opium, and heroin was regarded as drug users.

Statistical analysis

In this study, the method sampling was cluster sampling, and it can affect the confidence intervals. Hence, survey analysis has been used in all analyses. Quantitative and qualitative data in results section have presented as mean ± standard deviation and frequency (percentage), respectively. The Chi-square test, *t*-test, and one-way ANOVA test were used in univariate analyses. For multiple analyses, the logistic regression model was used. Stata 10 software (StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP) software was used in data analysis.

RESULTS

Out of 2084 selected students, 1959 students completed the study questionnaire (response rate: 94.0%). The mean age of participants was 22.46 ± 4.55 years (minimum: 17 and maximum: 47). 658 (33.6%) and 1301 (66.4%) of participants were male and female, respectively.

Table 1 shows the frequency distribution of the substance abuse by gender. As shown in Table 1, 82% of the students do not smoke cigarettes, 48.8% are nonhookah smoker, 90.5% never consumed alcohol in the past 30 days, and 93% have not experienced of drug use. It is noted that in all categories boys are higher users than girls ($P < 0.001$).

Table 2 presents the demographic characteristics of the students by cigarette and hookah smoking. As shown in Table 2, gender, living status, having job along with education, having smoker friend, presence of a smoker in the family and age had a significant correlation with cigarette and hookah smoking. The results also showed that the hookah smoking, cigarette smoking, alcohol consumption, and drug abuse were co-occurred.

Table 3 presents the demographic and key characteristics of the students by alcohol consumption in the past 30 days and drug use. As shown in Table 3, gender, living status, having a job along with education, having smoker friend, and presence of a smoker in the family had a significant relationship with alcohol consumption in the past 30 days and drug use.

Table 1: Prevalence of substance abuse in college students by gender

Tobacco use	Boys, *n* (%)	Girls, *n* (%)	Total, *n* (%)	95% CI
Cigarette smoking				
Nonsmoker	453 (68.8)	1153 (88.6)	1606 (82.0)	80.2-83.6
Experimenter	60 (9.1)	82 (6.3)	142 (7.2)	6.2-9.3
Occasional user	47 (7.1)	42 (3.2)	89 (4.5)	3.7-5.6
Regular smoker	78 (11.9)	16 (1.2)	94 (4.8)	3.9-5.8
Ex-smoker	20 (3.0)	8 (0.6)	28 (1.4)	1.0-2.1
Hookah smoking				
Nonsmoker	246 (37.4)	710 (54.6)	956 (48.8)	46.6-51.0
Experimenter	151 (22.9)	306 (23.5)	457 (23.3)	21.5-25.3
Occasional user	168 (25.5)	195 (15.0)	363 (18.5)	16.9-20.3
At least once a month	32 (4.9)	35 (2.7)	67 (3.4)	2.7-4.3
At least once a week	61 (9.3)	55 (4.2)	116 (5.9)	5.0-7.1
Alcohol consumption in the past 30 days				
Never	541 (82.2)	1232 (94.7)	1773 (90.5)	89.1-91.7
1-3 times	71 (10.8)	50 (3.8)	121 (6.2)	5.2-7.3
>3 times	46 (7.0)	19 (1.5)	65 (3.3)	2.6-4.4
Experience of drug abuse				
No	571 (86.8)	1251 (96.2)	1822 (93.0)	91.8-94.1
Yes	87 (13.2)	50 (3.8)	137 (7.0)	6.0-8.2

CI=Confidence interval

Four logistic models were used to evaluate the relationship of all variables listed in Tables 2 and 3 that significant in 0.2 level with cigarette smoking, hookah smoking, alcohol consumption, and drug abuse. The results of these analyses [Table 4] indicated that being male, living in dormitory in comparison of parental house, having job along with education, having smoker friend, ever drug abuse, alcohol consumption in the past 30 days and hookah smoking increases the risk of cigarette smoking. Living in dormitory in comparison of parental house, having smoker in the family, having smoker friend, alcohol consumption in the past 30 days and cigarette smoking increases the risk of hookah smoking but being married has protective effect for hookah smoking.

The results of Table 5 indicate that living in single house in comparison of parental house, having smoker in the family, having smoker friend, ever drug abuse, hookah smoking, and cigarette smoking increases the risk of alcohol consumption in the past 30 days but being married has protective effect for alcohol consumption in the past 30 days. Being married, living in dormitory or single house in comparison of parental house, having job along with education, having smoker friend, being regular hookah smoker, and cigarette smoking increases the odds of being drug abuser [Table 5].

DISCUSSION

In this study, 18% of the students (31.2% of the males and 11.4% of the females) have experienced cigarette smoking, and only 4.8% (11.9% of the males and 1.2% females) have been regular smokers. In addition, 4% of the students (7.1% of the males and 3.2% of the females) were occasional cigarette smokers. These findings are consistent with other national studies and studies in neighboring countries. In a meta-analysis study, entitled "the prevalence of cigarette smoking among students of Iran's universities" by Haghdoost and Moosazadeh in 2013,[15] 22 valid articles were selected. The prevalence of smoking among male students was 13.4–39.9% compared with 0.7–25.5% among female students. The results of meta-analysis demonstrated that prevalence of cigarette smoking among male and female students in Iran's universities was 19.8% (17.7–21.9) and 2.2% (1.4–3.02), respectively. The occurrence of cigarette smoking in university students in other countries was as follows: 18.5% in Turkey,[25] 24% in Pakistan,[26] and 14.5% in Saudi Arabia.[27] Hookah smoking was more prevalent than cigarette smoking among Iranian adults and youth.[7,28] The prevalence of hookah smoking (at least once per month) in this study was 9.3%. We also realized that 51.1% of the samples had at least tried

Table 2: Demographic and key characteristics of the students by cigarette smoking and hookah smoking

Variable	Cigarette smoking				Hookah smoking			
	NS*, *n* (%)	ES, *n* (%)	RS, *n* (%)	*P*	NS, *n* (%)	ES, *n* (%)	RS, *n* (%)	*P*
Gender								
Male	453 (68.8)	80 (12.2)	125 (19.0)	<0.001	246 (37.4)	319 (48.5)	93 (14.1)	<0.001
Female	1153 (88.6)	90 (6.9)	58 (4.5)		710 (54.6)	501 (38.5)	90 (6.9)	
Marital status								
Single	1310 (82.3)	135 (8.5)	146 (9.2)	0.690	771 (48.5)	657 (41.3)	163 (10.2)	0.016
Married	296 (80.4)	35 (9.5)	37 (10.1)		185 (50.3)	163 (44.3)	20 (5.4)	
Living in								
Parental home	1190 (84.5)	110 (7.8)	108 (7.7)	<0.001	684 (48.6)	579 (41.1)	145 (10.3)	0.006
Dormitory	188 (78.0)	23 (9.5)	30 (12.4)		127 (52.7)	100 (41.5)	14 (5.8)	
Single house	34 (57.6)	8 (13.6)	17 (28.8)		22 (37.3)	26 (44.1)	11 (18.6)	
Others	194 (77.3)	29 (11.6)	28 (11.2)		123 (49.0)	115 (45.8)	13 (5.2)	
Having job								
Yes	395 (69.5)	77 (13.6)	96 (16.9)	<0.001	223 (39.3)	266 (46.8)	79 (13.9)	<0.001
No	1203 (87.2)	92 (6.7)	85 (6.2)		726 (52.6)	550 (39.9)	104 (7.5)	
Alcohol consumption in the past 30 days (times)								
Never	1539 (86.8)	131 (7.4)	103 (5.8)	<0.001	930 (52.5)	722 (40.7)	121 (6.8)	<0.001
1-3	42 (34.7)	31 (25.6)	48 (39.7)		13 (10.7)	71 (58.7)	37 (30.6)	
>3	25 (38.5)	8 (12.3)	32 (49.2)		13 (20.0)	27 (41.5)	25 (38.5)	
Hookah smoking								
Never smoker	914 (95.6)	25 (2.6)	17 (1.8)	<0.001	-	-	-	-
Experimenter	598 (72.9)	110 (13.4)	112 (13.7)		-	-	-	
Regular smoker	94 (51.4)	35 (19.1)	54 (29.5)		-	-	-	
Ever drug abuse								
No	1558 (85.5)	146 (8.0)	118 (6.5)	<0.001	927 (50.9)	746 (40.9)	149 (8.2)	<0.001
Yes	48 (35.0)	24 (17.5)	65 (47.4)		29 (21.2)	74 (54.0)	34 (24.8)	
Having smoker friend								
No	1115 (94.4)	44 (3.7)	22 (1.9)	<0.001	724 (61.3)	401 (34.0)	56 (4.7)	<0.001
Yes	491 (63.1)	126 (16.2)	161 (20.7)		232 (29.8)	419 (53.9)	127 (16.3)	
Smoker in the family								
No	1120 (85.4)	92 (7.0)	100 (7.6)	<0.001	722 (55.0)	500 (38.1)	90 (6.9)	<0.001
Yes	482 (75.0)	78 (12.1)	83 (12.9)		231 (35.9)	319 (49.6)	93 (14.5)	
Age (mean±SD)	22.2±4.4	23.5±5.5	23.5±4.6	<0.001	22.4±4.7	22.6±4.5	22.0±3.7	0.287

*NS=Never smoker. ES=Experimenter smoker, RS=Regular smoker, SD=Standard deviation

hookah smoking in some occasions. These values in Mohammadpoorasl *et al*.[18] study in Tabriz were 8.5% and 39.4%, respectively. The results of Ghoreshi and Shajari study in Zanjan showed that 13% and 4.2% of university students were occasionally and regular hookah user, respectively.[17] These results in comparison with studies undertaken in western countries are relatively similar. Primack *et al*.[16] found that the prevalence of hookah smoking among the United States college students in a lifetime, over the past year and the past 30 days were 40.5%, 30.6%, and 9.5%, respectively. Thirty-eight percent of the students in Poland had smoked water pipe at least once in their life, and 22% had smoked hookah during the last 30 days.[29] In this study, 9.5% of students had alcohol consumption in the past 30 days, and 7% had experience of drug abuse. These findings are similar to other national researches and indicated that alcohol consumption and drug abuse among the university students of Karaj city in Iran is generally lower than other countries. Studies showed that 2.6–7.6% and 8–17% of university students in Iran were drug users and used alcohol at least once in the past 30 days.[6,19-21,23] Data from the United States revealed that more than 60% of American college students reported past month alcohol use and 14.5% of students reported past 30 days use of marijuana.[30,31] Lower rate of alcohol use and drug abuse in Iran can be explained as follow: (1) Legal prohibition of drug abuse and religious and legal prohibition of alcohol use; (2) the society norms about alcohol use and drug abuse; and (3) although survey was anonymous, students still may be reserved about information given.

Table 3: Demographic and key characteristics of the students by alcohol consumption and drug abuse

Variable	Alcohol consumption in the past 30 days				Ever drug abuse		
	Never, *n* (%)	1-3 times, *n* (%)	>3 times, *n* (%)	*P*	No, *n* (%)	Yes, *n* (%)	*P*
Gender							
Male	541 (82.2)	71 (10.8)	46 (7.0)	<0.001	571 (86.8)	87 (13.2)	<0.001
Female	1232 (94.7)	50 (3.8)	19 (1.5)		1251 (96.2)	50 (3.8)	
Marital status							
Single	1433 (90.1)	102 (6.4)	56 (3.5)	0.373	1490 (93.7)	101 (6.3)	0.020
Married	340 (92.4)	19 (5.2)	9 (2.4)		332 (90.2)	36 (9.8)	
Living in							
Parental home	1289 (91.5)	80 (5.7)	39 (2.8)	<0.001	1335 (94.8)	73 (5.2)	<0.001
Dormitory	214 (88.8)	14 (5.8)	13 (5.4)		218 (90.5)	23 (9.5)	
Single house	39 (66.1)	12 (20.3)	8 (13.6)		42 (71.2)	17 (28.8)	
Others	231 (92.0)	15 (6.0)	5 (2.0)		227 (90.4)	24 (9.6)	
Having job							
Yes	473 (83.3)	62 (10.9)	33 (5.8)	<0.001	491 (86.4)	77 (13.6)	<0.001
No	1290 (93.5)	59 (4.3)	31 (2.2)		1320 (95.7)	60 (4.3)	
Ever drug abuse							
No	1690 (92.8)	92 (5.0)	40 (2.2)	<0.001	-	-	-
Yes	83 (60.6)	29 (21.2)	25 (18.2)		-	-	
Having smoker friend							
No	1152 (97.5)	21 (1.8)	8 (0.7)	<0.001	1151 (97.5)	30 (2.5)	<0.001
Yes	621 (79.8)	100 (12.9)	57 (7.3)		671 (86.2)	107 (13.8)	
Smoker in the family							
No	1219 (92.9)	56 (4.3)	37 (2.8)	<0.001	1243 (94.7)	69 (5.3)	<0.001
Yes	550 (85.5)	65 (10.1)	28 (4.4)		575 (89.4)	68 (10.6)	
Age (mean±SD)	22.4±4.9	22.8±4.3	22.9±4.0	0.527	22.4±4.5	23.9±5.3	0.001

SD=Standard deviation

Table 4: Logistic regression analysis of the relationship between cigarette smoking status and hookah smoking status and risk variables

Variables	Cigarette smoking			Hookah smoking		
	OR	95% CI	*P*	OR	95% CI	*P*
Gender (boy/girl)	1.53	1.02-2.92	0.041	1.14	0.78-1.68	0.500
Being married	1.01	0.49-2.08	0.985	0.40	0.24-0.67	0.001
Living in						
Parental home (reference)	1	-	-	1	-	-
Dormitory	1.84	1.07-3.17	0.027	0.045	0.24-0.81	0.008
Single house	1.25	0.58-2.73	0.568	0.72	0.32-1.60	0.415
Others	1.12	0.55-2.28	0.752	0.76	0.30-1.91	0.552
Having job	1.55	1.04-2.31	0.030	1.43	0.94-2.18	0.099
Having smoker in the family	1.01	0.68-1.48	0.989	1.87	1.34-2.61	<0.001
Having a smoker friend	4.96	2.92-8.41	<0.001	1.97	1.35-2.89	<0.001
Drug abuse (ever use)	4.62	2.91-7.32	<0.001	1.18	0.69-2.01	0.540
Alcohol consumption in the past 30 days (times)						
Never (reference)	1	-	-	1	-	-
1-3	3.24	2.01-5.25	<0.001	2.39	1.47-3.89	<0.001
>3	4.25	2.28-7.92	<0.001	3.79	2.05-7.00	<0.001
Hookah smoking						
Never smoker (reference)	1	-	-	-	-	-
Experimenter	5.05	2.83-8.98	<0.001	-	-	-

Contd...

Table 4: Contd...

Variables	Cigarette smoking			Hookah smoking		
	OR	95% CI	*P*	OR	95% CI	*P*
Regular smoker	7.84	4.05-15.20	<0.001	-	-	-
Cigarette smoking						
Never smoker (reference)	-	-	-	1	-	-
Experimenter	-	-	-	2.53	1.58-4.06	<0.001
Regular smoker	-	-	-	3.06	1.92-4.86	<0.001

OR=Odds ratio, CI=Confidence interval

Table 5: Logistic regression analysis of the relationship between alcohol consumption in the past 30 days and drug abuse and risk variables

Variables	Alcohol consumption in the past 30 days			Drug abuse		
	OR	95% CI	*P*	OR	95% CI	*P*
Being married	0.59	0.35-0.97	0.040	1.62	1.01-2.61	0.046
Living in						
Parental home (reference)	1	-	-	1	-	-
Dormitory	1.33	0.77-2.30	0.304	2.02	1.16-3.54	0.014
Single house	2.26	1.11-4.59	0.025	2.81	1.35-5.83	0.006
Others	1.27	0.51-3.19	0.608	0.95	0.42-2.13	0.893
Having job	1.45	0.99-2.10	0.053	1.86	1.22-2.84	0.004
Having smoker in the family	1.52	1.06-2.18	0.025	1.48	0.99-2.21	0.056
Having a smoker friend	3.51	2.22-5.56	<0.001	2.00	1.22-3.28	0.006
Drug abuse (ever use)	2.09	1.29-3.40	0.003	-	-	-
Hookah smoking						
Never smoker (reference)	1	-	-	1	-	-
Experimenter	2.03	1.23-3.35	0.006	1.68	0.96-2.94	0.067
Regular smoker	4.81	2.69-8.60	<0.001	3.51	1.83-6.72	<0.001
Cigarette smoking						
Never smoker (reference)	1	-	-	1	-	-
Experimenter	2.66	1.64-4.32	<0.001	2.76	1.55-4.90	0.001
Regular smoker	4.90	3.09-7.76	<0.001	7.15	4.33-11.80	<0.001

OR=Odds ratio, CI=Confidence interval

Findings show that our studied risk-taking behaviors (cigarette smoking, hookah smoking, alcohol use, and drug use) are much more prevalent in males than in females. These results are similar to previous studies results performed in Iran.[18,19,32-35]

According to the findings of the present study, living in dormitory or single house in comparison of parental house was a strong risk factor for cigarette smoking, hookah smoking, alcohol use, and drug abuse. These results are similar to the results of the previous study performed in Iran.[18,19,35] The first limitation of the present study is relying on self-report data. Although we tried to increase the validity of answers by ensuring confidentiality and anonymity, we had no way of assessing under-reporting of high-risk behaviors. Finally, due to cross-sectional design of the study, the conclusions about associations between the risk factors and high-risk behaviors are limited.

CONCLUSIONS

The prevalence of tobacco smoking and substance abuse, particular in males, are high. It seems that planning preventive interventions for this part of the population are necessary. Living in dormitory or single house in comparison of parental house was a strong risk factor for cigarette smoking, hookah smoking, alcohol use, and drug use. This study emphasized the co-occurrence of risky behaviors, so, it is better high-risk behaviors simultaneously targeted at reducing or preventing interventions. Future studies should assess the factors affecting smoking initiation, as well as effective techniques for the prevention of smoking initiation and substance abuse in Iranian students.

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Conflicts of interest

There are no conflicts of interest.

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