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Smoking and Substance Abuse among Medical Students in Iran

Hadi Ghasemi [a], Mohammad Pooyan Jadidfard [b], Mehrdad Asgharian [c]

[a]Associate Professor, Dept. of Community Oral Health, School of Dentistry, Shahid Beheshti University of Medical Sciences.
[b]Assistant Professor, Dept. of Community Oral Health, School of Dentistry, Shahid Beheshti University of Medical Sciences.
[c]Private dentist.
Correspondence to Hadi Ghasemi (email:ha.ghasemi@sbmu.ac.ir)
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Objectives Drug abuse is a critical health problem in human societies. This study aimed to evaluate the prevalence and determinants of drug abuse among students in a medical university in Iran.
Methods This cross-sectional study was performed in 2016 on a convenient sample of 800 undergraduate students in a medical university in Tehran, Iran. Data were gathered by means of a self-administered questionnaire inquiring the students' age, gender, marital status, home city, living status, smoking, and drug abuse including history, frequency and type. Statistical analyses were performed by the Chi-square test and logistic regression models.
Results The mean age of the respondents was 23.5 years; 67% were males, and 70% were single. Totally, 15% of the students reported cigarette smoking and ≤ 6% used other drugs. The frequency of substance abuse by male students was significantly higher than that by female students (P<0.01). Alcohol consumption was reported by 7% of the students, and had a significantly higher frequency among females (P=0.02). Older students, those spending their free time alone, and those without a job had higher frequency of drug abuse (P≤0.001).
Conclusion Prevalence of drug abuse was low among medical students evaluated in this study, and most of them reported no smoking. Some demographic and lifestyle factors may predispose students to smoking and drug abuse. Provision of preventive programs including surveillance, consultation and treatment will help university students avoid such risky behaviors.
Keywords Smoking; Substance Abuse; Students; Health Occupations

Introduction

Smoking and drug abuse are two undesirable individual and social behaviors which are practiced by people from different social classes and countries. Such risky behaviors usually begin with occasional minor use or in response to curiosity but eventually result in an ethical and mental decline in dependent individuals.[1, 2] Smoking and drug abuse threaten global health as one-fifth of the world's population over 15 years of age are estimated to be current smokers[3], and a quarter of one billion 15-64-year-old individuals are estimated to use at least one illicit drug.[4]

University students comprise a major risk group for smoking and drug abuse. Characteristics of this particular period of life such as efforts to become independent, separation from the family, and pressures due to academic responsibilities make students vulnerable to smoking and drug abuse.[5] This may ruin the students' overall academic performance[6] and reduce their efficiency for future life responsibilities. Smoking and drug abuse by university students have received a lot of attention as a global health issue in recent years.[7-10]

Prevalence of smoking and drug abuse has been widely studied by questionnaires in university students of different countries. The prevalence of smoking, for example, was reported to be 1.4% among 773 students of nine medical schools in Thailand [11], 7% among 11,954 students from 50 universities offering medical/health professional programs in China [12], 19% among 1,217 third-year medical students of 12 medical schools in Turkey [13], and 26% among 163 medical students attending all seven medical schools in Lebanon. [14] The prevalence of drug abuse was as high as 26% among 855 medical students from 49 medical colleges throughout the United States[15], 5-25% among 3706 students attending seven universities in England, Wales, and Northern Ireland[16], 20% among 230 undergraduate and postgraduate medical students in a private medical college in north India[17], 14% among 1,587 male students attending private and public universities in Kuwait (18), 2-16% among 7,923 students from Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam[19], and 13-19% in different universities in Iran. [20-22]

University students of healthcare fields have the ethical as well as the professional responsibility to work for promotion of public health. They, therefore, are expected to firstly avoid adverse health effects of smoking and drug abuse for their own health and secondly to help smoker patients to quit smoking and avoid any kind of drug abuse. In Iran, with about 200,000 students studying in 60 medical universities nationwide, continuous monitoring of the rate and risk factors of smoking and drug abuse during medical education at a national level and also in each university is an important task. The present study aimed to evaluate the prevalence of smoking and drug abuse and factors affecting such unhealthy behaviors among the students of a medical university in Tehran, the capital of Iran.

Methods and Materials

The present cross-sectional study was conducted on

undergraduate students of one of the medical universities in Tehran, Iran. The target population of this study was a convenient sample of undergraduate students attending all eleven departments of the university. During April 2016, one of the authors (MA) visited each department and asked the present students to fill out the questionnaire. Each participant returned the completed questionnaire immediately and the process continued until the predetermined sample size was reached.

The process of data collection was designed to reach 800 completed questionnaires. The sample size was calculated based on the following calculation: If 20% of students are assumed to have drug abuse, 682 students would be required in order to estimate the rate of drug abuse in the entire population of students in the university with 3% margin of error and 95% confidence interval (CI). To compensate for approximately 15% probable incomplete questionnaires, an additional 120 were added to enroll a final sample of 800 medical students. Efforts were made to distribute questionnaires in each department according to the number of attending students.

The questionnaire included the following parts: demographic questions regarding age, gender, marital status, home city (capital or other cities), questions about students' living status (in dormitory, with parents, alone, or with friends), having a job after school hours, and questions regarding the students' reported frequency of cigarette smoking, alcohol consumption, and drug abuse [including hashish, opium, marijuana, bhang (a form of cannabis), cocaine, opium dross (opium residue), Ritalin, and sedatives, anti-anxiety drugs, or narcotic drugs]. In the present text, terms "drug abuse" and "substance abuse" are used when referring to the use of the abovementioned illegal substances. Regarding cigarette smoking, alcohol consumption or drug abuse, the following question was asked: "Do you use cigarettes/alcohol/drug?" with the following answer choices: 1. Not at all, 2. Not currently, 3. Occasionally, whenever available, 4. Once a week, 5. Once a day, 6. More than once a day. For further analysis, a dichotomous variable was developed to allocate each student to one of the following two categories of user (answer choices 3-6) or non-user (answer choices 1-2).

The questionnaire was developed originally using the related questions from similar studies.[15, 16] The validity of the questionnaire was confirmed by making revisions based on recommendations of a group of professors at the Department of Community Oral Health of Shahid Beheshti School of Dentistry. To assess the reliability of the questionnaire, a test-retest process was conducted on 20 students with a 2-week period which resulted in a kappa statistic of >0.9.

The Ethics Committee of Shahid Beheshti School of Dentistry approved this study (ethic code: IR.SBMU.RIDS.REC.1395.206). All respondents were ensured about the confidentiality of their information, and their written informed consent was obtained.

Descriptive statistics regarding the frequency and percentage of students belonging to each category were reported. The Chi-square test was used to analyze the differences in frequency values. To evaluate the factors related to students' reported drug abuse, cigarette smoking and alcohol consumption, multiple logistic regression models were fitted to the data while the students' gender, age, living with or without parents, home city, marital status, and spending free time served as covariates. The corresponding odds ratios (OR) and their 95% CIs were calculated. The goodness of fit of the models was assessed by the Hosmer-Lemeshow test.

Results

In total, 800 students completed the questionnaires. The mean age of students was 23.5±1.9 years; 67% were males, and 70% were single. As shown in Table 1, about two-thirds of the students were from cities other than the capital city of Tehran, one-third lived in dormitories, one-third reported to spend their free time alone, and more than 80% reported to have no job after school hours.

Table 1. Distribution (%) of students (n=800) based on demographic factors.

		All (%)	Male (%)	Female (%)
Marital status	Single	563 (70)	369 (76)	194 (61)
	Married	237 (30)	114 (24)	123 (39)
Age (years)	≤ 22	221 (27)	111 (35)	110 (23)
	23-25	507 (63)	190 (60)	317 (66)
	≥ 26	72 (10)	16 (5)	56 (12)
Home city	Capital	218 (27)	127 (26)	91 (29)
	Other cities	582 (73)	356 (74)	226 (71)
Living status	In dormitory	258 (32)	201 (41)	57 (18)
	With parents	303 (38)	163 (34)	140 (44)
	Home single	186 (23)	94 (20)	92 (29)
	Home with friends	53 (7)	25 (5)	28 (9)
Spending free time with	Friends	175 (22)	116 (24)	59 (19)
	Family	225 (28)	102 (21)	123 (39)
	Fiancé	129 (16)	46 (10)	83 (26)
	Alone	271 (34)	219 (45)	52 (16)
Having a job**	Yes	124 (16)	108 (22)	16 (5)
	No	676 (84)	375 (78)	301(95)

* Statistical evaluation by the Chi-square test.
** After school hours.

Table 2 shows the distribution of the students' self-reported drug abuse. Of the whole respondents, 15% reported cigarette smoking occasionally or always; this included 21% of male and 6% of female students (P<0.001). Regarding alcohol consumption, 7% of the respondents reported occasional consumption. Frequency of alcohol consumption by females (10%) was significantly higher than that by males (5%) (P<0.05).

Further analysis showed that about half of female students who reported alcohol consumption were divorced.

Table 2. Distribution (%) of students (n=800) according to their self-reported drug abuse, cigarette smoking, and alcohol consumption.

		All (%)	Males (%)	Females (%)	P-value*
Cigarette smoking	Yes	123 (15)	103 (21)	20 (6)	<0.001
	No	677 (85)	380 (79)	297 (94)	
Alcohol consumption	Yes	56 (7)	26 (5)	30 (9)	0.02
	No	744 (93)	457(95)	287 (91)	
Hashish	Yes	41 (5)	25 (5)	16 (5)	1.00
	No	759 (95)	458 (95)	301 (95)	
Opium	Yes	24 (3)	24 (5)	0 (0)	<0.001
	No	776 (97)	459 (95)	317 (100)	
Marijuana	Yes	50 (6)	34 (7)	16 (5)	0.29
	No	750 (94)	449 (93)	301(95)	
Bhang	Yes	24 (3)	24 (5)	0 (0)	<0.001
	No	776 (97)	459 (95)	317 (100)	
Cocaine	Yes	9 (1)	9 (1)	0 (0)	0.01
	No	791 (99)	474 (99)	317 (100)	
Burned opium	Yes	15 (2)	15 (3)	0 (0)	0.001
	No	785 (98)	468 (97)	317 (100)	
Ritalin	Yes	15 (2)	15 (3)	0 (0)	0.001
	No	785 (98)	468 (97)	317 (100)	
Sedative or anti-anxiety drugs	Yes	15 (2)	15 (3)	0 (0)	<0.001
	No	785 (98)	468 (97)	317 (100)	
Narcotic dugs	Yes	15 (2)	15 (3)	0 (0)	0.001
	No	785 (98)	468 (97)	317 (100)	

* Statistical evaluation by the Chi-square test

Using marijuana and hashish was reported by 5-6% of the respondents with no gender difference (P>0.05). From 2% to 5% of male students reported occasional use of opium, bhang, cocaine, opium dross, Ritalin, and sedative, anti-anxiety or narcotic drugs.

Table 3 presents the association of some demographic factors with drug abuse, cigarette smoking, and alcohol consumption among these students. Except for alcohol consumption, male students were significantly more likely than female students to report drug abuse (P≤0.05). Cigarette smoking and alcohol consumption were more prevalent among students who did not live with their parents (P≤0.03). For all types of studied drugs, the usage prevalence was higher among older students, those spending their free time alone, and those without a job (P≤0.001).

Table 4 shows the results of three logistic regression models explaining factors related to the students' reported cigarette smoking, alcohol consumption, or drug abuse. The likelihood of being a cigarette smoker was higher for male students (OR=3.3, 95%CI=0.2-0.5) and those who reported living alone (OR=2.0, 95% CI=1.3-3.3). The likelihood of alcohol consumption was higher for female (OR=8.7, 95% CI=3.0-25.0), older (OR=3.7, 95%CI=2.5-5.5) and single (OR=10, 95% CI=0.0-0.5) students. The likelihood of drug abuse was higher for older students (OR=1.4, 95% CI=1.1-1.6) from the capital (OR=5.0, 95% CI=0.0-0.6) and students living alone (OR=10.7, 95% CI=4.7-24.0)

Table 3. Distribution (%) of students (n=800) who reported using different types of drugs based on their background factors.

		All (%)	Cigarette smoking (%)	Alcohol consumption (%)	Drug abuse* (%)
Gender	Male	483 (60)	103 (21)	26 (5)	43 (9)
	Female	317 (40)	20 (6)	30 (10)	16 (5)
	P-value		<0.001	0.03	0.05
Marital status	Single	563 (70)	89 (16)	30 (7)	42 (8)
	Married	237 (30)	34 (14)	17 (7)	17 (7)
	P-value		0.66	1.00	1.00
Age (years)	≤ 22	221 (27)	45 (20)	1 (0.5)	16 (7)
	23-25	507 (63)	54 (11)	32 (6)	20 (4)
	≥ 26	72 (10)	24 (33)	23 (32)	23 (32)
	P-value		<0.001	<0.001	<0.001
Home city	Capital	218 (27)	27 (12)	24 (11)	21 (10)
	Other cities	582 (73)	96 (17)	32 (6)	38 (7)
	P-value		0.15	0.008	0.17
Living status	With parents	303 (38)	36 (12)	9 (3)	21 (7)
	Without parents	497 (62)	87 (18)	47 (10)	38 (8)
	P-value		0.03	<0.001	0.78
Spending free time	Alone	271 (34)	67 (25)	41 (15)	47 (17)
	Not alone	529 (66)	56 (11)	15 (3)	12 (2)
	P-value		<0.001	<0.001	<0.001
Having a job	Yes	124 (16)	0 (0)	0 (0)	0 (0)
	No	676 (84)	123 (18)	56(8)	59 (9)
	P-value		<0.001	0.001	0.001

*Using either hashish, opium, marijuana, bhang, cocaine, burned opium, sedative or narcotic drugs, or Ritalin
Statistical analysis by the Chi-square test

Table 4. Determinants of drug abuse by students (n=800) by means of three similar logistic regression models.

	B	SE	OR	95% CI	P-value
Cigarette smoking (0=no, 1=yes)					
Gender (0=male, 1=female)	-1.23	0.26	0.3	0.2-0.5	<0.001
Age (years)	0.00	0.06	1.0	0.8-1.1	0.89
Living status (0=with parents, 1= without parents)	0.22	0.30	1.2	0.7-2.2	0.45
Home city (0=capital, 1=non-capital)	0.02	0.30	1.0	0.5-1.8	0.94
Marital status (0=single, 1=married)	0.37	0.26	1.4	0.8-2.4	0.15
Spending free time (0=not alone, 1=alone)	0.73	0.23	2.0	1.3-3.3	0.002
Constant and goodness of fit[1] (*P*)	-2.13	1.40			*P*<0.001
Alcohol consumption (0=no, 1=yes)					
Gender (0=male, 1=female)	2.17	0.53	8.7	3.0-25.0	<0.001
Age (years)	1.31	0.20	3.7	2.5-5.5	<0.001
Living status (0=with parents, 1= without parents)	22.8	1158	>100	0.0-0.0	0.98
Home city (0=capital, 1=non-capital)	-0.23	1158	0.0	0.0-0.0	0.98
Marital status (0=single, 1=married)	-1.77	0.60	0.1	0.0-0.5	0.003
Spending free time (0=not alone, 1=alone)	20.6	1158	>100	0.0-0.0	0.98
Constant and goodness of fit[1] (*P*)	-55.2	1158			*P*=0.38
Drug abuse[2] (0=no, 1=yes)					
Gender (0=male, 1=female)	0.32	0.17	1.4	0.6-2.7	0.36
Age (years)	0.30	0.08	1.4	1.1-1.6	<0.001
Living status (0=with parents, 1= without parents)	0.13	0.51	1.1	0.4-3.1	0.79
Home city (0=capital, 1=non-capital)	-1.55	0.53	0.2	0.0-0.6	0.004
Marital status (0=single, 1=married)	-0.39	0.40	0.7	0.3-1.4	0.32
Spending free time (0=not alone, 1=alone)	2.37	0.42	10.7	4.7-24	<0.001
Constant and goodness of fit[1] (*P*)	-10.2	1.98			*P*<0.001

B: Regression coefficient, SE: Standard error, OR: Odds ratio
1 Hosmer-Lemeshow test
2 Using either hashish, opium, marijuana, bhang, cocaine, burned opium, sedative or narcotic drugs, Ritalin

Discussion

The present findings revealed that these students mostly reported no smoking or drug abuse. Among all the studied factors, cigarette smoking was the most prevalent, reported by 15% of students while drug abuse was reported by less than 10% of students. Gender, age, home city of students, and their living status (with or without parents) were associated with students' reported drug abuse.

Prevalence of cigarette smoking in this study (15%) was lower than the rate reported in three medical universities in Iran, which was 19% to 24% [23-25], within the range of overall rate of smoking among university students in Iran i.e. 6.7-15.7% [26], but slightly higher than the overall prevalence of cigarette smoking by the adult population of Iran i.e. 12.5% .[27] This value is lower than the rate reported for medical students in Lebanon i.e. 26% [14], and 19% reported in 12 medical universities in Turkey[13], but higher than the 7% reported in 50 universities in China [12], and 1.4% reported in 9 medical universities in Thailand. [11] The difference in prevalence of cigarette smoking in the abovementioned studies may partly be due to cultural differences among the countries. In the study conducted in Thailand [11], very low rates of cigarette smoking among medical students were attributed to implementation of national smoking control programs such as tobacco control policies, interventions of health professional alliances, and enforcement of smoking ban policies.

The reported prevalence of alcohol consumption in this study (7%) was slightly higher than the rate estimated for the entire population (5.7%) [28], commensurate with a survey on medical students in Tehran (7%) [29] but lower than the rate reported in similar studies from other cities of Iran reporting alcohol consumption by 10% of male medical students in Isfahan and Kermanshah [23], and 16% of medical students in Tabriz. [30] These values are lower than the prevalence of alcohol consumption by medical students of Western countries [97% of students in a French medical school [31], 91% of students from 49 medical universities of the United States [15], and 84% of university students in Ireland and United Kingdom[32]]. In a study conducted in India, about 17% of students from 8 medical colleges [33] reported alcohol consumption. This rate was about 10% for a population of students from 3 universities in Iraq.[34] Variations in the prevalence of alcohol consumption in the abovementioned studies originate mainly from structural and cultural differences of different countries. In Iran and other Islamic countries, alcohol consumption is against the Islamic law. This may

partly explain the low rate of alcohol consumption by the students in the present study and the study conducted in Iraq.[34]

The overall prevalence of using other drugs in the present study was 1-6% with marijuana being in the first rank reported by 6% of students. Findings from several Iranian universities show a similar range of 1-10% .[20, 22, 23, 30] The prevalence of drug abuse in the Iranian population aged 15–64 years was estimated to be < 2.5% (3). On the other hand, some of the studies from Western countries showed higher rates for drug abuse among university students as 26% of the university students in the United States [15], up to 25% of university students in the United Kingdom [16], 3-77% from a French medical school [31], and 5-51% of a sample of university students in Germany [35] reported drug abuse. Various rates reported for drug abuse by university students in the abovementioned studies might be partly due to different types of drugs investigated, duration of drug abuse, student target groups, and settings in which the study was performed (all university premises, particular campuses, dormitories, etc.). However, higher rates of drug abuse by university students of some American and European countries compared with Eastern countries were reported in a previous review. [36]

Generally, the reported prevalence of cigarette smoking, alcohol consumption, and drug abuse by medical students in the present study were close to the rates reported by similar national studies, and far below the values reported in some universities of Western countries especially regarding alcohol consumption and drug abuse. However, continuous monitoring and development of intensified preventive programs are required to minimize the prevalence of such unhealthy behaviors among medical students.

Gender clearly correlates with drug abuse by university students such that male students have more frequently reported drug abuse than female students. [16, 17, 20-22, 26] This reflects easier access to, or higher demand for these drugs by male than female students. In addition, higher adherence to social and cultural norms by women, and the social stigma for female drug abuse may partly explain this difference. [37] Moreover, small values for the reported prevalence of use of some of the drugs by female students as reported in the present study may help tailor preventive programs based on gender. Higher rate of alcohol consumption by females than males in this study may be partly explained by the point that approximately half of the females who reported alcohol consumption were divorced. Unfavorable psychological outcomes of divorce may lead them to adopt unhealthy behaviors like alcohol consumption. This finding is in accordance with the result of a study on a French medical school [31], and necessitates more emphasis to be placed on preventive programs as evidence shows an increase in the prevalence of drug abuse by females. [38, 39]

In this study, the results of bivariate analysis showed that older students, students living without parents, those living alone, and those without a job had a higher prevalence of drug abuse. Several studies in the United Kingdom [16], France [31], and Iran [40], found that drug abuse was less common among students living with their parents. Parental supervision seems to protect students from being involved in drug abuse. Parents may play a significant role in controlling this risky behavior. [41] In the present study, lower prevalence of drug abuse by students who had a job may reflect their perceived responsibilities and limited time due to their working condition. Correlation between the students' drug abuse and having a job is, however, controversial. In a study on students from six universities in France, Verger et al. found a higher prevalence of drug abuse among students who had a paid job. [42] Another study from France showed no significant correlation between students' binge drinking behavior and having a job. [43]

The target population for this study was students in one of the main medical universities of Iran. Investigating the prevalence and determinants of drug abuse among such students is, therefore, important due to their responsibilities as future care providers. The generalizability of the results to the whole student population, however, should be made with caution because of the convenience nature of sampling. Limitations may also arise from cross-sectional nature of the data.

Conclusion

A relatively low prevalence of smoking and drug abuse by medical students in this study is promising. The ethical, professional and social responsibility of students in health occupations, however, necessitates specifically designed preventive programs to constantly improve their knowledge about the health hazards of smoking and drug abuse, provide proper psychosocial and medical support, and monitor the prevalence of such risky behaviors among the students. In such programs, emphasis should be placed on the role of family support, suitable entertainment activities, and enforcement of appropriate rules and regulations to ban smoking and drug abuse in the university environment.

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Conflict of Interest

No Conflict of Interest Declared■

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