

Smoking Behaviors Among University Students: A Cross-sectional Study in Tehran, Iran

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Background: Smoking is a risk factor for many diseases and is the leading cause of preventable death and a major public health concern. **Objectives:** The aim of study was to determine the prevalence of smoking behaviors and the related problems among university students in Iran.

Patients and Methods: Having employed a cross-sectional study, 1600 university students were selected from four major universities in the capital of Iran (Tehran) by two-stage cluster sampling. Data were collected by means of an anonymous self-administrated questionnaire.

Results: A total of 1600 participants with mean age of 22.23 ± 3.09 years were included in the study. Of the included students, 62.4% were male and 37.6% were female among which 91.4% of them were single. Given that, the cigarette smoking was reported by 25.3%, comprising 33.7% males and 11.1% females. Also, the mean duration of smoking was 4.79 ± 3.46 years. The results showed that the field of study and type of accommodation were the two leading factors played roles in smoking behaviors.

Conclusions: The rate of cigarette smoking among university students in Iran is very high. The lack of adequate information about burden of smoking related diseases indicates incapability and inefficiency of educational activities on this issue.

Keywords: Smoking; Universities; Students; Iran

1. Background

Smoking is a risk factor for many diseases and the major public health problem throughout the world. It is estimated that smoking and tobacco-induced diseases lead to approximately 5.4 million deaths annually (1). By 2030, 8.3 million deaths worldwide will be attributed to these diseases, representing 10% of deaths globally (2). The rate of smoking behaviors still remains high among adolescents with decrease in the age of onset over the time (3). This issue is considered to be of more importance among students, as an educated population which can affect all the strata of society. There are many studies on the prevalence of smoking behaviors and the associated risk factors among university students, suggesting that smoking prevalence tends to increase in the universities in Iran (4, 5). Nazary et al. (4) stated that 43.5% of the university students start smoking during the university time.

In contrast to many developed countries, smoking in Iran is currently not forbidden in most public places. Hence, smokers are not under any social pressure to quit smoking. Studies showed an increasing number of smokers among all society members in Iran (6-9), namely university students (4, 5, 10-12) or even school students (13-

15). Prevalence of smoking in Iran ranges between 11% and 15% in total including male and female (6-9). Considering that university students as an educated group of the society can play a more effective role in preventing and reducing smoking behaviors in the society, it is necessary to identify the rate of smoking in the population.

2. Objectives

The aim of this study was to determine the prevalence of smoking behavior and the related issues among university students including male and female students in four major universities in Tehran, Iran.

3. Patients and Methods

This cross-sectional study was confirmed by the Ethics Committee of Shahed University, Tehran, Iran. It was conducted in accordance with the ethical standards of the Declaration of Helsinki (1975, revised in 1983) among university students in Tehran. The institutions were four major universities including Shahed University, Tehran University, Azad University and Art University. The sample

Implication for health policy/practice/research/medical education:

The cigarette smoking rate among university students in Iran is very high. The lack of adequate information about the burden of smoking-related diseases indicates the incapability and inefficiency of educational activities on the issue. The problem namely shows itself as the deficiency of knowledge about the hazard of smoking among the educated population. It emphasizes the need for close attention of the authorities to prevent and control the issue by selecting a broad community-based approach to the problem.

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size used in descriptive study was calculated by a pilot study through the following formula. When the estimated prevalence (P) is, precision error estimation (d) is 0.04, and alpha (α) is 0.05, the sample size became 384 cases. A sample of 400 participants was obtained from each university by a two-stage cluster sampling. Four major universities in Tehran were selected from which 400 participants were chosen by random sampling generated in Microsoft Excel 2007. The data were collected between April and May 2010.

Each student attended morning classes of at least one semester was included in this study. Exclusion criteria were incomplete questionnaires as well as unwillingness to answer questions. An anonymous questionnaire with 46 questions was administered. The draft of the questionnaire was composed for the focus group and refined through validation process. Content and face validity of the questionnaire were evaluated by a panel of experts. To this end, a number of specialists and experts

were invited to participate in assessing the validity of the questionnaire. Thereafter, the questionnaire was corrected according to the feedback. A pilot study on a group of 100 participants was conducted to verify the reliability of the questionnaire; Cronbach's alpha value was obtained as 0.76. The first section of the questionnaire was designed to explore the socio-demographic details (22 questions). In the second section, a questionnaire for the purpose of smoking status was conducted (23 questions). In the closing section, one question was asked about the degree of attention they paid to completing the questionnaire. Only smokers had to fill in all the 23 questions related to smoking. The students were visited at their classroom. Notably, they were informed of the study's purpose both verbally and in writing. Then, they were asked to complete the questionnaire under the supervision of the researchers. None of the students present in the classrooms during the visit refused to answer the questionnaire.

Table 1. Factors Associated With Current Smoking Among University Students in Tehran, Iran ($P < 0.001$)^a

Variables	Smoking Status	
	Non-Smokers	Current Smokers
Age, y, mean \pm SD	22.0 \pm 3	22.8 \pm 3
Gender		
Male	662 (66.3)	337 (33.7)
Female	534 (88.9)	67 (11.1)
Living arrangement		
Private-rented room	86 (59.3)	59 (40.7)
With relatives	19 (63.3)	11 (36.7)
With parents	797 (75.8)	254 (24.2)
Student accommodation	293 (79)	78 (21)
Field of Study		
Art	473 (68.5)	218 (31.5)
Humanities	224 (75.7)	72 (24.3)
Mathematics and technical sciences	250 (80.4)	61 (19.6)
Experimental sciences	246 (82.3)	53 (17.7)
Previous grade point average		
18-20	327 (88.1)	44 (11.9)
14-17	765 (72.9)	284 (27.1)
10-13	91 (54.8)	75 (45.2)
Duration of study, mean \pm SD	3.3 \pm 1.8	3.9 \pm 1.9
Source of income		
Personal	117 (59.4)	80 (40.6)
Family	816 (82.1)	178 (17.9)
Both	262 (64.4)	145 (35.6)
Smoking family (parents/siblings/spouse)		
Yes	500 (66.5)	252 (33.5)
No	694 (82)	152 (18)

^a Data are presented in No. (%), otherwise it is indicated in the table.

Descriptive statistics including frequency distribution tables and mean \pm standard deviations (SD) were generated with SPSS, version 17 (Chicago, Illinois, USA). A chi-square or Fisher's exact test was used to compare categorical variables. An independent t-test or Mann-Whitney test was used to compare the means. The significant level was defined as $P < 0.05$.

4. Results

A total of 1600 students (999, 62.4% male and 601, 37.6% female) completed the questionnaire, containing a response rate of 100%. About 99% of the respondents stated that they paid much/very much attention to filling out the questionnaire. The mean age of the students was 22.23 ± 3.09 years; additionally 1462 (91.4%) the students were single. The field of study for 43% of the students was art and 19% humanities, 19% mathematics and technical sciences, and 19% again experimental sciences. About 75% of the students had entered university from one to four years before the research. Of all the students participated in the study, 404 (25.3%) claimed that they were current cigarette smokers. The mean duration of smoking was 4.79 ± 3.46 years. About 54.2% of current smokers had started smoking before entering university. The frequency of cigarette use was increased in 241 (60.3%) participants after entering university, while it did not change in 129 (32.3%) students and decreased in only 30 (7.5%) students. The parents were unaware of their children smoking behaviors by 47.8% ($n = 188$) and were against it by 40.5% ($n = 159$). About 15% of the smokers stated that they never smoked in public places, 47.3% of them smoked if and when they needed to and 37.3% had been smoking in public places. Students would mainly smoke when they were nervous, upset and angry, when spending time with friends and after meals, constituting 75.3%, 69.8% and 66.6%, respectively.

As mentioned before, there were several factors which significantly affected the smoking behaviors among the students. As shown in Table 1, gender, age, type of accommodation, duration of university study, field of education, previous semesters GPA grade point average, patterns and income level and presence of a cigarette smoker in the family were considered to have substantial effects on the prevalence of smoking among the students ($P < 0.001$). The results indicated that gender, living in private-rented rooms or with relatives, studying in the fields of art or humanities, having lower grade points, longer duration of study, having personal income and presence of any smoker among family members had significant influence on the likelihood of the students becoming smokers. Factors such as marital status, number of family members, father's profession and absence of a parent caused no remarkable difference on the student's smoking behaviors. Only 205 of (51.1%) the participants had enough knowledge about smoking related complications and diseases. Overall, 184 smoker students (46.1%)

had attempted to quit and about 67.6% ($n = 273$) of the smokers stated that they had slight or no interest in quitting smoking.

5. Discussion

A survey was conducted on smoking behaviors of students from four major universities in Tehran, a city comprising of almost 10% of the Iranian population. The participants were 1600 students selected from these universities. About one fourth of the students stated that they were current smokers and the prevalence of smoking was 33.7% for male and 11.1% for female students. Although this rate is lower than some other countries, it is consistent with the results of the same studies in Tehran, but higher than that of other cities in Iran (4, 5, 10, 12). In 2002, a survey documented wide variations in smoking prevalence among university students (nonmedical or health-related issues) from 23 countries of the world (Europe, USA, Asia, South Africa, and Latin America) (16). In our study, the prevalence of current smoking among men was similar to Western Europe and United States (31%), Central Europe, Eastern Europe as well as Asia and Latin America (35%). However, it is lower than Southern Europe (44%) and higher than South Africa and Thailand (14%). In this study, prevalence of smoking amongst women was still below many European and American countries (28-39%), yet the ratio was in agreement with Asian and Latin American countries (15%). Khami et al. (5) reported that the rate of smoking among dental students in Tehran, Iran was 23% (32.7% of men and 14.6% of women). However, among studies conducted in other cities of Iran, 11% of the university students (22% of men and 2.4% of women) in Kerman (12), 14.4% in Semnan (4) and 18.48% in Shiraz (10) were reported to be smoker. According to Fotouhi et al. (8), the overall incidence of smoking in Tehran was 11.9% with a rate of 20.6% for men and 2.9% for women. Notably, these rates are much lower than the results achieved in this study among the university students which should highlight the need for a more effective approach to assess and prevent this important issue among university students.

The present study reported a male predominance over females. However in contrast but similar to Asian studies, the difference between men and women was not prominent in western countries (16). There were some other principal factors associated with high rates of smoking among the students including living in private-rented rooms instead of university accommodations, studying in the field of art or humanities and having personal income. Student life away from not only home but also parental and family support accompanies independence from restrictions which can lead to some dramatic changes in life, especially in uninformed students. The possibility is higher with those living alone or having economic independence. Tamim et al. (17) hold the same view and discussed that smoking is a simple solution to

cope with tensions during this critical period of separation from family and also early independence. Higher prevalence of smoking in some fields of education (e.g. art and humanities) could imply the lower level of awareness (such as arts), while higher level of knowledge about smoking behaviors in experimental science groups (like medical and health related fields) could cause considerably lower rate of smoking behavior. Although the difference between medical students and other students was not pointed out in some studies (18), the need for effective education against smoking among university students was evident in all studies. Promoting knowledge and awareness in students about complications and smoking-related diseases was likely to not only prevent the uptake of smoking but also encourage them to quit. Such compelling reasons highlight the need to identify the factors and include them in education programs. It seems that educational activities and public information programs about the consequences of smoking and the effects on physical and psychological health as well as the costs of addiction treatment for various substances for various substances including cigarettes were poor or simply not adequate. It could be well explained by the lack of knowledge about the hazard of smoking among the educated stratum of society. This emphasizes the necessity of the authorities' serious attention to prevent and monitor this issue by taking a broad community approach to this problem. It should be noted that in the case under study, determining the accurate student's misbehaviors was not feasible. All in all, as the data were collected through self-reporting, some students naturally avoided disclosing information despite the assurance of confidentiality. The strength of the study was diverse of participants in terms of cultural, economic and social aspects.

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Authors' Contribution

Dr. Farhad Jafari, Dr. Ali Davati, Dr. Akram Hajzamani, Dr. Naser Rezaiepour, Dr. Kamyab Alizadeh conducted the research, collected the data, performed the statistical analysis and prepared the manuscript. Dr. Farhad Jafari supervised the study and participated in designing and conducting the study as well as preparing the manuscript.

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