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Smoking and Its Related Factors Among Iranian High School Students

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Abstract

Background: In different studies, the prevalence of tobacco consumption has been growing in high schools boys.
Objectives: This study was conducted to determine the prevalence of smoking and its related factors among Iranian high school students in 2011.
Materials and Methods: In this cross-sectional study, 450 male students from 15 high schools of Shahroud (northeast of Iran) were selected for evaluation of the knowledge, attitude and practices (KAP) of students regarding tobacco consumption.
Results: Overall, 51% (95% CI: 46.5 - 55.7) of the students had positive history of smoking for at least one time and 7.1% (95% CI: 5 - 10) of them were current smokers. The most prevalent source of information about smoking was TV and radio programs (48%) and friends were the second source (22%). Based on the students' opinions, entertainment and smoker friends were the most important reasons for smoking tendency. There was significant statistical association between students smoking and positive family history of smoking (P value < 0.05).
Conclusions: The prevalence of smoking experince was very high among high school students. The most prevalent source of information about smoking was Iranian broadcasting companies. Positive family history of smoking and smoker friends were the important motivating factors toward smoking.

Keywords: Attitude, Iran, Knowledge, Smoking, Students

1. Background

Smoking is estimated to cause about 71% of lung cancers, 42% of chronic respiratory diseases, and nearly 10% of cardiovascular diseases. The highest incidence of smoking among males is in lower-middle-income countries; for the total population, smoking prevalence is highest among upper-middle-income countries (1).

The leading risk factor globally for mortality after raised blood pressure (responsible for 13% of deaths globally) is tobacco use (9%) (2). It has been found that the onset age of smoking in developed countries is mainly prior to the age of 18 years (3) and a household study in Tehran showed that 74.1% of smokers smoked their first cigarette before the age of 25 (4). While many interventions may be cost-effective, some are considered 'best buys' (actions that should be undertaken immediately to produce accelerated results in terms of lives saved, diseases prevented and heavy costs avoided). For tobacco use, two important best buys protect people from tobacco smoke: banning smoking in public places and warning about the risks of tobacco use (2).

In Iran, the 2008 comparable estimates of the prevalence of current daily tobacco smoking and current daily cigarette smoking in adults aged more than 15 years showed that age-standardized adjusted estimations of daily tobacco smoking were 20.8% and 1.3% for males and females, accordingly (1). Overall, the studies carried out for assessing the cigarette smoking status in Iranian students have reported this amount as 2% - 17% (4-10). Data from the Global Youth Tobacco Survey (GYTS) indicates that among those surveyed, nearly half of youth aged 13 - 15 years who have never smoked are exposed to second-hand tobacco smoke at home, with a similar percentage

exposed in places other than home; these youth are 1.5 - 2 times more likely to initiate smoking than those not exposed. In this study, the prevalence of different tobacco substances in 2003 was 13%, while in 2008 it was 26.6%, which showed an increasing trend (11). A research conducted in Shahroud, Iran also reported a 20% prevalence of smoking among university students (12) Ismaeeli and colleagues in a study on the prevalence of smoking in Iranian high school students also found that the prevalence of tobacco use was 15% (13). In a research carried out on adolescent high school students in Tehran, Iran, 21.2% of the participants tried tobacco first at the age of 10-12 years (6). In 2003, Heydari and colleagues in a descriptive cross-sectional questionnaire study on the prevalence of tobacco use among high school students in Tehran found that 6% of males and 2% of females tended to smoke every day (14).

The results of a study by Roohafza and colleagues showed that 11.8% of young adults smoked (15). In a cross-sectional research, Rahmanian and colleagues administered a homogeneous and reliable questionnaire to study the determinants of tobacco use by high school students in Jahrom, Iran. The result indicated that the prevalence of tobacco use among the participants was 9.4% (16).

In a cross-sectional, questionnaire-based study on the prevalence and motivators of smoking among high school students in Kerman, Iran, 4.9% of the students were dependent on nicotine and 80.6% of students smoked cigarette first before the age of 15 and most of the students mentioned smoking among their peers as a fashion (17).

In a review study, 177 full text papers were reviewed and it was found that in less than eight papers, there had been intervention to reduce tobacco use (18).

Rakhshani and colleagues in a quasi-experimental study tried to study the effect of instruction on prevention of smoking among high school students. They studied the students' awareness and attitudes based on the constructs of the health belief model. The results showed that the prevalence of cigarette smoking in the studied population was 2.2%; the mean awareness was 9.39 out of 20 and the mean attitude was 37.60 out of 50. The researchers concluded that instructional intervention based on the constructs of the health belief model played a preventive role in smoking prevention among high school students (6).

2. Objectives

The main objective of this KAP study was to estimate the prevalence of smoking and its related factors among high school male students in Shahroud, Iran.

3. Materials and Methods

This was a cross-sectional study on 450 male students from 15 high schools of Shahroud (northeast of Iran) in 2011. Questionnaire development was mostly inspired by Riyahi and colleagues' work (19); however, it was tried to take benefit from the experience and the information obtained and design a new questionnaire, the content validity of which was examined through experts' views. This questionnaire also included information about students' tobacco use as well as their knowledge and attitude toward smoking. The structured questionnaire for both knowledge and attitude with regard to smoking consisted of 12 and 23 questions, respectively. The knowledge and attitude questions were scored using a 5-likert scale, i.e. completely agree, agree, uncertain, disagree, and completely disagree. In a pilot study with 40 high school students, the Cronbach's alpha reliability coefficients for the awareness section and attitude section were found to be respectively 0.85 and 0.82.

The final questionnaire was administered to 450 high school students. In the multi-stage sampling procedure, first from the 15 high schools in Shahroud (which nearly have the same number of students) a 30-participant cluster was selected, so that each cluster included 10 students from each grade which were selected randomly according to the class list (grades one, two and three).

Noting the inappropriate awareness level of 60% (P = 60%), the precision of 5.5% (d = 5.5%) and type one error of 5%, the size of the sample was decided to be 300 people. Moreover, since the cluster sampling procedure was to be used, cluster effect of 1.5 was also added and the ultimate size of the sample was estimated to be 450 people. Since there were 15 high schools in Shahroud, a 30-student cluster for each high school was defined. The questionnaires were completed anonymously and without the researcher's presence and confidentiality of the collected data was ensured. Students were asked a question "do you now smoke cigarettes or any other form of tobacco, every day, some days or not at all?" Current smokers were defined according to self-reported smoking behavior during the past month prior to the survey (every day or weekly). For acquiring the experience of tobacco use, we questioned the students about trying cigarette or any form of tobacco even a puff in their life.

The relationships between grouped variables were detected using the chi-squared test and quantitative variables were compared between the groups using the t-test. Values of $P < 0.05$ were considered to indicate statistical significance.

4. Results

The mean and standard deviation of the students' age who participated in the study was 16.5 ± 1.1 (14 - 19 years old age range); 82.9% of the students were in the age group of 17 and lower. Frequency distribution was equal in all the three grades (150 male subjects in each grade).

Of mothers, 73.1% had education levels of high school diploma or lower and 23.6% had elementary education levels or lower; 79.8% of fathers had education levels of high school diploma or lower and 29.1% had elementary

education levels or lower; 88% of students were firstborn, second-born, third-born or forth-born. After TV and radio, the most important sources of information about tobacco use complications were peers and friends and then family. Most of the students spent their leisure time with their friends.

Of the students, 51.1% had tried tobacco even for one or two puffs; hooka with 64.78% and cigarette with 25.23% had the highest frequencies (Table 1).

In response to the question "who offered you tobacco first?" the highest frequency (21.1%) belonged to friends, followed by the person himself (10%) and family members (2.7%); 15.1% of the study subjects had at least one time experience of cigarette smoking and 33.1% hooka smoking. The highest frequency of tobacco trial belonged to the age group of 14 - 16 years (50.5%), followed by the age group of 10 - 13 (31.3%). However, the high frequency (7.8%) in the age group of below 10 years requires consideration.

The prevalence of tobacco use (current users) among the students was 7.1% (32/450) and 6 (1.3%) used cigarettes up to twice a day. Chi-squared test showed a significant relationship between the present status of tobacco use and students' level of education (P = 0.04), so that with increase in the level of education, tobacco use also increased; 3.1% of the students said that they had smoked at school. Entertainment with 48.7% and sitting with smoker friends with 28.3% had the highest frequencies, showing that about 76% of smoking occurs with peers.

Of the students, 27.8% said that there was a smoking person in their family, with the highest frequency belonging to the father (10.9%). Chi-squared test showed a significant relationship between the experience of tobacco use and the history of tobacco use in family (χ^2 = 14.54 and P = 0.001), so that the experience of tobacco use was greater in smoking families than in non-smoking families.

Table 2 shows a significant relationship between experience of tobacco use and student awareness, attitude and positive family history of tobacco use, so that students who had no experience of tobacco use had higher awareness and negative attitude than those with the experience of smoking. Overall, 86% of the students did not have positive views to smoking (negative attitude).

According to Table 2, there was a statistically significant relationship between the present status of tobacco use by students and awareness, attitude and tobacco use in family, so that students with smoking pattern had more tobacco use history in their families.

Chi-squared test did not show any significant relationship between the family status and the experience of tobacco use (P = 0.393), but a significant relationship was observed between family status and the present status of tobacco use, so that tobacco use was more prevalent among those with divorced parents (χ^2 = 22.7 and P = 0.001) (Table 2).

A significant relationship was observed between birth order and the present status of tobacco use, so that smoking was more prevalent among students with fourth and greater birth order (P < 0.001). There was no significant relationship between birth order and the experience of tobacco use (P = 0.081).

Table 1. Frequency Distribution of Students Based on Variables

Item	Values [a]
Information Source about tobacco use complications	
Peers and friends	97 (21.6)
TV and radio	218 (48.4)
Newspaper	6 (1.3)
Textbooks	9 (2)
Teachers and counselors	20 (4.4)
Family	74 (16.4)
Internet	12 (2.7)
Others	14 (3.1)
Total	450 (100)
Way to spend leisure time	
With friends	199 (44.2)
Studying	58 (12.9)
Exercise and sports	89 (19.8)
Others	104 (23.1)
Total	450 (100)
Experience of using tobacco and its form [b]	
Cigarette	58 (25.23)
Hand-rolled cigarette	4 (1.74)
Cigar	3 (1.30)
Pipe	3 (1.30)
Hooka	149 (64.87)
Others	13 (5.65)
Total	230 (100)
Reasons for tobacco use	
Company with smoker friends	65 (28.3)
Entertainment	112 (48.7)
Stress and social pressures	11 (4.8)
Self-expression	6 (2.6)
Others	36 (15.6)
Total	230 (100)

[a] Data are presented as No. (%).
[b] Students that have experience tobacco use (even a puff) (some of them were current smokers).

Table 2. The Relationship Between Experience of Tobacco Use and Student Awareness, Attitude and Positive Family History of Tobacco Use

Variable	Experience of Using Tobacco, %		P value	Tobacco Use at Present, %		P value
	Yes	No		Yes	No	
Awareness			0.020			0.001
Weak	6 (2.6)	1(0.5)		5 (15.6)	2 (0.5)	
Mediocre	20 (8.7)	9 (4.1)		6 (18.8)	23 (5.5)	
Good	204 (88.7)	210 (95.4)		21(65.6)	393 (94.0)	
Attitude			< 0.001			< 0.001
Positive	9 (3.9)	1 (0.5)		6 (18.7)	4 (0.9)	
No idea	37 (16.1)	16 (7.3)		9 (28.1)	44 (10.5)	
Negative	184 (80.0)	203 (92.2)		17 (53.2)	370 (88.6)	
Tobacco use in family			0.001			0.001
Yes	82 (35.7)	43 (19.5)		21 (65.6)	104 (24.9)	
Living with parents			0.393			0.001
Yes	206 (89.6)	202 (91.8)		25 (78.1)	383 (91.6)	
Births order			> 0.05			0.1
≥ 4	49 (21.3)	53 (34.1)		11 (34.4)	91 (21.8)	

5. Discussion

The prevalence of current tobacco use among the students was 7.1%. The most important reason for tobacco use among the students was entertainment and the second most important reason was keeping company with smoking friends and peers. Ramezankhani and colleagues (6) and Ziaoddini (17) reported a prevalence of 7.4% and 7.3% respectively, which are close to the finding of our study. In some studies at different areas of Iran such Zahedan and Tabriz, the prevalence of tobacco use was less than the recent finding (7, 20, 21). Other studies in Iran reported a higher prevalence than our study (8, 9, 13, 15, 16, 22, 23).

In a community-based, cross-sectional survey examining current tobacco use, the prevalence of tobacco use among Arab students was 3% - 15% and among American adolescents it was 7% - 22% (24).

Although there are similarities and differences between the aforementioned studies, all of them indicate that there is a problem with tobacco use among adolescents which requires special attention.

The present study showed that 27.8% of students had a history of cigarette smoking in their families (125/450). Rahmanian (16), Rouhafza (15) and Rakhshani (7) reported a history of cigarette use in respectively 3%, 12.4% and 17.5% of students, which is close to the findings of the present study.

This study showed that 46.6% of students tried tobacco before the age of 15, which is not consistent with the findings of Ziaoddini and colleagues (80.6%) (17). In other studies such as Zarghami's study (23), about half of subjects started smoking at the age of 13 or less and in the study of Mohammadi et al. (9) the mean age of smoking was 12.2 years.

The highest frequency of tobacco use in this study belonged to the age range of 14-16, which is not consistent with the findings of Ramezankhani (27.6%) (6).

In this study, 8.1% of the students had first tried tobacco before the age of 10, which is not consistent with the findings of another study (21.2%) (6). The results of this study showed that 52.1% of the students had tried tobacco, which is not consistent with the findings of Ziaoddini (38%) and Ramezankhani (25%) (6, 17). The high frequency of tobacco use among adolescents indicated the necessity of paying more attention to this group as the future constructing generation.

Students had a good awareness about and negative attitudes towards tobacco, which is not consistent with another study (7).

Rouhafza and colleagues reported the score of awareness and attitudes of the participants in their study respectively as 8.34 and 15.39, which is not consistent with the results of this study (15). Negative attitude towards tobacco found in this study was a positive point which paves the way for interventions to reduce tobacco use in this group.

The results of different studies indicate that to prevent and control tobacco use, instructions should start from earlier ages in elementary and junior high school or the first grade of high school.

A significant relationship was observed between tobacco use in family and the prevalence of smoking among students, which is consistent with the findings of other studies (10, 16).

Several aspects of this study can limit the application of the findings. First, the cross-sectional nature of the study can only act as evidences for the relationship between the predictor variables and tobacco use and does not show the causality; second, generalization of the study results is limited to male high school students of Shahroud city.

The prevalence of smoking experience was high among male high school students. The most prevalent source of information about smoking was Islamic Republic of Iran Broadcasting (IRIB). Positive family history of smoking and smoker friends were the important motivating factors toward smoking. Considering the strong association of friendship with smoker close friends and the presence of a tobacco user in family, preventive actions concerning substance abuse as well as intervention for decreasing cigarette smoking in the society can help reduce cigarette smoking in adolescents.

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Authors' Contributions

Reza Chaman conceived and designed the evaluation, interpreted the data, performed the statistical analysis and drafted the manuscript. Ahamd Khosravi participated in designing as well as evaluation and interpretation of data, performed parts of the statistical analysis, helped with drafting, and revised the manuscript. Sima Sajedinejad participated in designing, evaluation and interpretation of data, helped with drafting and revise the manuscript. Saeed Nazemi collected the data and revised the manuscript critically for important intellectual content. Khadije Fereidoon Mohasseli participated in designing the evaluation and revise the manuscript critically for important intellectual content. Behzad Valizade participated in designing the evaluation and revised the manuscript critically for important intellectual content. Hamid Vahedi participated in interpretation of data and revised the manuscript critically for important intellectual content. EH collected the data and revised the manuscript critically for important intellectual content. Mohammad Amiri participated in designing, evaluation and interpretation of data, helped with drafting and revised the manuscript. All the authors read and approved the final manuscript.

Declaration of Interest:

The authors have no conflicts of interest to disclose.

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