

## Cigarette Smoking among Iranian Adolescents

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**Objective:** Smoking is a worldwide health problem. Despite recent efforts to reduce the rate of smoking, adolescent smoking still remains a significant public health concern.

Current study was conducted to determine the effects of socio-environmental and personal factors on the smoking among adolescents.

**Methods:** In the first stage of a longitudinal study of smoking in adolescents, 1785 students in Tabriz city were randomly selected. A self-administered questionnaire was used to collect information about demographic characteristics and self-esteem of the subjects and their attitude towards smoking. Information was also gathered about the smoking habits of the subjects, their families and friends. The association of different variables with smoking was evaluated by a logistic regression model and Chi square test using SPSS.

**Results:** Mean age of the subjects was  $16.3 \pm 0.87$  years. 77.4% of them reported that they never smoked. 18.2% had experimented the cigarette smoking at least once. But 4.4% said that they were regular smokers. Having a smoker family member (OR=1.40) or a smoker friend (OR=3.43) and a positive attitude toward smoking (OR=1.23) were significantly associated with a higher prevalence of smoking.

**Conclusion:** An educational program aimed at changing the attitude towards smoking may be a successful primary prevention method.

*Iranian Journal of Psychiatry and Behavioral Sciences (IJPBS) , Volume 1, Number 1, Spring and Summer 2007 : 30-35.*

**Keywords:** Adolescents • Attitude • Family • Self Concept • Smoking

### Introduction

Tobacco use is one of the major preventable causes of premature death and diseases in the world. Despite recent efforts in prevention of smoking, adolescent smoking remains as a significant public health problem. Studies show that male and female adolescents, once begin smoking, will continue up to 16 and 20 years respectively (1). Other studies indicate that smoking in early adolescence is a strong predictor of smoking in adulthood (2-5). Smoking just a few cigarettes during adolescence leads to 16-fold increase in the risk of adult smoking (3). Furthermore, the earlier one starts smoking, the more cigarettes per day one will smoke as an adult (2).

Starting smoking at a younger age has also been associated with more difficulty in quitting smoking during young adulthood (6).

Above findings reveal that prevention of smoking in the adolescents is essential to reduce the overall prevalence of smoking and its morbidity and mortality rates. Social, environmental, behavioral and genetic factors are all important etiological factors in nicotine dependency. Studies of the patterns, prevalence and risk factors of smoking help to develop an effective strategy in prevention of adolescents' cigarette smoking. Limited information on adolescents' cigarette smoking is available in Iran. Cigarette smoking rate in the general population of Iran is reported to be about 11.9% (7). One study showed that 27.2% of Iranian males and 3.4% of females smoked cigarette. It also showed that they, on average smoked 13.6 cigarettes per day. In that study, age of starting smoking in 66.35% of smokers (70.6% males and 34.9% females) was 15-24 year (8). While in Sari 11.5% and in Rasht (north of Iran) 9% of male high school students were cigarette smoker, this figure was reported 22.5% in Isfahan (center of Iran) (9-11). It was also

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reported that 11.2% of all 11 to 14 years old students in west of Tehran smoked regularly before high school (12). In Zahedan (south east of Iran) 7.8% of female and 25.2% of male high school students reported that they had tried smoking at least once and 0.4% of females and 2.3% of males said that they were regular smoker (13). Sohrabi et al concluded that male high school students in Tehran were 50% more at risk of cigarette addiction in comparison to their counterparts in the West, South, Center, North and East of Iran (14).

Western researchers have reported that smoking in adolescents is related to their self-esteem, age, having a smoker family member or a friend and to their attitude toward smoking (15-19). But the effect of these variables on smoking is not clear in Iran.

Current study aimed to investigate the patterns, prevalence and the risk factors of cigarette smoking in high school male students in Tabriz city (northwest of Iran).

## Materials and Methods

Thirty high schools with 68 classes were selected randomly in Tabriz city (northwest of Iran). Thirteen hundred students at grade 10<sup>th</sup> were identified, of which 1791 (14%) were selected by cluster and stratified samplings. Six (0.3%) of the students refused to participate in the study.

We selected the 10<sup>th</sup> grade student because we wanted to have a better chance of follow up in the second stage of the study. Since smoking in Iranian females is very rare, our study just concentrated on male adolescents' population.

After the ethics committee approved the project, a short self-administered questionnaire was distributed among the students. To increase the response rate, the students were asked to take part in the study anonymously. We collected information on demographic data of the students, their smoking habits and history of smoking in members of family and best friends.

To obtain information on self-esteem we used the Persian version of Rosenberg self-

esteem questionnaire. The test-retest correlation for the Persian version of Rosenberg self-esteem questionnaire had already been calculated separately on 31 students (Cronbach alpha: 0.89).

We used semantic differential scale to study students' attitude toward smoking (internal consistency of 0.85).

Based on their response, students were divided into three groups of:

1. Never smoker: adolescents who had never tried cigarette.
2. Experimenter: adolescents who had experimented with cigarette smoking but had smoked less than 100 cigarettes.
3. Regular smoker: adolescents who had smoked 100 cigarettes or more in lifetime irrespective of current smoking status (16).

We categorized students into two major groups (never smoker and smoker) for the purpose of statistical analysis. Logistic regression was used to study the association among several variables and the  $\chi^2$  test was used to examine the association between smoking status and independent variables (age groups, family type, living with parents, having smokers in the family and among friends). The one-way analysis of variance was used to compare mean score of self-esteem and attitude toward smoking among the three smoking groups.

## Results

The mean age of the subjects was  $16.3 \pm 0.87$  years (age range: 15 to 19). Demographic characteristics of the participants are presented in table 1.

Out of 404 (22.6%) adolescents who reported that they had smoked cigarette, 324 (18.2%) were classified as experimenter and 79 (4.4%) as regular smoker.

Age of starting smoking was  $12.7 \pm 2.7$  years (age range: 5 to 18). Rate of starting smoking increased gradually with age and peaked at 15 (18%). Figure 1 shows that the rate of starting smoking decreases after the age of 15.

**Table 1.** Information on the age and smoking habits of the adolescents, their family and friends

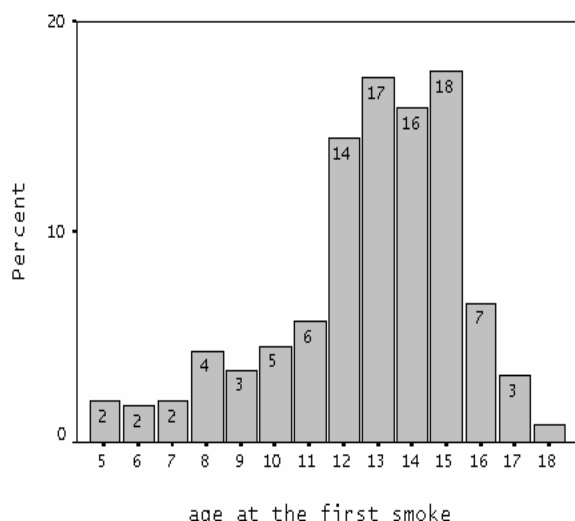
Characteristics	Never smoker n (%)	Experimenter <sup>a</sup> n (%)	Regular smoker <sup>b</sup> n (%)	Overall n (%)	p-value
<b>Age</b>					
15 years	240 (81.6)	48 (16.3)	6 (2.1)	294 (16.6)	<b>&lt;0.001</b>
16 years	707 (81.3)	141 (16.2)	22 (2.5)	870 (49.0)	
17 years	328 (71.8)	91 (19.9)	38 (8.3)	457 (25.7)	
18 years	84 (62.7)	40 (29.8)	10 (7.5)	134 (7.5)	
19 years	15 (75.0)	3 (15.0)	2 (10.0)	20 (1.1)	
Total	1374 (77.4)	323 (18.2)	78 (4.4)	1775 (100)	
<b>Living with parents</b>					
Yes	1286 (77.6)	298 (18.0)	73 (4.4)	1657 (94.7)	<b>0.844</b>
No	70 (75.3)	18 (19.3)	5 (5.4)	93 (5.3)	
<b>Family type</b>					
Small (<6 members)	735 (76.9)	180 (18.8)	41 (4.3)	956 (54.1)	<b>0.630</b>
Large (≥6 members)	633 (78.1)	139 (17.2)	38 (4.7)	810 (45.9)	
<b>Smoker in the family</b>					
Yes	845 (81.1)	161 (15.4)	36 (3.5)	1042 (58.7)	<b>&lt;0.001</b>
No	530 (72.2)	162 (22.1)	42 (5.7)	734 (41.3)	
<b>Number of the smoker friends</b>					
0	844 (86.8)	119 (12.2)	9 (1.0)	972 (63.9)	<b>&lt;0.001</b>
≥ 1	319 (58.2)	166 (30.3)	63 (11.5)	548 (36.1)	

<sup>a</sup> Experimenters: Those who had smoked less than 100 cigarettes.  
<sup>b</sup> Regular smokers: Those who had smoked 100 cigarettes or more.

Five hundred eighteen fathers (33.1%), 81 mothers (0.5%) and 90 siblings (5.1%) were smoker. 548 students (36.1%) had at least one friend who smoked. Self-esteem scores in the never smoker, experimenter and regular smoker groups (Mean ± SD) were 17.67± 4.38, 19.10 ± 4.51, and 20.44 ± 5.38 respectively (P<0.001).

groups (Mean ± SD) were -10.82 ± 2.35, 8.04 ± 4.05, and -4.27 ± 5.64 respectively (P<0.001).

The analysis by logistic regression revealed that having a smoker in the family (OR=1.4) or among the friends (OR=3.4) and a positive attitude toward smoking (OR=1.2) were factors associated with smoking (table 2).



**Figure 1.** Percentage of age- specific smoking onset percentages.

Mean score of attitude toward smoking in never smoker, experimenter, and regular smoker

**Table 2.** Logistic regression analysis of the relationship between smoking and risk variables

Variables	OR	95%CI	P value
Older age	1.01	0.99-1.02	0.590
Any smoker in the family	1.40	1.06-1.83	0.017
Living with single parents	1.44	0.81-2.57	0.216
Having friend who smoked	3.43	2.61-4.51	<0.001
Higher size of family	0.995	0.98-1.01	0.498
Higher self-esteem score	1.02	0.99-1.04	0.208
Positive attitude toward smoking	1.23	1.18-1.28	<0.001

### Discussion

The prevalence of smoking has been reported differently in the literature, ranging from 8% to 56 % in different studies (15, 20-23). In our study, overall, 22.6% of the students reported that they had tried smoking before. Only 4.4% said that they were regular smoker. In Iran smoking is strongly disapproved by the families. It is not only banned in high schools but also culturally unacceptable among teenagers. These factors

possibly explain the lower rate of adolescence smoking in our study population.

Although the ANOVA and Chi-square tests indicated that smoking in adolescent was related to a low self-esteem, a positive attitude toward smoking and presence of a smoker in the family or among the friends, in multivariate analysis, having a smoker friend, a smoker family member and a positive attitude toward smoking were significantly associated with smoking.

Higher smoking rates among individuals with lower self-esteem have been demonstrated in some studies (19,24), but some studies have not supported such a finding (18,25,26). We could not find a statistically significant association between rate of smoking and self-esteem.

In some studies it has been shown that there is a strong association between the age and smoking (18,19,27-29). In our study, after adjusting for confounding variables through multivariate analysis there was not a statistically significant relationship between age and smoking.

Having a friend who smokes not only influences the onset of smoking (17,18,25,30,31), but also is a strong predictor of continuing the habit in adulthood (16,32).

Numerous studies have shown that the adolescent smoking is related to the presence of a smoker in the family, especially father (25,30). Our study confirms this association too.

Like other studies (33,34) we found a significant association between an increased prevalence of smoking and a positive attitude towards it.

### Conclusion

The cross-sectional nature of our study provides no evidence of causality between smoking and different variables. The findings of the study cannot also be generalized to other age groups and females. Longitudinal studies, thus, with a more representative sample, will be required to overcome these limitations in future. However, our study suggests that educational programs aiming at changing the attitude of the teenagers towards smoking can work as a preventive measure.

### Acknowledgment

Authors would like to thank the National Public Health Management Center of Tabriz University for funding and supporting this research project.

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