

## The Prevalence and Motivation of Cigarette Smoking among Kerman high school students

Hassan Ziaaddini, MD<sup>1</sup>  
 Manzume S. Meymandi, PharmD<sup>1,2</sup>  
 Alireza Zarezadeh, MD<sup>2</sup>

<sup>1</sup> Department of Psychiatry,  
 Beheshti Hospital Kerman  
 University of Medical Sciences.  
 Iran

<sup>2</sup> Pharmacology Dept., Kerman  
 Neuroscience Research Center.  
 Kerman, Iran

### Corresponding Author:

Shamsi Meimandi – Manzume  
 Kerman Neuroscience Research  
 Center, Kerman University of  
 Medical Sciences.  
 Jomhoori Blvd, 76175-113,  
 Kerman, Iran  
 Email: manzume@yahoo.com  
 Tel: +98-341-2120547  
 Fax: +98-341-2111010

**Objective:** Nicotine dependence has been identified as a critical health problem. This study assesses the prevalence and motivation of smoking among Iranian junior and senior students.

**Methods:** A cross sectional study was performed using a questionnaire. In addition to data on frequency, motivation, initiation and cessation, this questionnaire included Fagerstrom items for nicotine dependency. The census method was used for sampling. Thus, the questionnaire was distributed to all high school junior and senior students of Kerman.

**Results:** 3072 students participated in the study. Among them, 4.9% were nicotine dependent, 6.4% had used it occasionally during the last six months and 11.5% had used it at least once in their life. Out of all the cigarette users, 80.6% had experienced smoking before the age of 15 with  $9.09 \pm 8.52$  cigarette per day. Boys smoked significantly more than girls. More than 38% of the students had a history of smoking cessation. The most common motivations for smoking among the students have been identified as smoking of the peer group and the belief that smoking is fashionable.

**Conclusions:** The motivation and gender difference in smoking were similar to the general population. The rate of nicotine dependency was less than other parts of the country. However, the age of smoking initiation was in a decreasing trend and similar to other parts of the country. High school stage is a very critical period for adolescents' smoking. Therefore, for the provision of more social skills trainings and behavioral therapies, providing information for decision makers is recommended.

### Keywords:

*Cigarette, Iran, Motivation, Prevalence, Students*

*Iran J Psychiatry 2007; 2: 41-45*

Nicotine dependence is the most prevalent, most deadly, most costly, yet most treatable type of substance dependency. The popularity of cigarette grew dramatically in the first half of the twentieth century; as a result, dependency signs developed quickly. In terms of the diagnosis of nicotine dependency, about 20% of the population develops nicotine dependency at some point, making it the most prevalent psychiatric disorder (1). Three million people die annually from cigarette smoking and half of regular smokers are predicted to die (2). Up to 91% of adult smokers start smoking during adolescence (3). Although adolescence is a time of optimum health, adolescents are often inclined to assume behaviors which could damage their health and affect their lifestyle in the future (4).

Psychiatrists, other mental health professionals, educators, and politicians are increasingly identifying nicotine use and abuse by children and adolescents as a critical public health problem (5). According to a recent study in Iran, the prevalence of self-reported cigarette smoking in ages 11-18 years was 18.5% in boys and 10.1% in girls (6) with the initiation age of 15 to 24 (7, 8), which is similar to other countries. According to prior studies, co-morbidity of cigarette

smoking and illegal drug was high in Iran and many researchers consider tobacco as a gateway drug to illicit substance abuse (9). Iran with 15 millions of adolescents has one of the youngest populations in the world and Kerman could be considered an acceptable urban sample of the central part of Iran. Considering the age of initiation in Iran and availability of samples, this study was performed to determine the prevalence of cigarette smoking among Kerman high school students and their attitudes toward tobacco use.

### Materials and Method

In this cross sectional study, the target population consisted of pupils going to the last year of high school (junior) or college (senior) in Kerman in 2004. The city of Kerman is located in the central part of Iran with the distance of 1000 kilometers from the capital (Tehran), and it holds a population of more than half a million. The census method was used for sampling. The questionnaire was distributed to 3500 junior and senior students of all the high schools of Kerman. A number of 3072 students completed the questionnaire appropriately. The response rate was 92.59%.

**Instrument and Procedures**

The questionnaire consisted of two parts: 1) demographic data (sex, educational grade; 2) questions about cigarette smoking frequency, motivation, availability, modality of initiation, and cessation. The choices included in the frequency question are categorized as follows; 1) never smoked; 2) once in life; 3) sometimes; 4) daily; 5) if ever smoked, the number of daily smoked cigarettes. The question about modality of initiation consisted of the age of initiation, who offered the first cigarette (in a multiple choice question) and the places mostly used for smoking. The availability was investigated through multiple choice questions about the price, where the cigarettes are available and how effortless it is to have them. The cigarette cessation was defined by answering the following questions: "Did you ever intend to quit smoking and if so, how many times did you attempt to stop smoking and who did you refer to ?

The second part consisted of Fagerstrom questionnaire for nicotine dependency and its severity (10, 11). The translated valid copy of modified Fagestrom questionnaire was accessible and used in the precedent epidemiologic studies of this regard (12). This test determines the nicotine dependency via the three following questions: 1)" How many cigarettes a day do you smoke?" ; 2) "How soon after waking up do you smoke your first cigarette?"; 3) "Do you find it difficult to abstain from smoking in places where it is forbidden?".The content validity index for the first part was 90% and for each question alone was 80%. To confirm reliability, the test and retest method was used where the coefficient of correlation was 96.5% and cronbach's alpha index was 0.602.

The aim of this study was explained to participants in a general assembly by a trained staff prior to the distribution of the questionnaire. Then, the questionnaire was distributed during regular classroom sessions and collected in the same session after 30 minutes. Because only the volunteers completed the questionnaire, the passive (oral) consent was obtained. To further maintain confidentiality, school personnel did not participate in any parts of the data collection and all the questionnaires were nameless and contained no other indicators. The survey was approved by the

Research Committee of Kerman University of Medical Sciences and Health services.

**Analysis**

Data analysis was carried out using SPSS 10 software. Chi square, t-student test and Odd ratio for trends were used for comparisons. A p-value less than 0.05 was retained statistically significant.

**Results**

Among the 3072 participants, 1891 were male and 1181 were female. Moreover, 68.5% of the students were in the last year of high school (juniors) and 31.5% were in college (seniors). The mean age of initiation of cigarette smoking was 12±3.02 among males and 13.43±3.31 among females and no gender difference was observed. The mean number of daily cigarettes smoked was 9.09±8.52 with a significant difference between males (9.95±8.42) and females (5.83±8.18), (p<.005). The availability was defined by multiple choice questions concerning the easiness of cigarette accessibility. Rate of cigarette availability was very high for 91.4% of male and 80.7% of female students as they declared that the price was too low and there was no restriction on sale of cigarettes; gender difference in this regard was significant (p<.05). In the majority of participants, cigarette smoking had been started independently and in the second rank, cigarettes had been offered by a friend. The number of smoked cigarettes was significantly more in senior (college) students comparing to juniors (last year of high school) (p<.0001).

Table I demonstrates some important items in cigarette smoking frequency. All items were significantly different between males and females (p<.0001). According to Fagerstrom questionnaire, the prevalence of cigarette dependency was 4.9%. Nevertheless, 17.9% (11.5±6.4) of the cigarette users were not dependent; therefore, on the whole, 28.8% of the subjects could be considered as cigarette users. In male subjects, the most important motivations of tobacco use were identified as smoking of the peer group, the belief that smoking is fashionable and improves their self-esteem; and the incentives in females were; creating enjoyment and to be a girl of fashion.

**Table 1. The frequency of cigarette usage according to sex**

	Total		Male		Female		OR	CI
	No	%	No	%	No	%		
No smoking	2370	77.1	1350	70.1	1045	88.5	3.28	2.67-4.02
At least once in life	354	11.5	285	15.1	69	5.8	2.86	2.17-3.76
Sometime in last six month	198	6.4	156	8.1	42	3.2	2.43	1.72-3.45
Dependence	15	4.9	125	6.6	25	2.1	3.27	2.11-5.06
Total	3072	100	1891	100	1181	100		

Table 2. The frequency of cigarette smoking reasons according to sex

	Total		Male		Female		OR	CI	P
	No	%	No	%	No	%			
My friends smoke	72	22.1	68	24.9	7	10.6	2.79	1.21-6.41	<0.05
To impress others	36	10.6	36	13.2	0	0	-	-	<0.005
It can't stop	30	8.8	24	8.8	6	9.1	0.96	0.3-2.4	>0.05
It is a fashion	96	28.3	61	22.3	35	53	3.92	2.23-6.87	<0.0001
It gives me confidence	39	11.5	36	13.2	3	4.5	3.19	9.95-10.6	>0.05
It controls my weight	12	3.5	9	3.3	3	4.5	1.39	0.3-5.3	>0.05
To appear older	15	4.4	12	4.4	3	4.5	1.03	0.2-3.7	>0.05
I enjoy it	36	10.6	27	9.9	9	13.6	1.63	0.6-3.2	>0.05
Total	339	100	273	100	66	100			

The items of "Smoker friends", "To impress others", and "Smoking is in fashion" showed a significant gender difference (table II).

44.7 % of the male and 26.3% of female participants had a motivation to quit smoking; significant difference between males and females was observed ( $p < .05$ ). The total number of cessation attempts was ( $4.83 \pm 3.72$ ) with ( $5.32 \pm 3.62$ ) in boys, and ( $3 \pm 3.64$ ) in girls ( $p < .05$ ).

## Discussion

Several researches have concluded that self reports of cigarette smoking by adolescents are generally valid; and in different ethnic groups the difference in false negative and false positive rates does not seriously affect the quality of results (13).

Cigarette smoking rate reports vary from 11% to 30% in the population of older than 15 years of age in different parts of the country (7, 14, 15). The studies conducted on the youth showed that in (Tehran) the capital (14) 7.2% of male and 1% of female students used to smoke regularly whereas in Rasht, a city in the north, 9% of male high school students were cigarette smokers (16, 17). However, the most recent study showed that the prevalence of self reported cigarette smoking in middle and high school students (11-18 years old) across the country was 14.3% (6).

In India, the other Asian country, nearly 40% of students identified themselves as current smokers (18), while the prevalence of cigarette smoking among male secondary school children in Singapore was 33.2% (19). As a school based survey in 132 different countries, The Global Youth Tobacco Survey reported that the world wide cigarette smoking rate in the youth is 8.9% (20).

According to this study, 4.9% of high school students were nicotine dependent in Kerman. This rate is less than all the above findings; this controversy may be due to the applied method. In our opinion, the lower rate of smoking dependency in this study in compare to other mentioned studies may be due to the fact that those researches evaluated all the users, not only the tobacco dependents. If we consider all the users as an item, our finding would then be 22.8% .

Smoking prevalence has shown a decreasing trend in Iran from 1991 to 1999 (7, 8). In the United States of America, current smoking rate has increased by 26.5% from 1991 to 1995 (21) while from 1993 to 2004 this trend decreased to 22.3% among high school students (22). In Europe, daily smoking prevalence rose from 9 to 18 percent across a -year follow up in Australia (23) while in Hungary, it rose from 36% to 46% across a -four- year follow up (24).

The mean number of daily smoked cigarette in the general population of Iran was 13.6 10.3 (7). In rural samples, the average daily smoked cigarette varied from 11 to 16.8 (12, 25), however, it was 8.75 in our subjects .

The mean age of the first smoking experience was about 16 to 25 in the general population (12,14, 25); but ,as demonstrated in the studies conducted in high school students, it decreased to 14 to 15 years (17, 26). Moreover, in a recent study performed in 2004 among high school students, the mean age of the first attempt to smoke was 13.2 years (6). These studies are in agreement with our results that the age of the first smoking experience was ( $12 \pm 3.02$ ) in males and ( $13.43 \pm 3.31$ ) in females. In general, the age of smoking initiation in the world and in Iran is in a decreasing trend (6, 26, 27).

Apart from environmental, behavioral and personal factors, which all play a role in the initiation of smoking; there is another main theory of cigarette smoking called "strain theory" (28). Our study revealed that the main motivations to smoke in boys are "Smoker friends", "to think smoking is fashionable" and "to have a good self-esteem" and in girls the incentives were "pleasure", and "Smoker friends", respectively. These results are fairly similar to other studies which have identified a strong correlation between cigarette smoking and self esteem in adolescents (29). In addition, in a study conducted in Shiraz it was found that self esteem is associated with attitude toward smoking in adolescents (30). In another study, stress and anxiety relief were considered as main motivations (31). Adolescents are at the age of identity formation and they struggle to develop ego identity. Considering that peer group identity is an important developmental issue, teachers, principals, super intenders and other authority figures play an important

modeling role in the formation of the personality trait habits in the youth (5). Therefore, prior to smoking experience, attitude change at early age is needed (6, 26, 30, 32). Overall, in a world wide study, 60% of students were exposed to cigarette smoking in public places (33). According to these studies and in our opinion, cigarette smoking should be forbidden in public places seriously not only for the adverse medical effects of passion smoking, but for its modeling effects on adolescents .

More than 82 percent of our samples had a history of smoking cessation. The mean number of cessation attempts was  $5.45 \pm 3.66$  for juniors and  $10.0 \pm 0.1$  for seniors. This confirms a strong motivation to quit smoking, however, nearly all of the attempts for quitting had relapsed. These attempts are more than the result of a worldwide study in which the median percent of current student smokers who tried to stop smoking was 68.4% (33). A high rate of short term cessation was also reported in Australian adolescents; 70% of these daily smokers relapsed in 12 months and about 90 percent of quitting attempts involved no treatment in the past (23). However, the success rate in a single unaided quit attempt is low with about one percent remaining abstinent for one year later (24). It is interesting to know that none of our samples with a history of smoking cessation had referred to a health professional to quit smoking. It seems that referring to health professionals, coping with social pressures, especially peer pressure do not play an important role in cessations and its relapse. Thus, behavioral therapies such as social skills and self assertiveness trainings would be necessary to help the students to respond appropriately in such situations

High school period appears to be an initiation time that many adolescents try to experience cigarette smoking for different reasons. Therefore, we suggest providing information for adolescents who are about to start or stop smoking and for decision makers and we also advise more social skills training approaches to prevent cigarette smoking .

Limitations: Our finding in this study was subject to at least three limitations. First, the data was applied only to high school juniors and college students, therefore, did not represent all persons in school age. Second, the data was referred only to the youth who were in school on the day of the survey administration. Third, the data was based on self reports, possibly leading to under or over estimating of behavior.

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