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Smoking Habits of Adolescent Students in Tehran

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ABSTRACT

Background: *Cigarette smoking is among the main preventable causes of untimely death, morbidity and mortality in the world. Various reasons have been suggested for cigarette smoking among students which are mostly related to the culture and customs of a country. This study aimed to evaluate the factors associated with cigarette smoking among students.*

Materials and Methods: *This cross-sectional analytical study was conducted in Tehran in 2008 and used "Global Youth Tobacco Survey" (GYTS) self-administered questionnaire for data collection. A total of 4,523 students (2,251 girls and 2,272 boys) were selected by using randomized multi-stage cluster sampling. SPSS version 16 software, chi-square test and logistic regression test were used for data analysis.*

Results: *A total of 4,523 students (50.2% boys and 49.8% girls) with a mean age of 14.69±2.09 yrs were evaluated. The prevalence of smoking experience, current smoking, and current regular smoking among students was 25.5%, 7.4%, and 1.9%, respectively. The score of knowledge was 5.29±1.29 for all students, 5.34±1.23 for nonsmoker students, and 4.57±1.74 for current smokers (P<0.01). The mean score of attitude towards smoking was 27.29±7.41 for all students, 27.56±7.20 for non smokers and 21.10±7.69 for current smokers. The difference between the scores of current smokers and nonsmokers was statistically significant (P<0.01). In evaluation of the correlation between cigarette smoking and different variables, several factors were found to increase the likelihood of smoking among students including the male gender, older age, low grades, having smoker friends, pocket money more than 300,000 Rials (~$30.00) per month, exposure to family members' smoking, lack of parental advice, low scores for knowledge, low scores for attitude, passive smoking(exposure to secondhand smoke at home or outside),poor perception of anti-smoking messages broadcasting by the media, watching actors smoking (cigarette or hookah) in movies, and last but not least viewing smoking advertisements and cigarette commercials (OR=1.464-57.707).*

Conclusion: *Considering our study findings, planning and implementation of educational tobacco control programs are required at schools aiming at preventing cigarette smoking by increasing the knowledge and correcting the attitude of students.* ***(Tanaffos 2010; 9(2): 33-42)***

Key words: *Smoking habit, Students, Adolescent, Cigarette*

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INTRODUCTION

Cigarette smoking is considered a major public health hazard in the world. It is among the main preventable causes of untimely death, morbidity and mortality worldwide. About 5 million deaths occur annually due to cigarette smoking. If the pattern of tobacco consumption continues at the same pace as today, the morbidity and mortality rates will be doubled (10 million people per year) by the year 2020 (2,3) and 7 million of which will occur in developing countries (4). Studies indicate that most smokers start smoking under the age of 18 and during their adolescence. Adolescents are easily affected by their peers, social normalcy and tobacco advertisements. The younger the age of starting smoking, the greater will be the odds of becoming a regular smoker later in life. Usually with a simple smoking experience (1 or 2 puffs), the adolescent will become a regular smoker. More than one third of those who experienced smoking before the age of 18 will become daily and about two third of them will become regular smokers (5). In a report published by Warren regarding the results of Global Youth Tobacco Survey (GYTS) in 43 countries (1999-2001) on 13-15 year-old adolescents, the prevalence of experiencing smoking and its current use were reported to be 33% and 14%, respectively (6). Rachiotis and his colleagues in their study found that smoking among students was correlated with male gender (CI95%=1.08-3.08, OR:1.62), having smoker parents (CI95%=1.45-5.89, OR:2.59) and pocket money more than 16 Euros (CI95%:1.19-5.98, OR:2.64) (7). Ertas in his study in 2003 evaluated the factors associated with stages of cigarette smoking among Turkish youth. He showed that males and high-school students had higher odds of being susceptible to smoking compared with others and higher odds of becoming established smokers. Exposure to parent, teacher, and peer's smoking, cigarette promotions, and perceived ease of access to cigarettes are all significant predictors of being susceptible to smoking and established smoking. Turkish youth who attribute positive traits to smokers were more likely to be susceptible to smoking and to become established smokers (8). Various factors may play a role in initiation of smoking among which, gender, exposure to parent and peer's smoking, low grades, pocket money and type of school (public or private)(4), feeling mature, seeking attention and coolness (9) have been named by some studies. These factors are related to the culture, traditions and other characteristics of a country. In most developing countries precise data is not available on incidence and prevalence of smoking among adolescent students or on their knowledge and attitude towards it. Obtaining this information is the first step in planning and implementation of anti-smoking programs. In Iran, very few studies have been conducted in this regard with various results. Having a friend or a family member smoking, family issues, leisure, tendency towards smoking, and gender are factors reported to be responsible for students' smoking in Iranian studies (10-16).

This study aimed to determine the factors associated with adolescent smoking. The obtained results may be used in planning interventional and preventive measures aiming to decrease tobacco consumption and tendency towards it among students.

MATERIALS AND METHODS

This cross-sectional analytical study was based on a primary descriptive cross sectional study conducted on the same population in Tehran in the year 2008

using GYTS self-administered questionnaire. A total of 4,523 5th to 11th grade students (2,251 girls and 2,272 boys) were randomly selected using multi-stage cluster sampling. GYTS was first designed by the World Health Organization and Center for Disease Control aiming to evaluate tobacco consumption among adolescents and youths of all countries around the world by using the same basic methodology and questionnaire (17). The questionnaire included demographic characteristics, smoking experience, pattern of current smoking, age of initiation of smoking, knowledge and attitude towards smoking, exposure to parents and peers' smoking, role of media and cigarette advertisements in tobacco consumption, history of hookah consumption, and exposure to secondhand smoke. Before distributing the questionnaires, students were thoroughly informed by expert technicians regarding the objectives of the project and how to fill out the questionnaires. Students were also reassured about the confidentiality of their information. The questionnaire did not ask for the student's first or last name. Students filled out the questionnaires willingly without the attendance of a teacher or school personnel.

Definitions:

-Cigarette or hookah smoking experience: Students who had tried cigarette or hookah smoking even for one or 2 puffs in the past

-Current smoker: Students who had smoked cigarettes for a day or more during the last 30 days before the completion of the questionnaire

-Current regular smoker: Students who had smoked cigarettes for 20 days or more during the last 30 days before the completion of the questionnaire

-Age of initiation of smoking: Age at which the student had tried cigarette smoking for the first time in his/her life

Non-smoker: Students who were not current smokers

Statistical analyses were performed using SPSS ver.16 (SPSS Inc. Chicago, IL) software. Chi-square test was used to compare the frequency of variables in different groups. Logistic regression test was used for data analysis.

RESULTS

In this study a total of 4,523 questionnaires were completed out of which 49.8% belonged to girls and 52.2% belonged to boys. Understudy students were in the 5th, 6th, 7th, 8th, 9th, 10th and 11th grades and their mean age was 14.69±2.09 yrs. The prevalence of smoking experience, current smoking and current regular smoking among students was 25.5% (CI 95%=22.8-28.2), 7.4% (CI 95%=5.8-9.0) and 1.9%, (CI 95%=1.1-2.7) respectively. Prevalence of smoking experience, current use, and current regular use was 27.5%, 8.6% and 2.7%, respectively in boys. These rates were 23.5%, 6.1% and 1.0%, respectively in girls. The highest frequency of smoking experience belonged to the age group of 14-15 years (27.6%). This rate was 28.8% in girls and 26.6% in boys in this age group. About one of every three students (35.2%) had been exposed to secondhand smoke at home during the previous week. One of every two students (46.3%) had been exposed to cigarette smoke in places other than the home during the previous week. The knowledge of students about smoking and its related hazards was assessed by considering the minimum score of zero and maximum score of 8. Results showed that the mean score of knowledge for all students was 5.29±1.29. This score was 5.34±1.23 for nonsmokers and 4.57±1.74 for current smokers ($P<0.01$). The mean

score of attitude towards smoking (range 6-36) was 27.29±7.41, 27.56±7.20 and 21.10±7.69 for all students, non smokers and current smokers, respectively. A significant difference was found between the scores of non smokers and current smokers in this regard (P<0.01). Students were specifically asked about the parental advice and orientation regarding the health hazards of smoking (Figure 1).

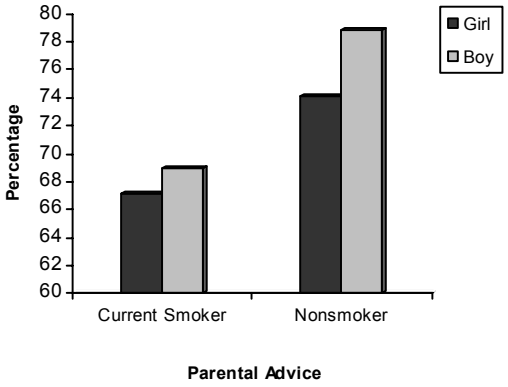

Figure 1. Parental advice regarding the health hazards of smoking among students based on smoking status and gender. (P<0.01 compared to girls).

Of non-smoker students, 76.4% had been informed by their parents regarding the health hazards of smoking whereas, this rate was 68.2% in current smokers (P<0.01). About 3 of every 4 students had received an anti-tobacco message (anti-cigarette or hookah smoking) from the media during the last 30 days. This figure was 79.0% among non smokers and 71.3% among current smokers (P<0.05). Almost half the students (54.6%) had been exposed to tobacco advertisements during the previous month. Viewing cigarette commercials in athletic competitions or TV programs was reported by 53.4% of non smoker students and 71.8% of current smokers (P<0.01). Four of every 10 students (38%) stated that they had watched actors smoking in movies. Watching smoking (cigarette or hookah) in the movies was reported by 25.9% of current smokers and 16.6% of non smokers (P<0.01). A total of 54.9% (CI95%=51.8-58.0) of students had experienced hookah smoking. Table 1 shows the relationship between hookah smoking experience and pattern of cigarette smoking.

Logistic regression test demonstrated that male gender, older age, low grades, peers' smoking, pocket money more than 300,000 Rials (~$30.00) per month, family members' smoking, lack of parental advice, low "knowledge" and "attitude" scores, exposure to secondhand smoke at home or in places other than the home, lack of anti-smoking messages in the media, watching actors smoking (cigarette or hookah) in the movies or in TV series, and viewing cigarette commercials were all factors responsible for increasing the risk of smoking among students (Table 2).

Table 1. The correlation between hookah smoking experience and pattern of smoking among adolescent students based on gender (using chi-square test).

Gender	Pattern of smoking	Hookah smoking experience Percentage
Girls	Nonsmoker	48.2
	Current smoker	90.8*
Boys	Nonsmoker	55.8
	Current smoker	90.5*
Total	Nonsmoker	52.0
	Current smoker	90.6*

P<0.01 compared to nonsmokers

Table 2. The correlation between different variables and cigarette consumption among understudy adolescent students (logistic regression test)

Variable	P-value	OR	Confidence Interval	
			Lower	Upper
Gender (males compared to females)	0.001	1.464	1.165	1.840
Age (older age)	0.001	1.602	1.491	1.721
Pocket money more than 30,000 T per month	0.001	2.724	1.756	4.227
Grades (over 17/20)				
15-17	0.001	2.896	2.201	3.811
10-15	0.001	3.825	2.881	5.077
Below 10	0.001	11.826	5.169	27.061
Close smoker friends (compared to none)				
Some of them	0.001	6.887	5.118	9.269
Most of them	0.001	23.477	16.045	34.352
All of them	0.001	57.707	32.087	89.892
Family members' smoking	0.001	2.076	1.635	2.637
Smoker father	0.001	2.086	1.659	2.624
Smoker mother	0.001	6.037	4.125	8.834
Smoker brother	0.001	5.000	3.603	6.939
Smoker sister	0.001	14.423	8.677	23.974
Smoker grandfather	0.002	1.691	1.204	2.375
Smoker grandmother	0.001	4.451	2.814	7.042
Lack of parental advice	0.001	1.505	1.176	1.926
Knowledge (low score)	0.001	0.671	0.618	0.729
Attitude (low score)	0.001	0.900	0.886	0.914
No discussion about the reasons of smoking at school	0.01	1.744	1.223	2.486
Exposure to secondhand smoke at home	0.001	4.117	3.221	5.262
Exposure to secondhand smoke in places other than the home	0.001	4.601	3.485	6.075
Exposure to anti-smoking messages in the media (Very much)				
A lot	0.05	1.645	1.065	2.540
Occasionally	0.05	1.490	1.025	2.166
Never	0.001	2.000	1.404	2.850
Watching smoking (cigarette or hookah) in movies (always compared to never)	0.05	2.124	1.108	4.072
Viewing cigarette commercials on TV or sport competitions (compared to never)				
Always	0.001	4.017	2.699	5.979
Often	0.001	2.979	2.054	4.321
Sometimes	0.01	1.788	1.234	2.591
Rarely	0.001	1.784	1.303	2.442

DISCUSSION

In this study, 3 out of every 10 students had experienced cigarette smoking (25.5%). A significant difference was found in this regard between girls and boys (23.5% versus 27.5%, P<0.01). Studies conducted in Greece and Kurdistan region in Iraq in 2005 according to the GYTS reported this rate to be 32.1% and 27.1%, respectively (18, 19). The highest prevalence of smoking experience was reported in the age group of 14-15 years which was in accord with other studies such as ones conducted in Zahedan in 2005 (20) and in Tehran in 1998-1999 (21). The prevalence of current smoking was 7.4% among all students. The ratio of smoking prevalence between boys and girls was 1.4:1.0. In a published study by Warren based on GYTS findings in 121 jurisdictions from 76 countries the ratio of current smoking between boys and girls was1.9:1.0. This ratio in different countries was reported to be 4.5:1.0 in Bahrain, 1.0:1.0 in Egypt, 2.2:1.0 in Jordan, 2.0:1.0 in Lebanon, 1.0:1.0 in the United States, and 1.4:1.0 in Moscow (22, 23). According to our study results, 35.2% of understudy students had been exposed to secondhand smoke at home during the previous week; whereas, 46.3% had been exposed to secondhand smoke in places other than the home in the previous week. These rates are in accord with those of other studies. The GYTS study during 1999 to 2001, Kyrlesi and colleagues in 2004-2005, Christophi and colleagues in 2005-2006, Warren and coworkers in 2006, Gururaj and colleagues in 2003-2004, GYTS study in 132 countries during 1999-2005 and Baska and coworkers in 2002-2003 all reported high exposure to secondhand smoke among students (1,6,18, 23-26). The mean score of "knowledge" among nonsmoker students was higher than that of current smokers (P<0.01).Very few studies have been conducted on the knowledge of students about tobacco use but all have showed higher scores of knowledge in nonsmokers. In a study by Shahrokhi and colleagues conducted in 20 provinces of Iran, it was reported that smokers had a lower level of knowledge about the hazards of smoking (27). Nonsmokers had a higher score of attitude as well (P<0.01). This finding was in accord with that of Shahrokhi's study (27). Considering the abovementioned findings, planning and implementation of educational programs seem necessary in order to increase the knowledge and correct the attitude of students toward smoking hazards.

A total of 78.5% of students had been exposed to anti-smoking messages from the media. According to GYTS during 1999-2001 in 43 countries, 80.4% of students had been exposed to anti-tobacco messages in the media (6). The frequency of exposure to anti-smoking messages was higher among nonsmokers compared to current smokers (P<0.05). This finding was in concordance with that of Christophi and colleagues in Cyprus (1).

Overall, 54.6% of students had been exposed to cigarette commercials during the previous month. This rate was almost similar to that reported by a study conducted in Cyprus during 2005-2006 (1). This rate was reported to be 79.7% in GYTS study conducted during 1990-2001 (6). In our study, viewing cigarette commercials in sport competitions or TV programs was reported to be higher among smokers (P<0.01). In a study conducted in Pakistan in 2004-2005, smokers had been exposed to smoking advertisements in the media more than nonsmokers (4).

In our study, about 1 of every 2 students (54.9%) had tried hookah smoking. Some studies conducted in the Eastern Mediterranean region reported the prevalence of consumption of tobacco products other than cigarette to be 10-18% among their youths (28). In a study conducted in Tehran in 2004-2005, the prevalence of hookah smoking experience was reported to be 56.9% among Tehran adolescent

students (29).

Prevalence of hookah smoking experience was higher among current smokers compared to nonsmokers (P<0.01). This finding was in concord with that of Maziak's study conducted on Syrian college students in 2003. He found a significant correlation between hookah and cigarette smoking (30). In this study, we found a correlation between hookah and cigarette smoking as well but it is not clear that which one affects the other. Hookah smoking has been increasing in Iran and some other countries during the recent years and therefore, it should be included in the tobacco control programs. Also, families should be concerned about smoking hookah by their youth and try to limit its ease of access. According to Table 2, males were more likely to smoke (CI95%=1.165-1.840, OR:1.464). Same result was observed in various studies such as Kelishadi's study in Isfahan in 2000, Rachiotis in Greece in 2004-2005, Sreeramareddy in Nepal in 2007, and Rudatsikira in Ethiopia in 2003 (16,7,31,32). Also, the likelihood of smoking increased with older age (CI 95%=1.165-1.840, OR=1.602). Similar results were reported by studies conducted in Savojbolagh, Iran in 2005, Isfahan, Iran in 2000, Nepal in 2007, and Ethiopia in 2003 (15,16,31,32). Therefore, if tobacco control interventional and educational programs start early enough, they can decrease the prevalence of tobacco consumption later in life. Pocket money more than 30,000 Tomans (~$30) per month increased the likelihood of smoking (CI 95%:1.756-4.227, OR:2.724). Rachiotis and colleagues in their study in 2004-2005 on 6,141 Greek students indicated that pocket money more than 16 Euros per week increased the likelihood of smoking (CI 95%=1.19-5.98, OR:2.64)(7). In our study, students who had smoker friends were more likely to smoke. According to a study conducted in Pakistan in 2004-2005, having smoker friends increased the likelihood of smoking up to 5 times (4). Similar results were obtained by Afrasyabifar and colleagues, Hashemi in 1999-2000, Majidpour and coworkers in 2003-2004 and Farshi and colleagues in 2005 (10,12,13,15). Considering the effect of having a smoker friend on initiation of smoking, students should be advised and assisted in choosing non smoker friends. Smoking by at least 1 family member in our study increased the prevalence of smoking (CI95%:1.635-2.637, OR:2.076). Kelishadi and colleagues studied the effect of environmental factors on smoking habits of 1,950 adolescents in Isfahan. Logistic regression test demonstrated that having a family member smoking significantly affected the prevalence of smoking among youths (16). This finding was in accord with those of Ramezankhani and colleagues in 1999, Sohrabi and colleagues in 1990, Heydari and colleagues in 2002-2003, Rozi and colleagues in 2004-2005, Rudatsikira and coworkers in 2003, Ertas in 2003, Sreeramareddy in 2007, and Siziya in 2003 (4,8,9,31-35). Considering the family influence in current smoking habits of students, tobacco control programs should include family members as well. Lack of parental advice regarding the health hazards of smoking raised the likelihood of smoking (CI95%=1.176-1.926, OR=1.505). This finding was in agreement with that of Ertas Study conducted according to GYTS in 2003 on 15,197 middle school and high school students in Turkey. He found a significant correlation between parental advice and cigarette smoking (8). Therefore, participation of family members in smoking control sessions held in schools might be helpful. Low knowledge score among students was associated with increased likelihood of smoking. Very few studies have been conducted in this regard but they have all demonstrated this correlation. In a study conducted by Andreeva and colleagues in 2005 on 609 Ukrainians aged 15-29 yrs, increased risk of smoking was reported among those with low levels of

knowledge and awareness (36). Studies conducted in Nepal and India showed similar results (31,35). Low scores of attitude were also associated with increased prevalence of smoking. A few studies have been performed on this subject and results showed that discussing the reasons of smoking by youths in class decreases the likelihood of smoking. Therefore, implementation of educational tobacco control programs is necessary aiming at increasing the knowledge and correcting the attitude of students towards smoking by employing discussion methods. Exposure of students to secondhand smoke at home (CI95%=3.221-5.262, OR:4.117) or in places other than the home (CI95%=4.601-3.485, OR=1.505) increased the prevalence of smoking. Bettcher and colleagues evaluated the effect of exposure to secondhand smoke (SHS) among students at home and in places other than the home during 2000-2007 according to GYTS. Never smokers exposed to SHS at home were 1.4-2.1 times more likely to be susceptible to initiating smoking than those not exposed. Students exposed to SHS in places other than the home were 1.3-1.8 times more likely to be susceptible to initiating smoking than those not exposed (37). According to a study by Warren and colleagues according to GYTS findings in 395 jurisdictions from 131 countries, smoker students were significantly more exposed to secondhand smoke at home and in places other than the home (23). Our study results showed a significant correlation between smoking and exposure to secondhand smoke but it is not clear which one affects the other. A smoker person might expose himself to secondhand smoke willingly or there is a possibility that exposure to cigarette smoke increases the likelihood of initiation of smoking.

Exposure to smoking in the movies was higher in smokers than non-smokers. Sohrabi in 1990 considered tobacco consumption by actors in the movies to be among the predisposing factors for initiation of smoking among students (33). It seems that not only superstars but also every actor smoking in the movies increases the likelihood of smoking among students. Viewing cigarette commercials in sport competitions or TV series also increased the likelihood of smoking among students. Similar results were obtained by a study conducted in Turkey in which cigarette advertisements were considered a predictive factor for initiation of smoking (8). Supervision and control of the media especially TV programs are strongly recommended in this regard.

In conclusion, considering our study findings planning and implementation of smoking control programs are necessary at schools with the aim of increasing the knowledge and correcting the attitude of students in this respect. Employing discussion methods might be helpful in this regard. Our study results might be helpful for strategy planning committees in the Ministry of Health, and Ministry of Education and Training.

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