Tobacco Use and Influencing Factors Among Iranian Children and Adolescents at National and Subnational Levels, According to Socioeconomic Status: The Caspian-IV Study

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Abstract

Background: Iran is facing an epidemiologic transition, with one of its features being the tendency towards smoking by adolescents. The findings of previous studies in Iran have shown that the pervasiveness of tobacco products among school students is high. No previous study has reported the prevalence and determinants of smoking in various socioeconomic statuses (SESs) and at the subnational level in Iran.

Objectives: To compare the prevalence of smoking and the factors that influence the initiation and continuation of tobacco use in a nationally representative sample of Iranian adolescents living in different regions with diverse socio-demographic patterns.

Patients and Methods: This nationwide, cross-sectional study was conducted in 2011 - 2012 among 14,880 students, aged 6 - 18 years, selected by cluster sampling from 30 provinces. Anonymous questionnaires were completed about tobacco use and the main psychological determinants of initiation and continuation to smoke. The questionnaire was modeled on the world health organization global school-based student health survey (WHO-GSHS). The sub-national regions were defined by the criteria of geography combined with SES. According to this classification, the lowest to highest SESs were considered for the southeast, north-northeast, west, and central regions, respectively. Data were analyzed using the STATA statistical software package.

Results: Overall, 13,486 students completed this survey (participation rate of 90.6%). They consisted of 50.8% boys, 75.6% urban residents, with a mean age of 12.47 ± 3.36 years. According to the self-report of students, 2.6 % (3.5% of boys and 1.7% of girls) were current smokers, and 5.9% (7.5% of boys and 4.2% of girls) had ever been smokers. The current use of tobacco was higher in participants aged 14 - 18 years (6.11%) than in those aged 10 - 13.9 years (1.18%) and 6 - 9.9 years (0.51%). Current and past tobacco use, respectively, had the lowest prevalence in the region with the lowest SES (2.2%, 3.7%) and the greatest prevalence in the highest SES region (4.3%, 8.9%). Entertainment was the most common reason for smoking initiation (83.65% of smokers) and continuation (77.01% of smokers), followed by feelings of pleasure, and enjoying the tobacco smell. These influencing factors did not differ significantly according to SES or gender.

Conclusions: Smoking is a health problem for Iranian adolescents, and has a higher prevalence in areas with higher SES. Entertainment and feeling pleasure were the commonest reasons for initiation and continuation of smoking. Tobacco-control programs should begin from childhood and family-centered preventive counseling should be intensified in Iran.

Keywords: Smoking, Socioeconomic Factors, Adolescents

1. Background

According to reports from the world health organization (WHO), tobacco use is one of the major causes of disease and deaths in the world. Tobacco use was estimated to cause 5.1 million deaths in 2004 at a global level (1), and by 2020 this number is expected to increase to 10 million deaths (2), with higher rates in low- and middle-income countries (3). Every day, nearly 100,000 youths begin to consume tobacco worldwide, with a quarter of them under 10 years of age (4). For instance, approximately 1000 adolescents in the United States become smokers daily (5).

Many studies have reported the prevalence of tobacco smoking among adolescents and youths of different countries. A study in selected countries of Southeast Asia showed that the extent of tobacco use among students

aged 13 - 15 years varied from 5.9% in Bangladesh to 56.5% in Timor-Leste; in those aged 15 years or more, the figures were 43.3% in Bangladesh, 34.6% in India, and 27.2% in Thailand (6). A study of 13 - 15-year-old students in Greece reported that 16.2% of them were current tobacco users (7).

Iran is facing an epidemiologic transition, with one of its features being the tendency of adolescents to start smoking. The findings of our previous national study during 2009 - 2010 in provincial counties of Iran showed that 10.4% of school students, aged 10 - 18 years, used tobacco product (8). Other studies performed among male high school students in Iran have reported levels of current smoking ranging from 2.3% (9) to 15.1% (10). In all of these studies, the number of smokers was higher among boys than among girls (11-13). According to the studies in Iran, the average age at which youths started cigarette smoking was 14.5 ± 2.4 years (14).

The main reason for smoking varies in different populations with diverse socioeconomic and cultural backgrounds. Psychosocial determinants (15-18) and social factors (19-23) influencing tobacco use have been studied in different countries.

To provide applicable programs for effective prevention and to plan for comprehensive and persistent tobacco-control programs in each population, the prevalence and determinants of smoking should be determined for various socioeconomic groups.

2. Objectives

No previous study has reported these factors at sub-national regions of Iran, or with large variations in health and socioeconomic status (SES) in the different regions. The aim of the present study is to compare the pervasiveness of tobacco smoking and the factors influencing the initiation and continuation of tobacco use in a nationally representative sample of Iranian adolescents living in different regions with diverse socio-demographic patterns.

3. Patients and Methods

The data for this cross-sectional study were collected as a part of the "national survey of school student high risk behaviors" (2011 - 2012) in the fourth survey of the school-based surveillance system titled childhood and adolescence surveillance and prevention of adult non-communicable diseases (CASPIAN-IV) Study. This school-based, nationwide health survey was conducted in 30 provinces in Iran. Details on the study protocol have been described before (24), and here we report it in brief.

3.1. Study Population and Sampling Framework

Having Iranian nationality (Iranian identification identity card) was the only inclusion criterion of study, and all foreign-nation students were excluded from the study population. The study population consisted of 14,880 school students, aged 6 - 18 years. They were selected, through a multistage, cluster-sampling method, from urban and rural areas urban and rural areas of 30 provinces of the

country in 30 provinces of the country (48 clusters of 10 students in each province). Stratification was performed in each province according to the residence area (urban/rural) and school grade (elementary/intermediate/high school). The sampling was proportional to size, with equal sex ratio; i.e., equal numbers of boys and girls were selected from each province and the ratios in urban and rural areas were proportionate to the population of urban and rural students. In this way, the numbers of samples in rural/urban areas and in each school grade were divided proportionally to the population of students in each grade. Clusters sampling with equal clusters was used in each province to reach the necessary sample size. Clusters were determined by the level of schools, including 10 sample units (students and their parents) in each cluster. The sampling frame was a list of students in each province, and was stratified by sex, living area, and grade using data obtained from the information bank of the ministry of education. In each province, schools were ordered by type and name of school, and the number of students was added cumulatively for each province. After determining clusters for each province, 10 students were selected consecutively in each cluster. The maximum sample size that could give a good estimate of all risk factors of interest was selected. The sample size was determined based on a proportion estimation formula. To obtain maximum sample size, prevalence was considered as 0.5, precision as 0.1, and type I error as 0.05. The estimated sample size (100 subjects) was multiplied by sex grouping (boy and girl), living area (urban and rural), and an attrition rate of 20%. Thus, the sample size was calculated as 480 students in each province. A total of 48 clusters of 10 subjects in each of the provinces and a total of 14,880 students were selected. The whole data from one of the provinces was not available; therefore, the analysis was performed on data from 30 provinces.

For comparison of regions with different SESs, the classification of Iran into four sub-national regions was used, based on a previous study. The sub-national regions were defined based on criteria combining geography with SES and using principal component analysis. SES was an index consisting of variables from the 2006 census, including literacy, family permanent income (family assets), and employment rate. According to this classification, the lowest to highest SESs were considered for the Southeast, north-northeast, west, and central regions, respectively (25).

3.2. Questionnaires

The questionnaires were prepared in Persian based on the questionnaire of the world health organization global school-based student health survey (WHO-GSHS). The validity and reliability of this questionnaire was confirmed (26). The students were reassured about the confidentiality of their answers, and the questionnaires were completed anonymously.

Questions were about demographic characteristics, parents' education levels, patterns of tobacco use, and the age

at which tobacco use started, as well as the psychological factors that influenced them to start and to continue smoking.

Those individuals who reported having experienced smoking were considered as 'ever' smokers, and those who reported that they actually were continuing to smoke were considered as 'current' smokers.

3.3. Ethical Concerns

The study protocols were reviewed and approved by ethics committees Tehran and Isfahan University of Medical Sciences other related national regulatory organizations. The ethical code for this study was 5429-90. After clarification of the study objectives and protocols, written consent and verbal assent were obtained from parents and students, respectively. All assessments and questionnaires were filled in private and quiet places, away from parents, classmates, and school staffs. All questionnaires were completed anonymously.

3.4. Statistical Analysis

Comparison of variables across regions was performed by means of trend analysis. A chi-square test was used to compare the prevalence rates in different areas and for different age groups. The mean of continuous variables was reported with a 95% confidence interval (CI); categorical variables are presented as percentages.

Statistical measures were estimated using survey data analysis methods in the STATA (STATA Corp. 2011, STATA statistical software: release 12, college station, TX: STATA Corp LP.) statistical software package. A P value < 0.05 was considered to be statistically significant.

4. Results

The population of this survey consisted of 13,486 children and adolescents out of the 14,880 invited subjects (participation rate of 90.6%). They were 6640 (49.2%) girls and 6846 (50.8%) boys; 75.6% of students were from urban environments, and 24.4% were from rural areas. The mean age of the participants was 12.47 ± 3.36 years, without significant difference between boys (12.36 ± 3.40 years) or girls (12.58 ± 3.32 years). Table 1 shows the prevalence of 'current' and 'ever' tobacco use by gender, age group, and living area according to sub-national classification.

Table 1. Comparison of the Frequency of Active Current and Ever Smoking in Iranian Children and Adolescents According to the age Group at National and Sub-National Levels: The Caspian-IV Study[a]

Variables	Southeast	North-Northeast	West	Central	National	P Value for Trend
Ever smoking						
Boys's age range, y						
6 - 10	1.18 (0.30, 4.55)	2.63 (1.27, 5.36)	1.89 (1.08, 3.29)	2.11 (1.17, 3.79)	2.04 (1.45, 2.88)	0.76
11 – 14	2.23 (0.85, 5.72)	5.81 (3.43, 9.67)	2.75 (1.85, 4.06)	5.44 (3.49, 8.38)	4.1 (3.16, 5.30)	0.03
15 – 18	10.84 (7.06, 16.28)	8.66 (6.00, 12.34)	13.79 (11.24, 16.81)	30.66 (25.44, 36.42)	16.92 (14.74, 19.35)	0.00
Total	5.07 (3.30, 7.73)	5.55 (4.07, 7.53)	6.28 (5.14, 7.65)	11.12 (8.86, 13.88)	7.48 (6.54, 8.54)	0.00
Girls's age range, y						
6 - 10	2.18 (0.92, 5.07)	1.72 (0.66, 4.39)	0.63 (0.25, 1.55)	1.93 (1.03, 3.60)	1.32 (0.88, 1.98)	0.13
11 - 14	1.46 (0.49, 4.32)	2.76 (1.45, 5.20)	2.55 (1.66, 3.88)	4.43 (2.92, 6.68)	2.98 (2.29, 3.88)	0.11
15 - 18	3.59 (1.61, 7.83)	9.69 (6.81, 13.62)	5.74 (4.23, 7.75)	11.37 (8.41, 15.21)	7.98 (6.63, 9.58)	< 0.001
Total	2.38 (1.39, 4.05)	4.96 (3.60, 6.80)	2.97 (2.31, 3.81)	6.34 (4.93, 8.13)	4.19 (3.60, 4.87)	< 0.001
Urban	3.53 (2.15, 5.75)	6.48 (5.14, 8.15)	5.08 (4.25, 6.07)	9.24 (7.67, 11.09)	6.54 (5.84, 7.31)	< 0.001
Rural	3.77 (2.32, 6.08)	2.01 (1.01, 3.96)	3.30 (2.27, 4.77)	6.82 (4.22, 10.85)	3.76 (2.94, 4.80)	0.007
Total	3.64 (2.56, 5.16)	5.26 (4.2, 6.56)	4.64 (3.95, 5.44)	8.86 (7.44, 10.51)	5.86 (5.29, 6.48)	< 0.001
Current smoking						
Boys's age range, y						
6 - 10	0.59 (8.1e-04, 4.12)	0.72 (0.24, 2.16)	0.5 (0.21, 1.18)	0.5 (0.21, 1.47)	0.56 (0.33, 0.97)	0.96
11 - 14	1.12 (0.28, 4.37)	1.94 (1.02, 3.63)	0.59 (0.24, 1.45)	1.99 (1.08, 3.65)	1.31 (0.88, 1.94)	0.06
15 - 18	8.37 (4.58, 14.81)	5.59 (3.41, 9.03)	6.19 (4.65, 8.20)	16.79 (12.87, 21.6)	8.97 (7.45, 10.75)	0.00
Total	3.62 (1.99, 6.5)	2.61 (1.73, 3.91)	2.49 (1.86, 3.32)	5.51 (4.09, 7.38)	3.49 (2.91, 4.18)	< 0.001
Girls's age range, y						
6 - 10	1.31 (0.43, 3.88)	0.57 (0.15, 2.17)	0	0.77 (0.30, 1.98)	0.44 (0.23, 0.83)	0.01
11 - 14	0.49 (7.2e-04, 3.22)	0.75 (0.24, 2.30)	0.55 (0.22, 1.37)	2.3 (1.33, 3.94)	1.04 (0.67, 1.60)	< 0.001
15 - 18	1.03 (0.27, 3.81)	5.2 (3.35, 7.98)	1.84 (1.15, 2.95)	5.1 (3.26, 7.89)	3.38 (2.57, 4.42)	< 0.001
Total	0.95 (0.44, 2.04)	2.31 (1.50, 3.53)	0.79 (0.51, 1.24)	2.92 (2.05, 4.14)	1.66 (1.32, 2.08)	< 0.001
Urban	2.3 (1.07, 4.88)	3.15 (2.33, 4.26)	1.89 (1.45, 2.46)	4.68 (3.66, 5.97)	3.01 (2.57, 3.52)	< 0.001
Rural	2.08 (1.16, 3.69)	0.62 (0.19, 2.00)	0.92 (0.48, 1.78)	2.16 (1.17, 3.96)	1.27 (0.90, 1.80)	0.055
Total	2.2 (1.33, 3.63)	2.46 (1.82, 3.31)	1.65 (1.29, 2.11)	4.29 (3.39, 5.40)	2.59 (2.24, 2.99)	< 0.001

[a]Values are expressed as % (95% CI).

According to the self-report of students, 2.6% (3.5% of boys and 1.7% of girls) were current smokers, and 5.9% (7.5% in boys and 4.2% in girls) were ever smokers. The prevalence of current tobacco use was significantly higher in participants aged 14 - 18 years (6.11%) than in those aged 10 - 13.9 years (1.18%) or 6 - 9.9 years (0.51%). Likewise, the prevalence of previous (ever) tobacco use was significantly higher in students aged 15 - 18 years (12.35%) than in those aged 11 - 14 years (3.55%) or 6 - 10 years (1.7%).

Overall, 3 % of urban students and 1.2% of rural students reported to be current smokers; the corresponding figures for ever tobacco use were 6.5% and 3.8%, respectively. The students living in the Southeast region, i.e., the region with the lowest SESs, had the lowest reported current tobacco use (2.2%), in comparison with their counterparts living in the Central region (4.3%), with the highest SESs. Likewise, ever smoking was lowest (3.7%) in the region with lowest SES levels and the highest (8.9%) was in the region with highest SESs (Table 2).

As presented in Table 3, the average age at which the first attempt to use tobacco was made was 12.40 ± 3.39 years, without significant difference between low and high SES regions (12.06 ± 3.75 years vs. 12.36 ± 3.29 years, respectively; P > 0.05).

Higher education levels of fathers were associated with lower frequency of smoking among their children (P = 0.003); the corresponding figure for mothers was significant only for boys (P = 0.01).

Tables 4 and 5 describe the factors influencing the initiation and continuation of smoking among students. 'Having entertainment and recreation' was the first reason reported for smoking initiation (in 83.65% of smokers) and continuation (in 77.01% of smokers). A 'feeling of pleasure' was the second reason for smoking initiation (59.56%) and its continuation (57.66%). The third most common factor for initiation and continuation of tobacco use was 'Enjoying the tobacco smell' for 31.97% and 33.33% of student smokers, respectively. The three aforementioned common factors influencing starting and continuing smoking were not significantly different between girls and boys.

'Helping to stay awake at night' was reported in 14.52% of boy smokers, and 'increasing the attention span' was expressed in 11.02% of girls. These reasons were reported as the least important factors for starting tobacco use.

Factors influencing the initiation and continuation of tobacco use were not significantly different (P > 0.05) with regard to the SESs of the living region.

Table 2. Comparison of the Frequency of Active Current and Ever Smoking in Iranian Children and Adolescents According to the age Group: The Caspian-IV Study[a]

Variables	Age Group, y				
	6 - 9.9	**10 - 13.9**	**14 - 18**	**Total**	**P Value**
Ever smoking					
Boys	2.04 (1.45, 2.88)	4.1 (3.16, 5.30)	16.92 (14.74, 19.35)	7.48 (6.55, 8.54)	< 0.001
Girls	1.32 (0.88, 1.98)	2.98 (2.29, 3.88)	7.98 (6.63, 9.58)	4.19 (3.60, 4.87)	< 0.001
Total	1.7 (1.31, 2.22)	3.55 (2.94, 4.27)	12.35 (11.01, 13.82)	5.86 (5.29, 6.49)	< 0.001
Current smoking					
Boys	0.56 (0.33, 0.97)	1.31 (0.88, 1.94)	8.97 (7.45, 10.75)	3.49 (2.91, 4.19)	< 0.001
Girls	0.44 (0.23, 0.83)	1.04 (0.67, 1.60)	3.38 (2.57, 4.42)	1.66 (1.32, 2.08)	< 0.001
Total	0.51 (0.34, 0.76)	1.18 (0.88, 1.57)	6.11 (5.21, 7.14)	2.59 (2.24, 2.99)	< 0.001

[a]Values are expressed as % (95% CI).

Table 3. The mean (SD) age of the First Attempt at Tobacco use in Iranian Adolescents at National and Sub-National Levels: The Caspian-IV Study[a]

	Southeast	North-North-east	West	Central	National	P Value for Trend
Boys	11.69 ± 3.80	11.90 ± 3.45	12.78 ± 3.30	12.15 ± 3.34	12.31 ± 3.37	> 0.05
Girls	13.42 ± 3.50	13.03 ± 3.16	11.85 ± 3.84	12.79 ± 3.16	12.56 ± 3.41	> 0.05
Urban	12.64 ± 2.23	12.48 ± 3.29	12.65 ± 3.30	12.36 ± 3.26	12.48 ± 3.25	> 0.05
Rural	11.43 ± 4.89	12.01 ± 4.01	11.56 ± 4.38	12.38 ± 3.52	11.90 ± 4.08	> 0.05
Total	12.06 ± 3.75	12.43 ± 3.35	12.48 ± 3.50	12.36 ± 3.29	12.40 ± 3.39	> 0.05

[a]Values are expressed as mean ± SD.

Table 4. Self-Reported Factors Influencing the Initiation of Tobacco use by Iranian Adolescents at National and sub National Levels: The Caspian-IV Study[a]

Reasons for Starting to Smoke	Southeast	North-Northeast	West	Central	National	P Value for Trend
Reducing the anxiety	32.26	23.64	19.44	15.12	19.13	> 0.05
Increasing the attention span	35.48	17.86	16.82	14.53	17.49	> 0.05
Social acceptance by friends	32.26	30.36	25.23	23.26	25.68	> 0.05
Feeling older	35.48	17.86	30.84	20.93	24.59	> 0.05
Feeling of being liked	38.71	17.86	23.58	18.60	21.64	> 0.05
Increasing the self-esteem	41.94	19.64	27.10	16.28	22.13	> 0.05
Feeling of pleasure	64.52	44.64	55.14	66.28	59.56	> 0.05
Helping to stay awake at night	25.81	10.71	21.50	08.72	14.21	> 0.05
Having entertainment and recreation	84.37	85.71	74.77	88.37	83.65	> 0.05
Forgetting problems	45.16	28.57	35.51	21.97	28.88	> 0.05
Enjoying the tobacco smell	22.58	33.93	35.51	30.81	31.97	> 0.05

[a]Values are expressed as percentages.

Table 5. Self-Reported Factors Influencing the Continuation of Tobacco use by Iranian Adolescents at National and sub National Levels: The Caspian-IV Study[a]

Reasons for Continuing to Smoke	Southeast	North-Northeast	West	Central	National	P Value for Trend
Reducing the anxiety	37.93	20.00	18.10	11.63	16.90	> 0.05
Increasing the attention span	27.59	14.55	18.10	18.10	15.28	> 0.05
Social acceptance by friends	20.69	21.82	18.10	19.30	19.44	> 0.05
Increasing the self-esteem	31.03	21.82	23.08	14.62	19.50	> 0.05
Feeling of pleasure	65.52	43.64	56.73	61.40	57.66	> 0.05
Having entertainment and recreation	76.67	78.18	67.62	82.46	77.01	> 0.05
Forgetting problems	41.38	18.18	22.86	16.47	20.61	> 0.05
Enjoying the tobacco smell	37.93	30.91	35.24	32.16	33.33	> 0.05
It is just a habit	43.33	30.91	29.41	29.41	30.81	> 0.05

[a]Values are expressed as percentages.

5. Discussion

To the best of our knowledge, this study is the first of its kind in the Middle East and North Africa (MENA) region for its nationwide coverage, for comparison of smoking according to SES, and for assessment of psychological determinants for starting and continuing to smoke. It showed higher prevalence of tobacco use in children and adolescents living in regions with high SESs than in those with low SESs. Ever and current tobacco use was more prevalent among participants 14 - 18 years of age than among their younger counterparts. Previous studies have reported prevalence rates of 2.5% to 26% for smoking by Iranian children and adolescents (5, 12, 16, 27-31). This wide range can be because of the variety of age groups studied and diversities in the socio-cultural statuses of the city where the study was conducted. The prevalence of smoking was lower in the current study than in the previous surveys of the CASPIAN study (8, 12); this difference could be because the previous surveys were conducted in

were conducted at provincial level of each county of each county, whereas the current study includes different cities in each county. Moreover, the previous surveys were conducted with students 10 - 18 years of age, whereas the current study surveyed students aged 6 - 18 years. In addition, the current survey was conducted with a larger sample size and in a higher number of provinces than the previous studies. In spite of these differences, all these nationwide studies found higher prevalence of smoking in boys than in girls, and in those aged 14 - 18 years than in those of younger age groups.

Previous studies in Iran and in the MENA countries did not compare the national and subnational prevalence of tobacco use in areas with different SESs. The higher prevalence of current and ever smoking in regions with higher SESs, which was documented in the current survey, shall be considered in future preventive health actions to reduce tobacco smoking. Such interventions need to be

designed and implemented at the subnational level, and according to the SESsin each region.

Previous studies reported conflicting results about the prevalence of smoking according to SES. Our findings are in line with the studies of Hanson and Chen (32) and Johnson (33), in which smoking was more prevalent in high-SES areas. Likewise, the study of Mohammadpoorasl et al. showed that the prevalence of intention to start smoking was greater among those with a higher SES than with a lower SES (34). However, some other studies showed that the prevalence of cigarette smoking was higher among students with low SES than with high SES (15, 25, 35). On the other hand, some studies did not confirm significant association of SES with tobacco use (36-38). The Minnesota adolescent community cohort proposed that low individual SES, and not community-level SES, was associated with higher risk in adolescent smoking (39).

Previous studies in Iran (13, 36, 40-44) found higher prevalence of current and ever smoking in boys than in girls. In the current study, we found similar results, without significant difference according to the SES.

In the current study, the average age for the first attempt at tobacco use was12.40 ± 3.39 years. This age had no significant difference between low- and high- SES areas at the subnational level. However, a study in the capital city of Tehran found that in the areas of the city with lower SES, the age at which youths started to smoke was one year lower than in the high-SES areas of the city (45). It is worth mentioning that, compared to the first survey of the CASPIAN study (12), the age at which smoking was started decreased by one year. This finding warrants implementation of preventive public health actions for families and children of young age.

Several studies in different countries, including Iran, have shown higher prevalence of current and ever smoking in students of higher school levels than in lower school levels (3, 12, 13, 42, 43, 46, 47). Similar findings were documented in the current study at national and subnational levels, without significant difference according to SES.

Most previous studies about smoking among students have been conducted in urban areas, and few of them have included rural areas. Consistent with some other studies in the MENA region that have included both urban and rural areas (12, 48, 49), the present study showed that the prevalence of current and ever tobacco use were higher among urban than among rural students. However, by considering the existing problem of smoking in rural areas, it is necessary to consider tobacco-control activities, both in urban and rural areas.

Factors that influence starting and continuation of smoking have large variations in different populations. In the current study, entertainment was the first reason reported for smoking initiation (among 83.65% of smokers) and continuation (among 77.01% of smokers). The other main reasons were related to feeling pleasure of smoking and enjoying the tobacco smell. These common reasons were not significantly different in terms of gender and SES. These findings suggest that, in general,

Iranian youths use tobacco for fun, whereas tensions and mental distress are not important determinants among them for smoking initiation and continuation. Our findings are in line with previous studies in some cities of Iran, which found entertainment as the main reason for starting and continuing to smoke (50, 51). In some populations, stress and psychological distress are reported as important factors associated with initiation and continuation of tobacco use (18, 52). In some other studies, smoking initiation and continuation were higher among students with depressive symptoms (53, 54), hostility, victimization by bullies (53), or aggressive tendencies (54). However, large variations exist between different populations; for instance, a recent study in Greece showed that about a third of student smokers started smoking just out of curiosity (55).

Large variations in factors influencing tobacco use and continuation among youths of different populations underscore the importance of considering culturally-appropriate and evidence-based tobacco control programs. Iran signed the WHO framework convention on tobacco control (WHO FCTC) in 2003, and ratified it in November 2005; different articles to this treaty have been considered. Anti-tobacco laws have been extensively implemented in Iran; for instance, all kinds of advertisements, smoking in indoor public places, and selling cigarettes to persons less than 18 years of age are banned. However, for reaching better outcomes of preventive programs, the community-specific determinants of initiation and continuation of tobacco use among youths should be taken into account. Thus, tobacco-control programs need to begin at childhood, and family-centered preventive counseling should be strengthened in Iran.

5.1. Study Limitations and Strengths

The main limitation of this study is its cross-sectional nature; therefore, the associations found shall be considered with caution. The other limitation is the providing of self-reported data, which are usually underreported. The large sample size is the main strong point of the study.

Tobacco use is a health problem for Iranian adolescents, with higher prevalence in areas with higher SESs. Entertainment and feeling pleasure were the most common reasons for initiation and continuation of smoking. Therefore, tobacco control–programs should begin at childhood, and family-centered preventive counseling should be intensified in Iran.

Acknowledgments

Footnotes

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